



wwPDB EM Validation Summary Report ⓘ

Nov 22, 2022 – 04:02 PM JST

PDB ID : 7ENA
EMDB ID : EMD-31204
Title : TFIID-based PIC-Mediator holo-complex in pre-assembled state (pre-hPIC-MED)
Authors : Chen, X.; Qi, Y.; Wang, X.; Wu, Z.; Yin, X.; Li, J.; Liu, W.; Xu, Y.
Deposited on : 2021-04-16
Resolution : 4.07 Å(reported)

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

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

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

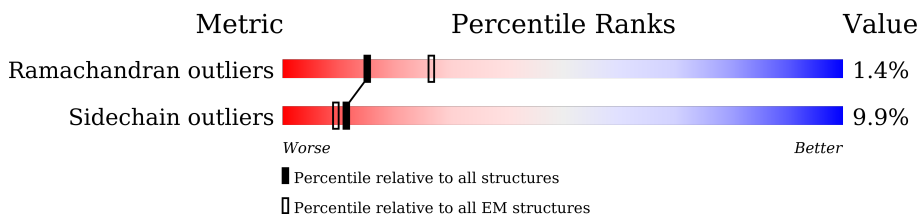
EMDB validation analysis : 0.0.1.dev43
Mogul : 1.8.5 (274361), CSD as541be (2020)
MolProbity : 4.02b-467
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
MapQ : 1.9.9
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.31.3

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 4.07 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

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

Mol	Chain	Length	Quality of chain
1	0	309	
2	8	346	
3	9	323	
4	DO	109	
5	DP	339	
6	DQ	307	
7	BA	316	
8	FA	517	
9	FB	249	

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Mol	Chain	Length	Quality of chain
10	PA	1970	61% 13% 25%
11	PB	1174	79% 17%
12	PC	275	76% 17% 7%
13	PD	142	75% 16% 9%
14	PE	210	83% 17%
15	PF	127	48% 14% 38%
16	PG	172	77% 21%
17	PH	150	83% 15%
18	PI	125	72% 18% 9%
19	PJ	67	81% 13%
20	PK	117	81% 19%
21	PL	58	55% 19% 24%
22	DA	1872	5% 29% 68%
23	DB	1199	8% 79% 20%
24	DD	1085	13% 85%
24	Dd	1085	15% 85%
25	DE	800	10% 66% 32%
25	De	800	67% 67% 33%
26	DF	677	14% 50% 10% 40%
26	Df	677	34% 56% 40%
27	DG	349	5% 39% 58%
28	DH	310	10% 59% 8% 33%
29	DI	264	7% 39% 7% 55%
29	Di	264	46% 46% 54%
30	DJ	218	36% 5% 59%







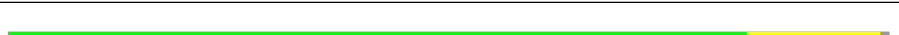
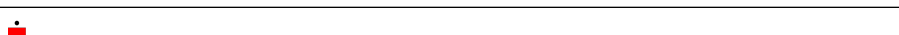
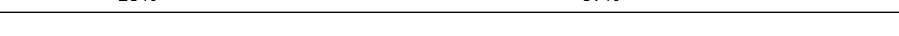
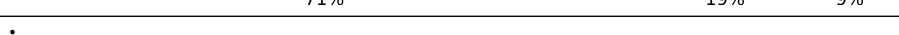
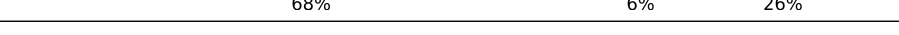



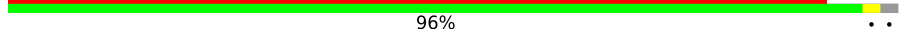


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Mol	Chain	Length	Quality of chain
30	Dj	218	44% 44% 56%
31	DL	161	20% 37% 9% 53%
31	Dl	161	66% 65% 34%
32	Dc	929	14% 13% 86%
33	Dk	211	46% 46% 54%
34	Dm	124	70% 69% 30%
35	EA	439	31% 10% 59%
36	EB	291	53% 6% 41%
37	1	548	27% 75% 21%
38	2	395	16% 96%
39	3	308	6% 94%
40	4	462	22% 94%
41	5	71	11% 85% 8% 7%
42	6	782	9% 80% 17%
43	7	760	91% 5%
44	c	311	79% 5% 15%
45	e	178	56% 43%
46	b	200	10% 52% 6% 42%
47	l	178	71% 29%
48	m	131	85% 15%
49	a	1581	11% 24% 5% 70%
50	d	270	42% 16% 41%
51	f	246	57% 11% 32%
52	g	233	58% 12% 29%
53	h	268	58% 10% 29%

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Mol	Chain	Length	Quality of chain
54	i	146	
55	j	135	
56	k	117	
57	n	1454	
58	o	788	
59	q	651	
60	r	208	
61	s	244	
62	t	212	
63	u	144	
64	v	200	
65	z	600	
66	x	989	
67	w	1368	
68	p	841	
69	X	69	
70	Y	69	

2 Entry composition [i](#)

There are 73 unique types of molecules in this entry. The entry contains 173965 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

- Molecule 1 is a protein called CDK-activating kinase assembly factor MAT1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	0	306	Total	C	N	O	S	0	0
			2255	1404	399	441	11		

- Molecule 2 is a protein called Cyclin-dependent kinase 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	8	299	Total	C	N	O	S	0	0
			2378	1535	406	426	11		

- Molecule 3 is a protein called Cyclin-H.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	9	287	Total	C	N	O	S	0	0
			2307	1477	398	417	15		

- Molecule 4 is a protein called Transcription initiation factor IIA subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	DO	97	Total	C	N	O	S	0	0
			771	491	133	145	2		

- Molecule 5 is a protein called TATA-box-binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	DP	177	Total	C	N	O	S	0	0
			1412	918	249	238	7		

- Molecule 6 is a protein called TFIIA-a.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	DQ	122	Total	C	N	O	S	0	0
			996	623	162	207	4		

- Molecule 7 is a protein called Transcription initiation factor IIB.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	BA	255	1959	1226	348	368	17	0	0

- Molecule 8 is a protein called General transcription factor IIF subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	FA	134	1101	698	199	202	2	0	0

- Molecule 9 is a protein called General transcription factor IIF subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	FB	222	1788	1127	320	338	3	0	0

- Molecule 10 is a protein called RPB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	PA	1475	11662	7336	2071	2183	72	0	0

- Molecule 11 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	PB	1134	9062	5732	1595	1671	64	0	0

- Molecule 12 is a protein called DNA-directed RNA polymerase II subunit RPB3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
12	PC	257	2059	1294	351	408	6	0	0

- Molecule 13 is a protein called DNA-directed RNA polymerase II subunit RPB4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	PD	129	1021	643	174	200	4	0	0

- Molecule 14 is a protein called DNA-directed RNA polymerase II subunit E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
14	PE	209	1720	1089	300	323	8	0	0

- Molecule 15 is a protein called DNA-directed RNA polymerase II subunit F.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
15	PF	79	635	406	108	116	5	0	0

- Molecule 16 is a protein called DNA-directed RNA polymerase II subunit RPB7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
16	PG	171	1334	867	216	243	8	0	0

- Molecule 17 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
17	PH	148	1186	750	194	237	5	0	0

- Molecule 18 is a protein called DNA-directed RNA polymerase II subunit RPB9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
18	PI	114	927	571	166	179	11	0	0

- Molecule 19 is a protein called RPB10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
19	PJ	64	507	328	86	87	6	0	0

- Molecule 20 is a protein called RNA_pol_L_2 domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
20	PK	117	937	604	154	177	2	0	0

- Molecule 21 is a protein called RPB12.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	PL	44	Total	C	N	O	S	0	0
			372	231	72	63	6		

- Molecule 22 is a protein called Transcription initiation factor TFIID subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	DA	600	Total	C	N	O	S	0	0
			4918	3135	858	897	28		

- Molecule 23 is a protein called Transcription initiation factor TFIID subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	DB	963	Total	C	N	O	S	0	0
			7796	5011	1315	1412	58		

- Molecule 24 is a protein called Transcription initiation factor TFIID subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	DD	159	Total	C	N	O	S	0	0
			1330	830	248	249	3		
24	Dd	158	Total	C	N	O	S	0	0
			1307	814	238	252	3		

- Molecule 25 is a protein called Transcription initiation factor TFIID subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	DE	546	Total	C	N	O	S	0	0
			4364	2766	757	820	21		
25	De	539	Total	C	N	O	S	0	0
			4327	2746	748	814	19		

- Molecule 26 is a protein called Transcription initiation factor TFIID subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	DF	408	Total	C	N	O	S	0	0
			3109	1970	542	579	18		
26	Df	403	Total	C	N	O	S	0	0
			3081	1954	533	576	18		

- Molecule 27 is a protein called Transcription initiation factor TFIID subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	DG	145	Total	C	N	O	S	0	0
			1180	748	217	211	4		

- Molecule 28 is a protein called Transcription initiation factor TFIID subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	DH	209	Total	C	N	O	S	0	0
			1633	1034	283	311	5		

- Molecule 29 is a protein called Transcription initiation factor TFIID subunit 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	DI	120	Total	C	N	O	S	0	0
			959	610	166	177	6		
29	Di	121	Total	C	N	O	S	0	0
			967	615	167	178	7		

- Molecule 30 is a protein called Transcription initiation factor TFIID subunit 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	DJ	90	Total	C	N	O	S	0	0
			720	466	115	135	4		
30	Dj	95	Total	C	N	O	S	0	0
			759	488	124	143	4		

- Molecule 31 is a protein called Transcription initiation factor TFIID subunit 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	DL	75	Total	C	N	O	S	0	0
			614	384	107	120	3		
31	Dl	107	Total	C	N	O	S	0	0
			876	547	158	166	5		

- Molecule 32 is a protein called Transcription initiation factor TFIID subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	Dc	127	Total	C	N	O	S	0	0
			1011	638	174	193	6		

- Molecule 33 is a protein called Transcription initiation factor TFIID subunit 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
33	Dk	98	785	499	142	139	5	0	0

- Molecule 34 is a protein called Transcription initiation factor TFIID subunit 13.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	Dm	87	724	456	131	131	6	0	0

- Molecule 35 is a protein called General transcription factor IIE subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	EA	179	1476	932	261	272	11	0	0

- Molecule 36 is a protein called Transcription initiation factor IIE subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
36	EB	172	1404	893	243	264	4	0	0

- Molecule 37 is a protein called General transcription factor IIH subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	1	433	3436	2153	602	664	17	0	0

- Molecule 38 is a protein called General transcription factor IIH subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	2	385	3024	1909	524	564	27	0	0

- Molecule 39 is a protein called General transcription factor IIH subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	3	295	2306	1477	384	426	19	0	0

- Molecule 40 is a protein called General transcription factor IIH subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	4	457	3644	2341	641	648	14	0	0

- Molecule 41 is a protein called General transcription factor IIIH subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
41	5	66	522	336	83	100	3	0	0

- Molecule 42 is a protein called General transcription and DNA repair factor IIIH helicase subunit XPB.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	6	652	5255	3345	898	980	32	0	0

- Molecule 43 is a protein called General transcription and DNA repair factor IIIH helicase subunit XPD.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
43	7	732	5861	3742	1023	1068	28	0	0

- Molecule 44 is a protein called Mediator of RNA polymerase II transcription subunit 27.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	c	263	2108	1337	378	382	11	0	0

- Molecule 45 is a protein called Mediator of RNA polymerase II transcription subunit 28.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	e	102	832	520	146	163	3	0	0

- Molecule 46 is a protein called Mediator of RNA polymerase II transcription subunit 29.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
46	b	115	899	563	155	172	9	0	0

- Molecule 47 is a protein called Mediator of RNA polymerase II transcription subunit 30.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
47	l	126	1040	649	191	193	7	0	0

- Molecule 48 is a protein called Mediator of RNA polymerase II transcription subunit 31.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
48	m	112	983	641	172	165	5	0	0

- Molecule 49 is a protein called Mediator of RNA polymerase II transcription subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
49	a	469	3585	2283	615	663	24	0	0

- Molecule 50 is a protein called Mediator of RNA polymerase II transcription subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
50	d	158	1268	791	228	243	6	0	0

- Molecule 51 is a protein called Mediator of RNA polymerase II transcription subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
51	f	167	1329	851	231	242	5	0	0

- Molecule 52 is a protein called Mediator of RNA polymerase II transcription subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
52	g	166	1382	880	244	248	10	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
g	11	LEU	PRO	conflict	UNP O43513

- Molecule 53 is a protein called Isoform 2 of Mediator of RNA polymerase II transcription subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
53	h	190	1465	913	259	289	4	0	0

- Molecule 54 is a protein called Mediator of RNA polymerase II transcription subunit 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
54	i	73	605	382	107	110	6	0	0

- Molecule 55 is a protein called Mediator of RNA polymerase II transcription subunit 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
55	j	122	1001	636	174	187	4	0	0

- Molecule 56 is a protein called Mediator of RNA polymerase II transcription subunit 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
56	k	112	879	537	163	175	4	0	0

- Molecule 57 is a protein called Mediator of RNA polymerase II transcription subunit 14.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
57	n	994	7241	4576	1293	1334	38	0	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
n	133	LEU	ALA	conflict	UNP O60244

- Molecule 58 is a protein called Mediator of RNA polymerase II transcription subunit 15.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
58	o	156	1221	780	212	222	7	0	0

- Molecule 59 is a protein called Mediator of RNA polymerase II transcription subunit 17.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
59	q	555	4276	2700	767	792	17	0	0

- Molecule 60 is a protein called Mediator of RNA polymerase II transcription subunit 18.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
60	r	206	1630	1033	285	294	18	0	0

- Molecule 61 is a protein called Mediator of RNA polymerase II transcription subunit 19.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
61	s	81	505	312	91	100	2	0	0

- Molecule 62 is a protein called Mediator of RNA polymerase II transcription subunit 20.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
62	t	193	1499	955	247	280	17	0	0

- Molecule 63 is a protein called Mediator of RNA polymerase II transcription subunit 21.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
63	u	107	792	492	132	165	3	0	0

- Molecule 64 is a protein called Mediator of RNA polymerase II transcription subunit 22.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
64	v	134	1083	668	185	226	4	0	0

- Molecule 65 is a protein called Mediator of RNA polymerase II transcription subunit 26.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
65	z	97	765	472	136	154	3	0	0

- Molecule 66 is a protein called Mediator of RNA polymerase II transcription subunit 24.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
66	x	896	7050	4516	1188	1292	54	0	0

- Molecule 67 is a protein called Mediator of RNA polymerase II transcription subunit 23.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
67	w	1334	10772	6965	1827	1909	71	0	0

- Molecule 68 is a protein called Isoform 2 of Mediator of RNA polymerase II transcription subunit 16.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
68	p	406	3124	1982	536	585	21	0	0

- Molecule 69 is a DNA chain called DNA (69-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
69	X	69	1429	672	279	409	69	0	0

- Molecule 70 is a DNA chain called DNA(69-MER).

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	P		
70	Y	69	1400	664	248	419	69	0	0

- Molecule 71 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
71	0	2	Total 2	Zn 2	0
71	BA	1	Total 1	Zn 1	0
71	PA	2	Total 2	Zn 2	0
71	PB	1	Total 1	Zn 1	0
71	PC	1	Total 1	Zn 1	0
71	PI	2	Total 2	Zn 2	0

Continued on next page...

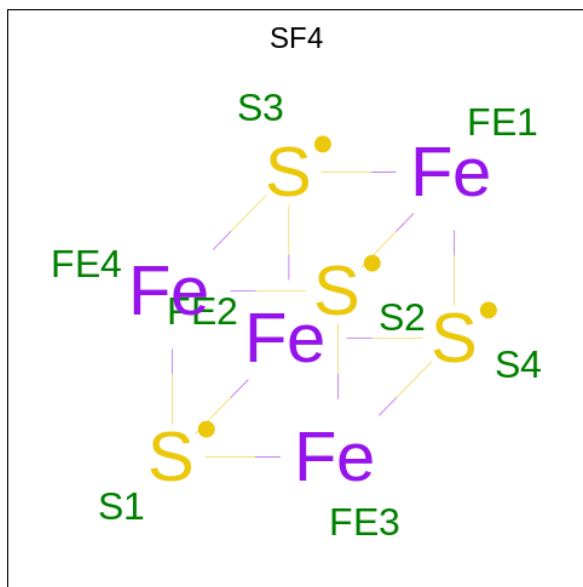
Continued from previous page...

Mol	Chain	Residues	Atoms		AltConf
71	PJ	1	Total	Zn	0
			1	1	
71	PL	1	Total	Zn	0
			1	1	
71	EA	1	Total	Zn	0
			1	1	
71	2	3	Total	Zn	0
			3	3	
71	3	1	Total	Zn	0
			1	1	

- Molecule 72 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
72	PA	1	Total	Mg	0
			1	1	

- Molecule 73 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe₄S₄).

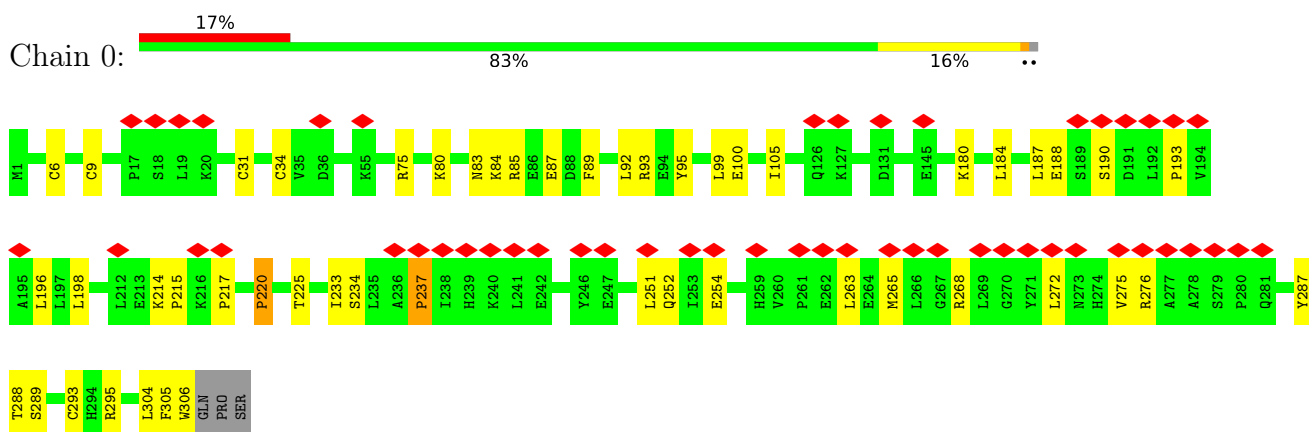


Mol	Chain	Residues	Atoms			AltConf
73	7	1	Total	Fe	S	0
			8	4	4	

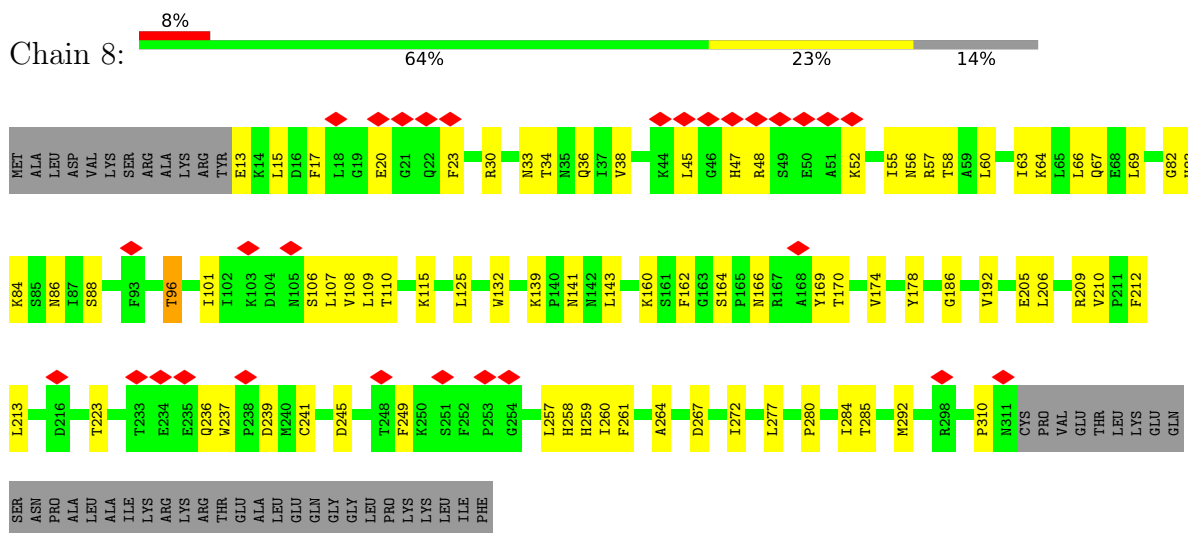
3 Residue-property plots [i](#)

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: CDK-activating kinase assembly factor MAT1



- Molecule 2: Cyclin-dependent kinase 7

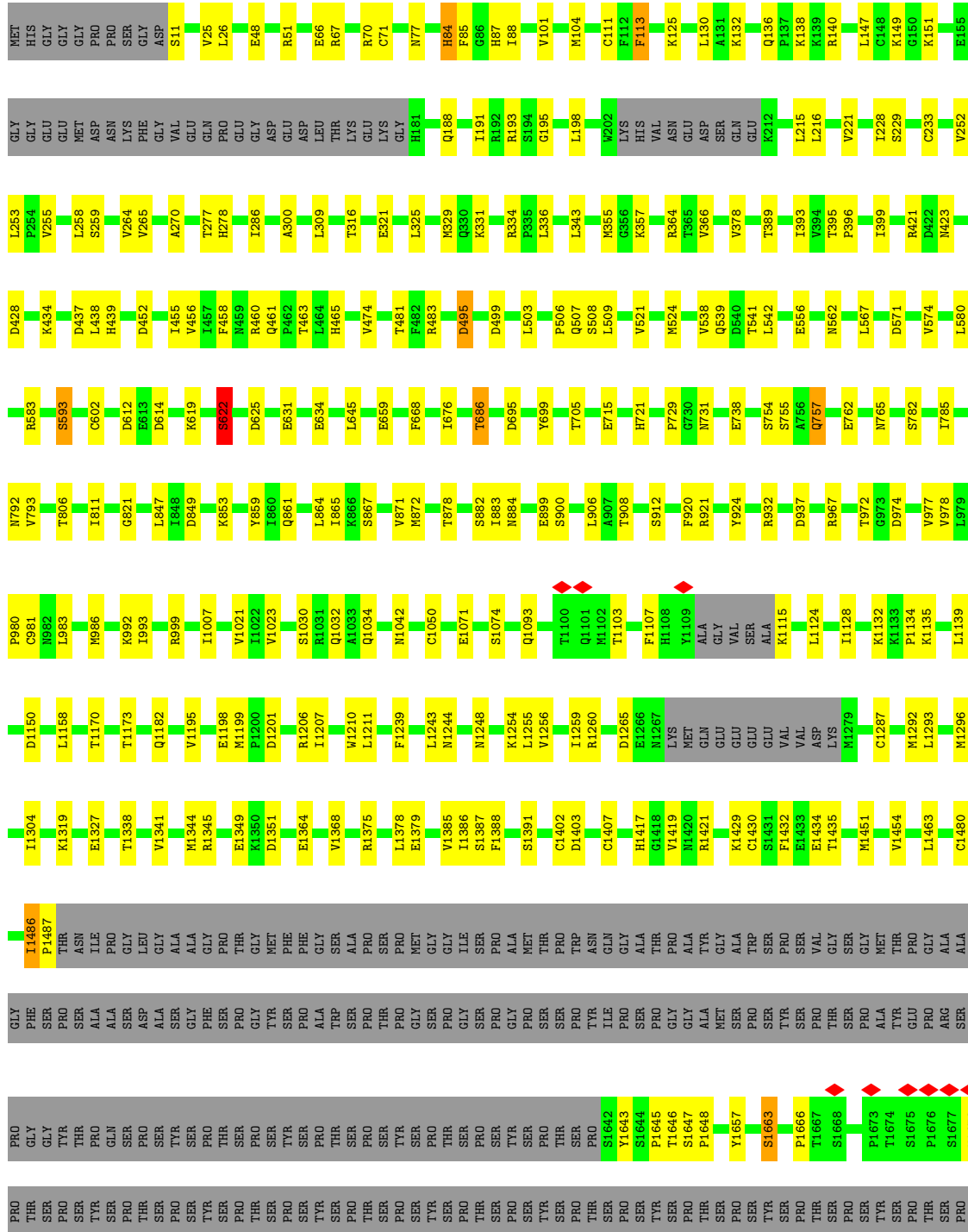


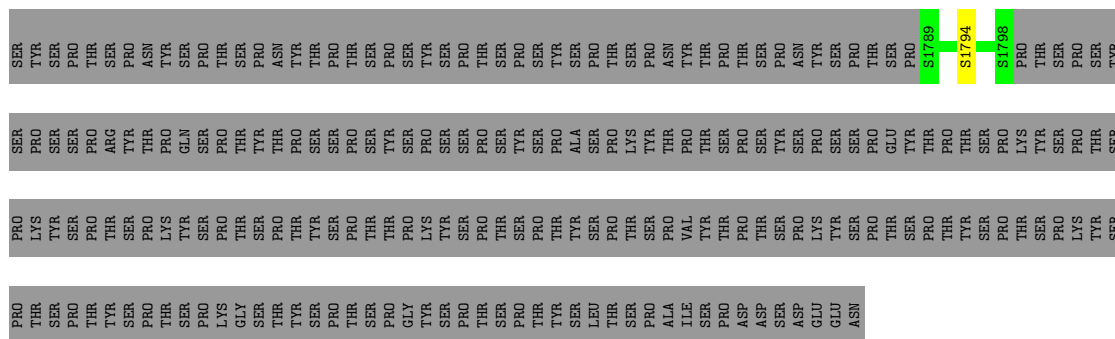
- Molecule 3: Cyclin-H



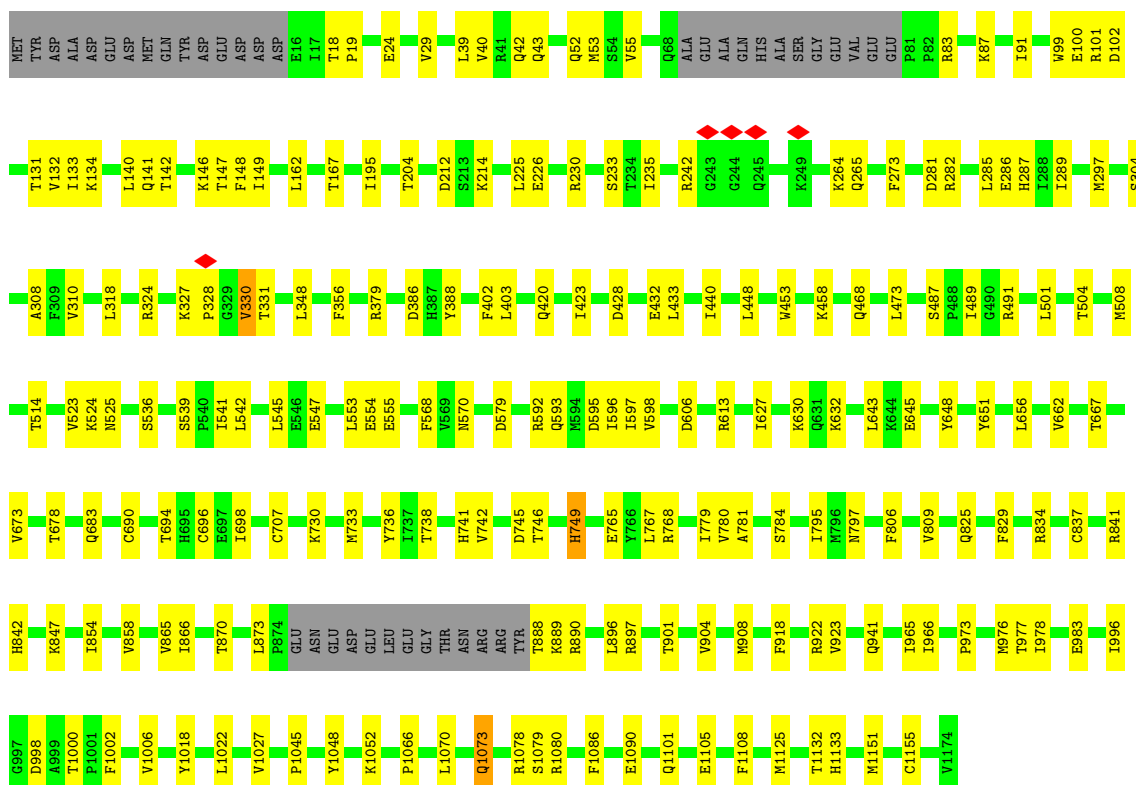
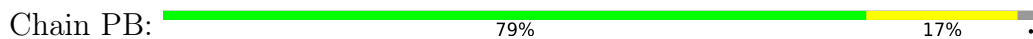


• Molecule 10: RPB1

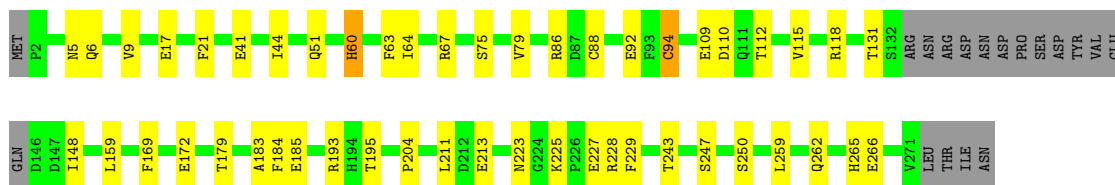
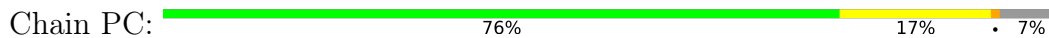





• Molecule 11: DNA-directed RNA polymerase subunit beta



• Molecule 12: DNA-directed RNA polymerase II subunit RPB3




• Molecule 13: DNA-directed RNA polymerase II subunit RPB4

Chain PD:  75% 16% 9%



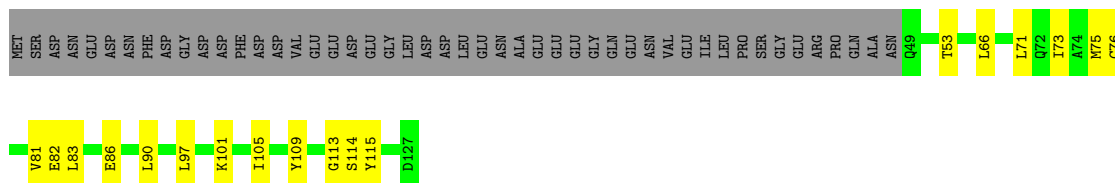
- Molecule 14: DNA-directed RNA polymerase II subunit E

Chain PE:  83% 17%




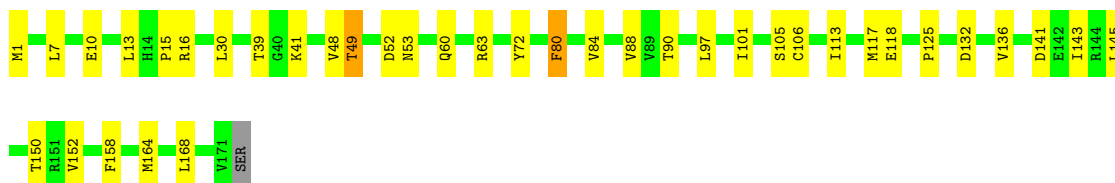
- Molecule 15: DNA-directed RNA polymerase II subunit F

Chain PF:  48% 14% 38%




- Molecule 16: DNA-directed RNA polymerase II subunit RPB7

Chain PG:  77% 21% ..



- Molecule 17: DNA-directed RNA polymerases I, II, and III subunit RPABC3

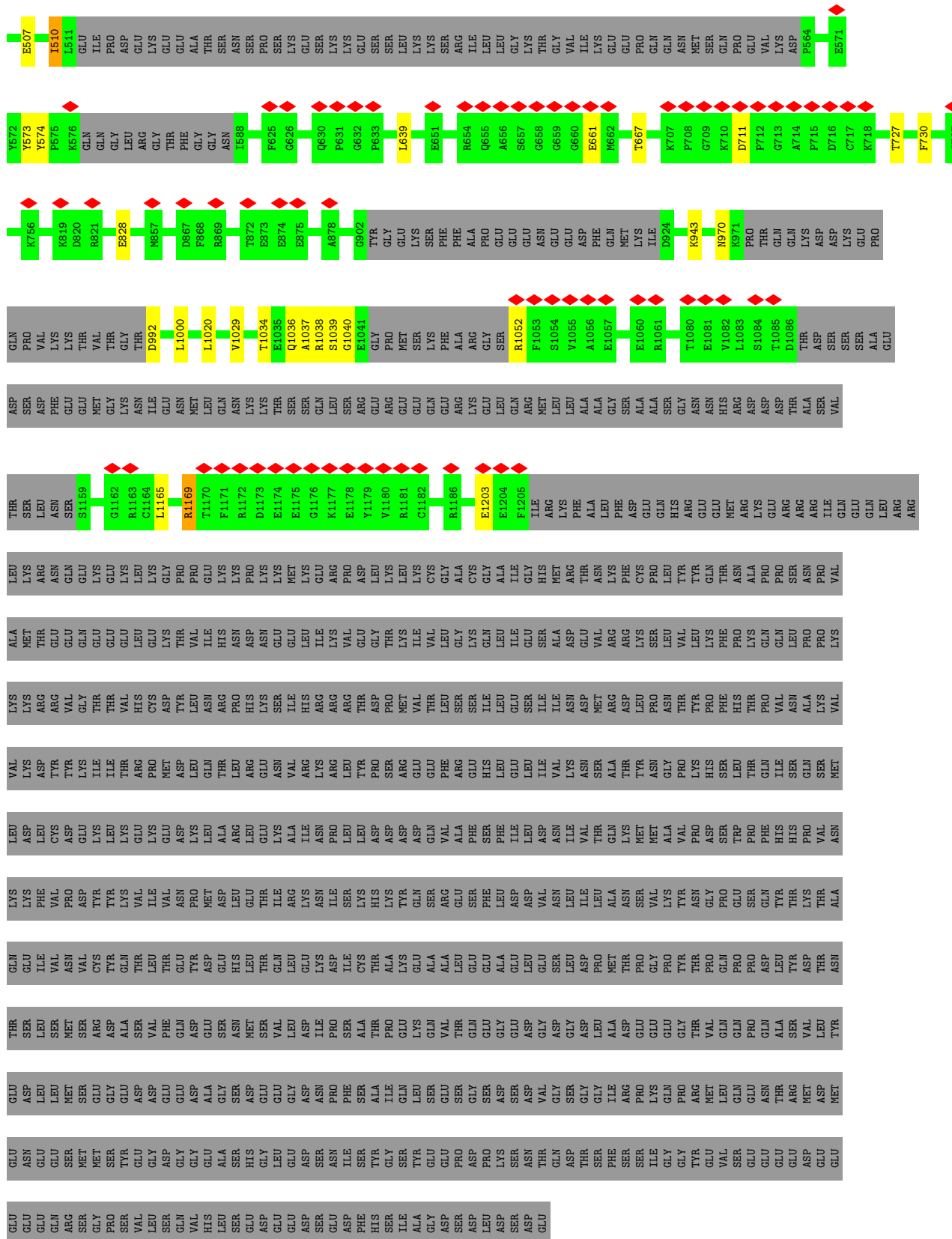
Chain PH:  83% 15% .

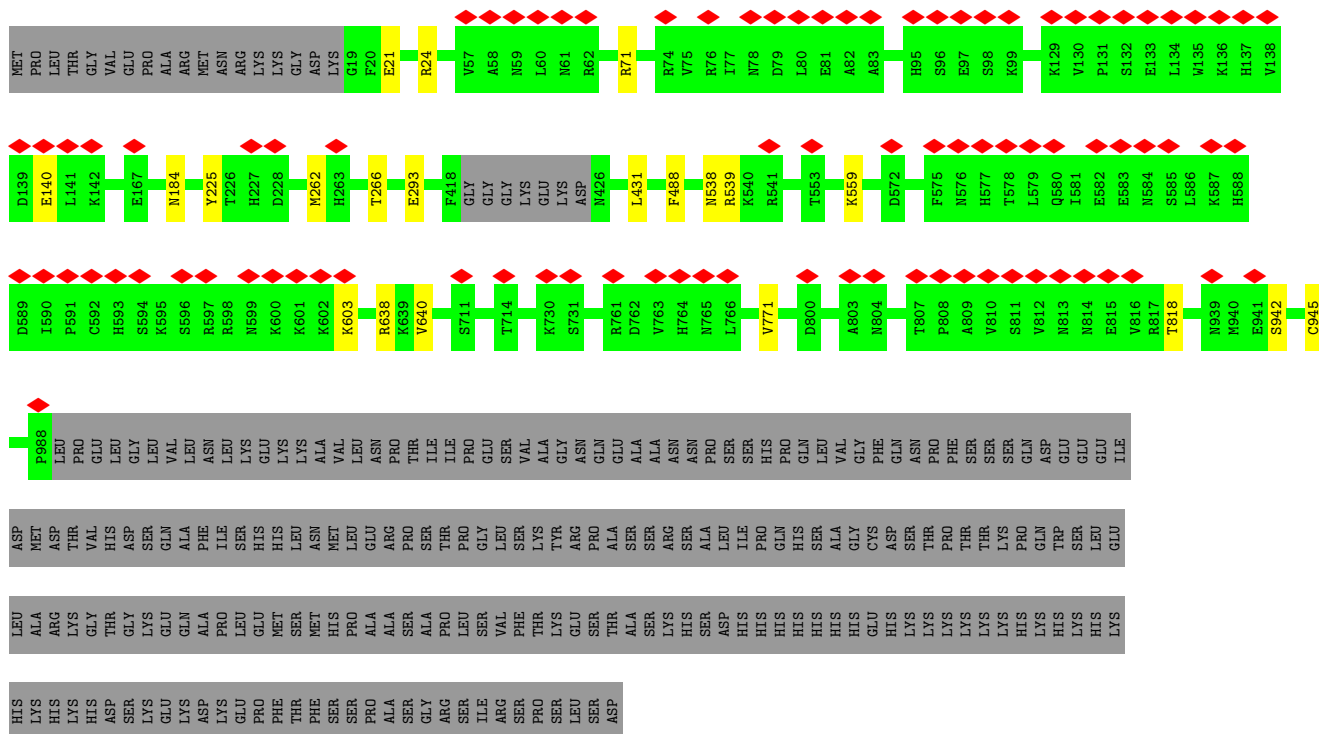
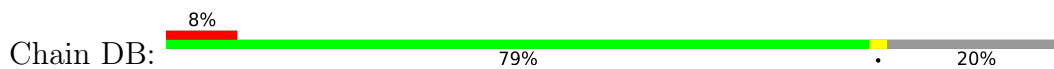


- Molecule 18: DNA-directed RNA polymerase II subunit RPB9

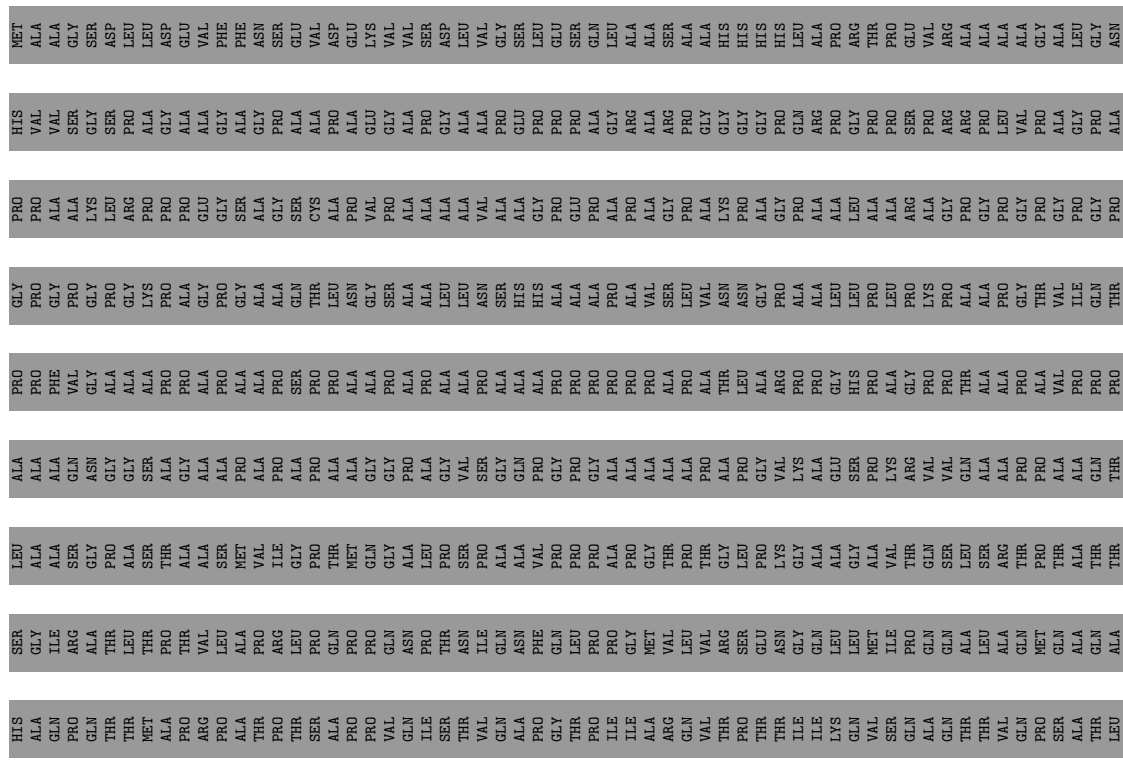
Chain PI:  72% 18% . 9%

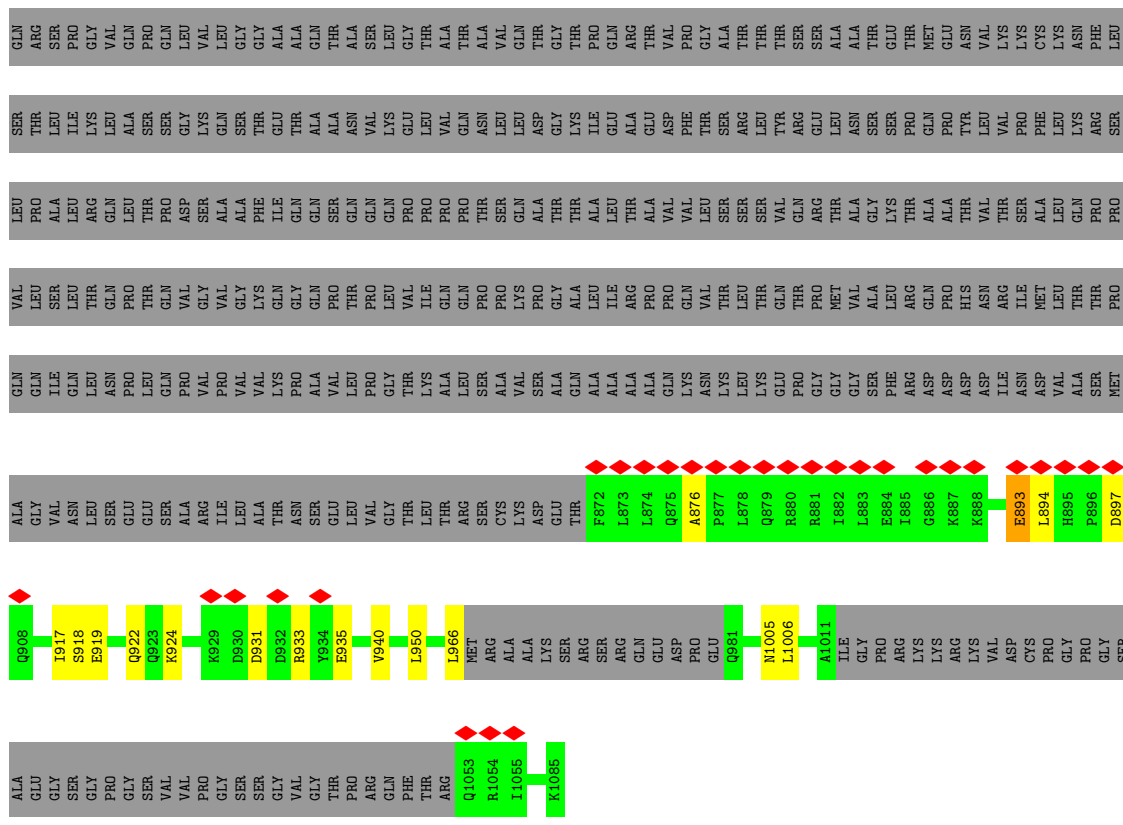




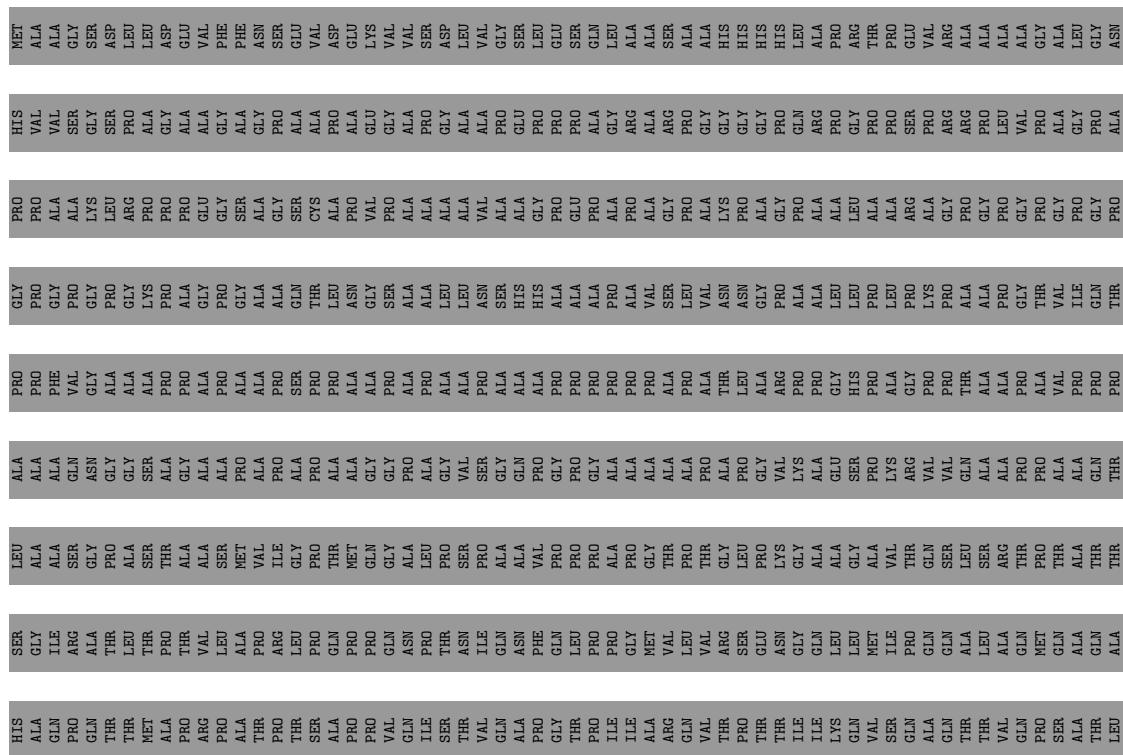


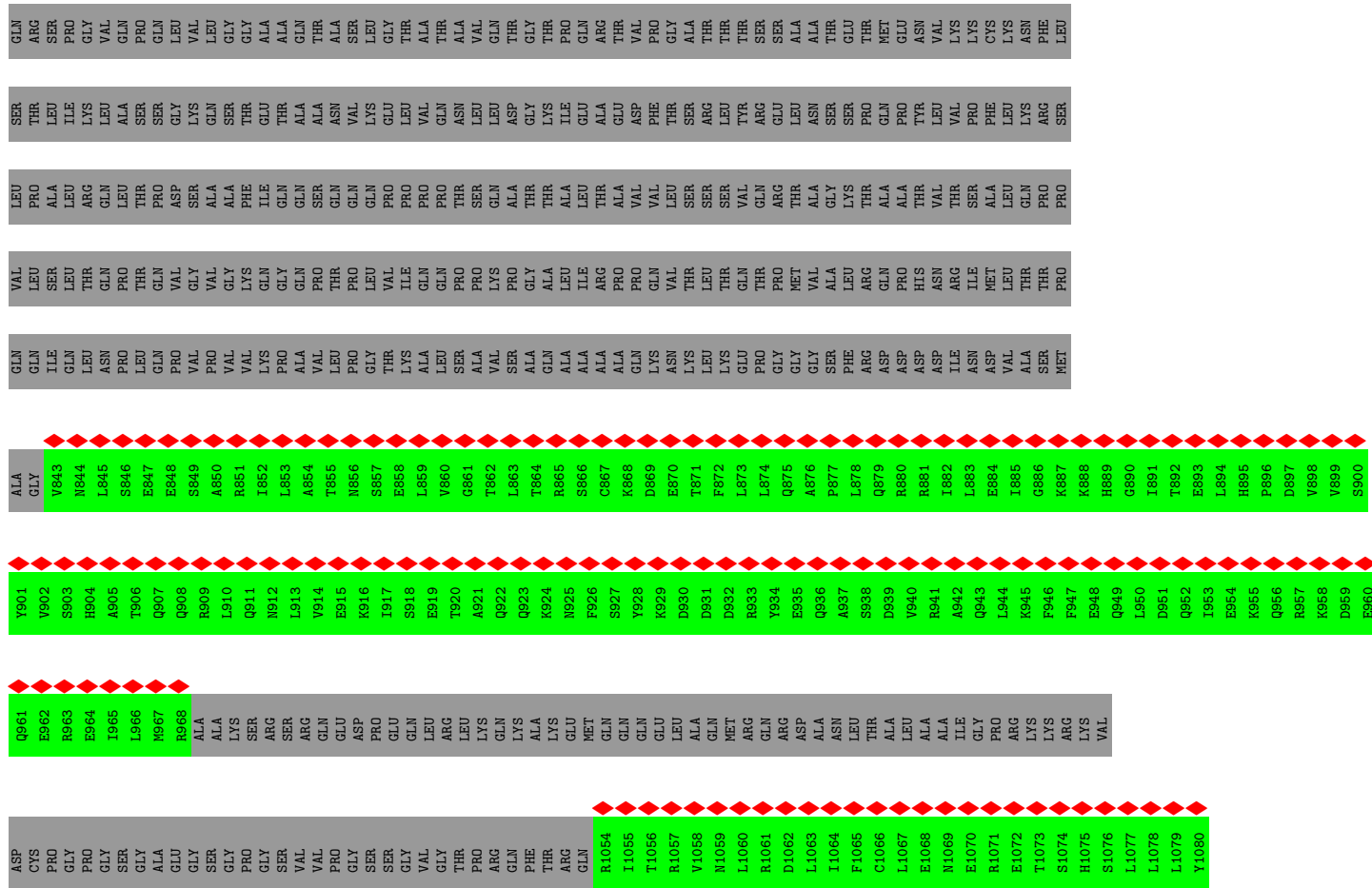
● Molecule 24: Transcription initiation factor TFIID subunit 4



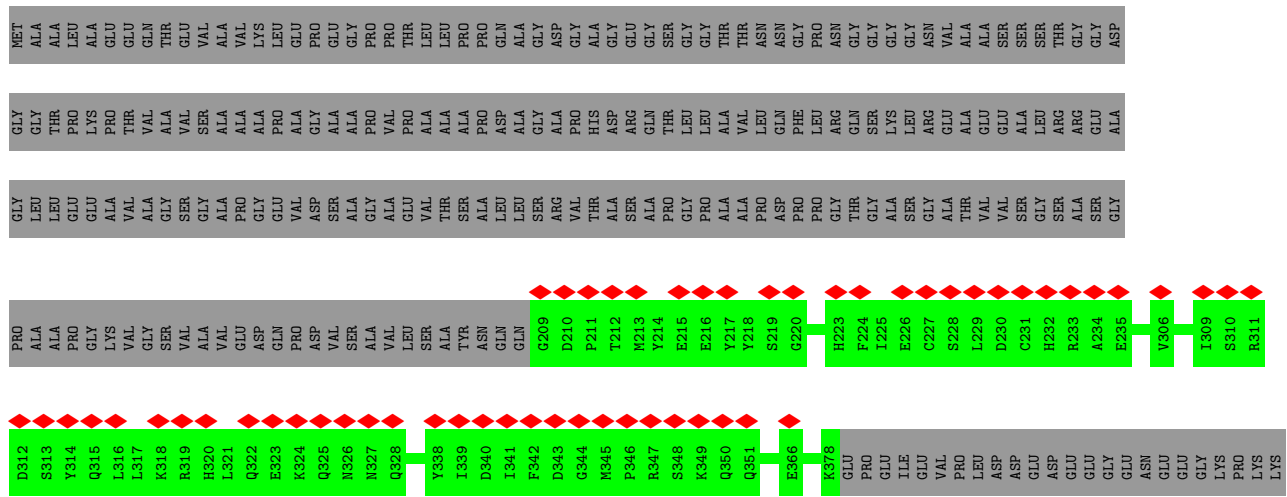


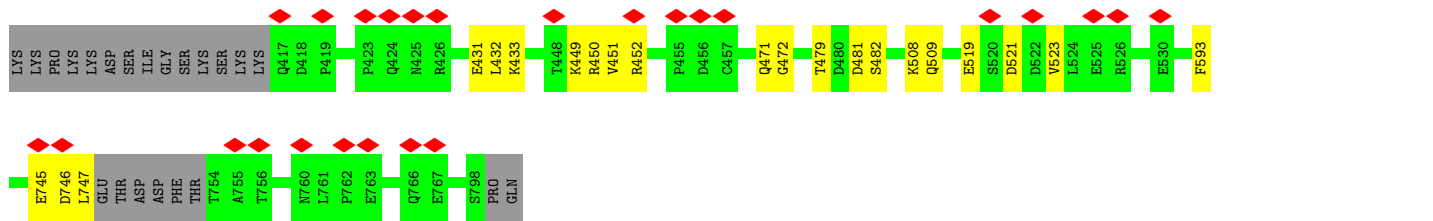
● Molecule 24: Transcription initiation factor TFIID subunit 4





• Molecule 25: Transcription initiation factor TFIID subunit 5

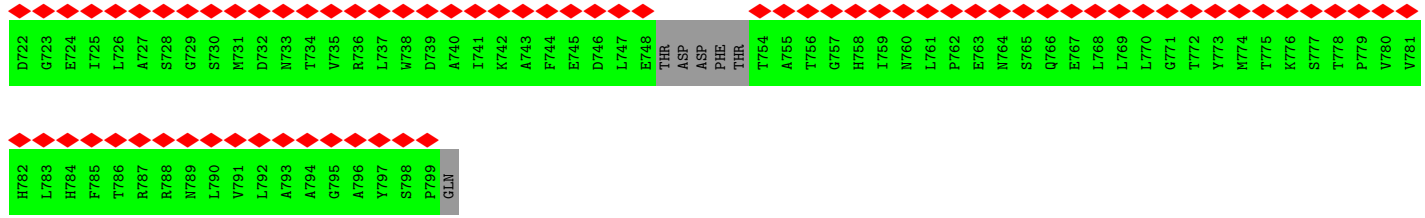




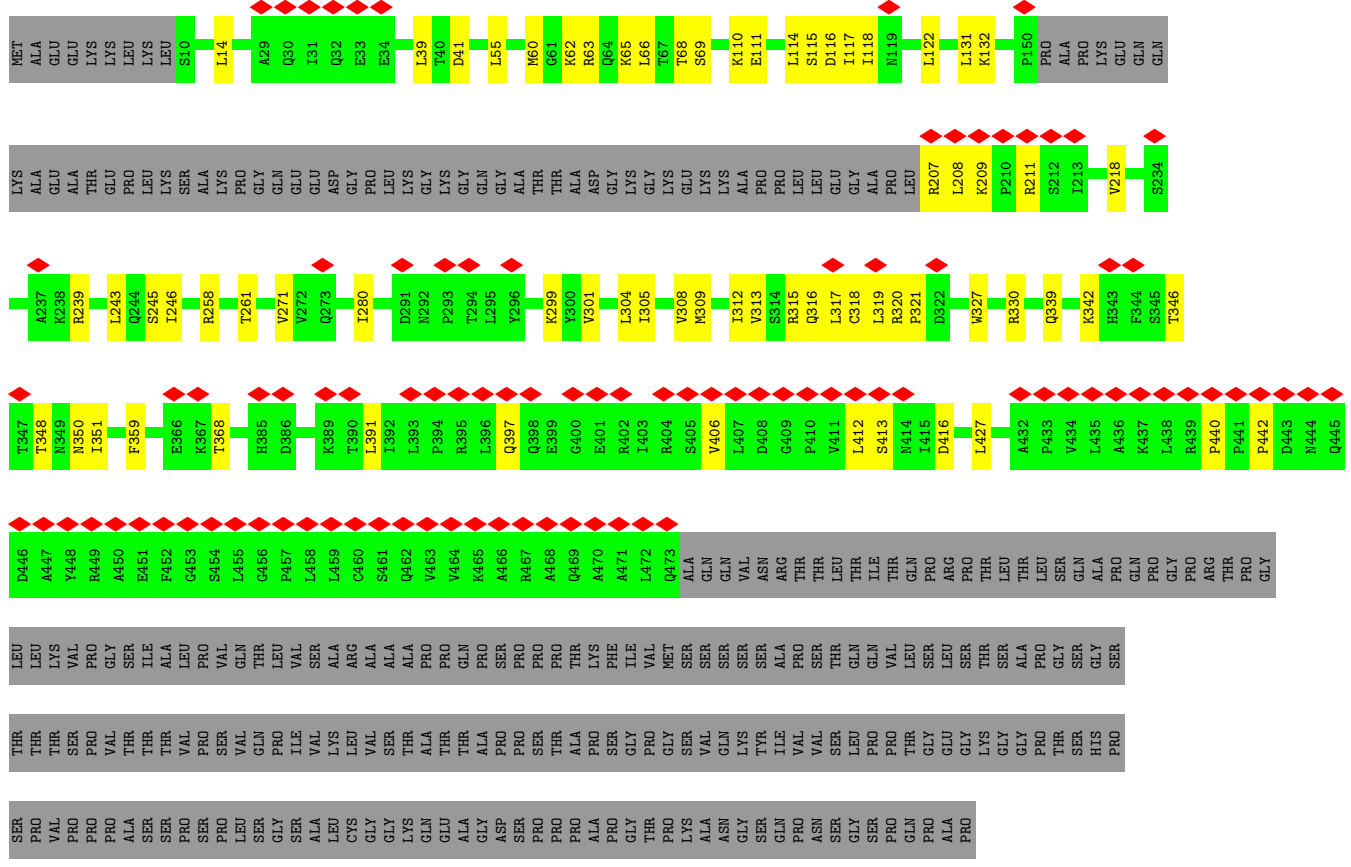
• Molecule 25: Transcription initiation factor TFIID subunit 5



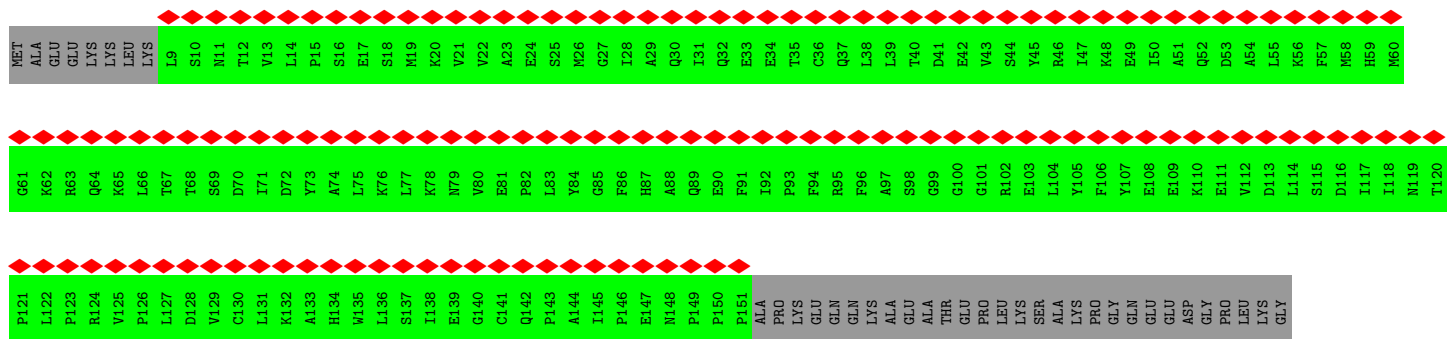
MET	ALA	LEU	VAL	ILE	SER	LYS	THR	ASP	PHE	THR	T754	A755	T756	N760	L761	P762	E763	Q766	E767	S798	PRO	GLN																																																																																																																																																													
GLY	THR	LEU	GLU	PRO	LYS	ALA	THR	VAL	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA																																																																																																																																																												
GLY	LEU	LEU	GLU	GLU	ALA	VAL	VAL	ALA	GLY	GLY	PRO	GLY	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA	ALA																																																																																																																																																												
PRO	ALA	ALA	PRO	GLY	LYS	VAL	VAL	SER	SER	VAL	VAL	VAL	ASP	GLN	PRO	GLN	ASP	ASP	ASP	ASP	ASP	ASP	ASP																																																																																																																																																												
Y241	P242	L243	F244	V245	H246	M247	Y248	L249	E250	L251	V252	Y253	N254	Q255	H256	E257	N258	E259	A260	K261	S262	F263	F264	E265	K266	F267	H268	G269	D270	Q271	E272	C273	Y274	Y275	Q276	D277	D278	L279	R280	V281	L282	S283	S284	L285	T286	T287	K288	E289	H290	M291	K292	G293	N294	E295	T296	M297	D299	F300																																																																																																																									
R301	T302	S303	K304	F305	V306	L307	R308	I309	S310	R311	D312	Y313	Y314	Q315	L316	L317	K318	R319	H320	L321	Q322	E323	K324	Q325	N326	N327	Q328	I329	K330	N331	I332	Q333	V334	E335	H336	L337	Y338	I339	D340	I341	D342	D343	D344	D345	D346	D347	D348	D349	D350	D351	D352	D353	D354	D355	D356	D357	D358	D359	D360	D361	D362	D363	D364	D365	D366	D367	D368	D369	D370	D371	D372	D373	D374	D375	D376	D377	D378	D379	D380	D381	D382	D383	D384	D385	D386	D387	D388	D389	D390	D391	D392	D393	D394	D395	D396	D397	D398	D399	D400	D401	D402	D403	D404	D405	D406	D407	D408	D409	D410	D411	D412	D413	D414	D415	D416	D417	D418	D419	D420	D421	D422	D423	D424	D425	D426	D427	D428	D429	D430	D431	D432	D433	D434	D435	D436	D437	D438	D439	D440	D441	D442	D443	D444	D445	D446	D447	D448	D449	D450	D451	D452	D453	D454	D455	D456	D457	D458	D459	D460	D461	D462	D463	D464	D465	D466	D467	D468	D469	D470	D471	D472	D473	D474	D475	D476	D477	D478	D479	D480
D481	S482	S483	L484	L485	A486	G487	G488	F489	A490	D491	S492	T493	V494	R495	V496	W497	S498	V499	T500	P501	K502	K503	L504	S505	S506	V507	K508	Q509	A510	S511	L512	L513	S514	L515	I516	D517	K518	E519	S520	D521	D522	V523	L524	E525	R526	L527	M528	D529	E530	K531	T532	A533	S534	E535	L536	K537	L538	L539	Y540																																																																																																																								
G541	H542	S543	G544	P545	V546	Y547	G548	A549	S550	F551	S552	P553	D554	R555	N556	Y557	L558	L559	S560	S561	S562	E563	D564	S565	G566	Y567	R568	L569	G570	S571	L572	Q573	T574	F575	T576	C577	L578	V579	G580	Y581	K582	G583	H584	N585	G586	F587	V588	M589	R590	T591	D592	F593	S594	P595	Y596	G597	L598	Y599	F600																																																																																																																								
V601	S602	G603	G604	H605	D606	R607	V608	A609	R610	L611	W612	A613	T614	D615	F616	Y617	P618	F619	G620	R621	F622	F623	A624	G625	G626	L627	A628	D629	V630	M631	C632	L633	R634	F635	H636	P637	N638	S639	M640	Y641	W642	A643	T644	G645	G646	S647	A647	D648	R649	T650	V651	R652	L653	C654	D655	V656	L657	F658	Y659	R660																																																																																																																							
G661	V662	R663	T664	F665	T666	G667	H668	R669	G670	H673	S674	L675	T676	F677	S678	P679	G680	G681	R682	F683	L684	A685	T686	G687	A688	T689	D690	G691	R692	V693	L694	L695	V696	D697	L698	G699	H700	G701	L702	M703	V704	G705	E706	L707	K708	G709	H710	T711	D712	T713	V714	C715	S716	L717	R718	F719	S720	R721																																																																																																																									

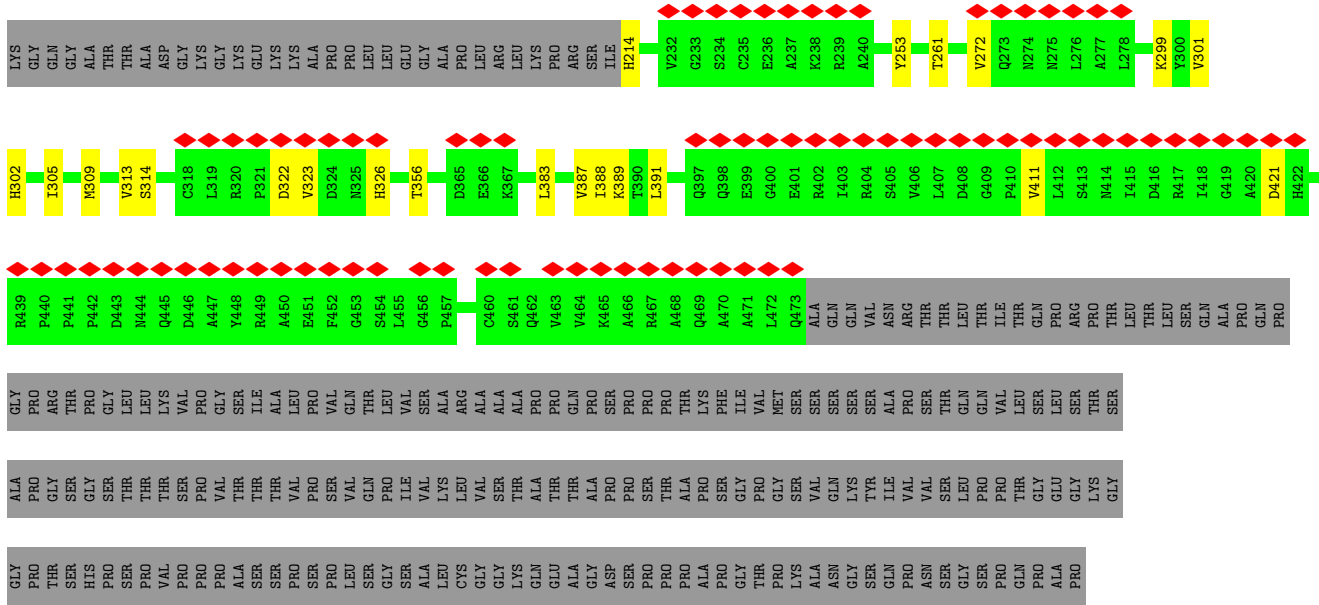


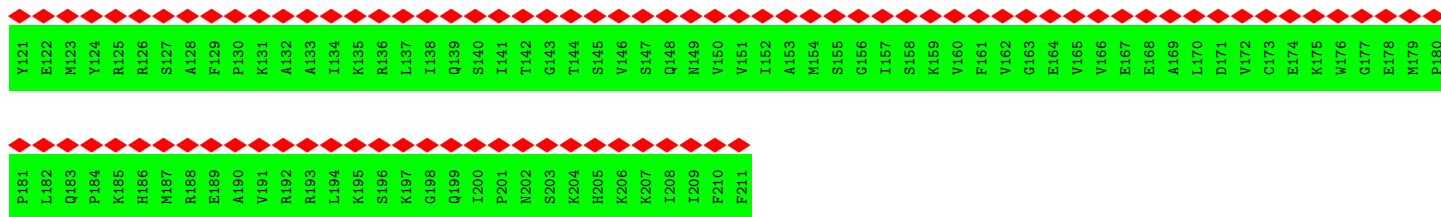
• Molecule 26: Transcription initiation factor TFIID subunit 6



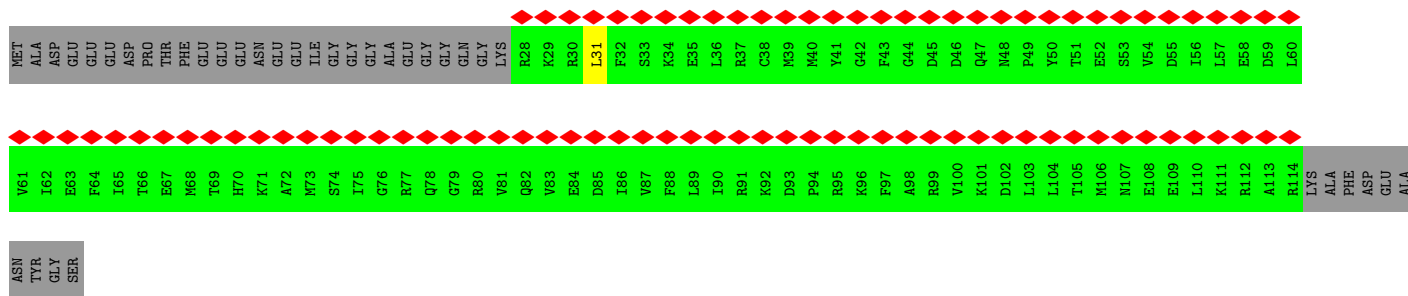
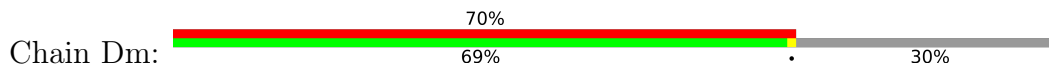
• Molecule 26: Transcription initiation factor TFIID subunit 6



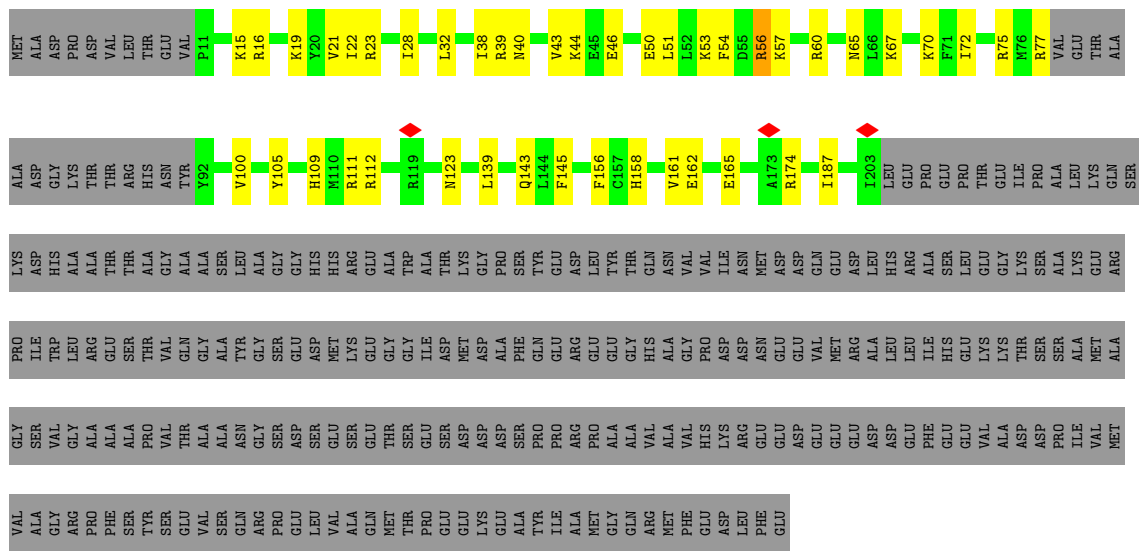
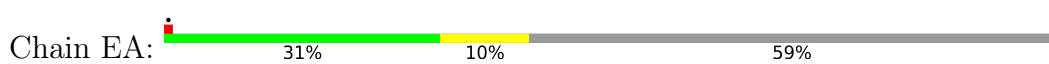




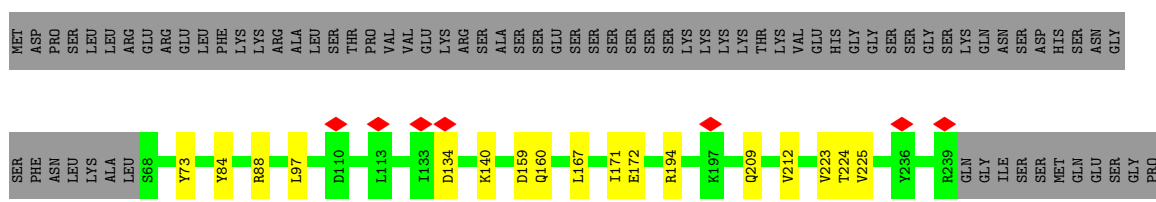
• Molecule 34: Transcription initiation factor TFIID subunit 13



• Molecule 35: General transcription factor IIE subunit 1

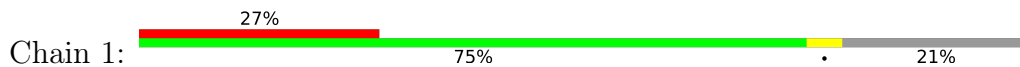


• Molecule 36: Transcription initiation factor IIE subunit beta



LYS LYS VAL ALA SER PRO ILE GLN ARG ARG ARG LYS LYS PRO PRO ALA SER GLN LYS LYS ARG ARG ARG PHE LYS LYS LEU LEU ALA ALA ASP ASP ASP ILE THR THR SER SER LYS

• Molecule 37: General transcription factor IIIH subunit 1



MET ALA THR SER GLU GLU VAL LEU LEU LEU ILE ILE VAL LYS LYS VAL VAL LYS LYS ARG ARG LYS LYS ARG ARG PHE LYS LYS LEU LEU MET ALA ALA ASP ASP ASP ILE THR THR SER SER LYS

ALA LYS ILE GLN LEU LEU VAL LEU VAL LEU LEU HIS ALA HIS VAL GLY ASP THR THR ASN ARG PHE HIS HIS PHE SER ASN SER GLY THR THR LEU LEU TYP TYP ASP ASP ALA ALA ASP ASP ILE LEU LEU LEU LEU K114 E120 D121 P122 V123

M148 T157 S158 D163 Q177 T178 D179 G180 C181 M182 G183 L184 R185 Y186 Y187 L188 L189 T189 S190 D191 I192 P201 K204 Y207 P212 H213 M214 M215 T216 E217 K218 E219 F220 W221 R222 R223 Q226 S227 H228 Y229 F230 H231 R232 D233 R234 L235 M236 T237 G238 S239 R240 D241 L242 F243 A244 E245 C246 A247 K248 I249 D250 E251 K252 G253 L254 K255 T256 M257 V258 S259 L260 G261 L272 E273 D274 K275 P276 E279 G280 Y281 G282 I283 S284 S285 V286 P287 S288 A289 S290 N291 S292 K293 S294 I295 K296 E297 M298 S299 N300 A301 L319 E323 A324 Q325 M326 E327 T329 S330 E331 P332 S333 D336 D343 C344 F345 Q346 P347 A348 V349 K350 N375 K378 S379 D380 R381 Y382 Y383 H384 G385 P386 T387 P388 I389 Q390 L392 Q393 Y394 A395 Q398 M411 L418 T419 V420 W421 S424 S425 S428 T431 T432 S435 P436 G437 G438 A439 L440 M441 G442 G443 G444 T445 L461 Q509 I512 R513 R514 Q515 Y516 Q540 R543 L544 M545 K546 LYS THR

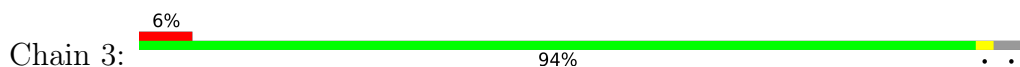
• Molecule 38: General transcription factor IIIH subunit 2



MET ASP GLU GLU PRO GLU ARG LYS R10 R17 T18 W19 E20 I21 D25 E26 S27 G28 S29 L30 K31 A32 T33 I34 E35 D36 I37 L38 F39 K40 A41 K42 R43 K44 R45 V46 F47 E48 H49 H50 G51 R54 R69 E72 D73 Q74 D75 P78 R125 T129

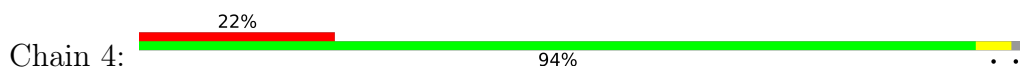
K132 K133 A134 V135 D136 M137 T138 C139 H140 S263 D264 Q265 C291 L318 E333 I334 P335 L336 E337 E338 Y339 R343 E351 L352 K353 D354 Q355 H356 P392 S393 G394 VAL

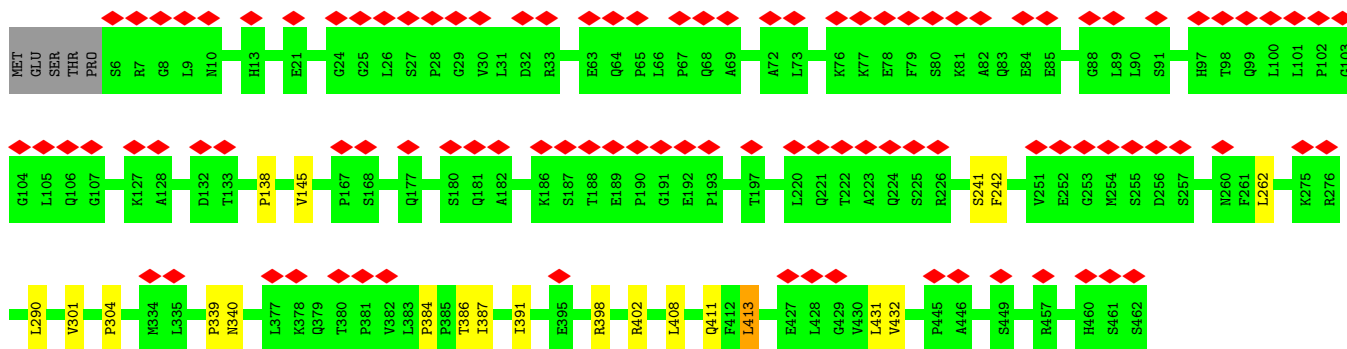
• Molecule 39: General transcription factor IIIH subunit 3



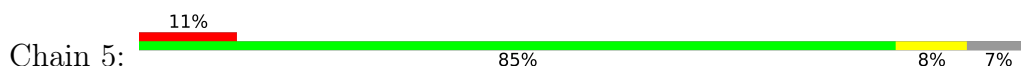
MET VAL SER ASP GLU D6 E7 E29 S30 Q31 F69 R87 D123 I124 K125 G126 Q127 L132 K149 K152 D153 M154 Q155 E156 K186 Q187 M188 Q235 S239 P244 H248 E286 K300 LYS LYS LYS LYS VAL SER ALA

• Molecule 40: General transcription factor IIIH subunit 4

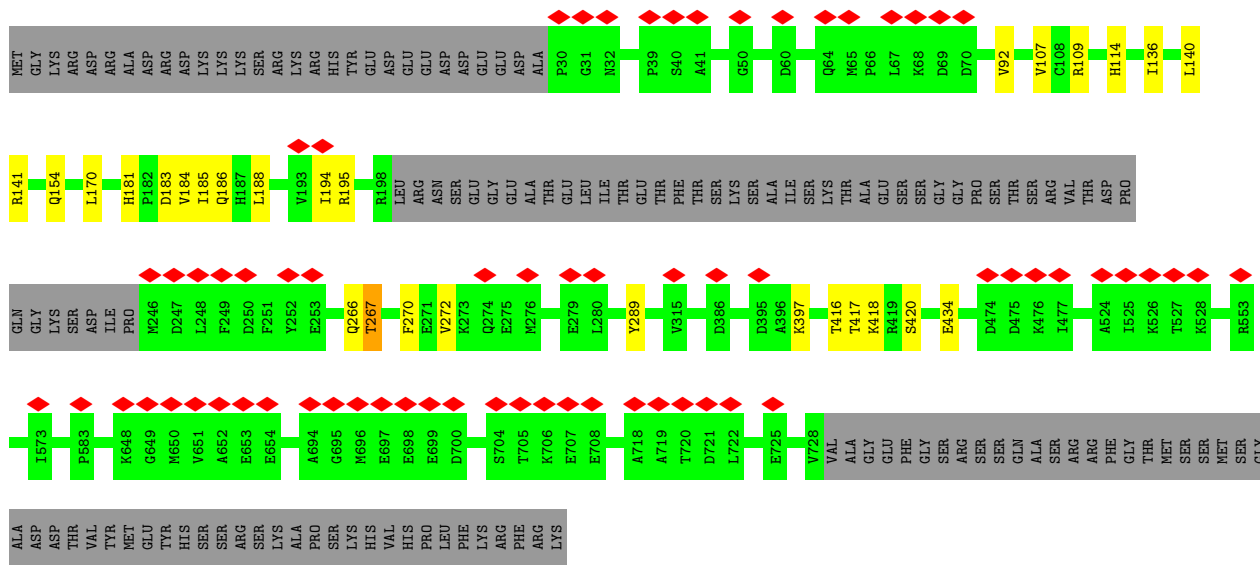
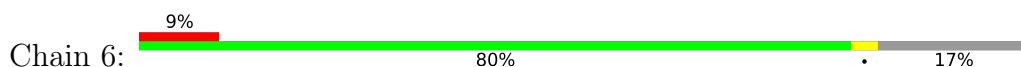




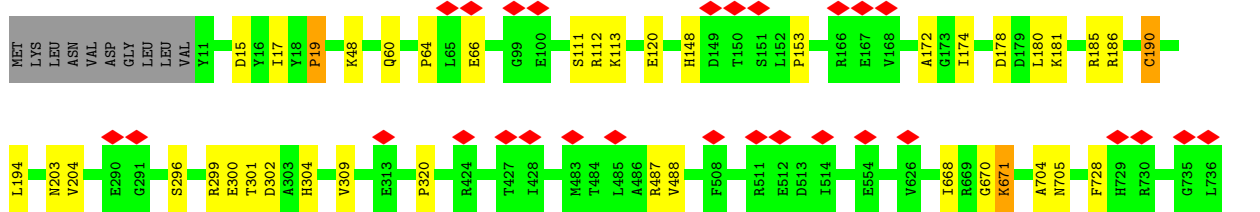
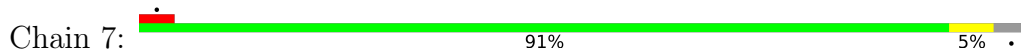
• Molecule 41: General transcription factor IIH subunit 5

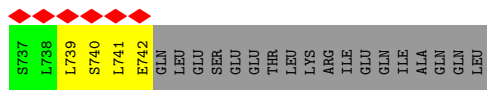


• Molecule 42: General transcription and DNA repair factor IIH helicase subunit XPB

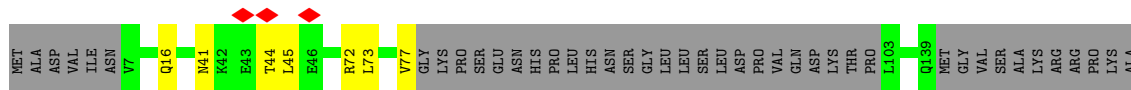
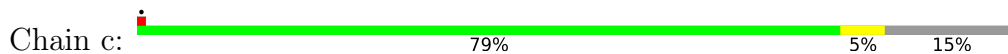


• Molecule 43: General transcription and DNA repair factor IIH helicase subunit XPD

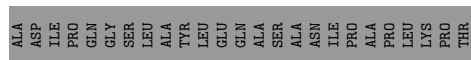
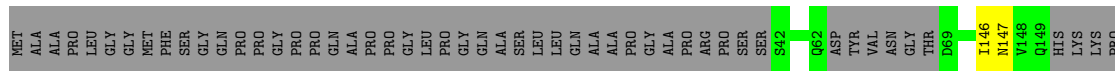




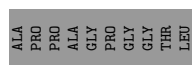
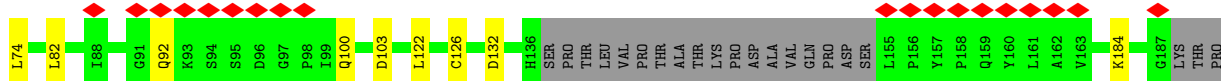
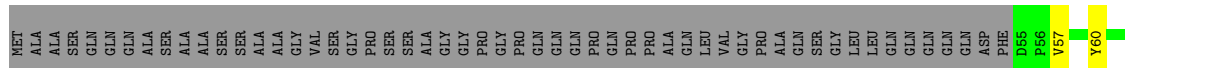
• Molecule 44: Mediator of RNA polymerase II transcription subunit 27



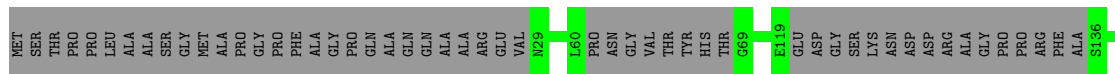
• Molecule 45: Mediator of RNA polymerase II transcription subunit 28



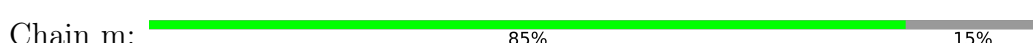
• Molecule 46: Mediator of RNA polymerase II transcription subunit 29



• Molecule 47: Mediator of RNA polymerase II transcription subunit 30

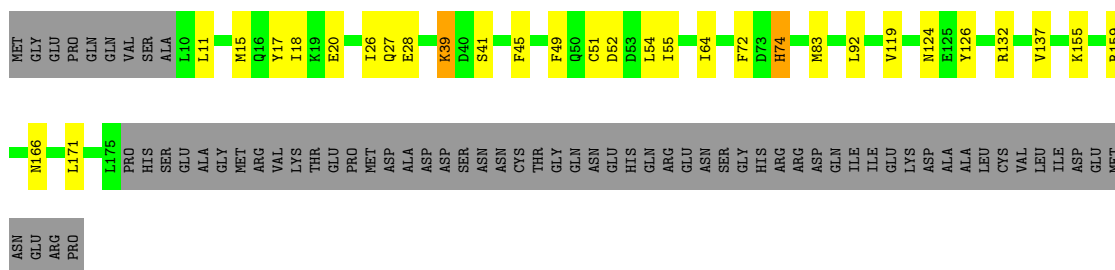


• Molecule 48: Mediator of RNA polymerase II transcription subunit 31



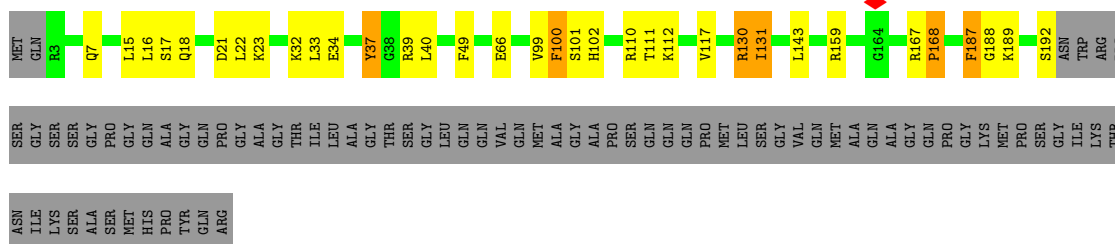
- Molecule 52: Mediator of RNA polymerase II transcription subunit 7

Chain g:  58% 12% 29%



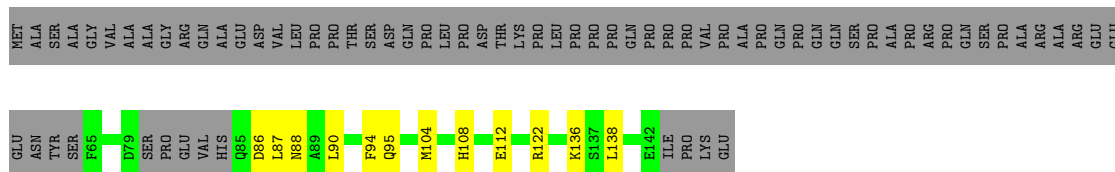
- Molecule 53: Isoform 2 of Mediator of RNA polymerase II transcription subunit 8

Chain h:  58% 10% 29%




- Molecule 54: Mediator of RNA polymerase II transcription subunit 9

Chain i:  42% 8% 50%



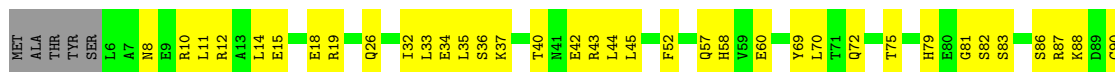
- Molecule 55: Mediator of RNA polymerase II transcription subunit 10

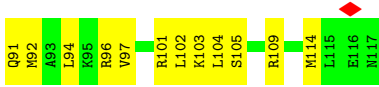
Chain j:  82% 7% 10%



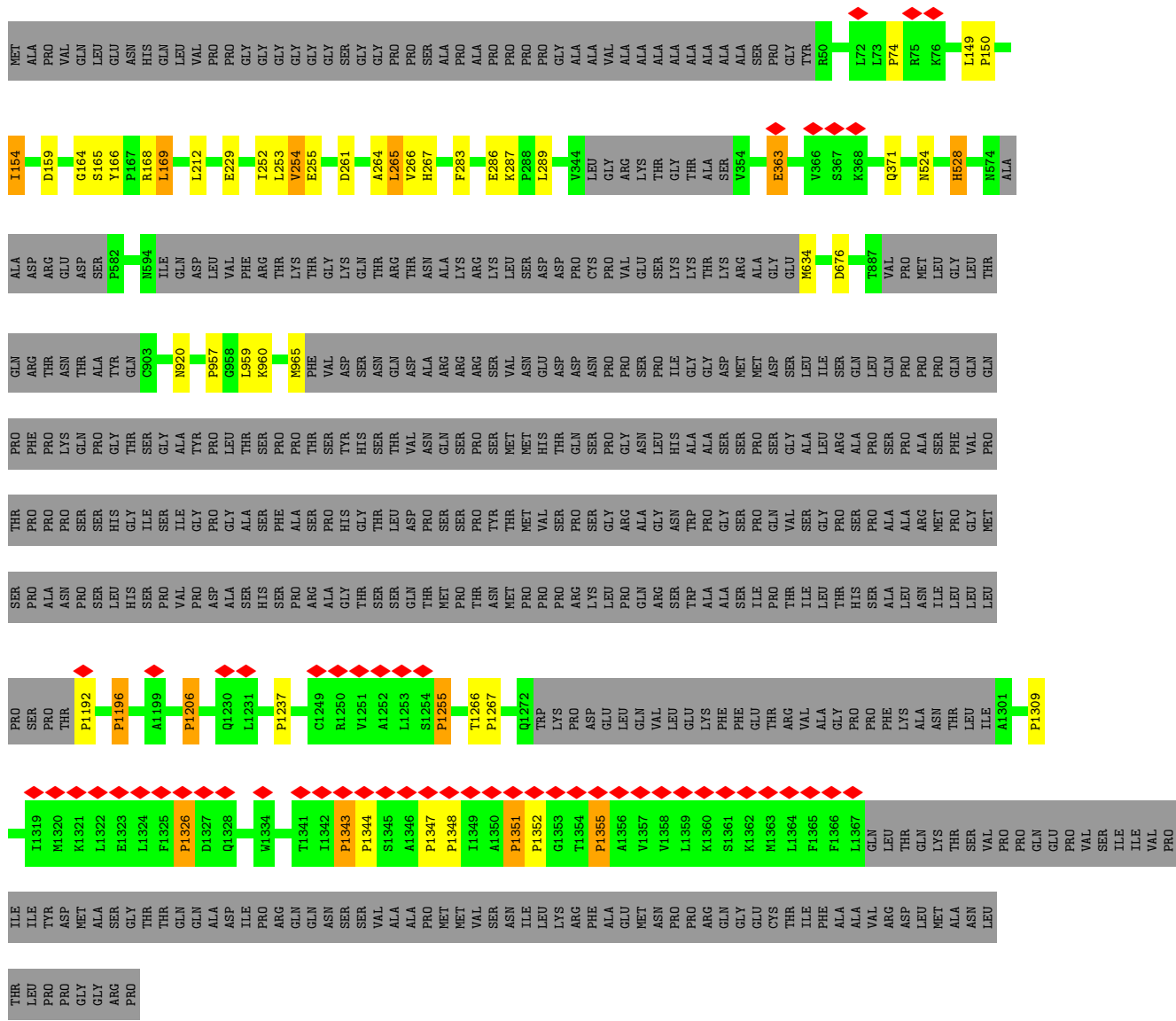
- Molecule 56: Mediator of RNA polymerase II transcription subunit 11

Chain k:  55% 41%

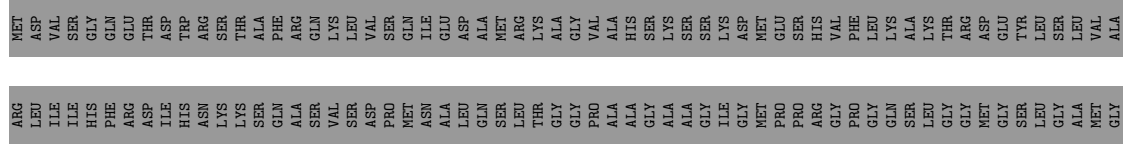


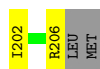


• Molecule 57: Mediator of RNA polymerase II transcription subunit 14

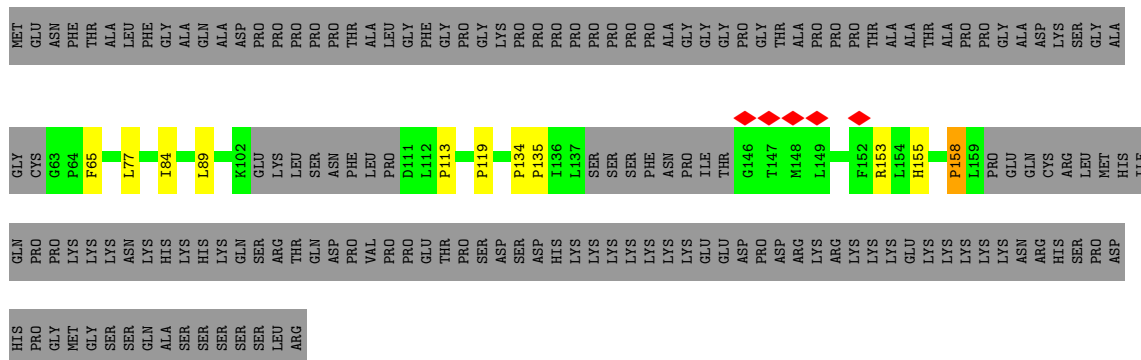


• Molecule 58: Mediator of RNA polymerase II transcription subunit 15

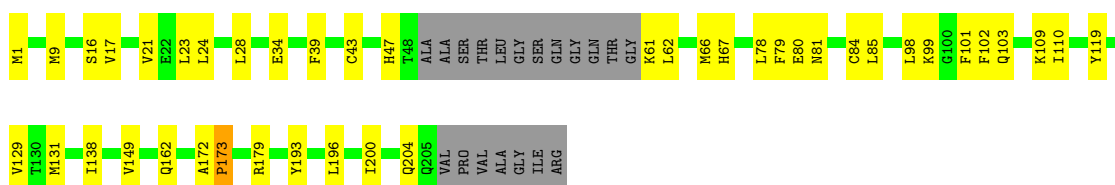




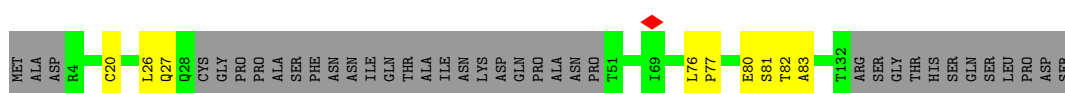
- Molecule 61: Mediator of RNA polymerase II transcription subunit 19



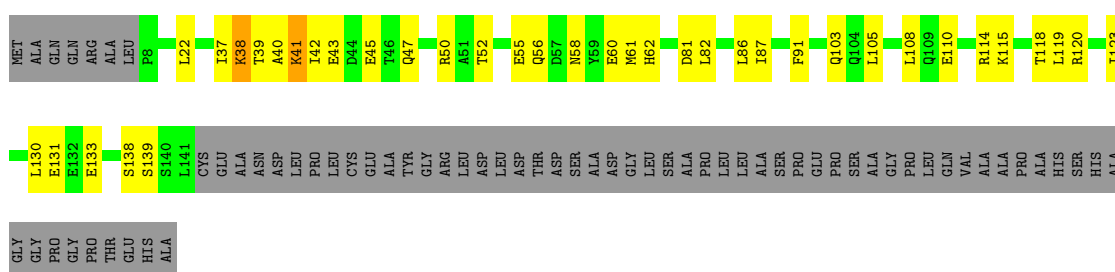
- Molecule 62: Mediator of RNA polymerase II transcription subunit 20



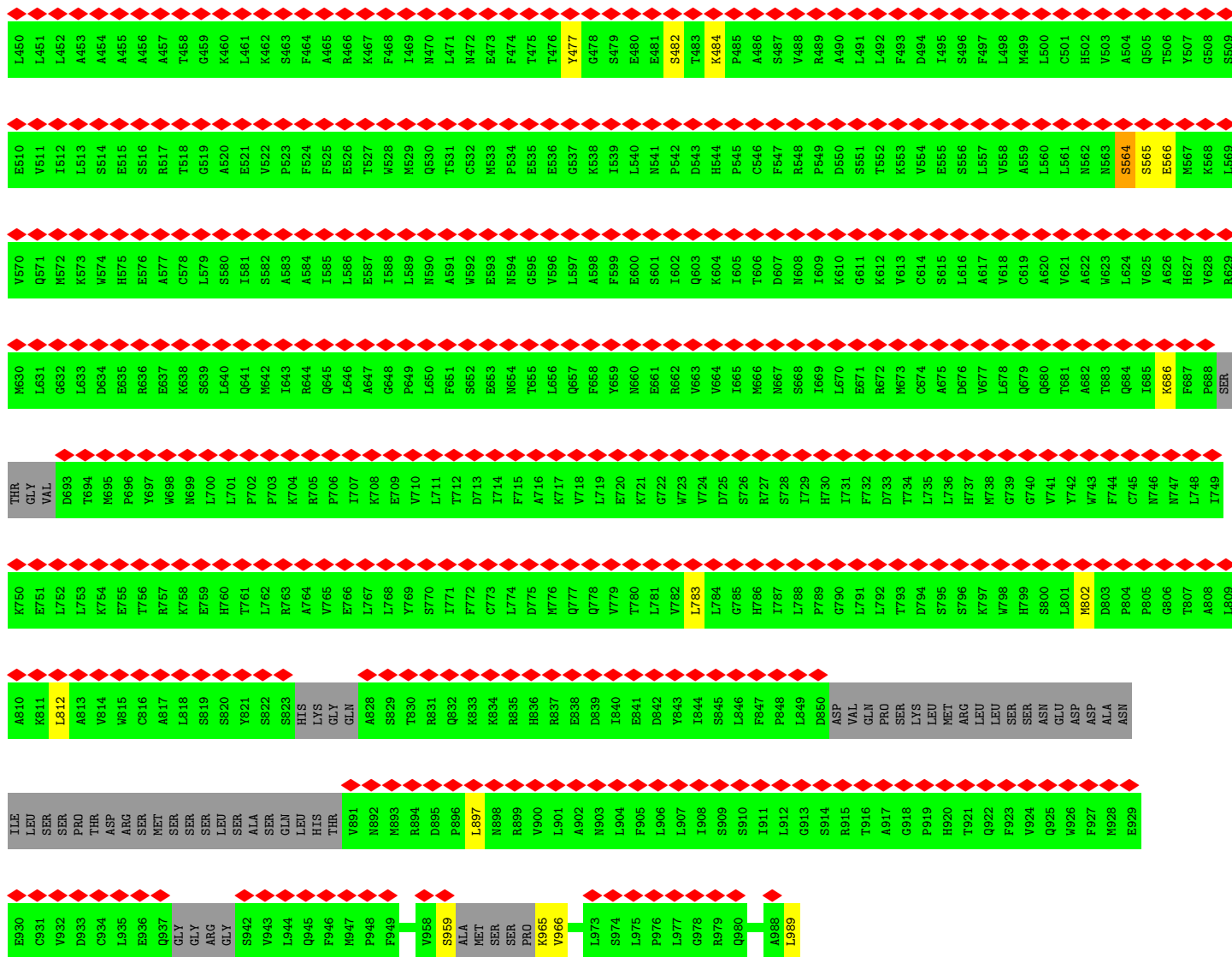
- Molecule 63: Mediator of RNA polymerase II transcription subunit 21



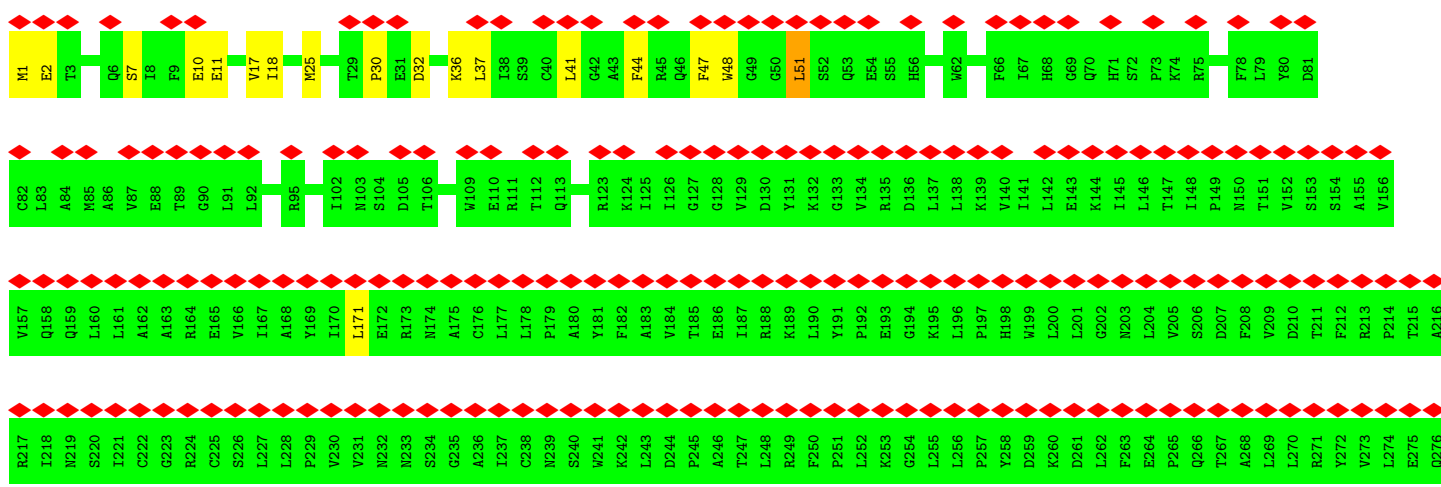
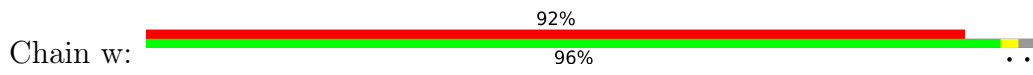
- Molecule 64: Mediator of RNA polymerase II transcription subunit 22



- Molecule 65: Mediator of RNA polymerase II transcription subunit 26



• Molecule 67: Mediator of RNA polymerase II transcription subunit 23



F997	H998	L937	M877	K757	V697	N637	E577	SS17	F457	K397	Q337	P277
H999	D999	A938	E878	K758	T698	Q638	S578	G517	L458	L398	L338	Y278
R1000	Q880	E939	A879	M759	D699	N639	L579	S519	Q459	F399	I339	S279
P1001	V881	Q880	Q880	V760	F700	Q640	G580	I520	Q460	D400	F340	R280
V1002	Y881	H822	E761	E761	F701	L641	I581	T521	L462	L401	F341	D281
T1003	Y883	H823	E763	E763	G703	L643	G583	P523	L463	L403	V343	M282
Y1004	F884	R824	Y764	Y764	S704	C644	F584	P524	M464	P404	F344	C284
L1005	I885	T825	R765	R765	D705	V645	I585	M525	K465	E405	Q345	N285
Y1006	I886	F826	K766	K766	S706	E646	S586	N526	S466	K406	F346	M286
N1007	Q887	A827	M767	M767	I707	S647	Q587	L527	L467	E407	A347	L287
T1008	L888	D828	K768	K768	Q708	T648	L588	L528	Q468	Y408	S348	G288
L1009	L889	F829	S769	S769	G709	A649	L589	D529	M469	I409	F349	L289
H1010	L890	L830	M770	M770	T710	L650	P590	S530	M470	P410	P350	N290
Y1011	L891	H831	S771	S771	M711	R651	T591	L531	D471	V411	H351	K291
E1012	K892	Y832	M772	M772	C712	L652	V592	T532	Y472	P412	M352	Q292
P953	P893	E833	E773	E773	K713	T653	F593	H533	K473	D413	V353	H293
M1014	N894	F834	M774	M774	D714	L654	K594	H534	I474	I414	L354	K294
H1015	D895	S835	D775	D775	I715	A655	S595	A535	A475	N415	S355	Q295
L1016	F896	T836	I776	I776	L716	L656	H596	K536	L476	K416	L356	R296
L1017	R897	S837	I777	I777	Q717	G657	A597	M537	L477	P417	H357	C297
D1018	N898	A838	T778	T778	T718	S658	N598	S538	C478	Q418	Q358	P298
R1019	R899	G839	H779	H779	I719	S659	G599	L539	M479	S419	K359	V299
A1020	C960	G840	F780	F780	M720	E660	I600	I540	A480	T420	L360	L300
F1021	L961	Q841	S781	S781	S721	V661	L601	H541	Y481	H421	A361	E301
L1022	D962	Q842	M782	M782	F722	Q662	H602	S542	S482	A222	G362	D302
P963	F903	L843	Q783	Q783	T723	P663	I543	I543	T483	F423	R363	Q303
R1024	N964	N844	G784	G784	P724	Q664	L604	A544	M484	A424	G364	L304
K1025	K905	R845	S785	S785	H725	P665	L605	T545	S485	M425	L365	V305
E1026	E906	C846	P786	P786	N726	T666	E606	R546	E486	M226	L366	D306
V1027	R907	L847	P787	P787	W727	R667	M607	V547	C487	C427	K367	L307
A1028	S908	E848	F788	F788	A728	F668	F608	I548	F488	I428	G368	V308
P909	P909	L849	F789	F789	S729	L669	S609	K549	T489	W429	R369	V309
I1030	E910	L850	L790	L790	S730	S670	Y610	S570	L490	I430	D370	Y310
I1031	H911	M851	C791	C791	T731	D671	R611	A551	P491	H431	H371	A311
G1032	D912	D852	L792	L792	L732	P672	M612	H552	M492	L432	L372	M312
S1033	L913	H853	L793	L793	S733	K673	H613	A553	G493	N433	M373	E313
L1034	Q914	W854	W794	W794	C734	T674	H614	K554	A494	R434	W374	R314
K1035	N915	M855	K795	K795	F735	V675	I615	S555	L495	K435	V375	S315
D1036	D916	K856	M796	M796	P736	L676	Q616	S556	V496	A436	L376	E316
N1037	W917	H857	L797	L797	G737	S677	P617	V557	E497	Q437	L377	T317
L1038	H918	L858	F798	F798	P738	A678	H618	A558	T498	N438	Q378	E318
P1039	T919	L859	E799	E799	L739	E679	Y619	L559	I499	D439	F379	E319
Q1040	X920	T860	T800	T800	Q740	S680	R620	A560	Y500	N440	I380	K320
G1041	H921	D861	D801	D801	A741	E681	V621	P561	G501	S441	S381	F321
C1043	N923	D863	L803	L803	F743	L683	L623	L563	G503	K442	S383	D322
L1044	Y924	R864	N804	N804	K744	N684	L624	V564	I504	Q444	I384	G324
S1045	H925	L865	Q805	Q805	Q745	R685	S625	E565	M505	I445	Q385	G325
D1046	K926	L866	L806	L806	M746	A686	H626	T566	R506	P446	K386	T326
T1047	K927	L867	G807	G807	N747	L687	L627	Y567	I507	I447	N387	S327
Y1048	L928	C868	E808	E808	V748	L688	H628	S568	P508	P448	A388	Q328
L1049	D929	L869	R809	R809	P749	L689	T629	R569	L509	H449	L389	L329
K1050	H930	A870	W810	W810	Q750	T690	L630	L570	P510	S330	A390	L330
C1051	L931	H871	L811	L811	E751	L691	A631	L571	G511	L451	D391	W331
A1052	O932	R872	E812	E812	S752	A692	A632	V572	T512	R452	F392	Q332
M1053	G933	S873	R813	R813	R753	R693	V633	Y573	N513	L453	L393	H333
N1054	F934	H874	L814	L814	F754	A694	A634	M574	C514	H454	P394	L334
A1055	E935	E875	G815	G815	N755	T695	Q635	E575	M515	H455	V395	S335
R1056	Q936	G876	A816	A816	L756	H696	T636	I576	A516	E456	M396	S336

4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	48654	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/\text{\AA}^2$)	50	Depositor
Minimum defocus (nm)	Not provided	
Maximum defocus (nm)	Not provided	
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	8.884	Depositor
Minimum map value	-4.573	Depositor
Average map value	-0.002	Depositor
Map value standard deviation	0.113	Depositor
Recommended contour level	0.5	Depositor
Map size (\AA)	674.56, 674.56, 674.56	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles ($^\circ$)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (\AA)	1.3175, 1.3175, 1.3175	Depositor

5 Model quality i

5.1 Standard geometry i

Bond lengths and bond angles in the following residue types are not validated in this section: SF4, 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	0	0.61	0/2288	0.81	4/3101 (0.1%)
2	8	0.66	0/2437	0.97	0/3306
3	9	0.73	0/2356	0.97	1/3185 (0.0%)
4	DO	0.56	0/781	0.75	0/1061
5	DP	0.62	0/1438	0.73	0/1935
6	DQ	0.54	0/1013	0.64	0/1366
7	BA	0.46	0/1987	0.75	2/2684 (0.1%)
8	FA	0.47	0/1130	0.57	0/1528
9	FB	0.55	0/1817	0.66	0/2445
10	PA	0.73	6/11888 (0.1%)	1.00	13/16066 (0.1%)
11	PB	0.77	1/9243 (0.0%)	1.01	15/12475 (0.1%)
12	PC	0.86	0/2102	1.19	7/2857 (0.2%)
13	PD	0.63	0/1036	0.97	0/1397
14	PE	0.58	0/1751	0.90	0/2366
15	PF	0.83	1/645 (0.2%)	1.07	1/871 (0.1%)
16	PG	0.65	0/1365	1.06	4/1853 (0.2%)
17	PH	0.67	0/1207	1.05	1/1628 (0.1%)
18	PI	0.62	0/948	1.06	1/1284 (0.1%)
19	PJ	0.86	0/516	1.19	0/696
20	PK	0.81	0/956	1.07	3/1294 (0.2%)
21	PL	0.70	0/377	0.95	0/500
22	DA	0.50	0/5037	0.65	2/6794 (0.0%)
23	DB	0.47	0/7993	0.61	0/10836
24	DD	0.58	0/1343	0.70	0/1795
24	Dd	0.29	0/1321	0.49	0/1772
25	DE	0.43	0/4469	0.58	0/6050
25	De	0.34	0/4433	0.55	0/6004
26	DF	0.55	0/3167	0.71	0/4303
26	Df	0.44	0/3140	0.64	0/4268
27	DG	0.53	0/1199	0.63	0/1612
28	DH	0.46	0/1673	0.60	0/2285
29	DI	0.46	0/981	0.57	0/1332

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
29	Di	0.31	0/989	0.46	0/1343
30	DJ	0.48	0/736	0.60	1/998 (0.1%)
30	Dj	0.31	0/775	0.52	0/1049
31	DL	0.43	0/622	0.69	3/841 (0.4%)
31	DI	0.30	0/888	0.56	3/1194 (0.3%)
32	Dc	0.40	0/1035	0.54	0/1406
33	Dk	0.31	0/799	0.48	0/1070
34	Dm	0.32	0/733	0.52	0/977
35	EA	0.61	0/1499	0.74	0/2012
36	EB	0.64	0/1428	0.64	0/1917
37	1	0.36	0/3502	0.65	0/4731
38	2	0.42	0/3094	0.67	0/4188
39	3	0.44	0/2353	0.74	0/3187
40	4	0.49	0/3729	0.73	0/5053
41	5	0.50	0/528	0.70	0/713
42	6	0.42	0/5365	0.68	0/7247
43	7	0.46	0/5984	0.69	0/8104
44	c	0.46	0/2146	0.62	0/2899
45	e	0.26	0/840	0.36	0/1128
46	b	0.51	0/911	0.62	0/1229
47	l	0.26	0/1048	0.41	0/1405
48	m	0.26	0/1010	0.37	0/1359
49	a	0.62	0/3660	0.75	1/4971 (0.0%)
50	d	0.62	0/1281	0.65	0/1718
51	f	0.57	0/1359	0.69	1/1845 (0.1%)
52	g	0.58	0/1411	0.81	0/1901
53	h	0.62	0/1485	0.72	1/2008 (0.0%)
54	i	0.67	0/612	0.71	0/815
55	j	0.41	0/1016	0.64	5/1363 (0.4%)
56	k	0.66	0/885	0.60	0/1190
57	n	0.34	0/7371	0.55	17/10037 (0.2%)
58	o	0.36	0/1256	0.62	0/1724
59	q	0.48	2/4351 (0.0%)	0.55	4/5886 (0.1%)
60	r	0.60	0/1663	0.79	1/2241 (0.0%)
61	s	0.59	0/510	0.77	5/694 (0.7%)
62	t	0.71	1/1530 (0.1%)	0.89	0/2066
63	u	0.38	0/797	0.52	0/1082
64	v	0.66	0/1092	0.73	0/1468
65	z	0.64	0/781	0.81	0/1067
66	x	0.59	0/7179	0.63	3/9712 (0.0%)
67	w	0.57	0/11053	0.62	2/15018 (0.0%)
68	p	0.71	0/3191	0.73	4/4333 (0.1%)
69	X	1.00	16/1607 (1.0%)	1.16	8/2481 (0.3%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z >5	RMSZ	# Z >5
70	Y	1.00	15/1565 (1.0%)	1.10	2/2410 (0.1%)
All	All	0.57	42/177706 (0.0%)	0.75	115/241029 (0.0%)

The worst 5 of 42 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
59	q	264	GLN	C-N	7.96	1.52	1.34
69	X	-26	DA	C1'-N9	-7.92	1.36	1.47
69	X	-27	DA	C1'-N9	-7.66	1.36	1.47
69	X	-19	DG	C1'-N9	-7.58	1.36	1.47
69	X	-36	DG	C1'-N9	-7.06	1.37	1.47

The worst 5 of 115 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
69	X	3	DT	P-O3'-C3'	-13.62	103.35	119.70
69	X	-10	DC	O5'-P-OP2	-9.57	97.08	105.70
70	Y	-2	DC	P-O3'-C3'	8.34	129.71	119.70
57	n	1355	PRO	N-CA-CB	6.88	111.55	103.30
67	w	47	PHE	CB-CA-C	6.87	124.14	110.40

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	
1	0	304/309 (98%)	242 (80%)	51 (17%)	11 (4%)	3	28
2	8	297/346 (86%)	266 (90%)	20 (7%)	11 (4%)	3	27
3	9	285/323 (88%)	268 (94%)	14 (5%)	3 (1%)	14	51
4	DO	95/109 (87%)	83 (87%)	11 (12%)	1 (1%)	14	51
5	DP	175/339 (52%)	166 (95%)	7 (4%)	2 (1%)	14	51
6	DQ	118/307 (38%)	105 (89%)	8 (7%)	5 (4%)	3	25
7	BA	251/316 (79%)	237 (94%)	10 (4%)	4 (2%)	9	44
8	FA	130/517 (25%)	117 (90%)	12 (9%)	1 (1%)	19	58
9	FB	218/249 (88%)	200 (92%)	13 (6%)	5 (2%)	6	37
10	PA	1461/1970 (74%)	1363 (93%)	81 (6%)	17 (1%)	13	49
11	PB	1128/1174 (96%)	1029 (91%)	83 (7%)	16 (1%)	11	46
12	PC	253/275 (92%)	229 (90%)	18 (7%)	6 (2%)	6	36
13	PD	127/142 (89%)	123 (97%)	3 (2%)	1 (1%)	19	58
14	PE	207/210 (99%)	201 (97%)	5 (2%)	1 (0%)	29	67
15	PF	77/127 (61%)	72 (94%)	3 (4%)	2 (3%)	5	34
16	PG	169/172 (98%)	159 (94%)	8 (5%)	2 (1%)	13	49
17	PH	146/150 (97%)	129 (88%)	16 (11%)	1 (1%)	22	61
18	PI	112/125 (90%)	102 (91%)	8 (7%)	2 (2%)	8	41
19	PJ	62/67 (92%)	59 (95%)	2 (3%)	1 (2%)	9	44
20	PK	115/117 (98%)	106 (92%)	8 (7%)	1 (1%)	17	55
21	PL	42/58 (72%)	38 (90%)	3 (7%)	1 (2%)	6	36
22	DA	582/1872 (31%)	539 (93%)	33 (6%)	10 (2%)	9	43
23	DB	959/1199 (80%)	912 (95%)	47 (5%)	0	100	100
24	DD	153/1085 (14%)	144 (94%)	6 (4%)	3 (2%)	7	40
24	Dd	154/1085 (14%)	150 (97%)	4 (3%)	0	100	100
25	DE	540/800 (68%)	500 (93%)	36 (7%)	4 (1%)	22	61
25	De	531/800 (66%)	484 (91%)	47 (9%)	0	100	100
26	DF	404/677 (60%)	369 (91%)	29 (7%)	6 (2%)	10	45
26	Df	399/677 (59%)	371 (93%)	27 (7%)	1 (0%)	41	75
27	DG	139/349 (40%)	135 (97%)	4 (3%)	0	100	100
28	DH	207/310 (67%)	183 (88%)	20 (10%)	4 (2%)	8	40
29	DI	118/264 (45%)	103 (87%)	14 (12%)	1 (1%)	19	58

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
29	Di	119/264 (45%)	115 (97%)	4 (3%)	0	100	100
30	DJ	86/218 (39%)	82 (95%)	4 (5%)	0	100	100
30	Dj	91/218 (42%)	89 (98%)	2 (2%)	0	100	100
31	DL	73/161 (45%)	65 (89%)	5 (7%)	3 (4%)	3	25
31	DI	105/161 (65%)	101 (96%)	4 (4%)	0	100	100
32	Dc	125/929 (14%)	116 (93%)	9 (7%)	0	100	100
33	Dk	96/211 (46%)	91 (95%)	5 (5%)	0	100	100
34	Dm	85/124 (68%)	79 (93%)	6 (7%)	0	100	100
35	EA	175/439 (40%)	160 (91%)	12 (7%)	3 (2%)	9	43
36	EB	170/291 (58%)	160 (94%)	6 (4%)	4 (2%)	6	36
37	1	431/548 (79%)	350 (81%)	73 (17%)	8 (2%)	8	40
38	2	383/395 (97%)	311 (81%)	72 (19%)	0	100	100
39	3	293/308 (95%)	238 (81%)	51 (17%)	4 (1%)	11	46
40	4	455/462 (98%)	374 (82%)	70 (15%)	11 (2%)	6	36
41	5	64/71 (90%)	57 (89%)	6 (9%)	1 (2%)	9	44
42	6	648/782 (83%)	514 (79%)	123 (19%)	11 (2%)	9	43
43	7	730/760 (96%)	600 (82%)	112 (15%)	18 (2%)	5	35
44	c	255/311 (82%)	235 (92%)	17 (7%)	3 (1%)	13	49
45	e	98/178 (55%)	92 (94%)	4 (4%)	2 (2%)	7	40
46	b	111/200 (56%)	109 (98%)	1 (1%)	1 (1%)	17	55
47	l	120/178 (67%)	115 (96%)	5 (4%)	0	100	100
48	m	110/131 (84%)	106 (96%)	4 (4%)	0	100	100
49	a	457/1581 (29%)	421 (92%)	31 (7%)	5 (1%)	14	51
50	d	154/270 (57%)	143 (93%)	9 (6%)	2 (1%)	12	48
51	f	163/246 (66%)	145 (89%)	13 (8%)	5 (3%)	4	31
52	g	164/233 (70%)	150 (92%)	11 (7%)	3 (2%)	8	41
53	h	188/268 (70%)	163 (87%)	15 (8%)	10 (5%)	2	21
54	i	69/146 (47%)	65 (94%)	2 (3%)	2 (3%)	4	32
55	j	120/135 (89%)	107 (89%)	9 (8%)	4 (3%)	4	30
56	k	110/117 (94%)	98 (89%)	10 (9%)	2 (2%)	8	41
57	n	980/1454 (67%)	876 (89%)	83 (8%)	21 (2%)	7	38

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
58	o	152/788 (19%)	138 (91%)	13 (9%)	1 (1%)	22	61
59	q	543/651 (83%)	476 (88%)	53 (10%)	14 (3%)	5	34
60	r	204/208 (98%)	190 (93%)	10 (5%)	4 (2%)	7	40
61	s	75/244 (31%)	64 (85%)	7 (9%)	4 (5%)	2	21
62	t	189/212 (89%)	168 (89%)	17 (9%)	4 (2%)	7	38
63	u	103/144 (72%)	99 (96%)	0	4 (4%)	3	26
64	v	132/200 (66%)	117 (89%)	9 (7%)	6 (4%)	2	24
65	z	93/600 (16%)	84 (90%)	6 (6%)	3 (3%)	4	30
66	x	876/989 (89%)	824 (94%)	50 (6%)	2 (0%)	47	80
67	w	1332/1368 (97%)	1266 (95%)	62 (5%)	4 (0%)	41	75
68	p	400/841 (48%)	366 (92%)	33 (8%)	1 (0%)	41	75
All	All	21285/34555 (62%)	19303 (91%)	1689 (8%)	293 (1%)	15	46

5 of 293 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	0	214	LYS
1	0	220	PRO
1	0	237	PRO
10	PA	539	GLN
10	PA	980	PRO

5.3.2 Protein sidechains [i](#)

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	0	209/283 (74%)	172 (82%)	37 (18%)	2	12
2	8	259/299 (87%)	190 (73%)	69 (27%)	0	3
3	9	252/296 (85%)	177 (70%)	75 (30%)	0	2
4	DO	84/98 (86%)	70 (83%)	14 (17%)	2	14
5	DP	153/293 (52%)	145 (95%)	8 (5%)	23	51

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
6	DQ	111/269 (41%)	97 (87%)	14 (13%)	4	22
7	BA	214/268 (80%)	199 (93%)	15 (7%)	15	42
8	FA	117/448 (26%)	110 (94%)	7 (6%)	19	47
9	FB	196/218 (90%)	163 (83%)	33 (17%)	2	14
10	PA	1305/1748 (75%)	1060 (81%)	245 (19%)	1	10
11	PB	993/1027 (97%)	817 (82%)	176 (18%)	2	12
12	PC	234/252 (93%)	196 (84%)	38 (16%)	2	15
13	PD	108/126 (86%)	86 (80%)	22 (20%)	1	7
14	PE	191/192 (100%)	157 (82%)	34 (18%)	2	11
15	PF	69/111 (62%)	55 (80%)	14 (20%)	1	7
16	PG	147/153 (96%)	113 (77%)	34 (23%)	1	5
17	PH	129/131 (98%)	108 (84%)	21 (16%)	2	14
18	PI	103/112 (92%)	80 (78%)	23 (22%)	1	6
19	PJ	53/56 (95%)	43 (81%)	10 (19%)	1	9
20	PK	106/106 (100%)	88 (83%)	18 (17%)	2	13
21	PL	41/55 (74%)	29 (71%)	12 (29%)	0	2
22	DA	532/1665 (32%)	486 (91%)	46 (9%)	10	36
23	DB	876/1083 (81%)	855 (98%)	21 (2%)	49	69
24	DD	144/815 (18%)	128 (89%)	16 (11%)	6	25
24	Dd	146/815 (18%)	146 (100%)	0	100	100
25	DE	478/657 (73%)	461 (96%)	17 (4%)	35	60
25	De	475/657 (72%)	473 (100%)	2 (0%)	91	94
26	DF	324/574 (56%)	262 (81%)	62 (19%)	1	9
26	Df	322/574 (56%)	301 (94%)	21 (6%)	17	45
27	DG	133/322 (41%)	124 (93%)	9 (7%)	16	44
28	DH	181/270 (67%)	159 (88%)	22 (12%)	5	23
29	DI	106/235 (45%)	89 (84%)	17 (16%)	2	15
29	Di	107/235 (46%)	107 (100%)	0	100	100
30	DJ	79/154 (51%)	69 (87%)	10 (13%)	4	22
30	Dj	83/154 (54%)	83 (100%)	0	100	100
31	DL	70/141 (50%)	59 (84%)	11 (16%)	2	16

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
31	Dl	98/141 (70%)	98 (100%)	0	100	100
32	Dc	113/833 (14%)	111 (98%)	2 (2%)	59	77
33	Dk	87/182 (48%)	87 (100%)	0	100	100
34	Dm	80/106 (76%)	79 (99%)	1 (1%)	69	82
35	EA	163/373 (44%)	122 (75%)	41 (25%)	0	4
36	EB	155/261 (59%)	142 (92%)	13 (8%)	11	37
37	1	384/484 (79%)	367 (96%)	17 (4%)	28	55
38	2	342/352 (97%)	336 (98%)	6 (2%)	59	77
39	3	259/272 (95%)	258 (100%)	1 (0%)	91	94
40	4	394/399 (99%)	383 (97%)	11 (3%)	43	65
41	5	59/64 (92%)	54 (92%)	5 (8%)	10	37
42	6	576/688 (84%)	558 (97%)	18 (3%)	40	63
43	7	630/664 (95%)	601 (95%)	29 (5%)	27	54
44	c	231/280 (82%)	217 (94%)	14 (6%)	18	47
45	e	94/152 (62%)	94 (100%)	0	100	100
46	b	102/163 (63%)	92 (90%)	10 (10%)	8	29
47	l	116/155 (75%)	116 (100%)	0	100	100
48	m	102/115 (89%)	102 (100%)	0	100	100
49	a	393/1391 (28%)	315 (80%)	78 (20%)	1	8
50	d	139/230 (60%)	95 (68%)	44 (32%)	0	2
51	f	144/223 (65%)	122 (85%)	22 (15%)	2	16
52	g	157/216 (73%)	128 (82%)	29 (18%)	1	10
53	h	161/225 (72%)	132 (82%)	29 (18%)	1	11
54	i	71/133 (53%)	61 (86%)	10 (14%)	3	19
55	j	113/124 (91%)	110 (97%)	3 (3%)	44	66
56	k	94/98 (96%)	48 (51%)	46 (49%)	0	0
57	n	689/1272 (54%)	662 (96%)	27 (4%)	32	58
58	o	141/697 (20%)	139 (99%)	2 (1%)	67	80
59	q	461/577 (80%)	396 (86%)	65 (14%)	3	19
60	r	180/183 (98%)	151 (84%)	29 (16%)	2	15
61	s	31/208 (15%)	28 (90%)	3 (10%)	8	29

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
62	t	166/178 (93%)	128 (77%)	38 (23%)	1	5
63	u	78/119 (66%)	73 (94%)	5 (6%)	17	45
64	v	122/173 (70%)	88 (72%)	34 (28%)	0	3
65	z	89/512 (17%)	77 (86%)	12 (14%)	4	21
66	x	787/864 (91%)	771 (98%)	16 (2%)	55	73
67	w	1202/1232 (98%)	1185 (99%)	17 (1%)	67	80
68	p	353/736 (48%)	346 (98%)	7 (2%)	55	73
All	All	18686/29967 (62%)	16829 (90%)	1857 (10%)	11	29

5 of 1857 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
22	DA	410	TRP
64	v	38	LYS
31	DL	107	LYS
62	t	109	LYS
56	k	105	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 381 such sidechains are listed below:

Mol	Chain	Res	Type
46	b	129	GLN
57	n	267	HIS
48	m	80	GLN
50	d	127	GLN
58	o	705	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

5.6 Ligand geometry [i](#)

Of 18 ligands modelled in this entry, 17 are monoatomic - leaving 1 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
73	SF4	7	801	43	0,12,12	-	-	-		

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

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
73	SF4	7	801	43	-	-	0/6/5/5

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

5.7 Other polymers [i](#)

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

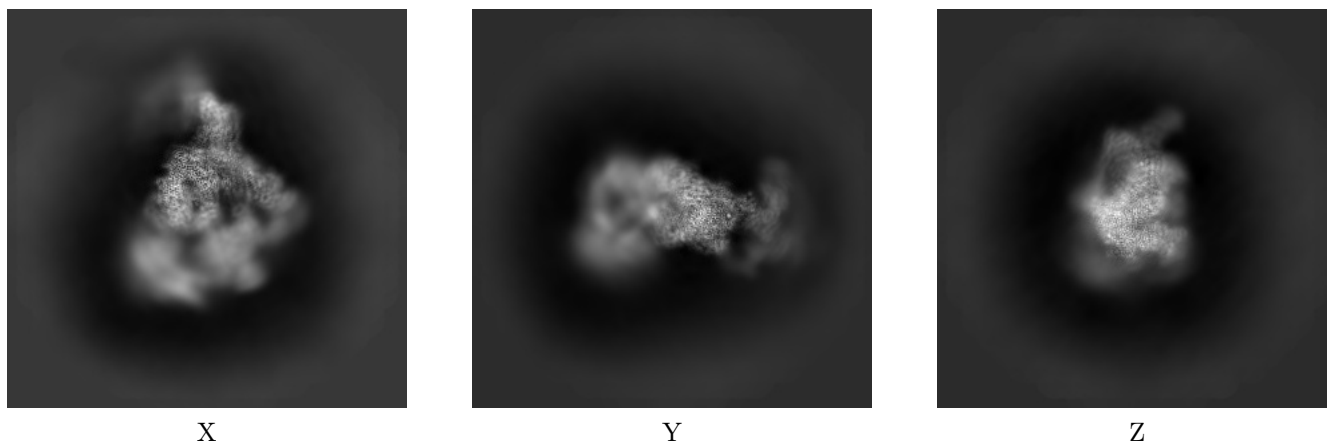
6 Map visualisation [i](#)

This section contains visualisations of the EMDB entry EMD-31204. These allow visual inspection of the internal detail of the map and identification of artifacts.

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

6.1 Orthogonal projections [i](#)

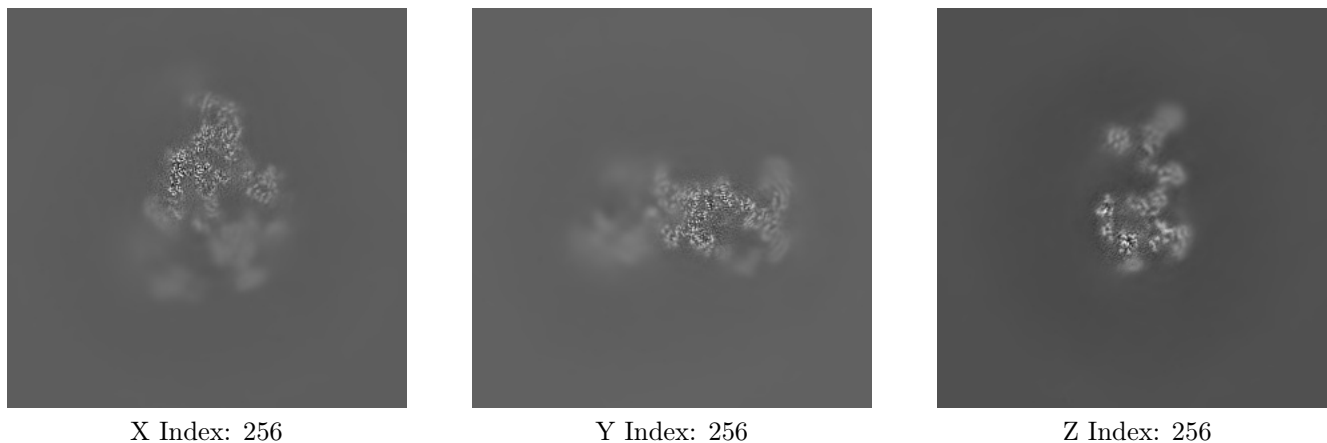
6.1.1 Primary map



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

6.2 Central slices [i](#)

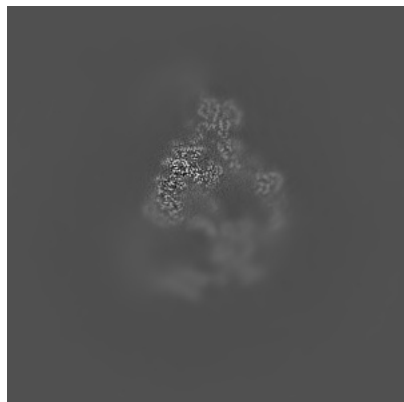
6.2.1 Primary map



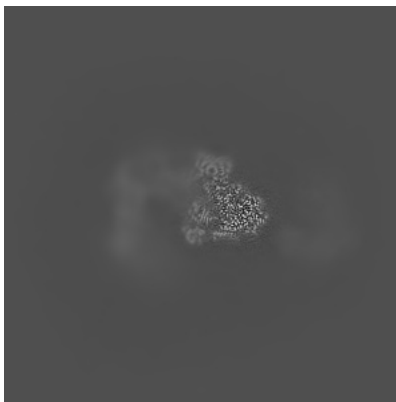
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices [i](#)

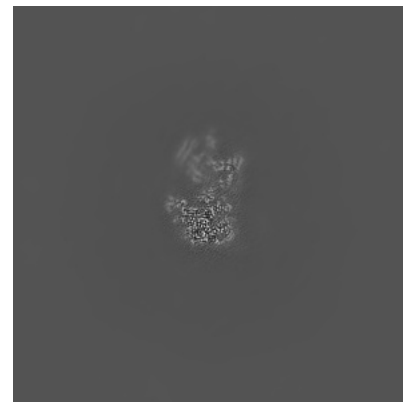
6.3.1 Primary map



X Index: 245



Y Index: 219

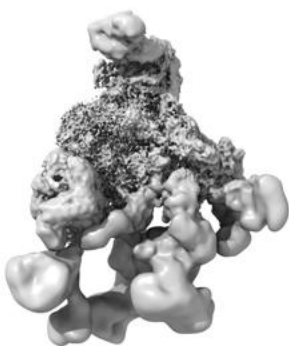


Z Index: 301

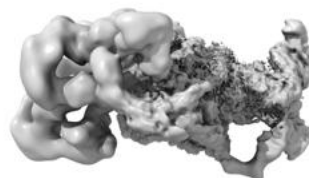
The images above show the largest variance slices of the map in three orthogonal directions.

6.4 Orthogonal surface views [i](#)

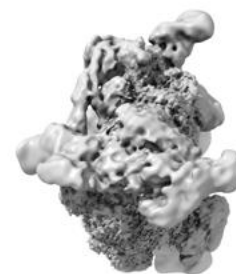
6.4.1 Primary map



X



Y



Z

The images above show the 3D surface view of the map at the recommended contour level 0.5. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

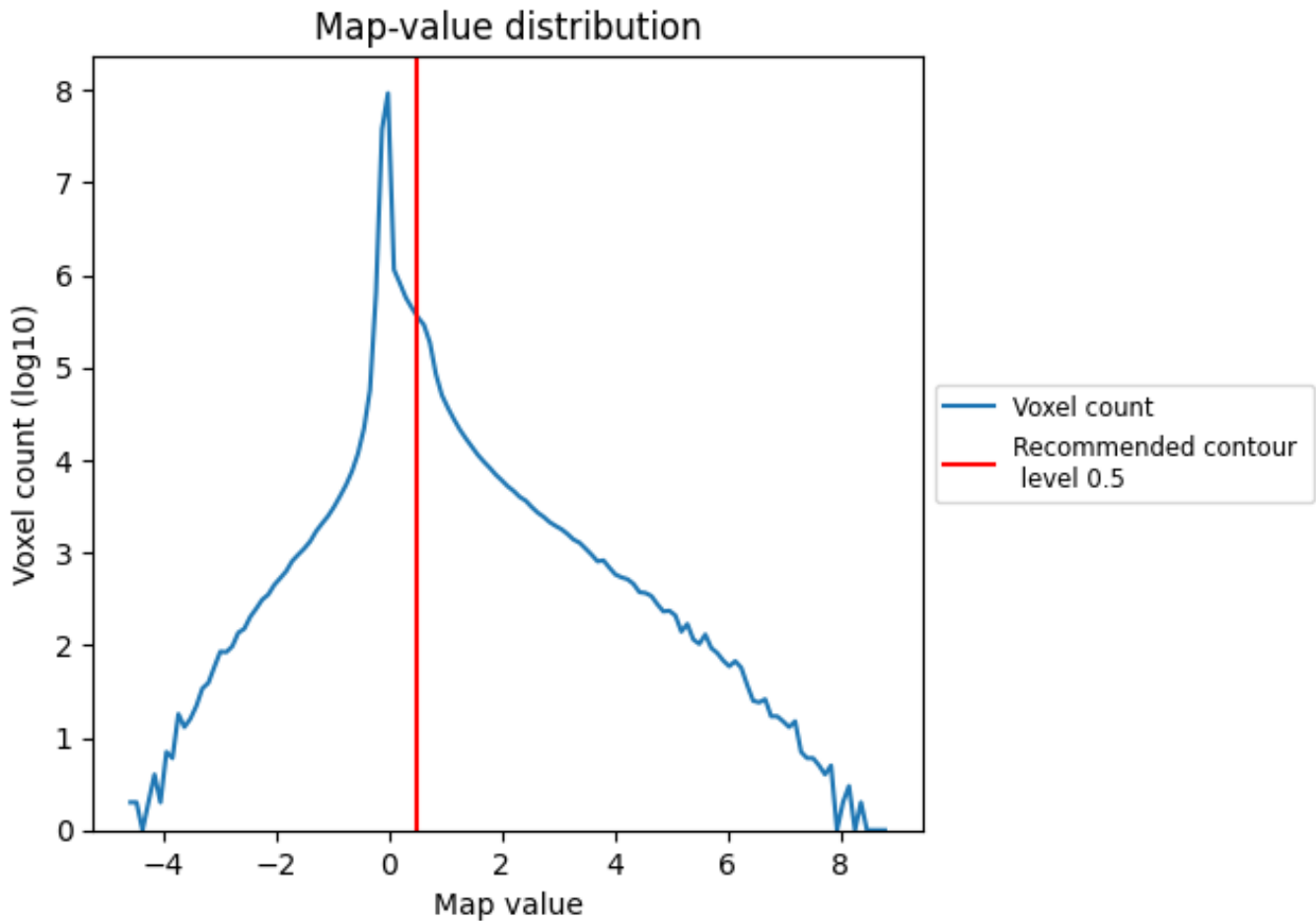
6.5 Mask visualisation

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

7 Map analysis [i](#)

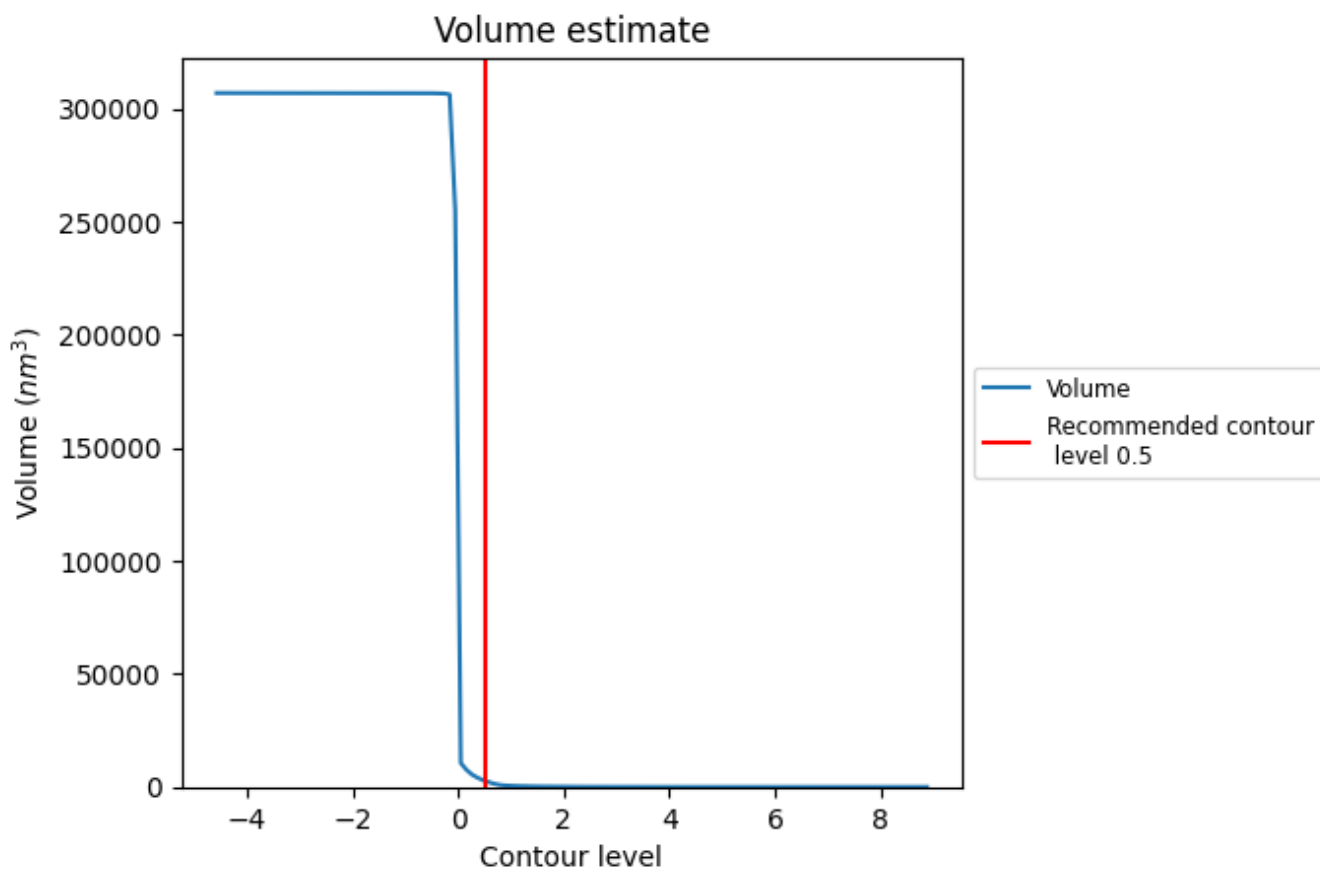
This section contains the results of statistical analysis of the map.

7.1 Map-value distribution [i](#)



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

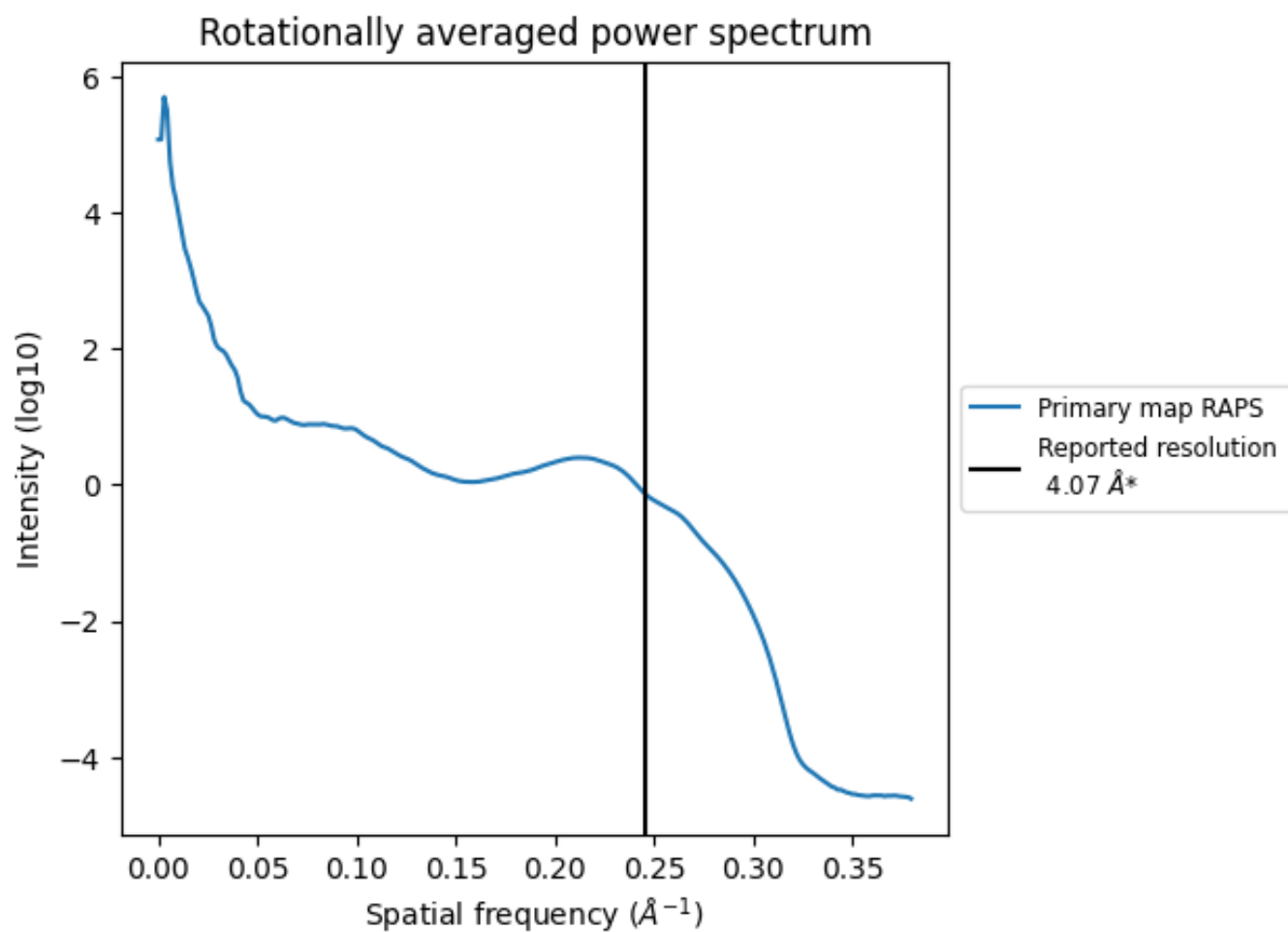
7.2 Volume estimate [\(i\)](#)



The volume at the recommended contour level is 2784 nm^3 ; this corresponds to an approximate mass of 2515 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 0.246 Å⁻¹

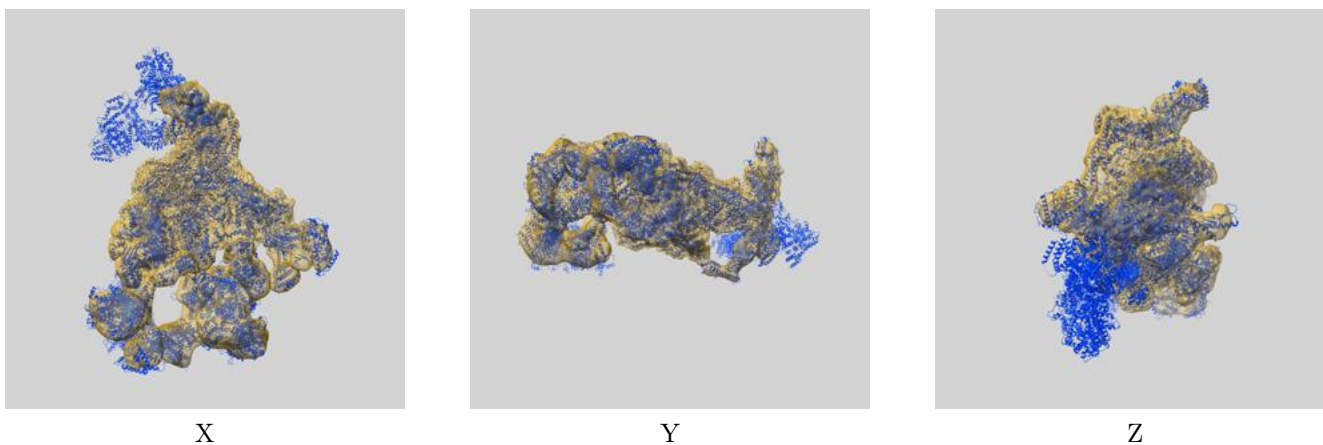
8 Fourier-Shell correlation

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

9 Map-model fit [i](#)

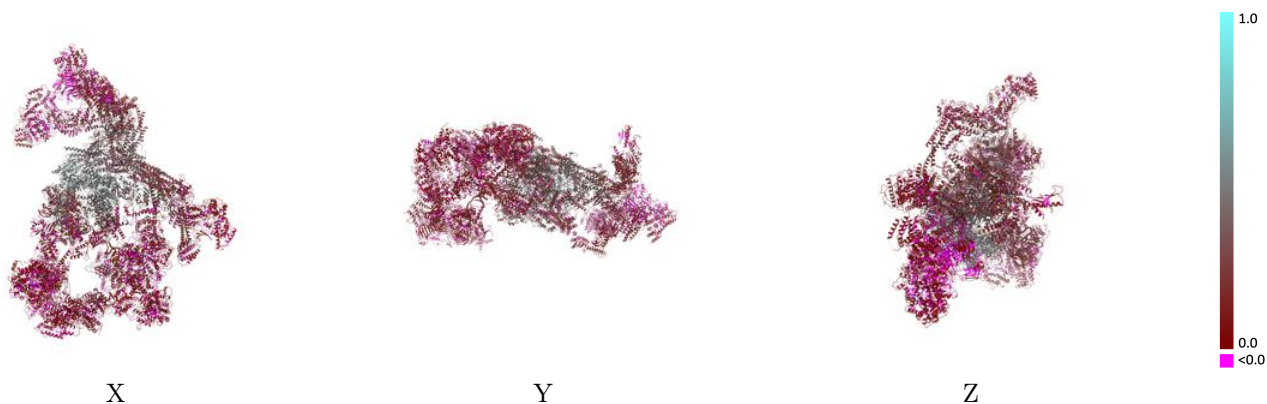
This section contains information regarding the fit between EMDB map EMD-31204 and PDB model 7ENA. Per-residue inclusion information can be found in section 3 on page 18.

9.1 Map-model overlay [i](#)



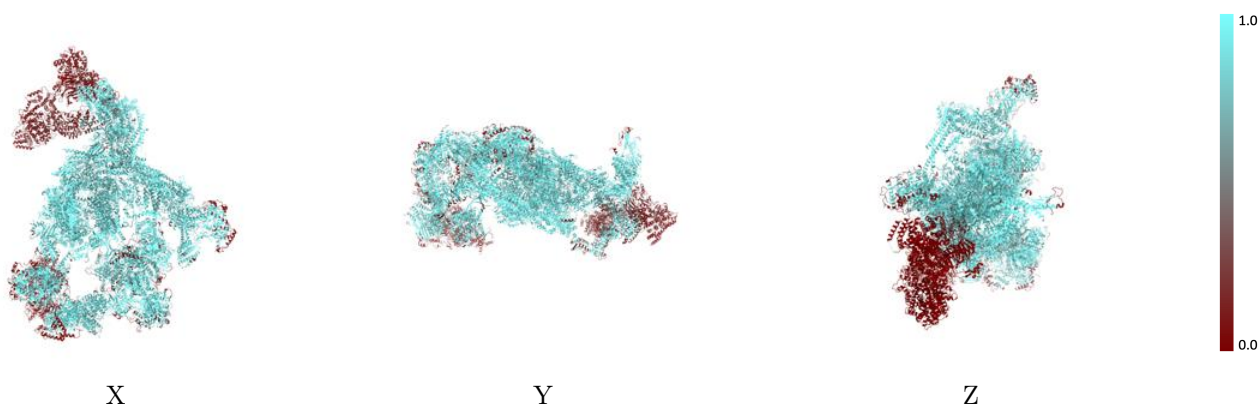
The images above show the 3D surface view of the map at the recommended contour level 0.5 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

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



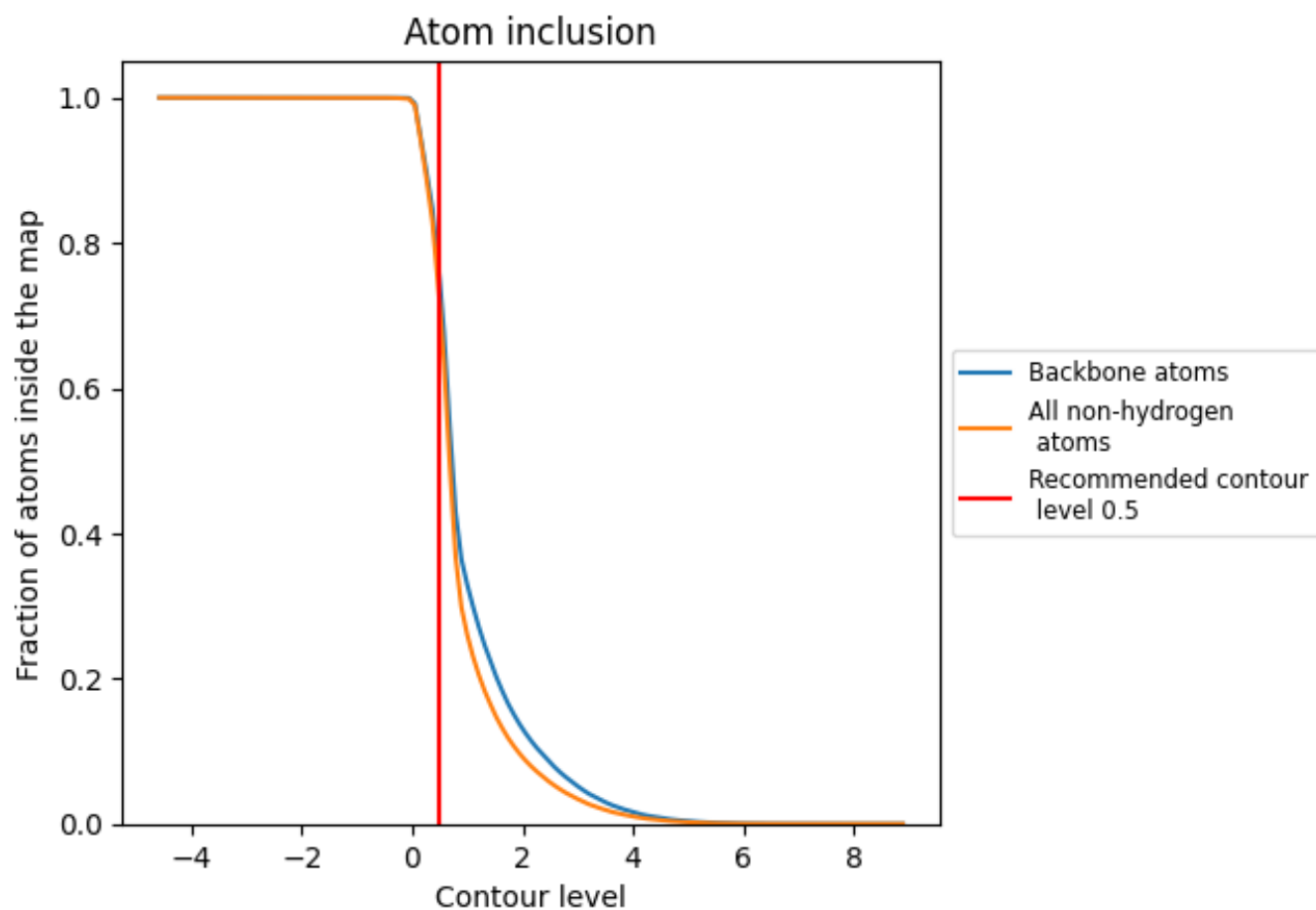
The images above show the model with each residue coloured according to its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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

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



The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.5).







































































9.4 Atom inclusion [i](#)



At the recommended contour level, 75% 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 (0.5) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	 0.7165	 0.1680
0	 0.7756	 0.1210
1	 0.6325	 0.0350
2	 0.8071	 0.0600
3	 0.9162	 0.0610
4	 0.7586	 0.0700
5	 0.8324	 0.0600
6	 0.8635	 0.0830
7	 0.9114	 0.1070
8	 0.8332	 0.1070
9	 0.6160	 0.0680
BA	 0.9207	 0.2770
DA	 0.8307	 0.0650
DB	 0.8879	 0.0600
DD	 0.7419	 0.0830
DE	 0.8123	 0.0650
DF	 0.7669	 0.0520
DG	 0.8530	 0.0550
DH	 0.8341	 0.0500
DI	 0.8171	 0.0540
DJ	 0.8743	 0.0580
DL	 0.5265	 0.0640
DO	 0.9128	 0.1060
DP	 0.9507	 0.1750
DQ	 0.7994	 0.1050
Dc	 0.0000	 0.0350
Dd	 0.0000	 0.0350
De	 0.0042	 0.0330
Df	 0.4394	 0.0530
Di	 0.0000	 0.0290
Dj	 0.0000	 0.0260
Dk	 0.0000	 0.0420
Dl	 0.0000	 0.0460
Dm	 0.0000	 0.0440
EA	 0.9471	 0.1860



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Chain	Atom inclusion	Q-score
EB	 0.9146	 0.1040
FA	 0.8957	 0.0700
FB	 0.8836	 0.1080
PA	 0.9544	 0.4180
PB	 0.9496	 0.4520
PC	 0.9628	 0.4890
PD	 0.9353	 0.4060
PE	 0.9720	 0.3600
PF	 0.9773	 0.5210
PG	 0.9605	 0.4380
PH	 0.9612	 0.4530
PI	 0.9714	 0.3540
PJ	 0.9737	 0.5150
PK	 0.9365	 0.4430
PL	 0.9579	 0.4470
X	 0.9510	 0.1560
Y	 0.9657	 0.1760
a	 0.5993	 0.0940
b	 0.7897	 0.1460
c	 0.8980	 0.2830
d	 0.9098	 0.1440
e	 0.8864	 0.1890
f	 0.9330	 0.2460
g	 0.9520	 0.1380
h	 0.8913	 0.2730
i	 0.9114	 0.1540
j	 0.9320	 0.1050
k	 0.9322	 0.2870
l	 0.9220	 0.1950
m	 0.9195	 0.1730
n	 0.8872	 0.1890
o	 0.9035	 0.1670
p	 0.0000	 -0.0140
q	 0.9169	 0.3040
r	 0.9256	 0.3830
s	 0.9400	 0.1130
t	 0.8863	 0.3610
u	 0.9387	 0.1550
v	 0.9143	 0.3410
w	 0.0421	 0.0510
x	 0.1952	 0.0640
z	 0.8983	 0.1220