Full wwPDB EM Validation Report

Oct 6, 2024 – 05:48 AM JST

PDB ID	:	7ENC
EMDB ID	:	EMD-31207
Title	:	TFIID-based PIC-Mediator holo-complex in fully-assembled state (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	:	4.13 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:

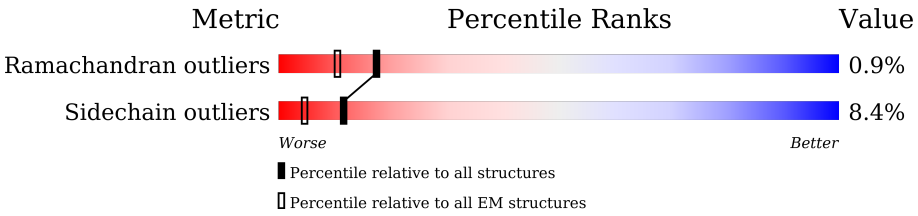
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.39

1 Overall quality at a glance (i)

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

The reported resolution of this entry is 4.13 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	207382	16835
Sidechain outliers	206894	16415

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	a	1581	30% 25% 5% 70%
2	m	131	85% 15%
3	d	270	14% 43% 16% 41%
4	f	246	58% 9% • 32%
5	g	233	53% 17% • 29%
6	h	268	54% 16% • 29%
7	r	208	• 74% 18% 8%
8	t	212	• 74% 17% 9%
9	j	135	7% 79% 10% • 10%

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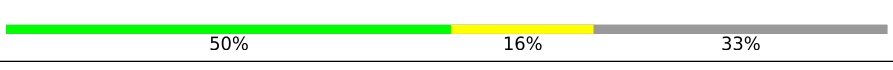
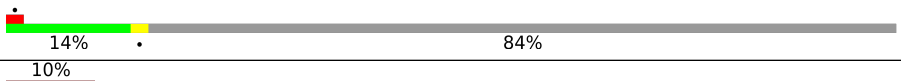
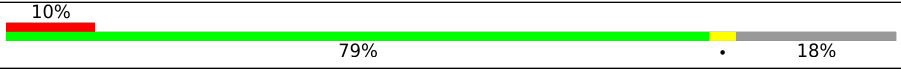
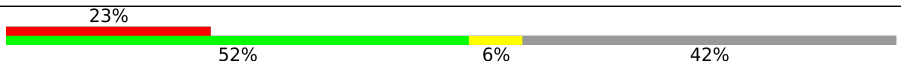
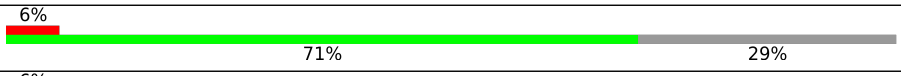
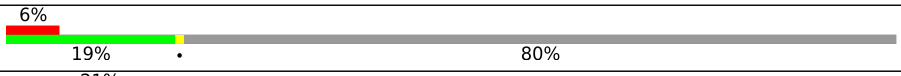
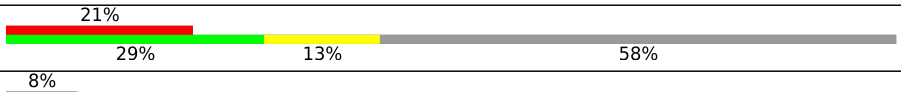
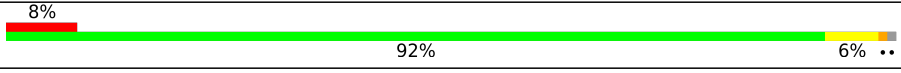
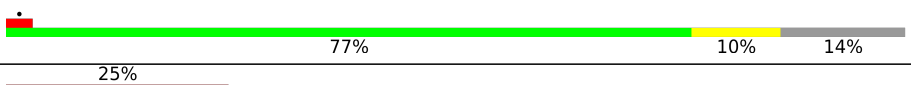
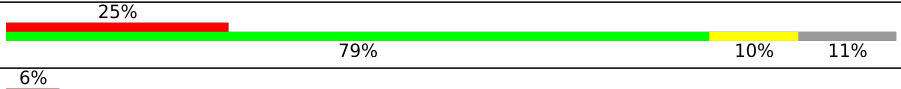
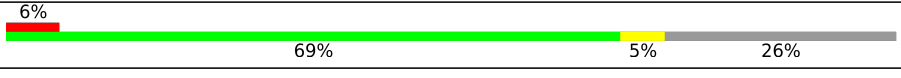
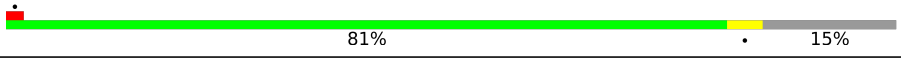
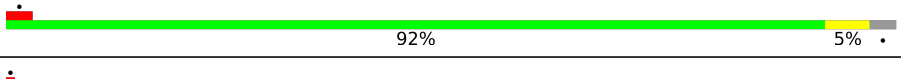
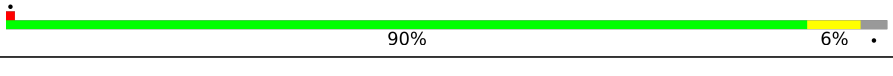
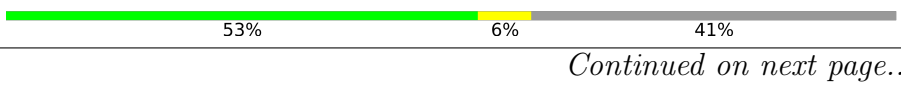
Mol	Chain	Length	Quality of chain
10	k	117	
11	n	1454	
12	q	651	
13	s	244	
14	u	144	
15	v	200	
16	z	600	
17	c	311	
18	e	178	
19	b	200	
20	l	178	
21	o	788	
22	i	146	
23	0	309	
24	8	346	
25	9	323	
26	1	548	
27	2	395	
28	3	308	
29	4	462	
30	5	71	
31	6	782	
32	7	760	
33	EA	439	
34	EB	291	

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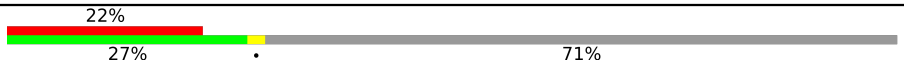
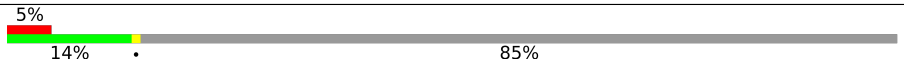
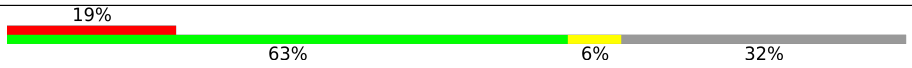
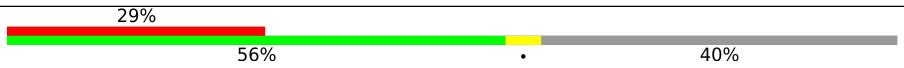
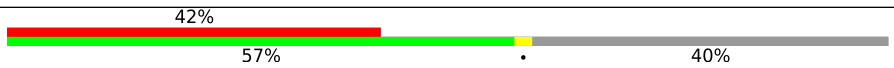
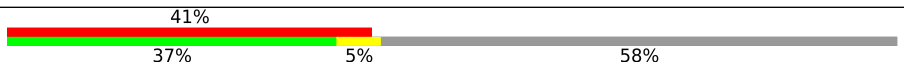
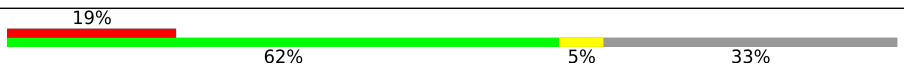
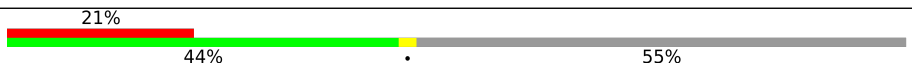
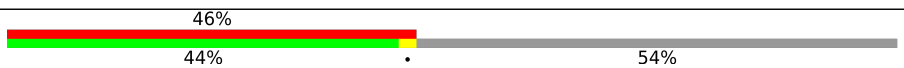
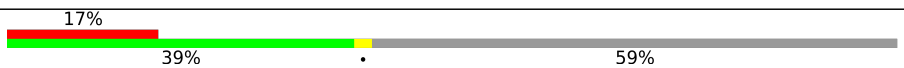
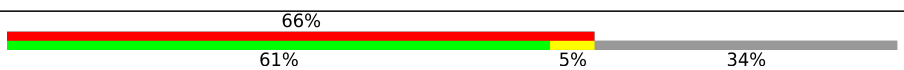
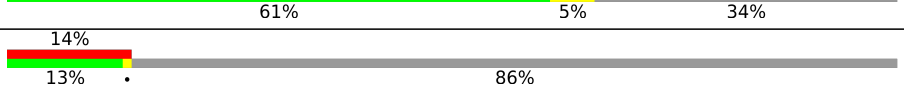
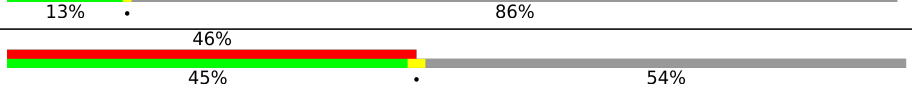
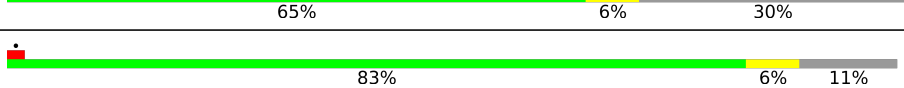
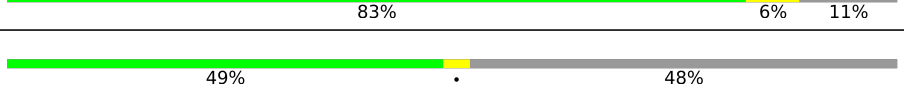
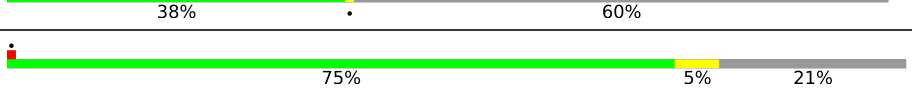
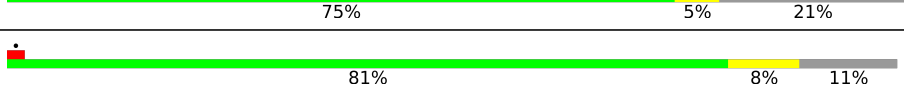
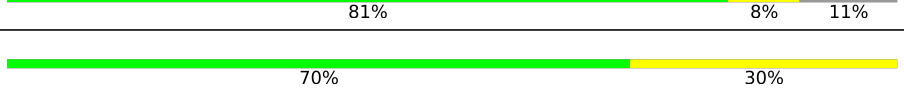
Mol	Chain	Length	Quality of chain
35	DA	1872	
36	DB	1199	
37	DD	1085	
37	Dd	1085	
38	DE	800	
38	De	800	
39	DF	677	
39	Df	677	
40	DG	349	
41	DH	310	
42	DI	264	
42	Di	264	
43	DJ	218	
43	Dj	218	
44	DL	161	
44	Dl	161	
45	Dc	929	
46	Dk	211	
47	Dm	124	
48	DO	109	
49	DP	339	
50	DQ	307	
51	BA	316	
52	FB	249	
53	X	69	

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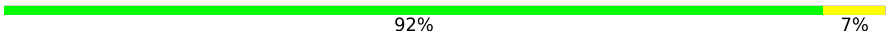
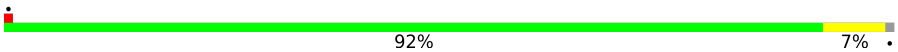
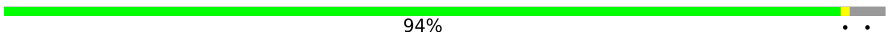
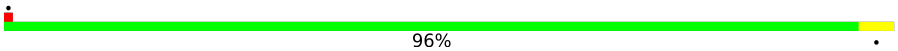
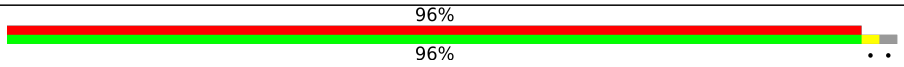
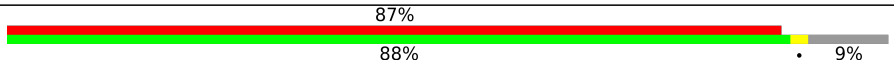
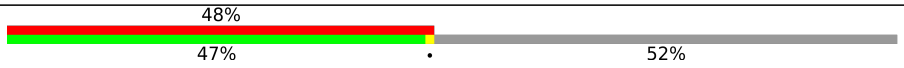
Mol	Chain	Length	Quality of chain
54	Y	69	
55	PA	1970	
56	PB	1174	
57	PC	275	
58	PD	142	
59	PE	210	
60	PF	127	
61	PG	172	
62	PH	150	
63	PI	125	
64	PJ	67	
65	PK	117	
66	PL	58	
67	FA	517	
68	w	1368	
69	x	989	
70	p	841	

2 Entry composition

There are 73 unique types of molecules in this entry. The entry contains 171177 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 Mediator of RNA polymerase II transcription subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	a	469	3570	2271	614	661	24	0	0

- Molecule 2 is a protein called Mediator of RNA polymerase II transcription subunit 31.

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

- Molecule 3 is a protein called Mediator of RNA polymerase II transcription subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	d	158	1264	788	227	243	6	0	0

- Molecule 4 is a protein called Mediator of RNA polymerase II transcription subunit 6.

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

- Molecule 5 is a protein called Mediator of RNA polymerase II transcription subunit 7.

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

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
g	10	ALA	LEU	conflict	UNP O43513
g	11	LEU	PRO	conflict	UNP O43513

- Molecule 6 is a protein called Isoform 2 of Mediator of RNA polymerase II transcription subunit 8.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	h	190	Total	C	N	O	S	0	0
			1486	925	262	295	4		

- Molecule 7 is a protein called Mediator of RNA polymerase II transcription subunit 18.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	r	191	Total	C	N	O	S	0	0
			1528	969	270	274	15		

- Molecule 8 is a protein called Mediator of RNA polymerase II transcription subunit 20.

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

- Molecule 9 is a protein called Mediator of RNA polymerase II transcription subunit 10.

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

- Molecule 10 is a protein called Mediator of RNA polymerase II transcription subunit 11.

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

- Molecule 11 is a protein called Mediator of RNA polymerase II transcription subunit 14.

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

There is a discrepancy between the modelled and reference sequences:

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

- Molecule 12 is a protein called Mediator of RNA polymerase II transcription subunit 17.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	q	552	Total	C	N	O	S	0	0
			4261	2691	764	789	17		

- Molecule 13 is a protein called Mediator of RNA polymerase II transcription subunit 19.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	s	77	Total	C	N	O	S	0	0
			485	300	87	96	2		

- Molecule 14 is a protein called Mediator of RNA polymerase II transcription subunit 21.

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

- Molecule 15 is a protein called Mediator of RNA polymerase II transcription subunit 22.

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

- Molecule 16 is a protein called Mediator of RNA polymerase II transcription subunit 26.

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

- Molecule 17 is a protein called Mediator of RNA polymerase II transcription subunit 27.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	c	255	Total	C	N	O	S	0	0
			2069	1314	370	374	11		

- Molecule 18 is a protein called Mediator of RNA polymerase II transcription subunit 28.

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

- Molecule 19 is a protein called Mediator of RNA polymerase II transcription subunit 29.

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

- Molecule 20 is a protein called Mediator of RNA polymerase II transcription subunit 30.

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

- Molecule 21 is a protein called Mediator of RNA polymerase II transcription subunit 15.

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

- Molecule 22 is a protein called Mediator of RNA polymerase II transcription subunit 9.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	i	62	Total	C	N	O	S	0	0
			520	329	92	94	5		

- Molecule 23 is a protein called CDK-activating kinase assembly factor MAT1.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	0	306	Total	C	N	O	S	0	0
			2255	1404	399	441	11		

- Molecule 24 is a protein called Cyclin-dependent kinase 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	8	299	Total	C	N	O	S	0	0
			2378	1535	406	426	11		

- Molecule 25 is a protein called Cyclin-H.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	9	287	Total	C	N	O	S	0	0
			2307	1477	398	417	15		

- Molecule 26 is a protein called General transcription factor IIH subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	1	405	Total	C	N	O	S	0	0
			2634	1640	486	501	7		

- Molecule 27 is a protein called General transcription factor IIH subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	2	331	Total	C	N	O	S	0	0
			2534	1597	441	470	26		

- Molecule 28 is a protein called General transcription factor IIH subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	3	263	Total	C	N	O	S	0	0
			2065	1323	344	379	19		

- Molecule 29 is a protein called General transcription factor IIH subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	4	449	Total	C	N	O	S	0	0
			3579	2303	624	638	14		

- Molecule 30 is a protein called General transcription factor IIH subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	5	54	Total	C	N	O	S	0	0
			428	277	67	82	2		

- Molecule 31 is a protein called General transcription and DNA repair factor IIH helicase subunit XPB.

Mol	Chain	Residues	Atoms					AltConf	Trace
31	6	606	Total	C	N	O	S	0	0
			4880	3117	849	884	30		

- Molecule 32 is a protein called General transcription and DNA repair factor IIH helicase subunit XPD.

Mol	Chain	Residues	Atoms					AltConf	Trace
32	7	734	Total	C	N	O	S	0	0
			5833	3727	1022	1055	29		

- Molecule 33 is a protein called General transcription factor IIE subunit 1.

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

- Molecule 34 is a protein called Transcription initiation factor IIE subunit beta.

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

- Molecule 35 is a protein called Transcription initiation factor TFIID subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	DA	550	Total	C	N	O	S	0	0
			4511	2882	782	820	27		

- Molecule 36 is a protein called Transcription initiation factor TFIID subunit 2.

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

- Molecule 37 is a protein called Transcription initiation factor TFIID subunit 4.

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

- Molecule 38 is a protein called Transcription initiation factor TFIID subunit 5.

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

- Molecule 39 is a protein called Transcription initiation factor TFIID subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
39	DF	408	Total	C	N	O	S	0	0
			3109	1970	542	579	18		

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Mol	Chain	Residues	Atoms					AltConf	Trace
39	Df	403	Total	C	N	O	S	0	0
			3081	1954	533	576	18		

- Molecule 40 is a protein called Transcription initiation factor TFIID subunit 7.

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

- Molecule 41 is a protein called Transcription initiation factor TFIID subunit 8.

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

- Molecule 42 is a protein called Transcription initiation factor TFIID subunit 9.

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

- Molecule 43 is a protein called Transcription initiation factor TFIID subunit 10.

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

- Molecule 44 is a protein called Transcription initiation factor TFIID subunit 12.

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

- Molecule 45 is a protein called Transcription initiation factor TFIID subunit 3.

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

- Molecule 46 is a protein called Transcription initiation factor TFIID subunit 11.

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

- Molecule 47 is a protein called Transcription initiation factor TFIID subunit 13.

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

- Molecule 48 is a protein called Transcription initiation factor IIA subunit 2.

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

- Molecule 49 is a protein called TATA-box-binding protein.

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

- Molecule 50 is a protein called TFIIA-a.

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

- Molecule 51 is a protein called Transcription initiation factor IIB.

Mol	Chain	Residues	Atoms					AltConf	Trace
51	BA	251	Total	C	N	O	S	0	0
			1939	1214	344	364	17		

- Molecule 52 is a protein called General transcription factor IIF subunit 2.

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

- Molecule 53 is a DNA chain called DNA (69-MER).

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

- Molecule 54 is a DNA chain called DNA (69-MER).

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

- Molecule 55 is a protein called RPB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
55	PA	1474	Total	C	N	O	S	0	0
			11655	7333	2070	2180	72		

- Molecule 56 is a protein called DNA-directed RNA polymerase subunit beta.

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

- Molecule 57 is a protein called DNA-directed RNA polymerase II subunit RPB3.

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

- Molecule 58 is a protein called DNA-directed RNA polymerase II subunit RPB4.

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

- Molecule 59 is a protein called DNA-directed RNA polymerase II subunit E.

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

- Molecule 60 is a protein called DNA-directed RNA polymerase II subunit F.

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

- Molecule 61 is a protein called DNA-directed RNA polymerase II subunit RPB7.

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

- Molecule 62 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

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

- Molecule 63 is a protein called DNA-directed RNA polymerase II subunit RPB9.

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

- Molecule 64 is a protein called RPB10.

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

- Molecule 65 is a protein called RNA_pol_L_2 domain-containing protein.

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

- Molecule 66 is a protein called RPB12.

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

- Molecule 67 is a protein called General transcription factor IIF subunit 1.

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

- Molecule 68 is a protein called Mediator of RNA polymerase II transcription subunit 23.

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

- Molecule 69 is a protein called Mediator of RNA polymerase II transcription subunit 24.

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

- Molecule 70 is a protein called Isoform 2 of Mediator of RNA polymerase II transcription subunit 16.

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

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

Mol	Chain	Residues	Atoms		AltConf
71	0	2	Total	Zn	0
			2	2	
71	2	3	Total	Zn	0
			3	3	
71	3	1	Total	Zn	0
			1	1	
71	EA	1	Total	Zn	0
			1	1	
71	BA	1	Total	Zn	0
			1	1	
71	PA	2	Total	Zn	0
			2	2	

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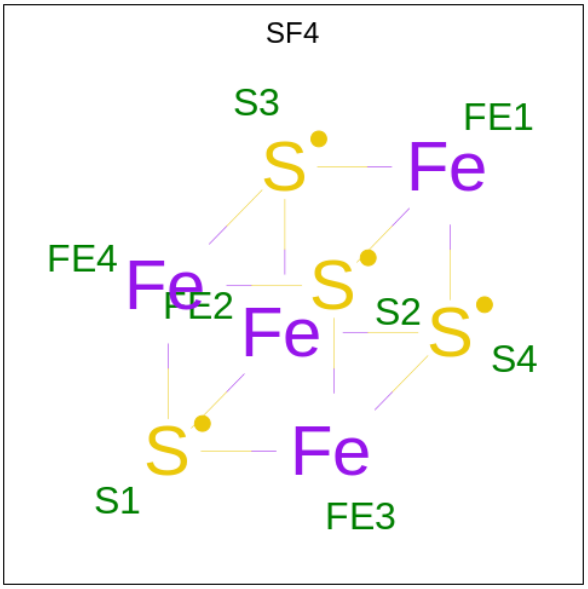
Mol	Chain	Residues	Atoms	AltConf
71	PB	1	Total Zn 1 1	0
71	PC	1	Total Zn 1 1	0
71	PI	2	Total Zn 2 2	0
71	PJ	1	Total Zn 1 1	0
71	PL	1	Total Zn 1 1	0

- Molecule 72 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe_4S_4).



Mol	Chain	Residues	Atoms	AltConf
72	7	1	Total Fe S 8 4 4	0

- Molecule 73 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

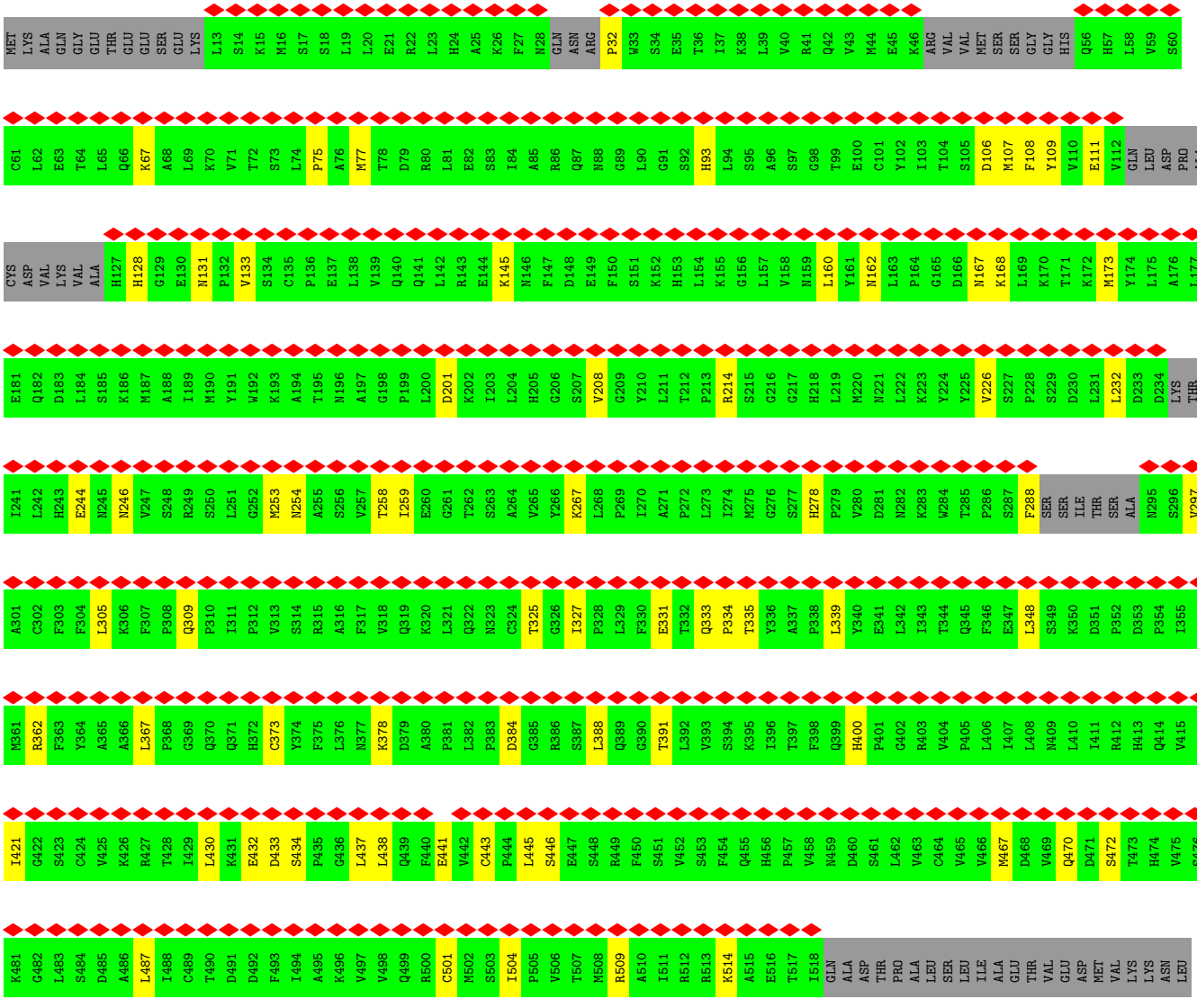
Mol	Chain	Residues	Atoms	AltConf
73	PA	1	Total Mg 1 1	0

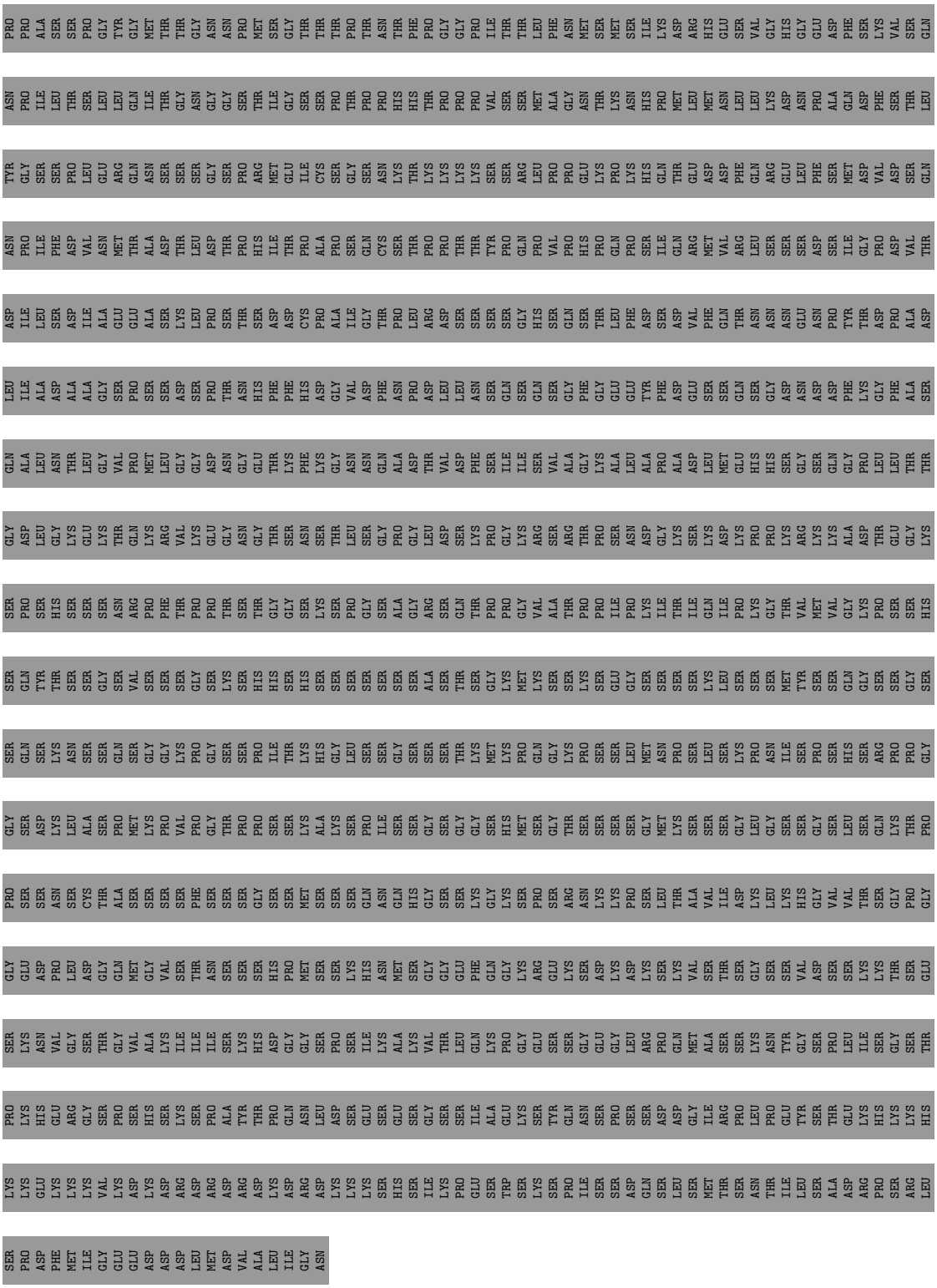
3 Residue-property plots (i)

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: Mediator of RNA polymerase II transcription subunit 1

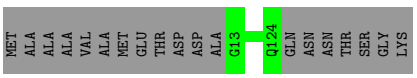
Chain a:





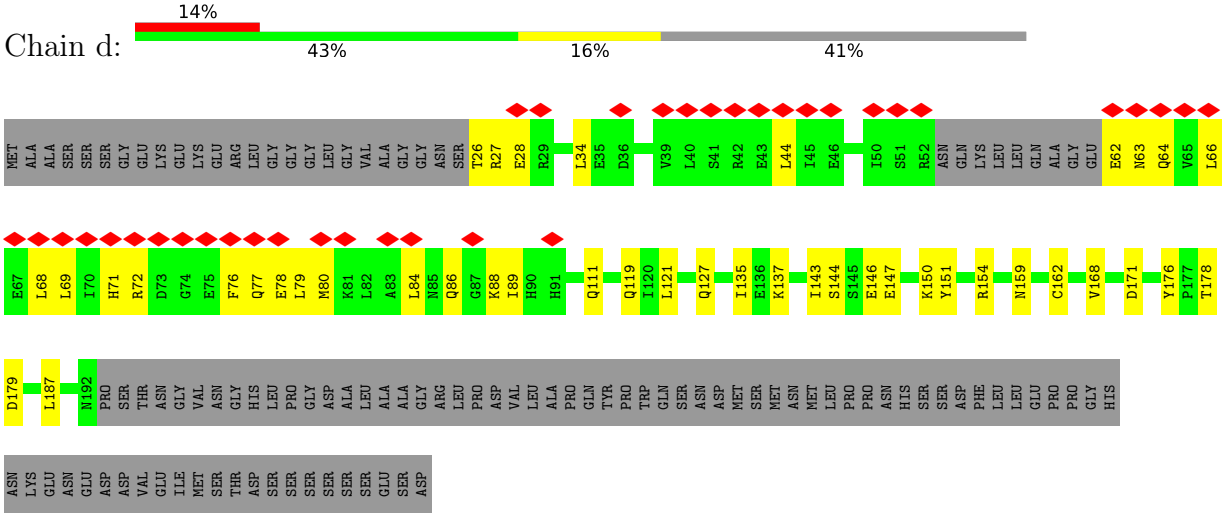
• Molecule 2: Mediator of RNA polymerase II transcription subunit 31

Chain m:



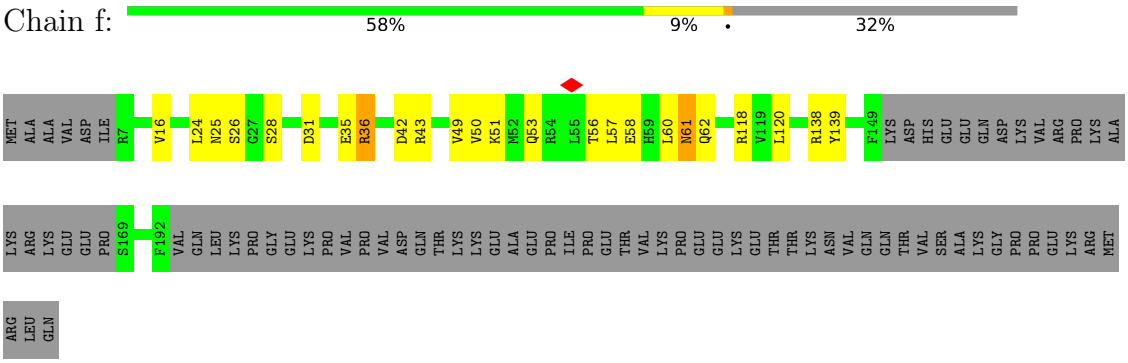
• Molecule 3: Mediator of RNA polymerase II transcription subunit 4

Chain d:



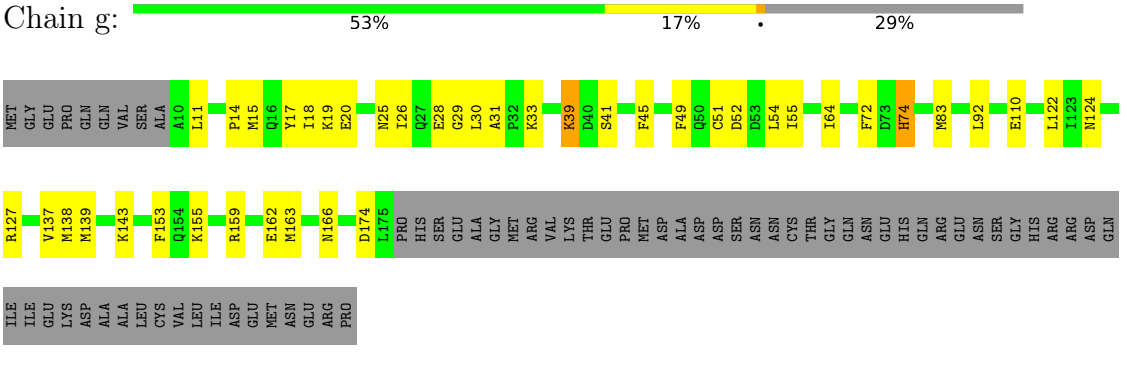
• Molecule 4: Mediator of RNA polymerase II transcription subunit 6

Chain f:



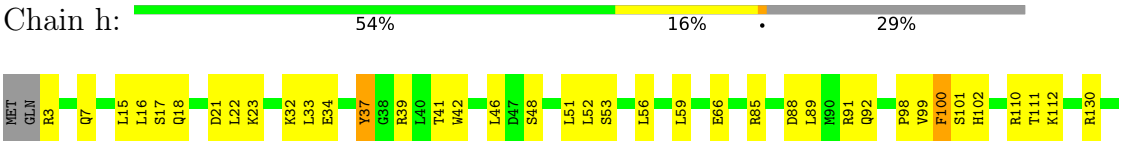
• Molecule 5: Mediator of RNA polymerase II transcription subunit 7

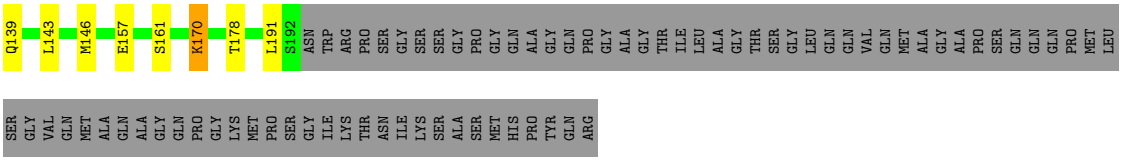
Chain g:



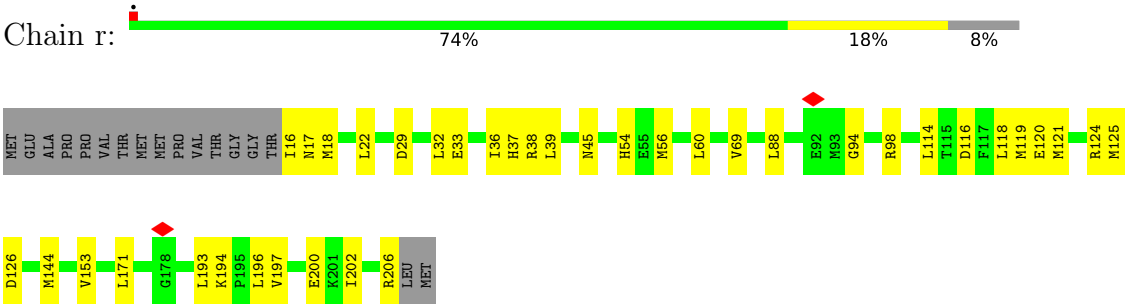
• Molecule 6: Isoform 2 of Mediator of RNA polymerase II transcription subunit 8

Chain h:

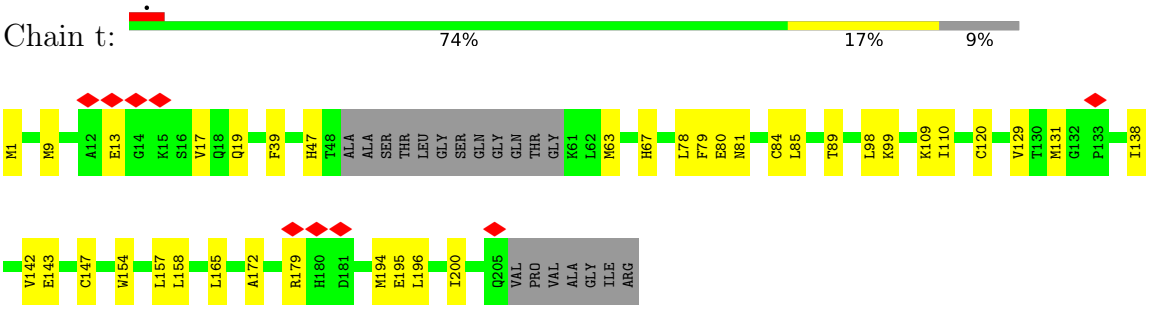




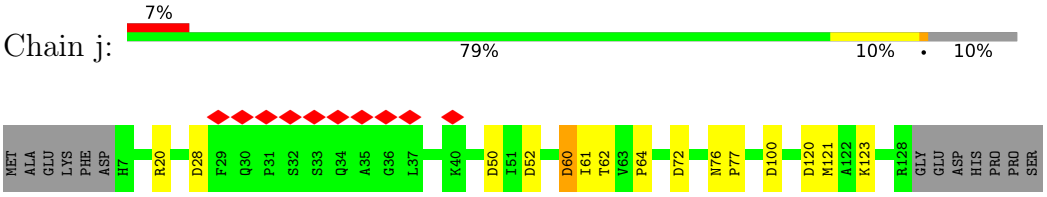
• Molecule 7: Mediator of RNA polymerase II transcription subunit 18



• Molecule 8: Mediator of RNA polymerase II transcription subunit 20

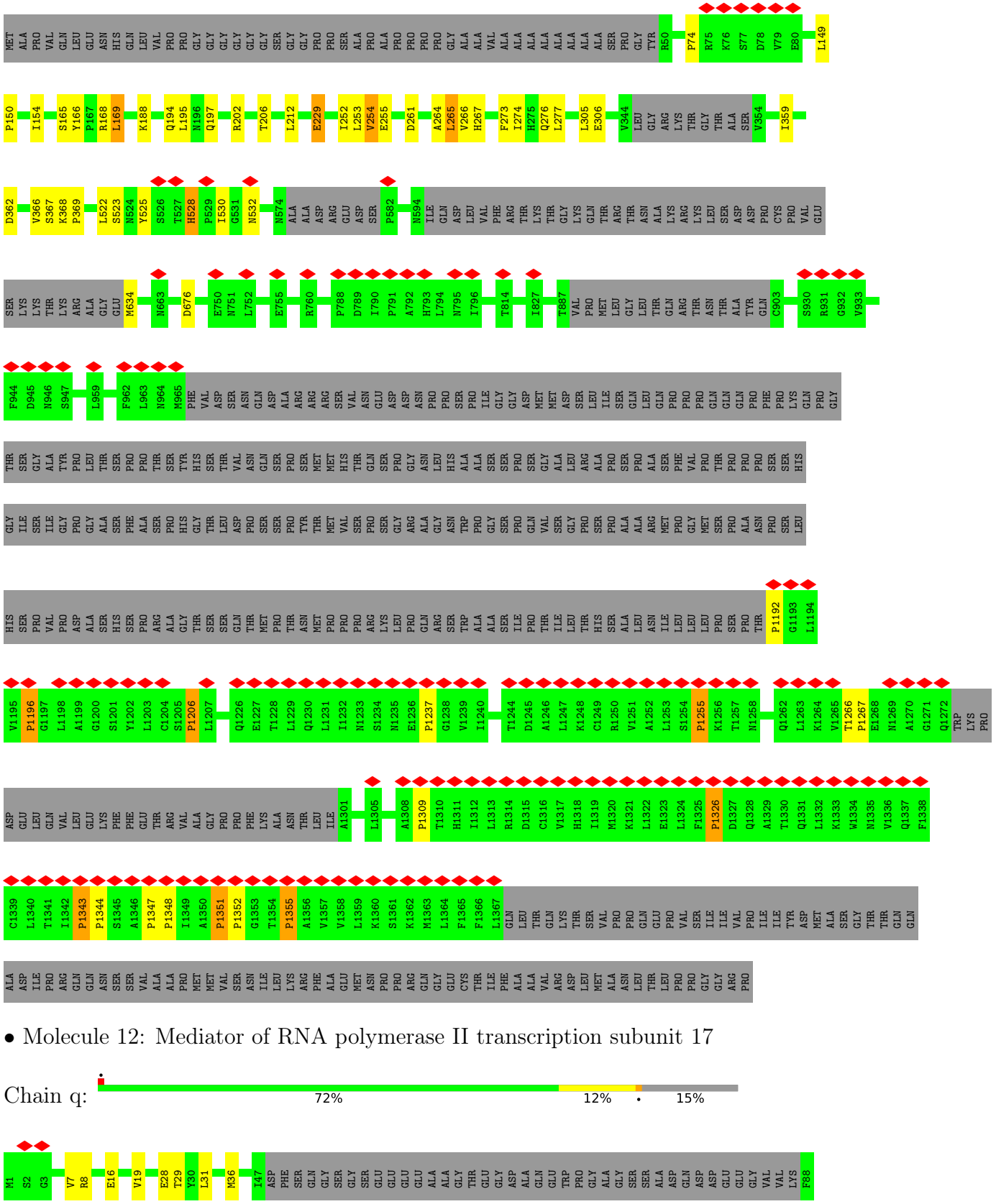


• Molecule 9: Mediator of RNA polymerase II transcription subunit 10



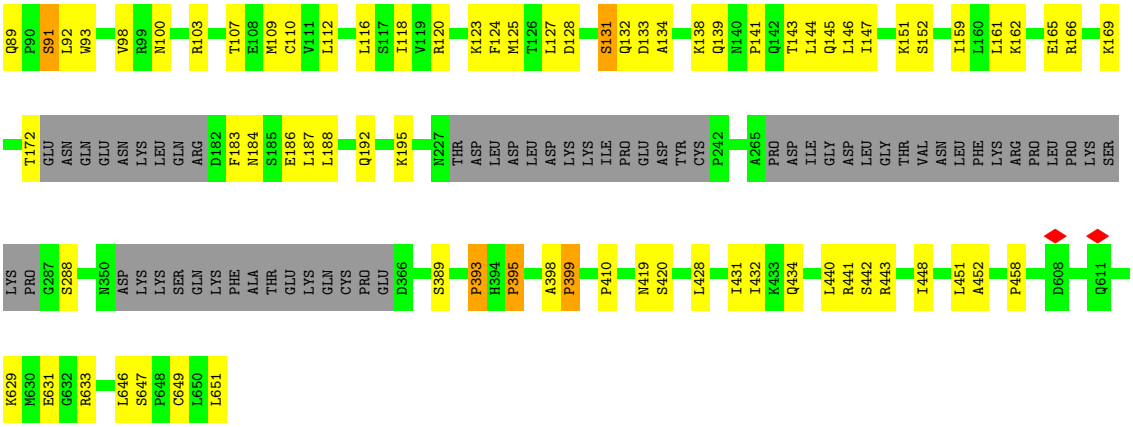
• Molecule 10: Mediator of RNA polymerase II transcription subunit 11

• Molecule 11: Mediator of RNA polymerase II transcription subunit 14



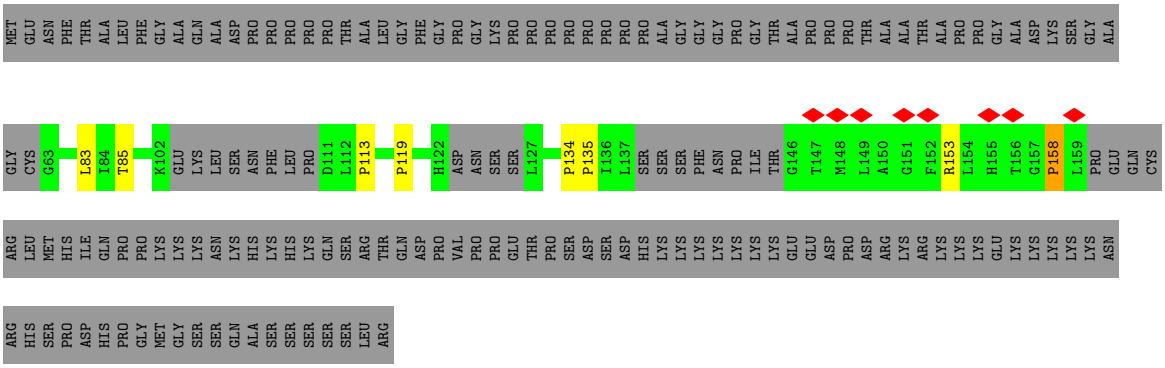
• Molecule 12: Mediator of RNA polymerase II transcription subunit 17

Chain q:



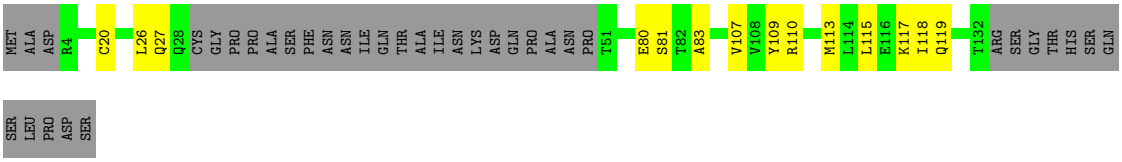
• Molecule 13: Mediator of RNA polymerase II transcription subunit 19

Chain s:



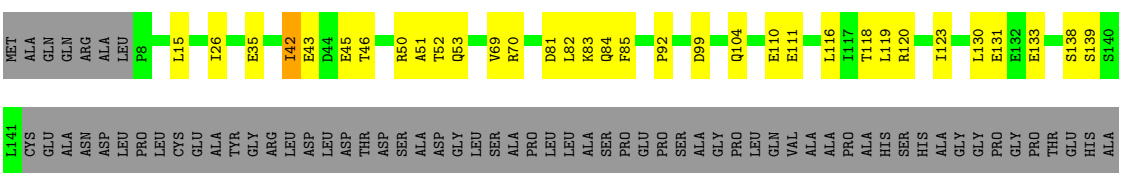
• Molecule 14: Mediator of RNA polymerase II transcription subunit 21

Chain u:



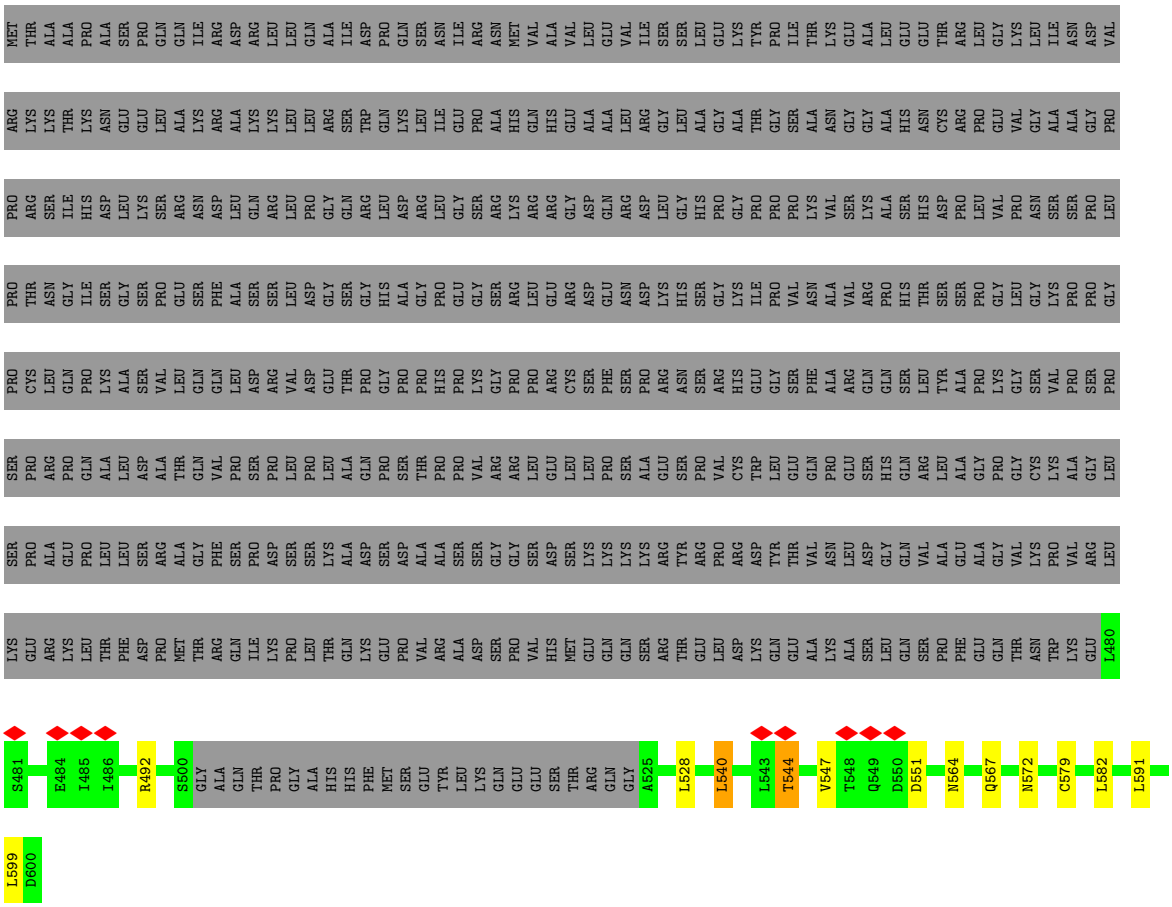
• Molecule 15: Mediator of RNA polymerase II transcription subunit 22

Chain v:



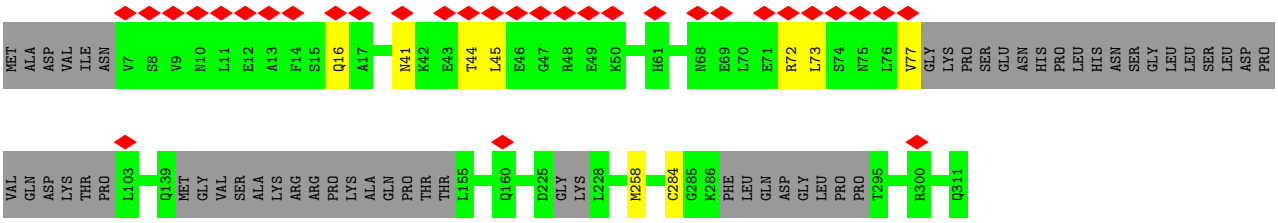
• Molecule 16: Mediator of RNA polymerase II transcription subunit 26

Chain z:



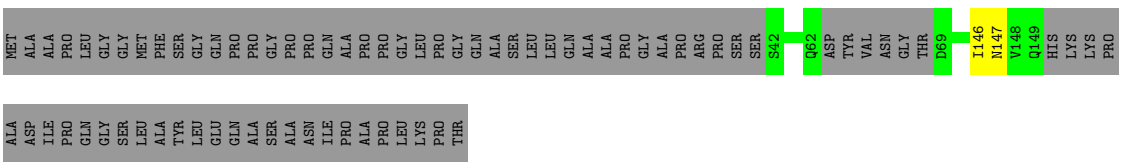
• Molecule 17: Mediator of RNA polymerase II transcription subunit 27

Chain c:



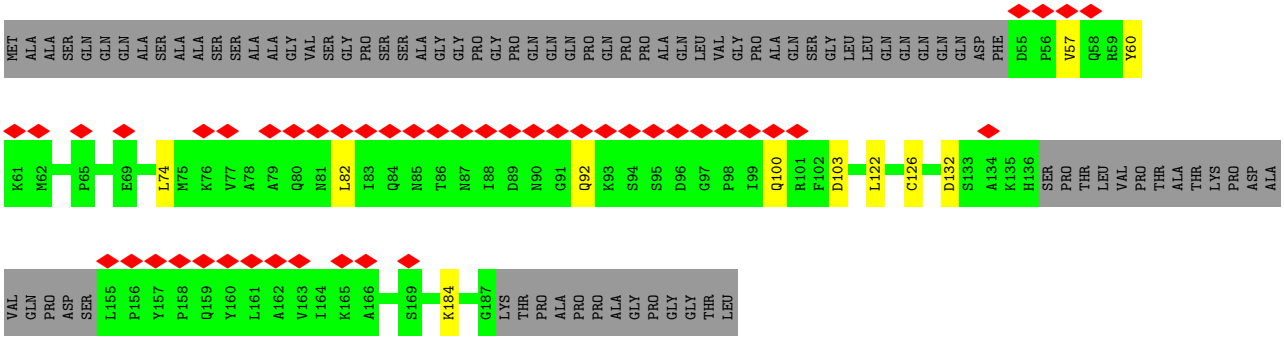
• Molecule 18: Mediator of RNA polymerase II transcription subunit 28

Chain e:



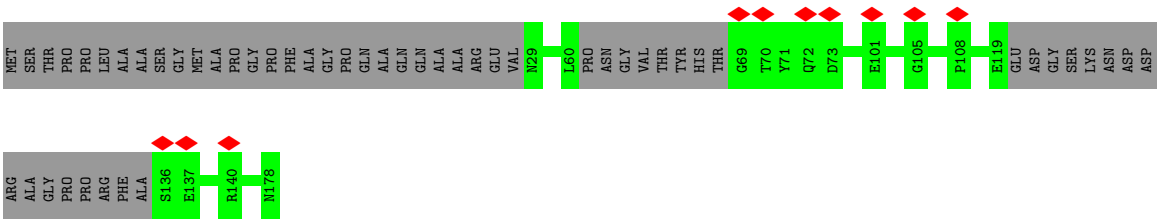
• Molecule 19: Mediator of RNA polymerase II transcription subunit 29

Chain b:



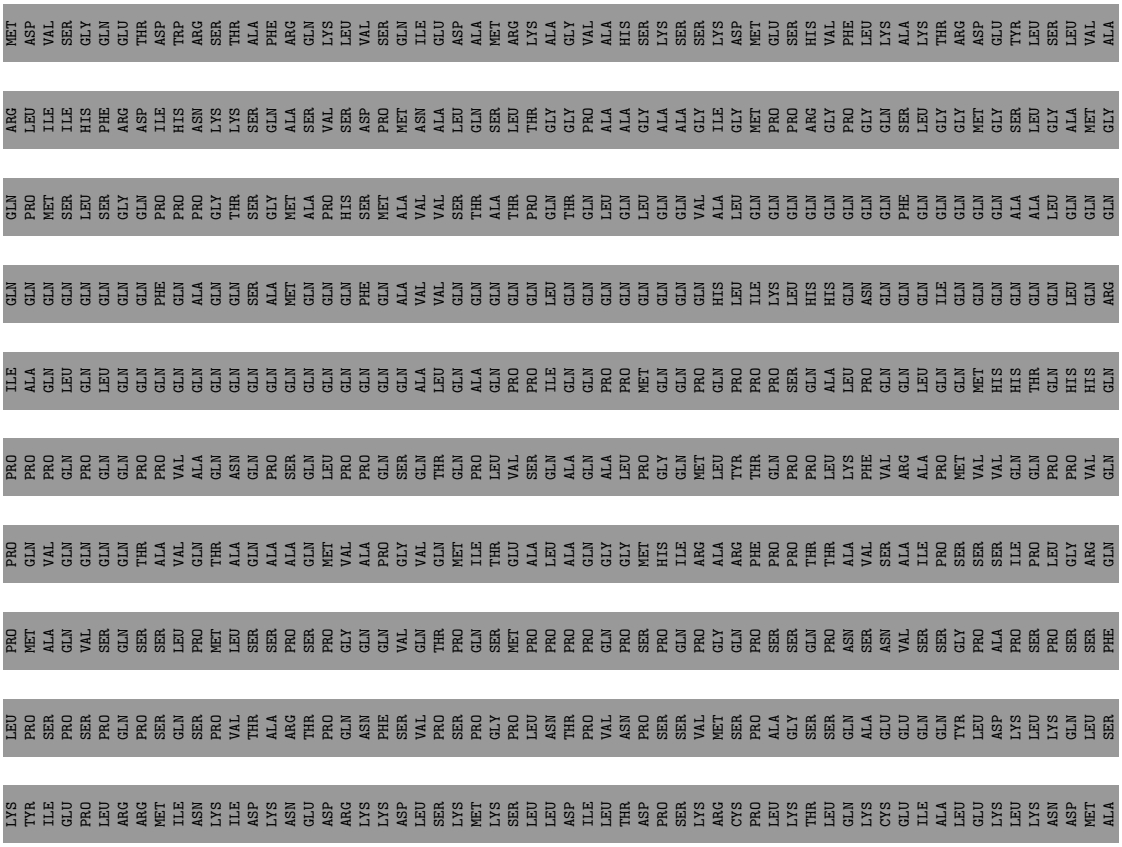
• Molecule 20: Mediator of RNA polymerase II transcription subunit 30

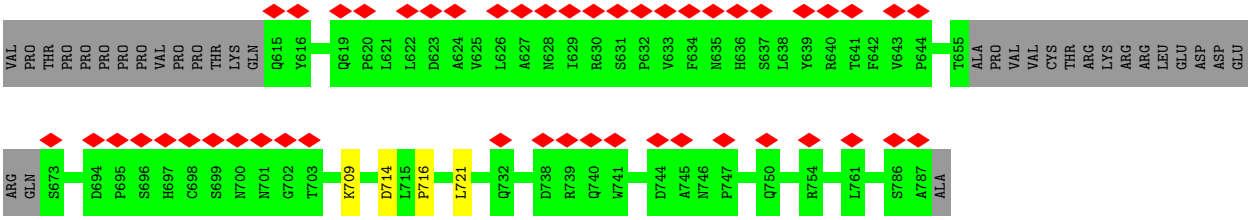
Chain l:



• Molecule 21: Mediator of RNA polymerase II transcription subunit 15

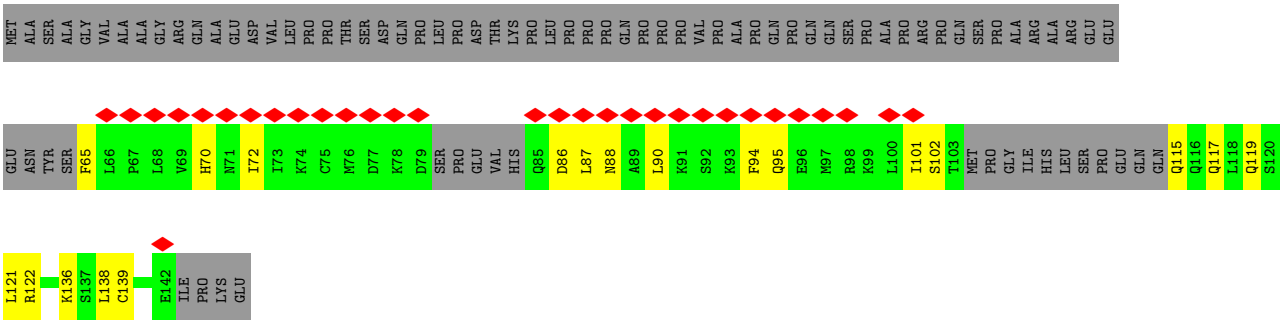
Chain o:





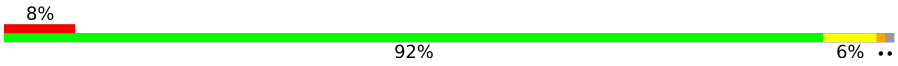
• Molecule 22: Mediator of RNA polymerase II transcription subunit 9

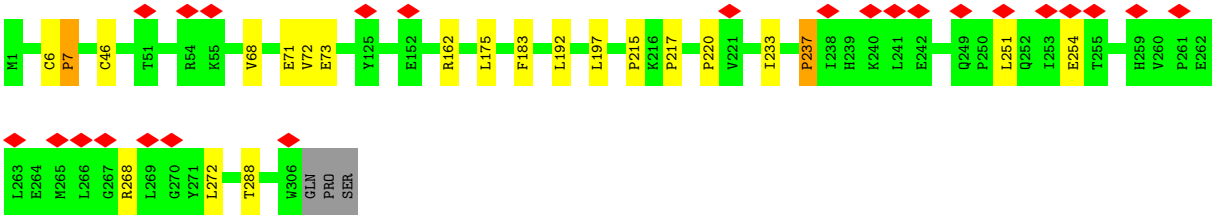
Chain i:



• Molecule 23: CDK-activating kinase assembly factor MAT1

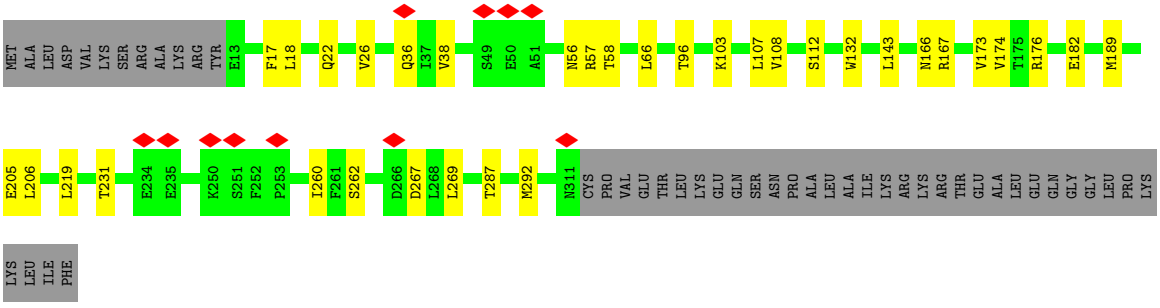
Chain 0:





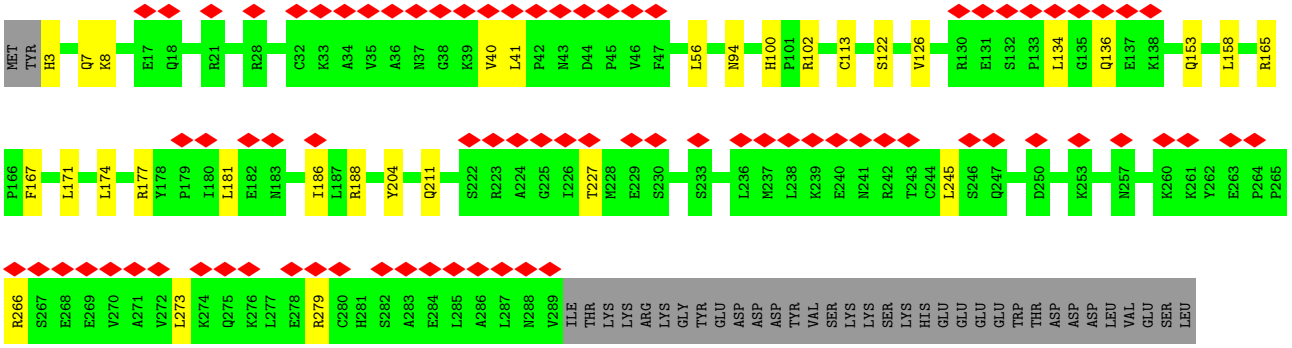
• Molecule 24: Cyclin-dependent kinase 7

Chain 8:



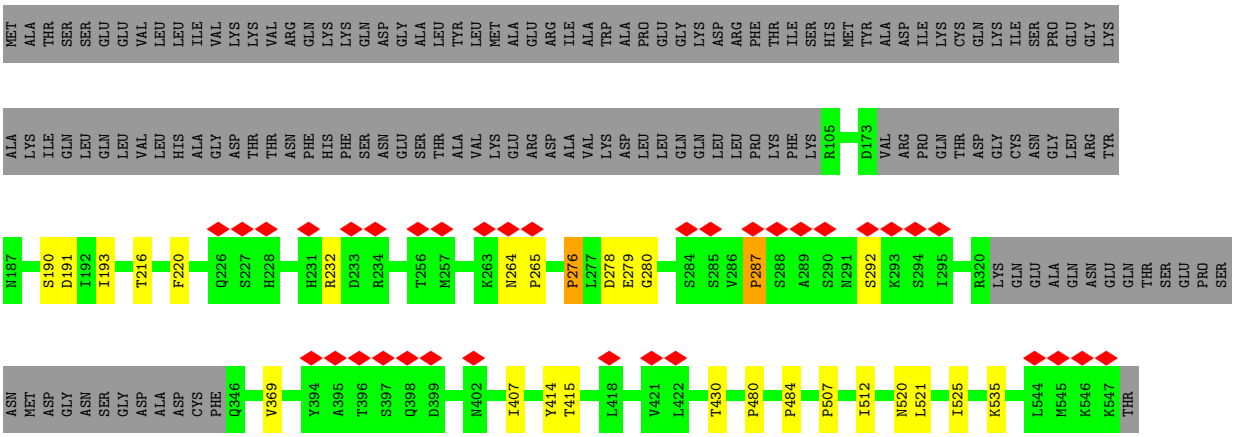
• Molecule 25: Cyclin-H

Chain 9:



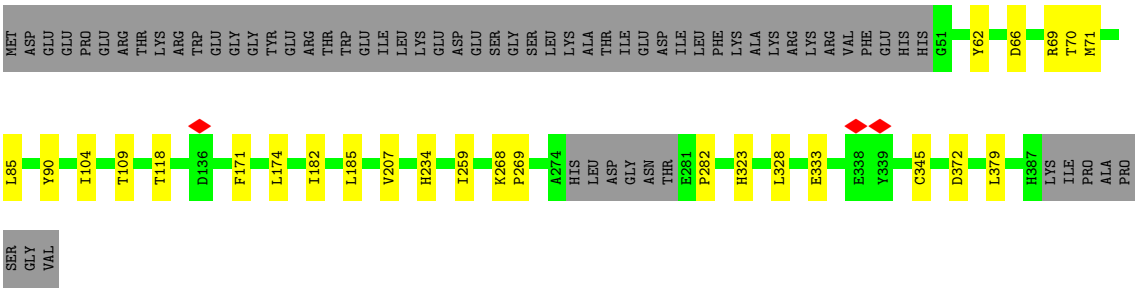
• Molecule 26: General transcription factor IIH subunit 1

Chain 1:



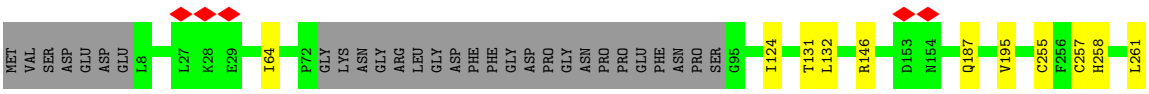
• Molecule 27: General transcription factor IIH subunit 2

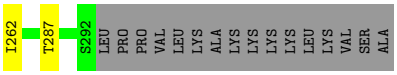
Chain 2:



• Molecule 28: General transcription factor IIH subunit 3

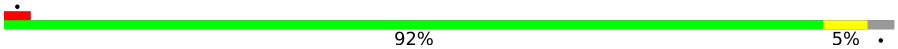
Chain 3:

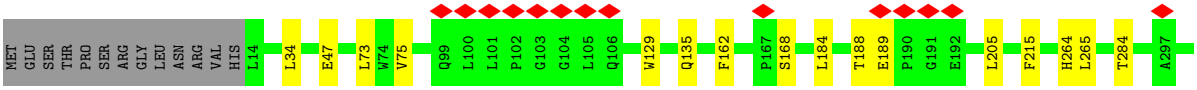


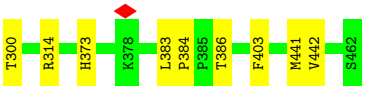


• Molecule 29: General transcription factor IIH subunit 4

Chain 4:

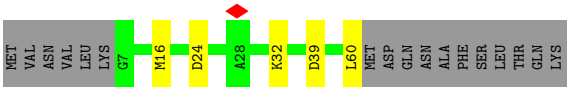






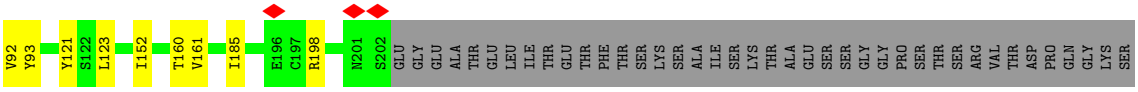
• Molecule 30: General transcription factor IIH subunit 5

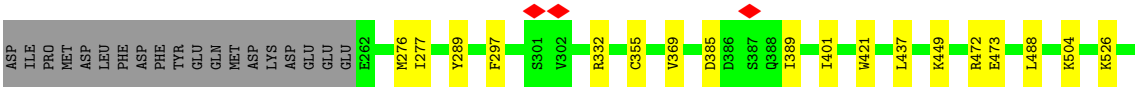
Chain 5:



• Molecule 31: General transcription and DNA repair factor IIH helicase subunit XPB

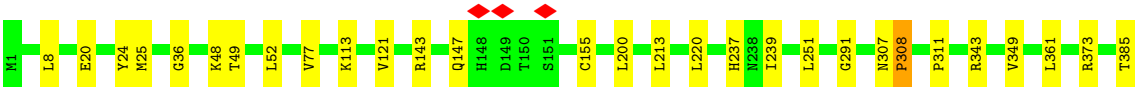
Chain 6:

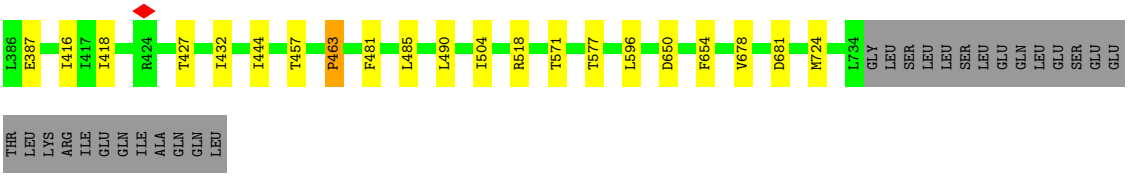




• Molecule 32: General transcription and DNA repair factor IIH helicase subunit XPD

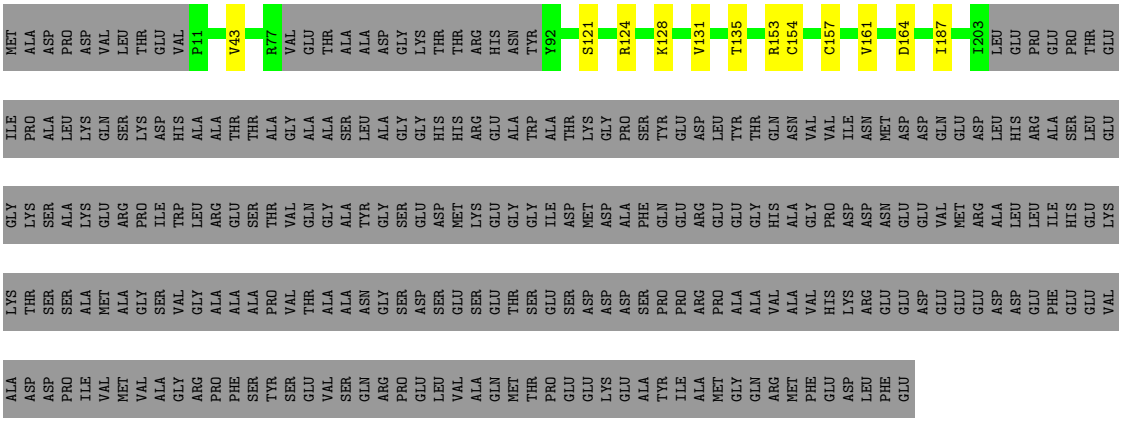
Chain 7:





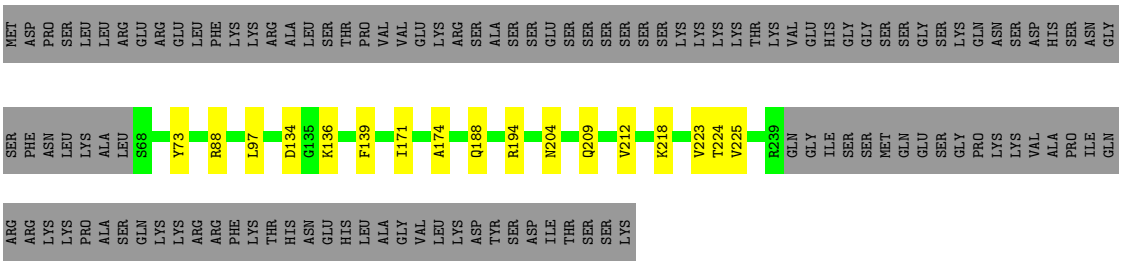
• Molecule 33: General transcription factor IIE subunit 1

Chain EA:



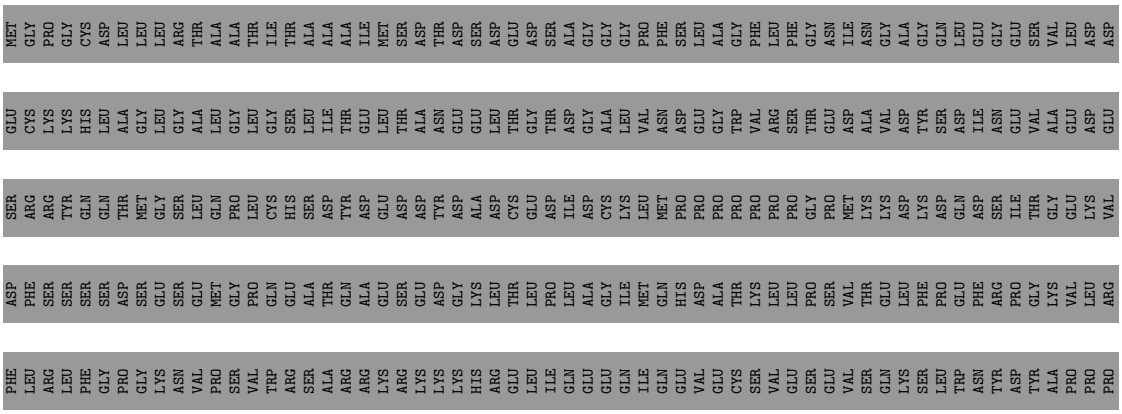
• Molecule 34: Transcription initiation factor IIE subunit beta

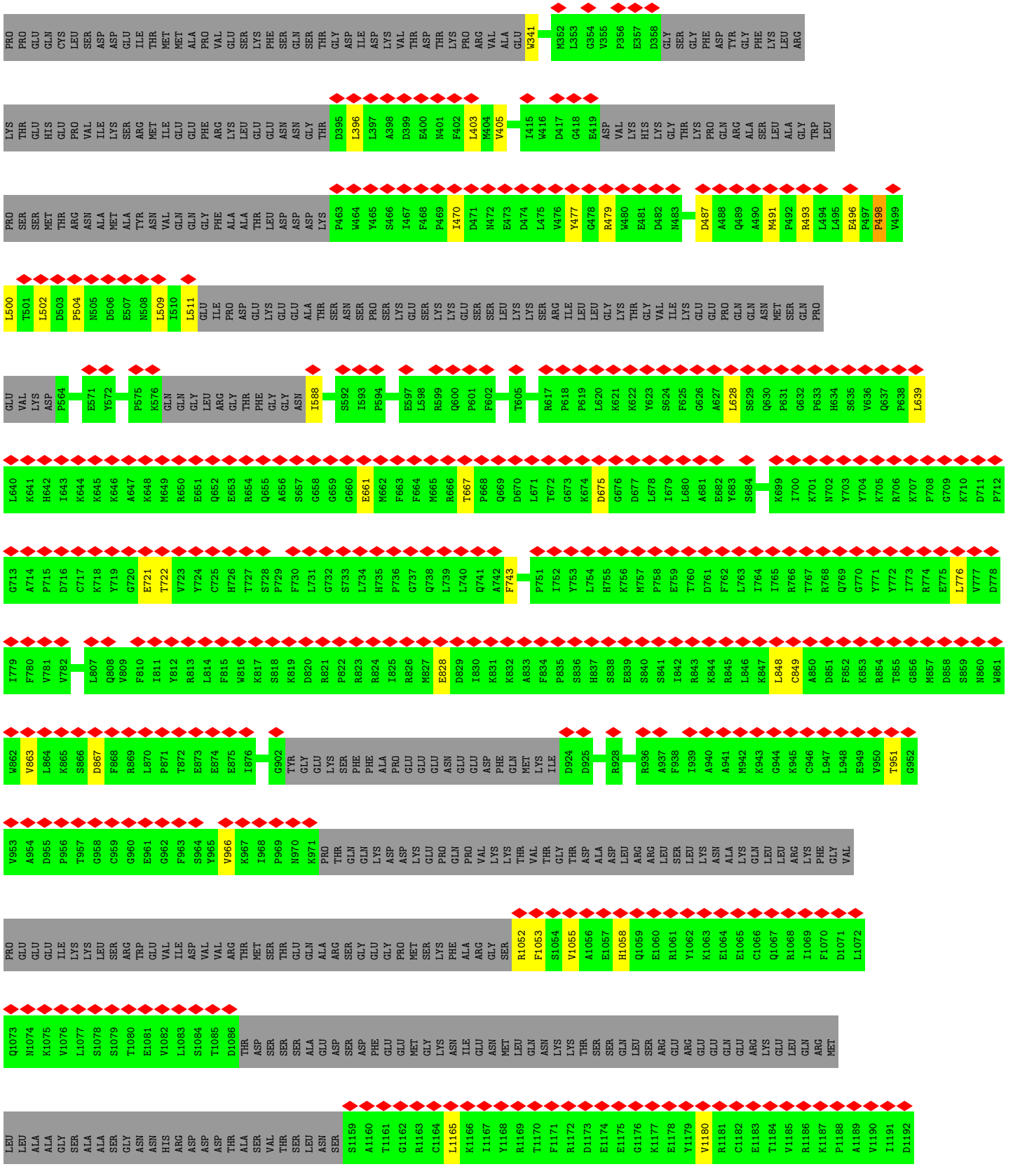
Chain EB:

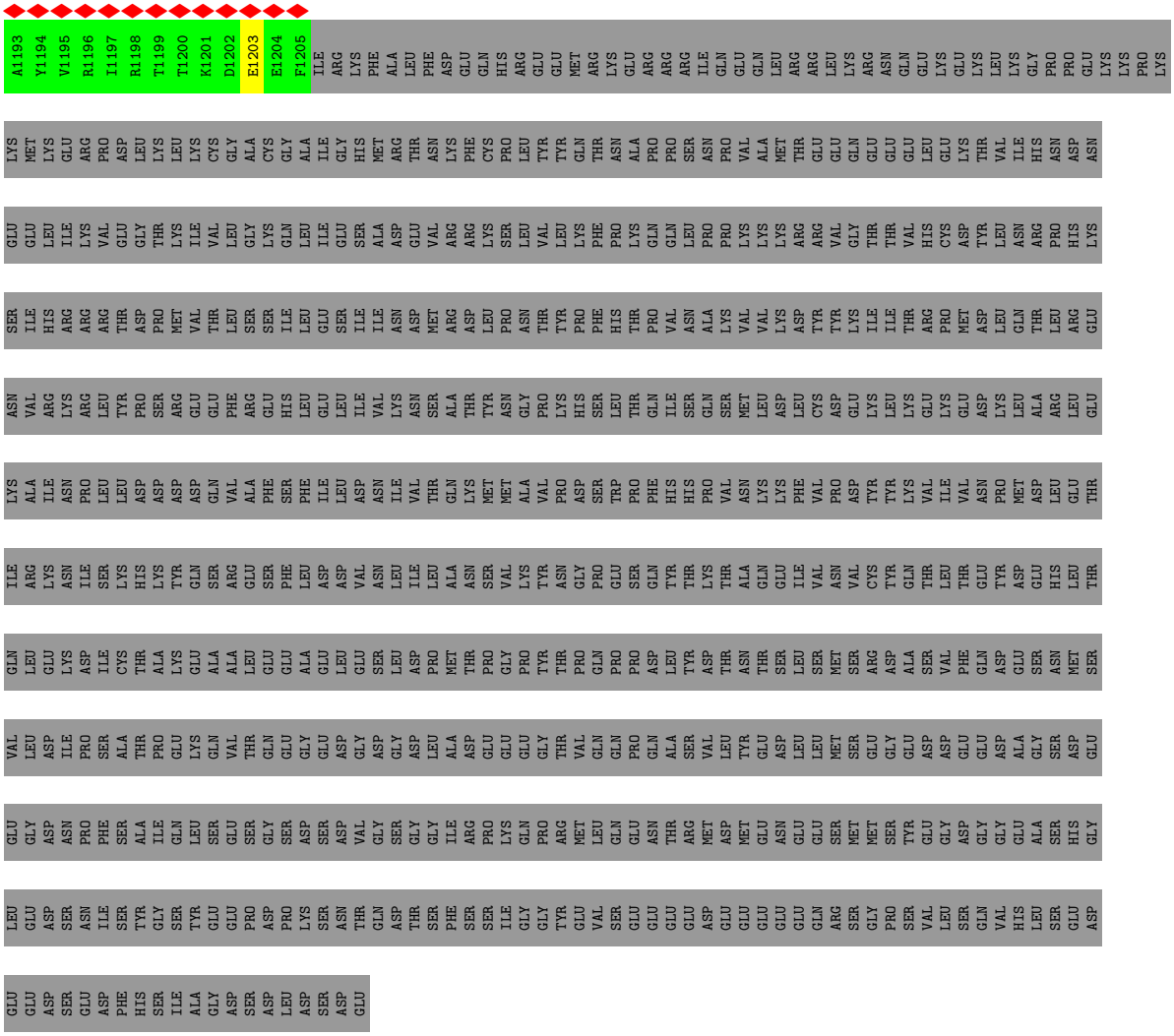


• Molecule 35: Transcription initiation factor TFIID subunit 1

Chain DA:

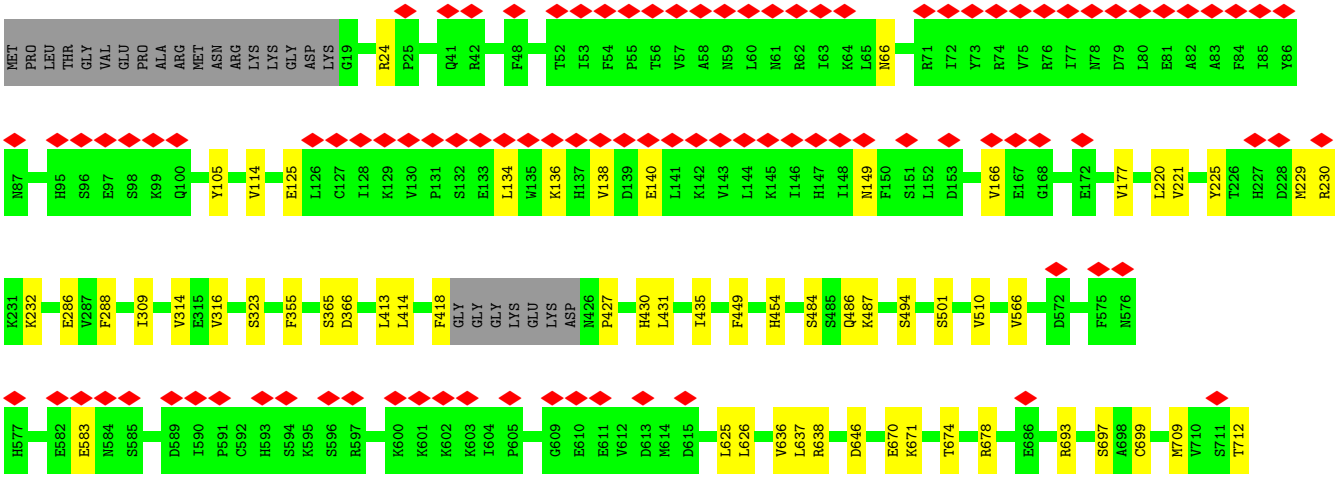


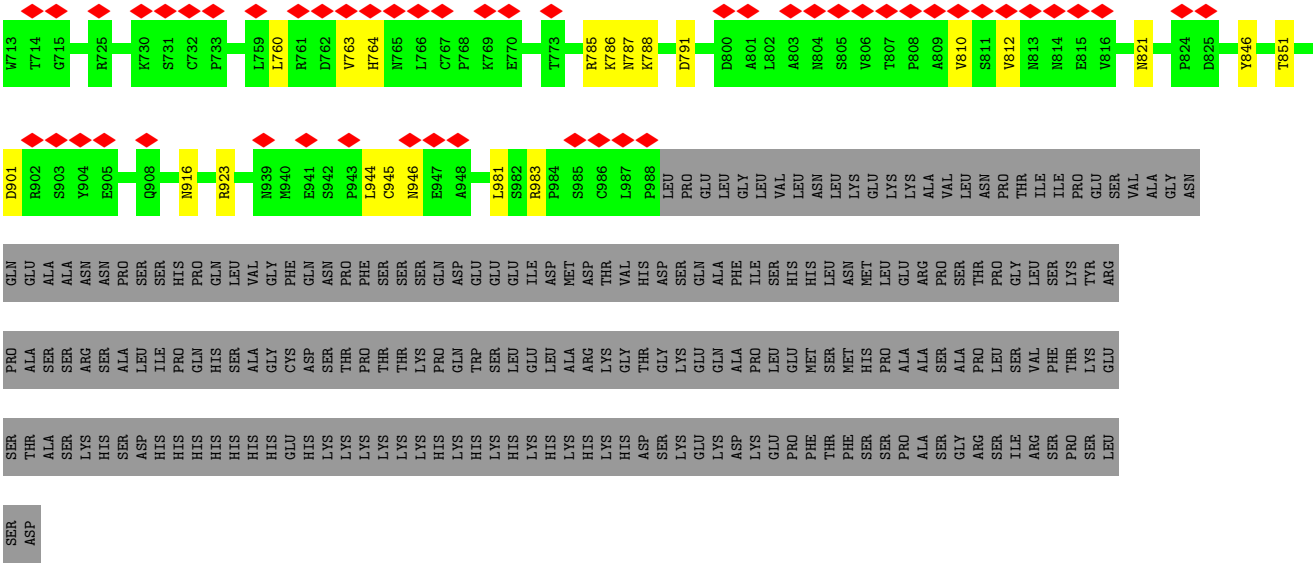




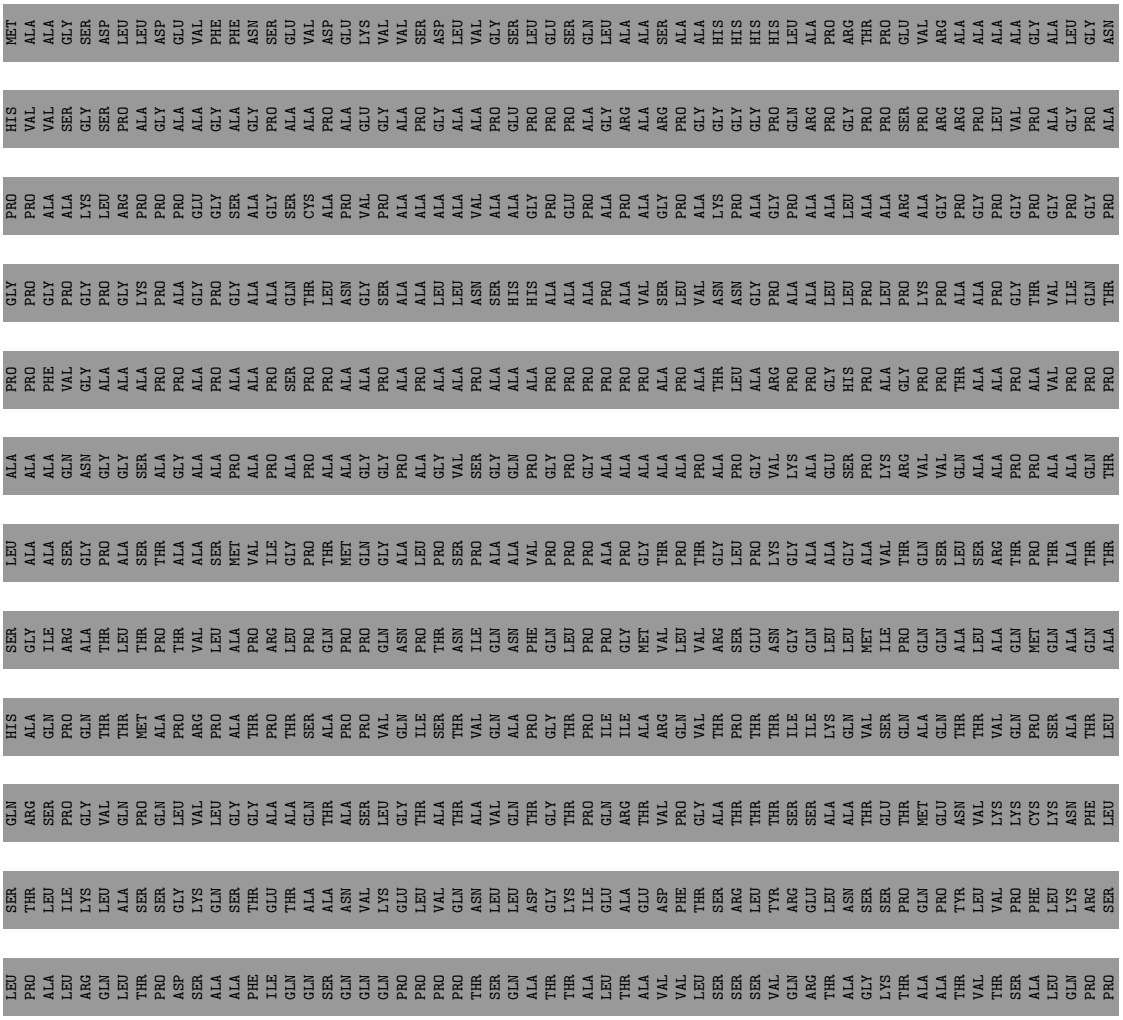
• Molecule 36: Transcription initiation factor TFIID subunit 2

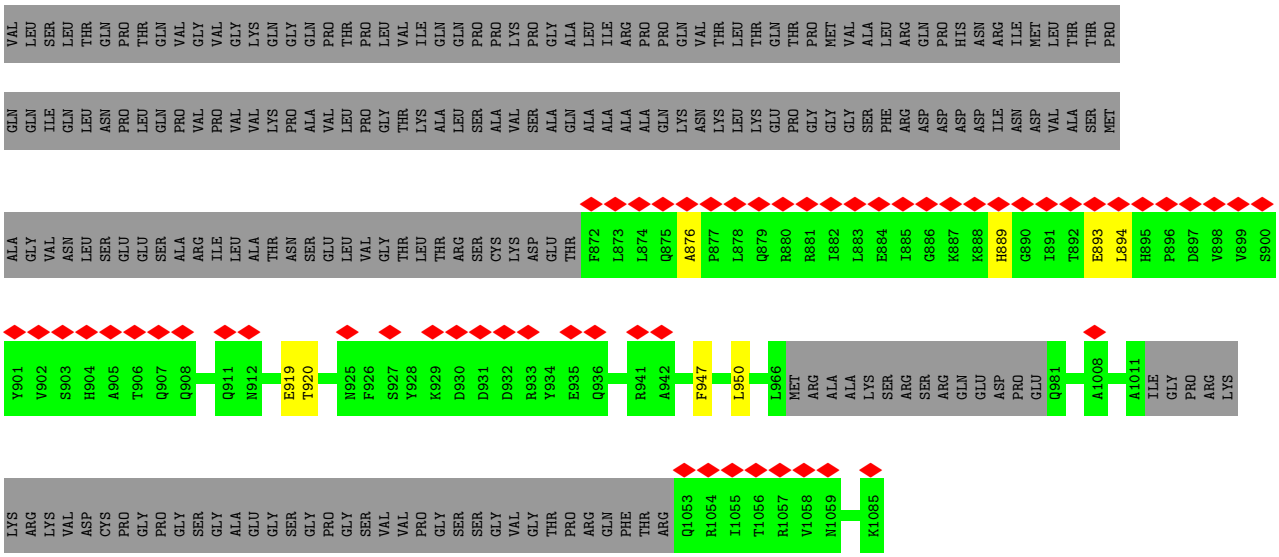
Chain DB:



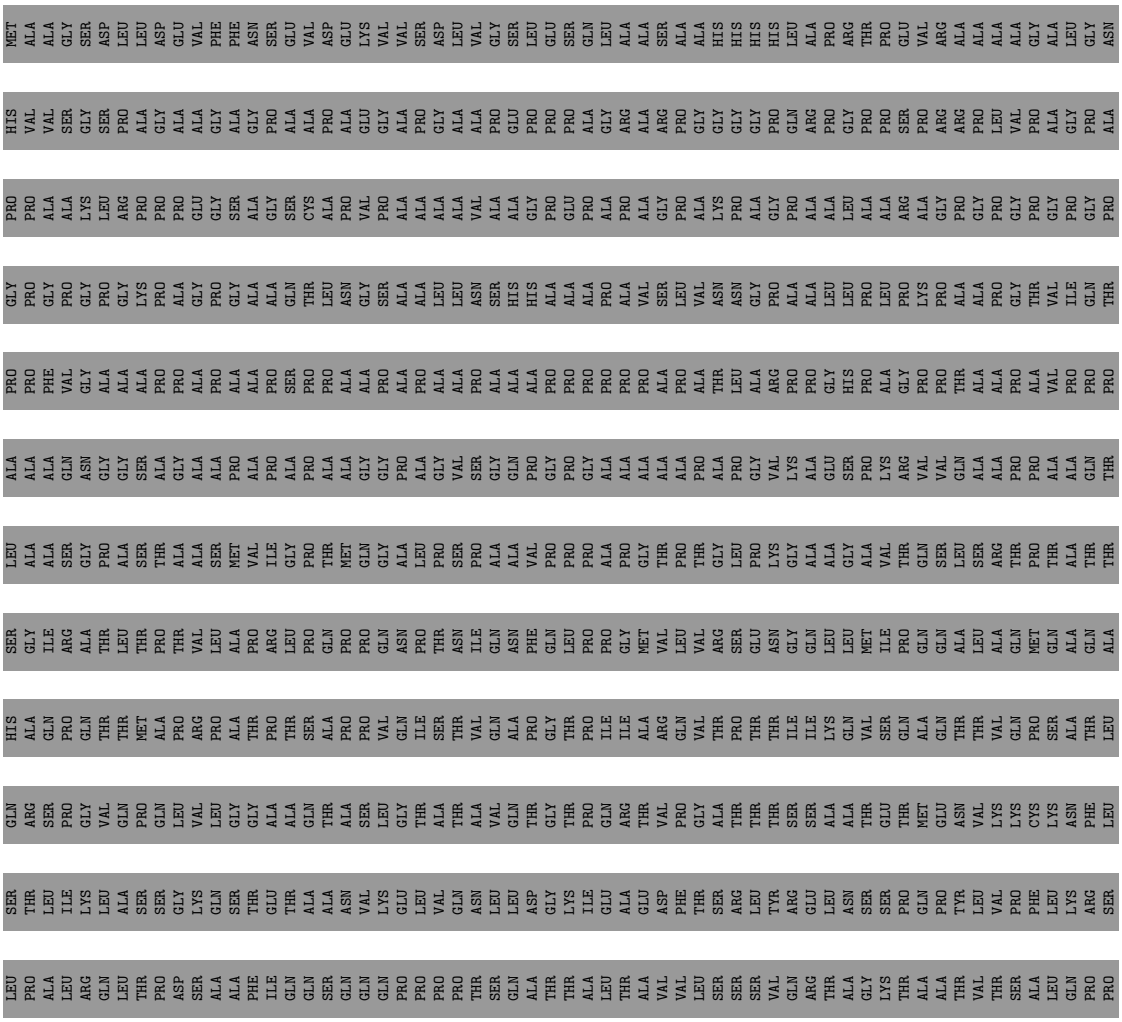


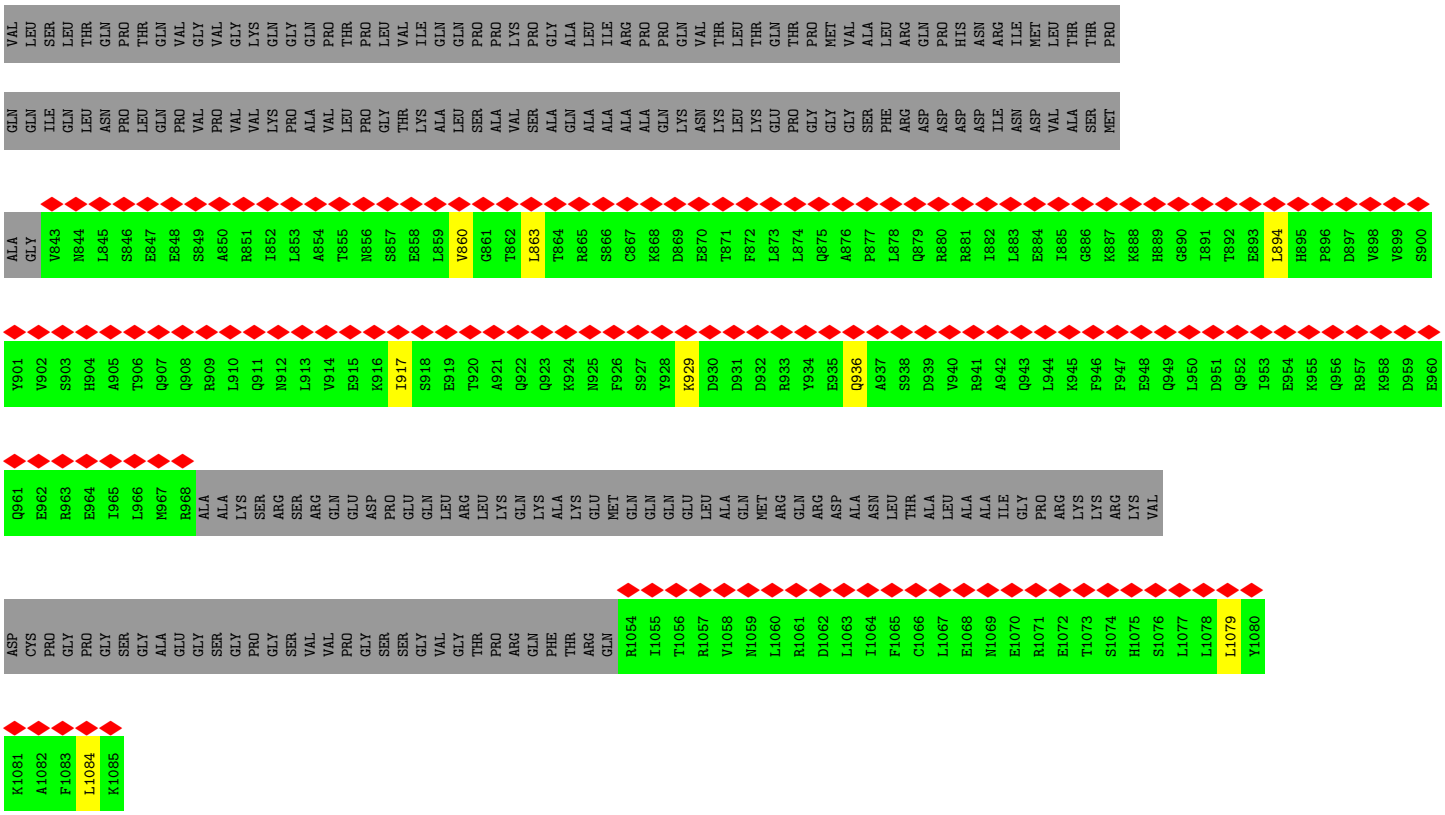
• Molecule 37: Transcription initiation factor TFIID subunit 4





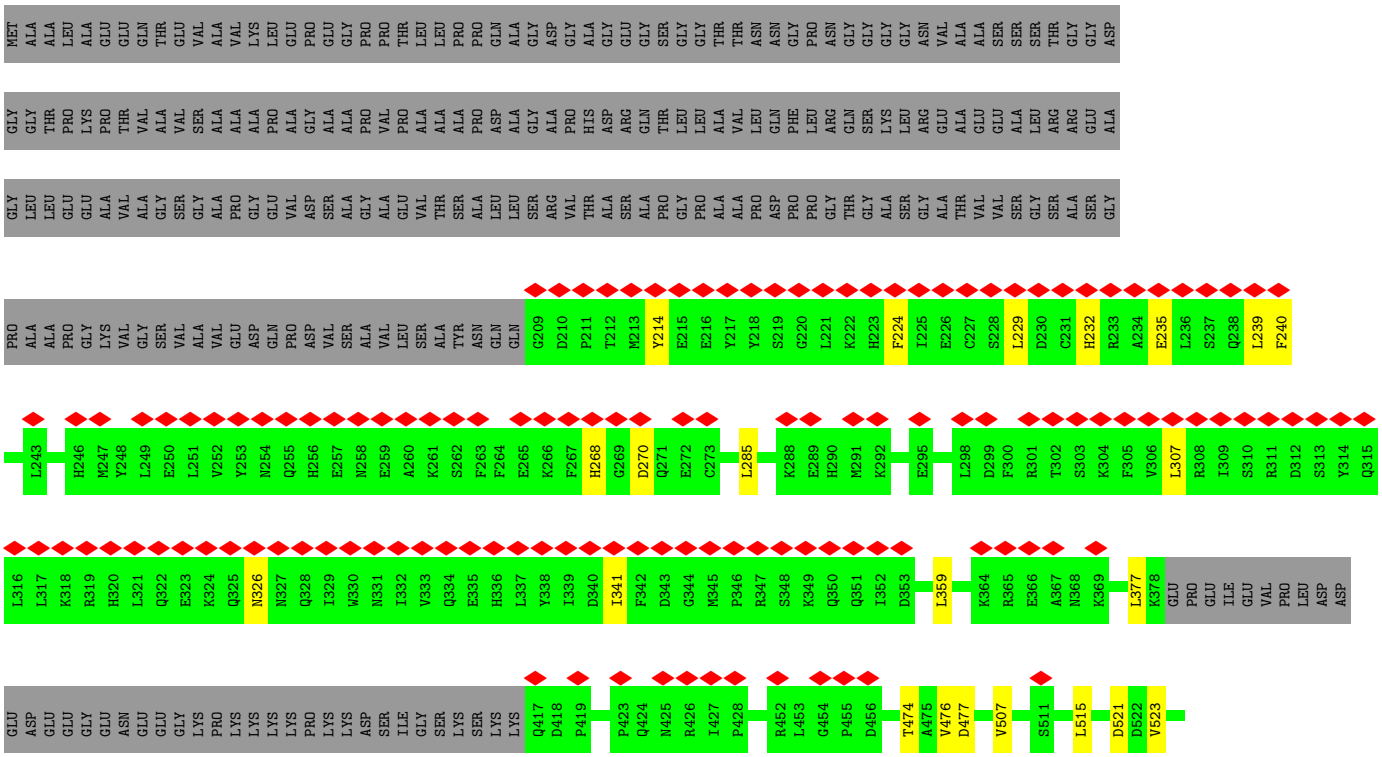
• Molecule 37: Transcription initiation factor TFIID subunit 4

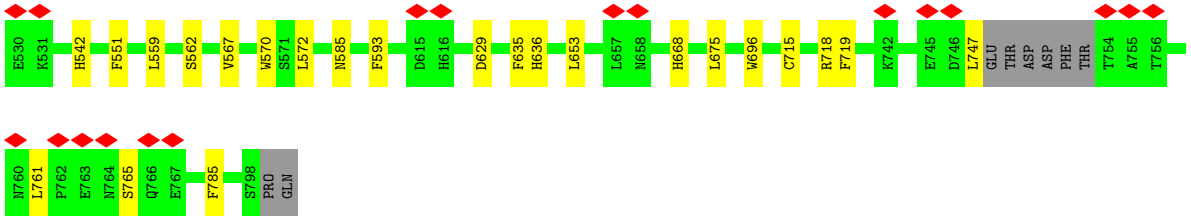




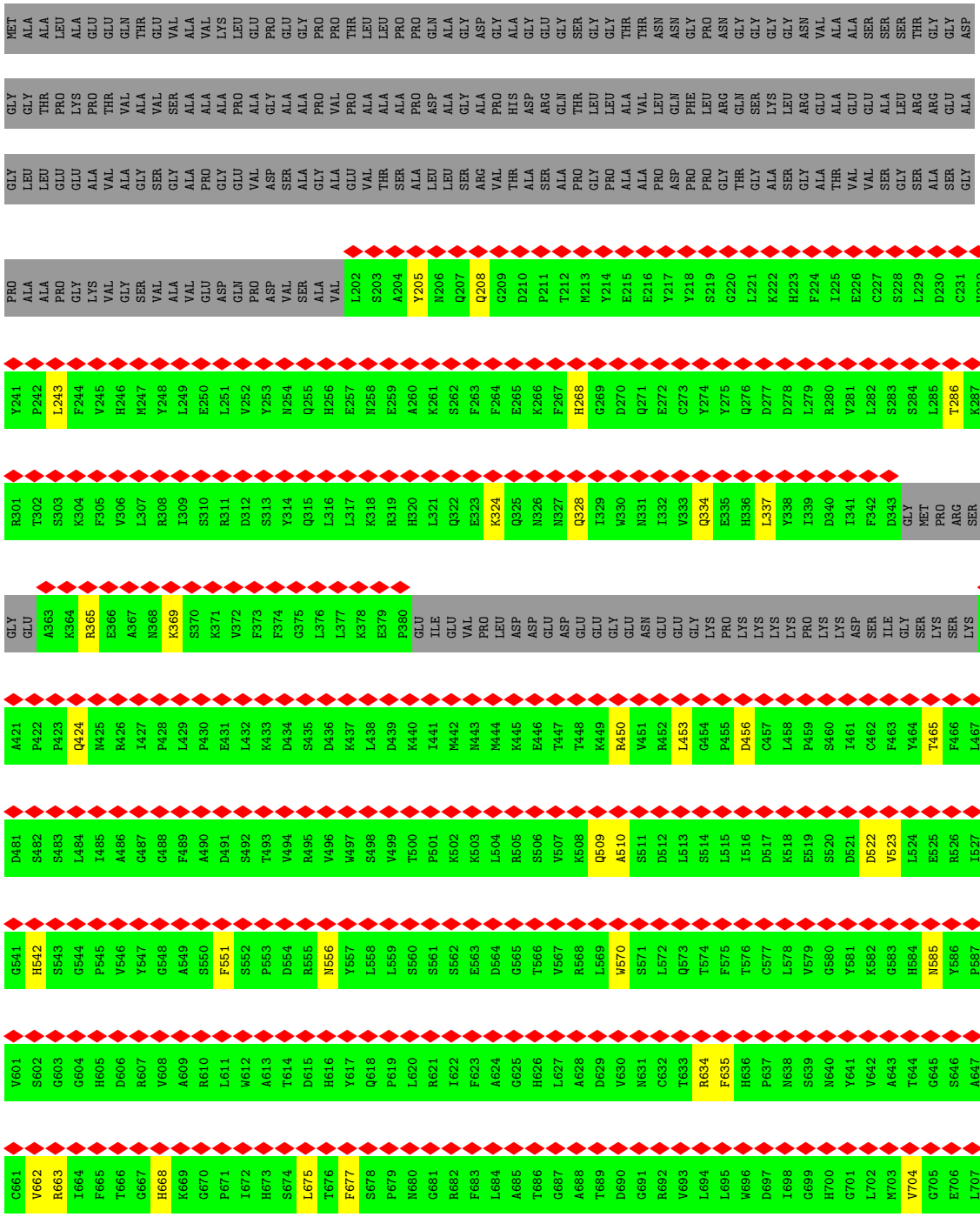
• Molecule 38: Transcription initiation factor TFIID subunit 5

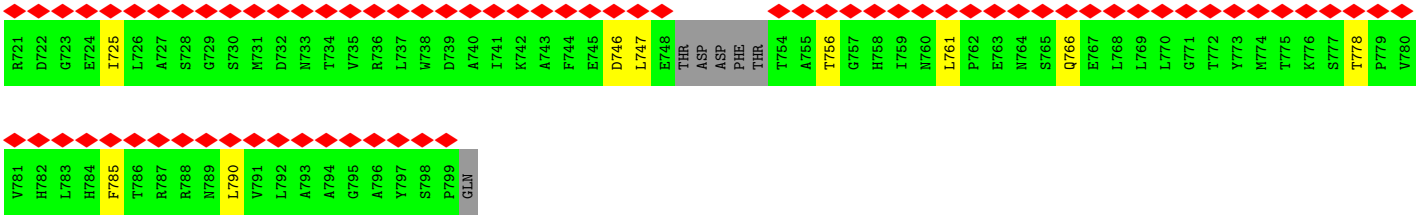
Chain DE:





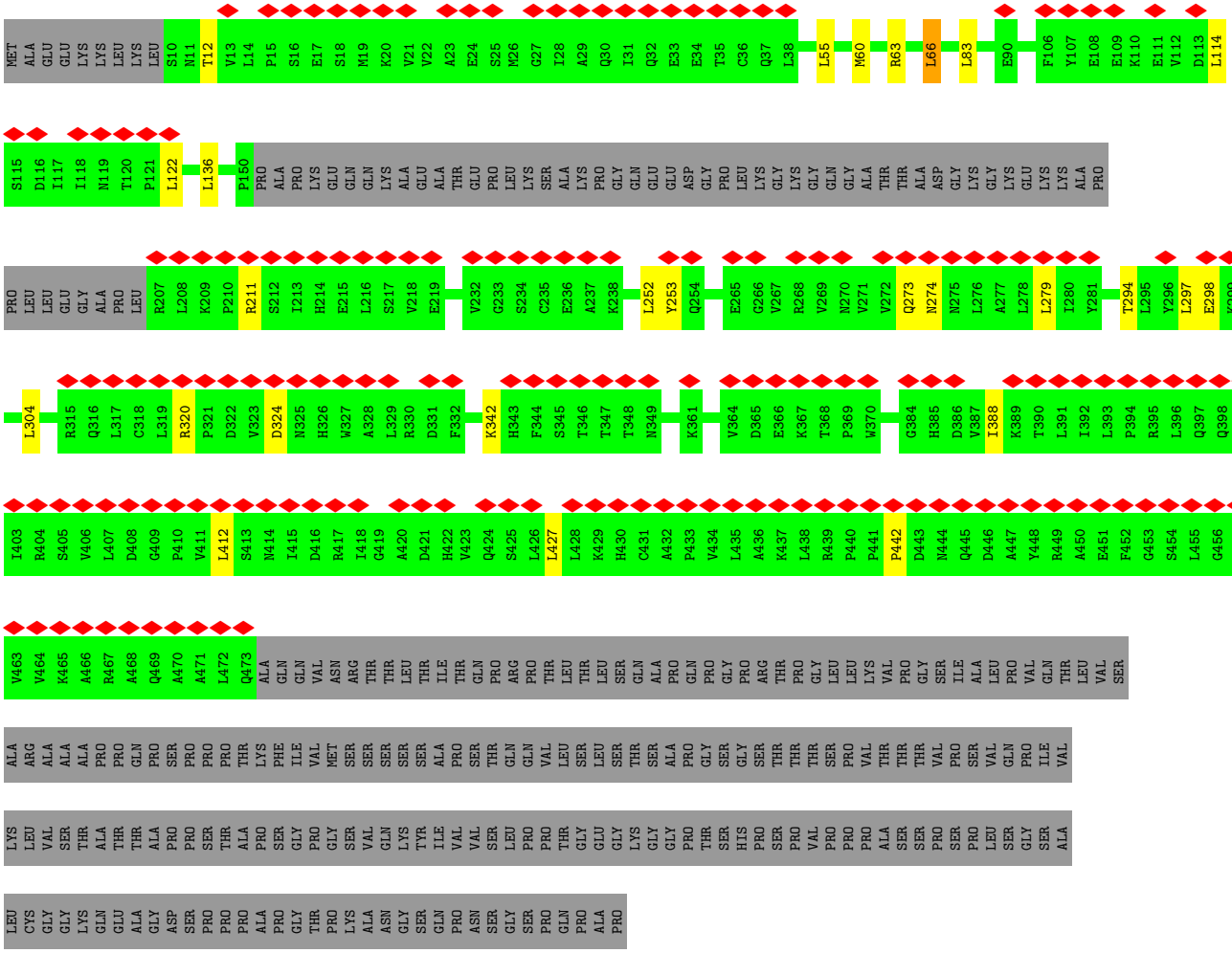
• Molecule 38: Transcription initiation factor TFIID subunit 5





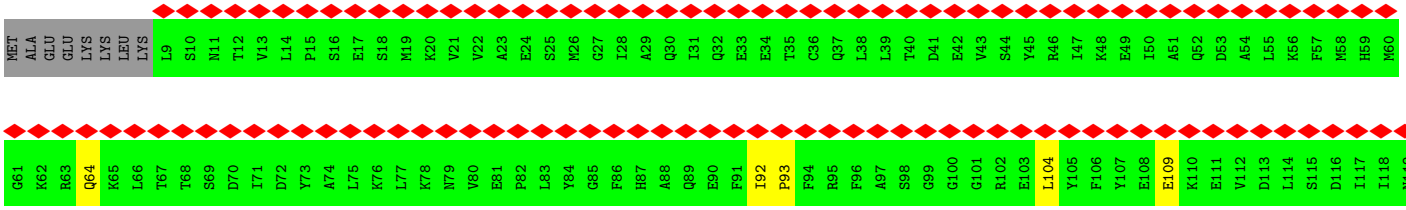
• Molecule 39: Transcription initiation factor TFIID subunit 6

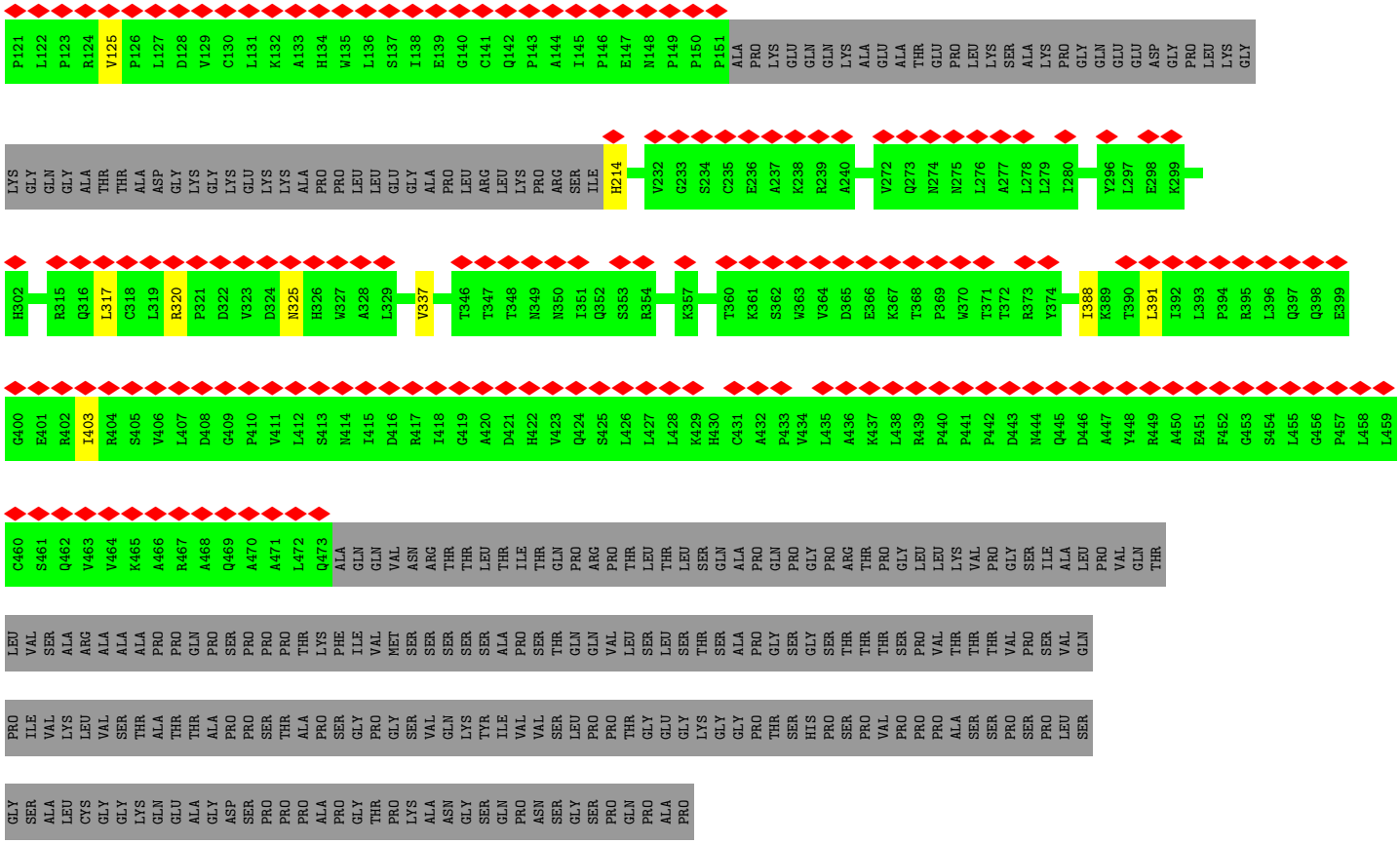
Chain DF:



• Molecule 39: Transcription initiation factor TFIID subunit 6

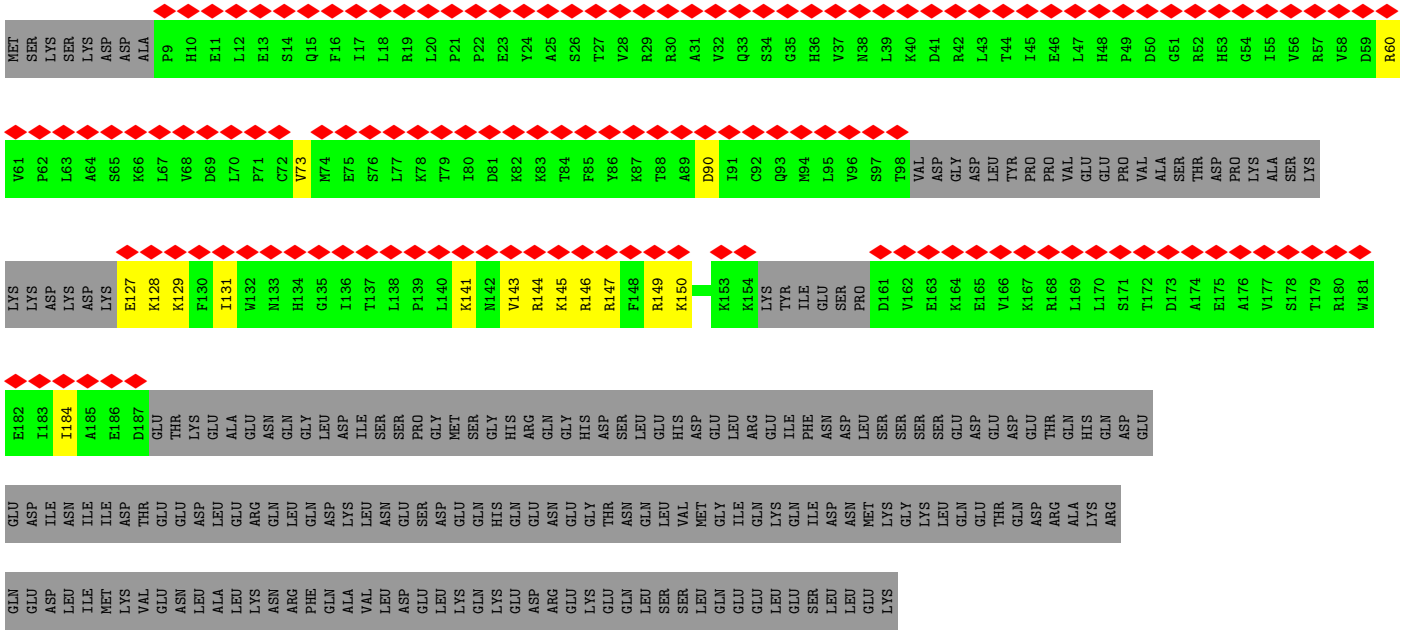
Chain Df:



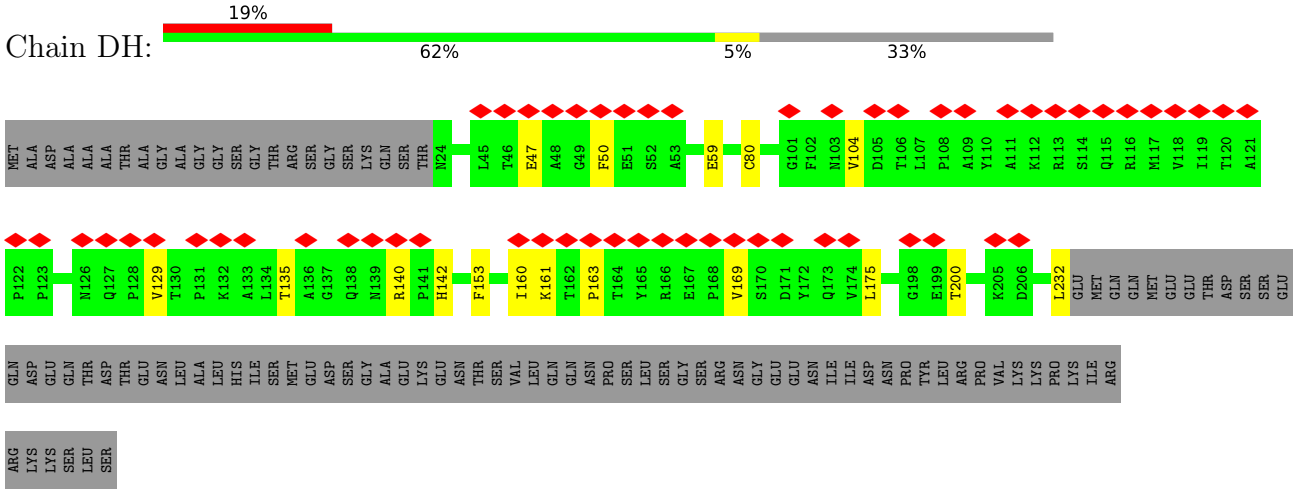


• Molecule 40: Transcription initiation factor TFIID subunit 7

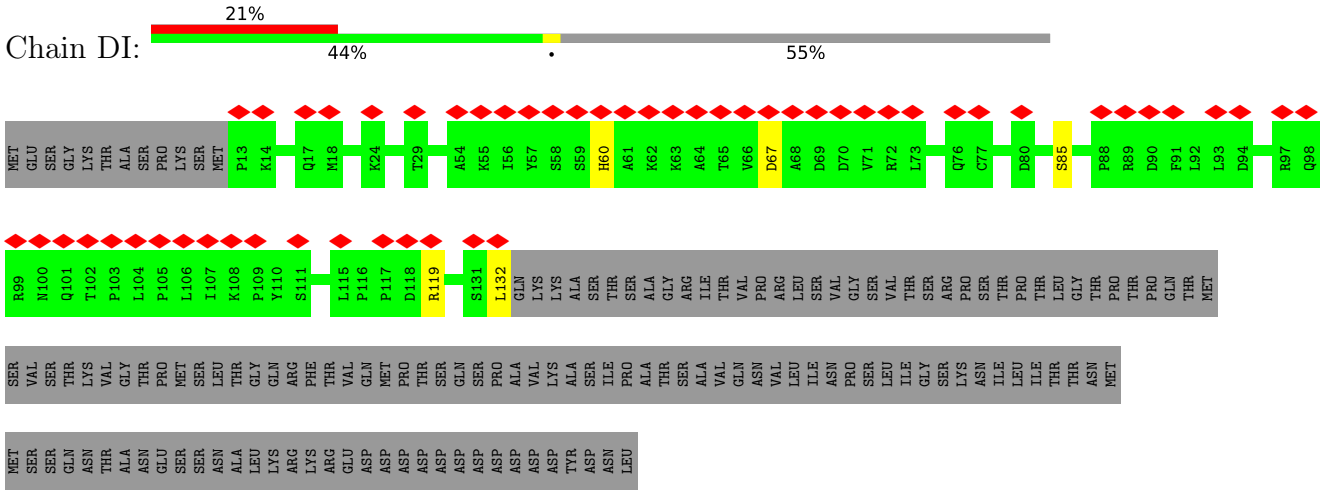
Chain DG:



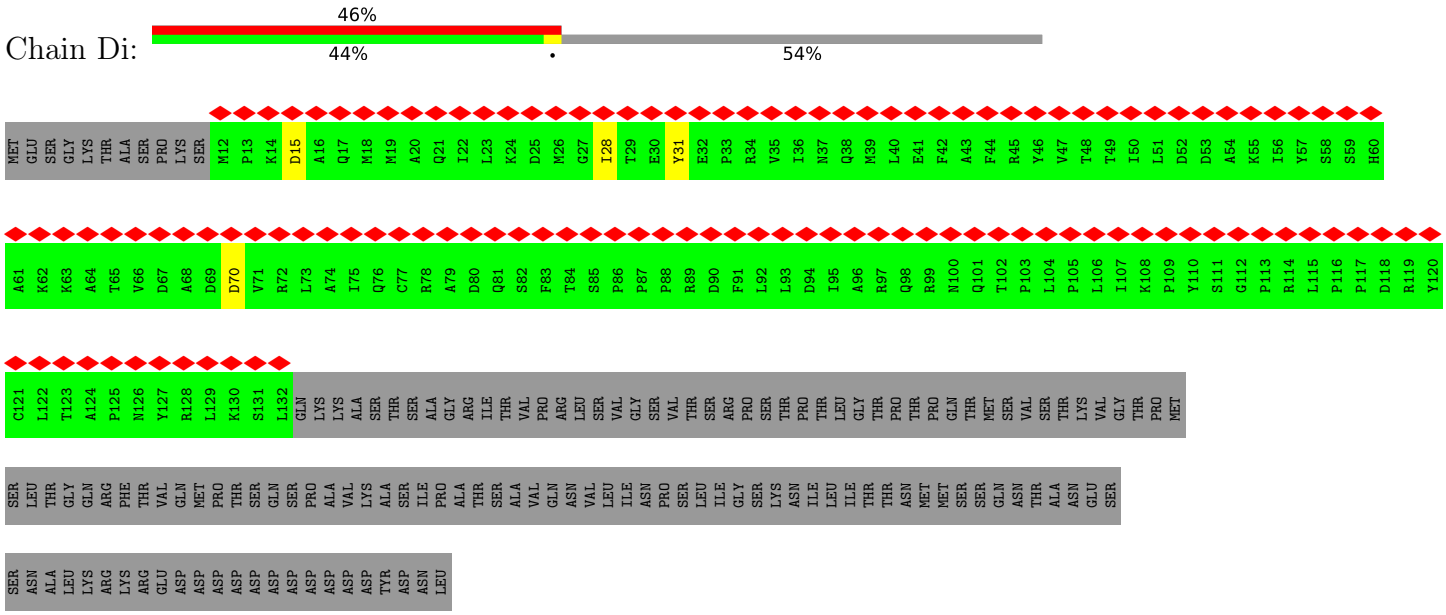
• Molecule 41: Transcription initiation factor TFIID subunit 8



• Molecule 42: Transcription initiation factor TFIID subunit 9

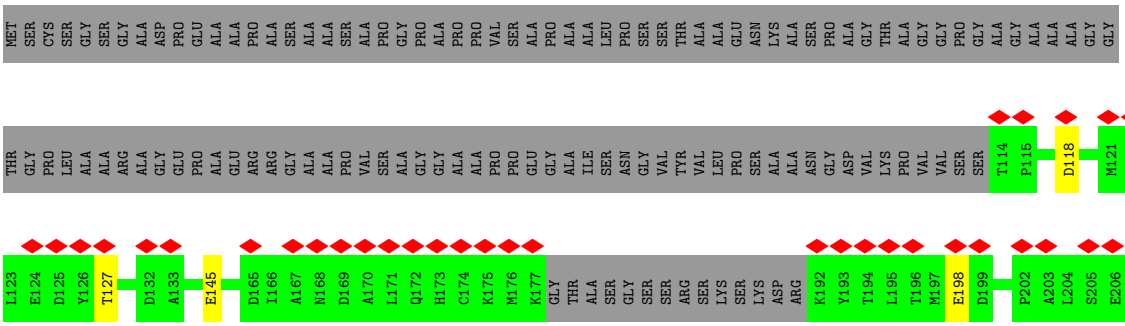


• Molecule 42: Transcription initiation factor TFIID subunit 9



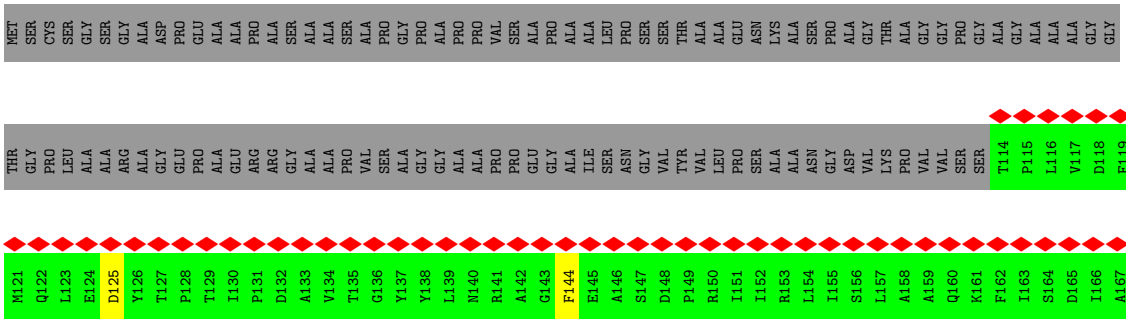
• Molecule 43: Transcription initiation factor TFIID subunit 10

Chain DJ:



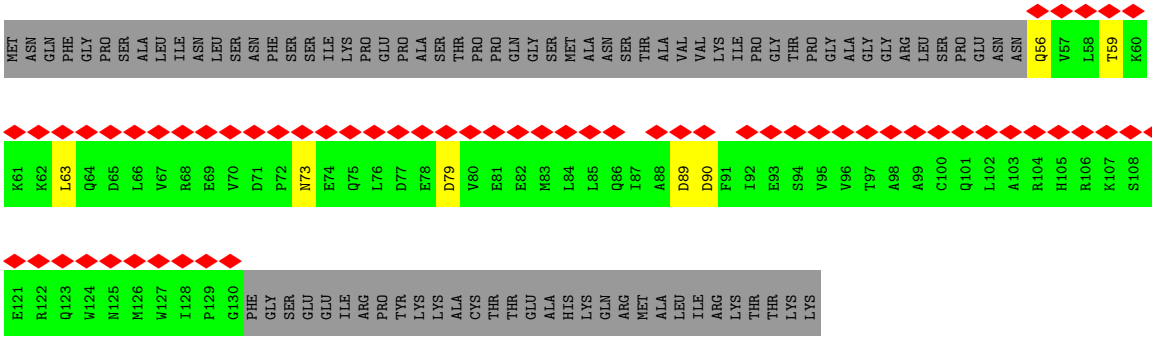
• Molecule 43: Transcription initiation factor TFIID subunit 10

Chain Dj:



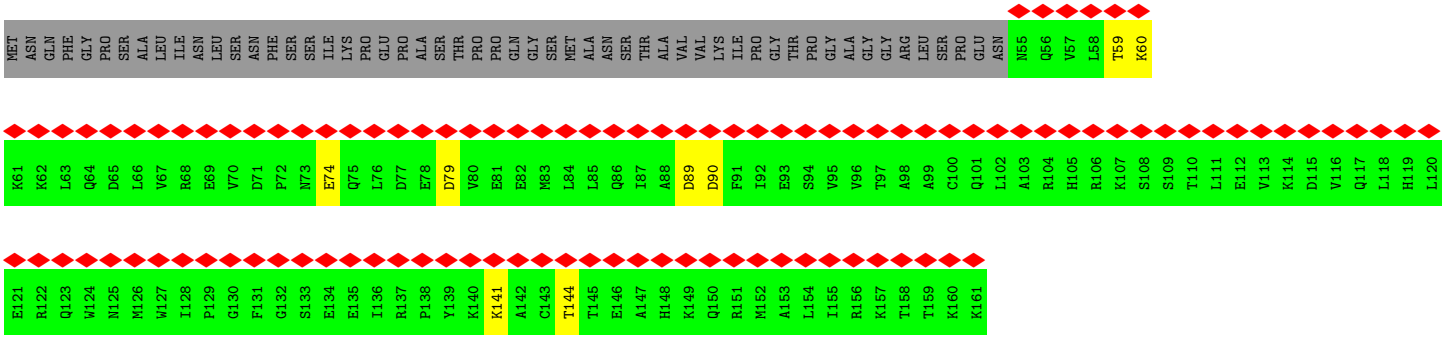
• Molecule 44: Transcription initiation factor TFIID subunit 12

Chain DL:

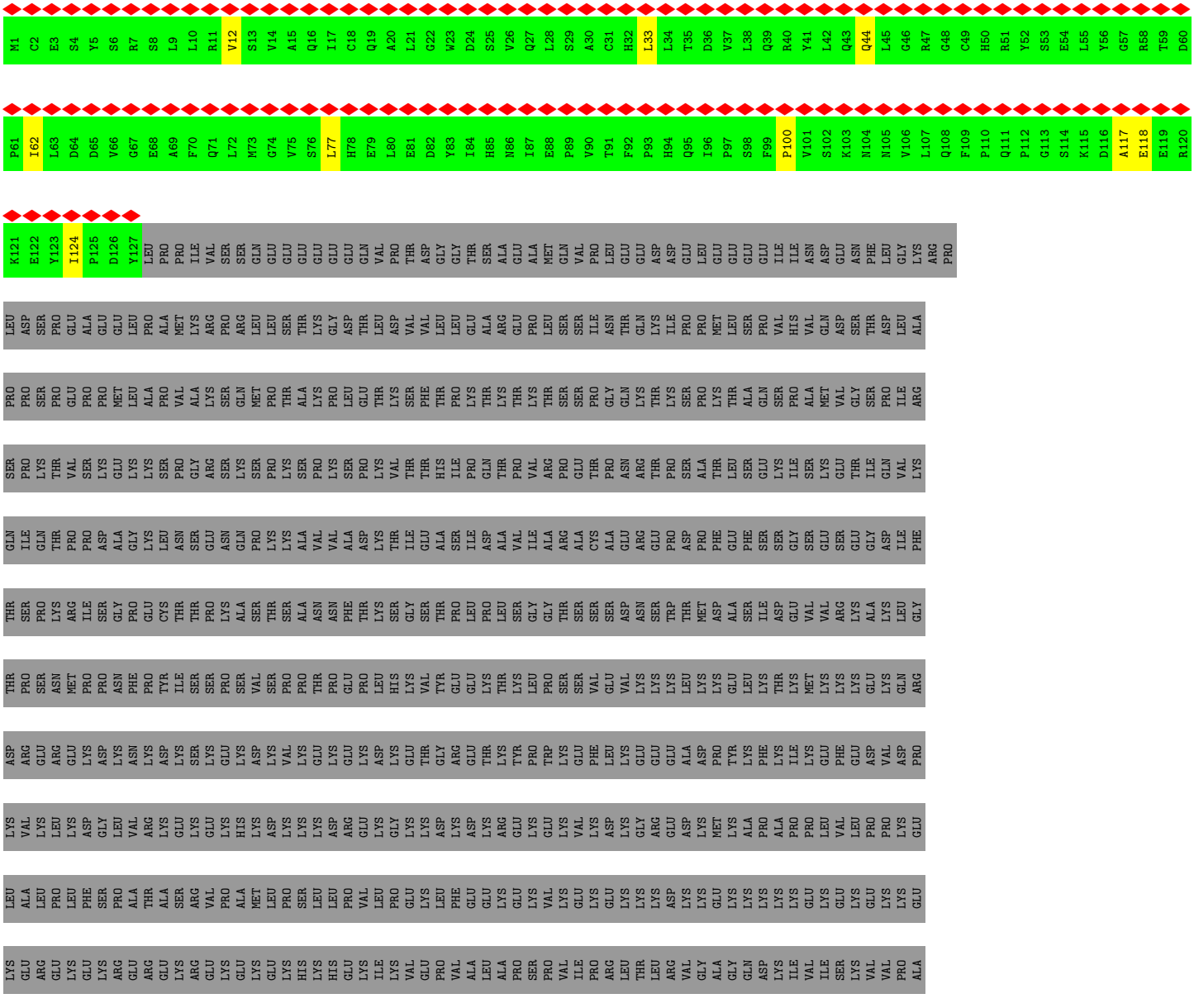


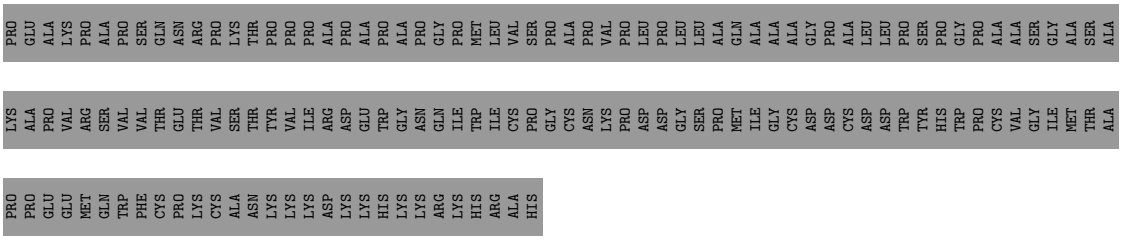
• Molecule 44: Transcription initiation factor TFIID subunit 12

Chain Dl:



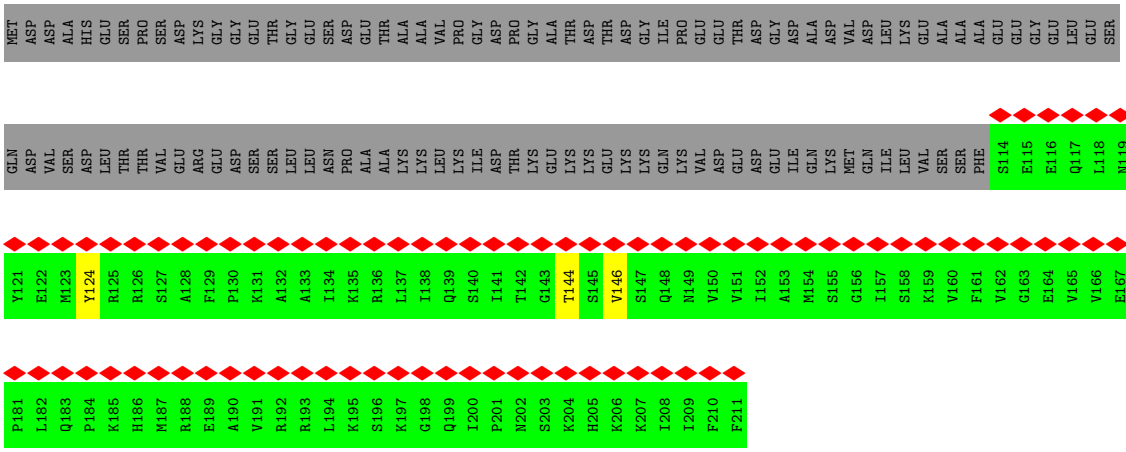
• Molecule 45: Transcription initiation factor TFIID subunit 3





• Molecule 46: Transcription initiation factor TFIID subunit 11

Chain Dk:

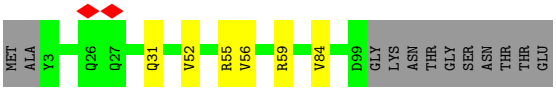


• Molecule 47: Transcription initiation factor TFIID subunit 13

Chain Dm:

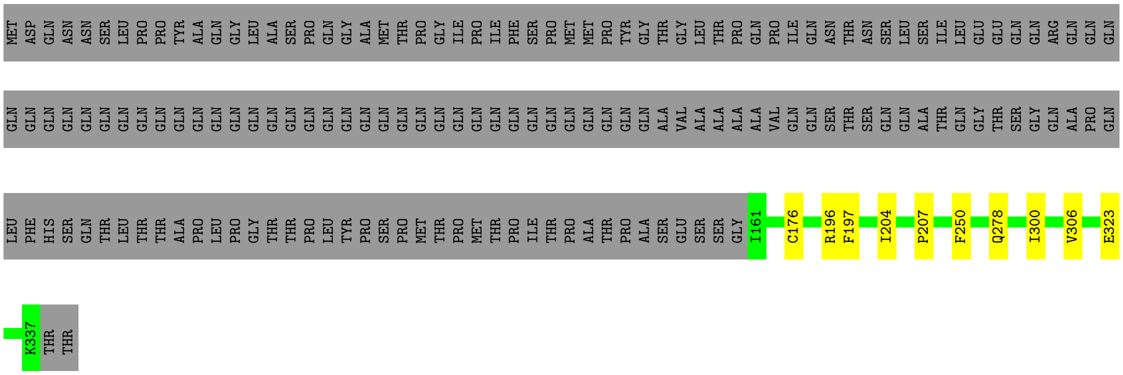
• Molecule 48: Transcription initiation factor IIA subunit 2

Chain DO:

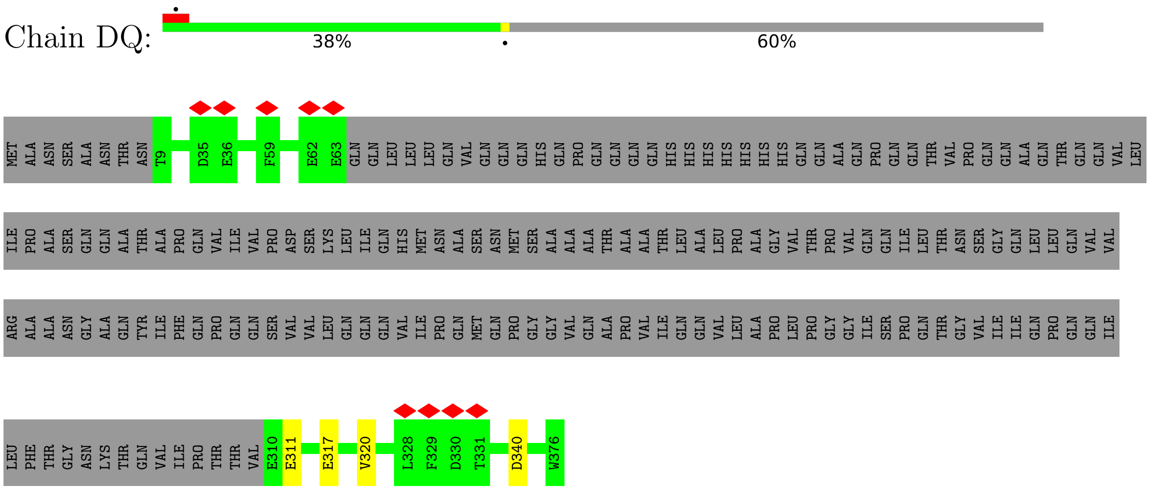


• Molecule 49: TATA-box-binding protein

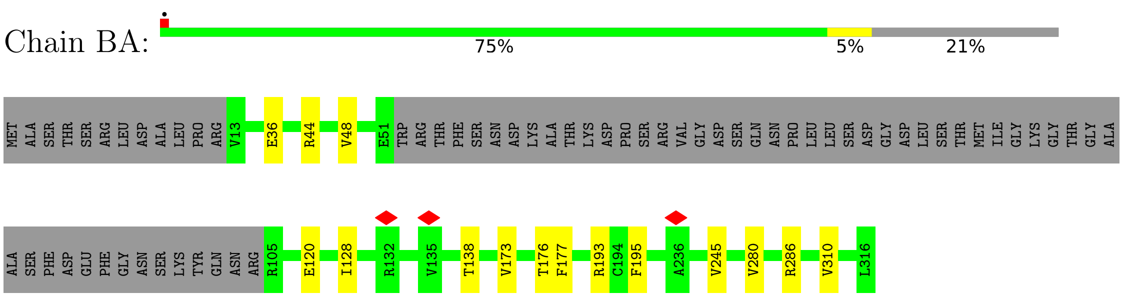
Chain DP:



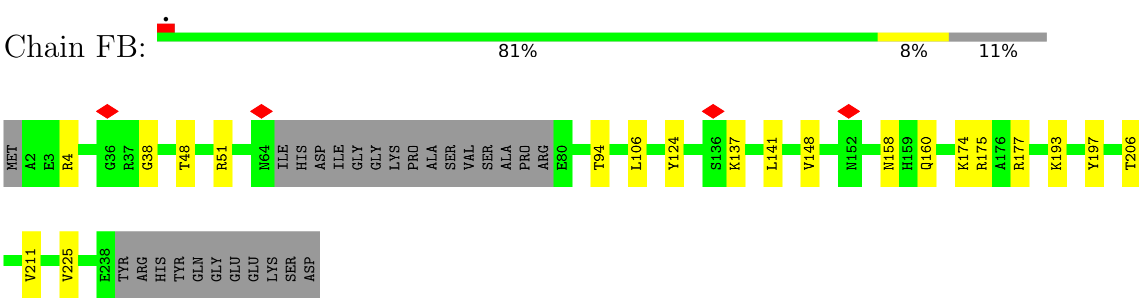
- Molecule 50: TFIIA-a



- Molecule 51: Transcription initiation factor IIB



- Molecule 52: General transcription factor IIF subunit 2

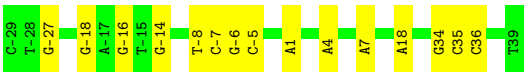


- Molecule 53: DNA (69-MER)

Chain X:

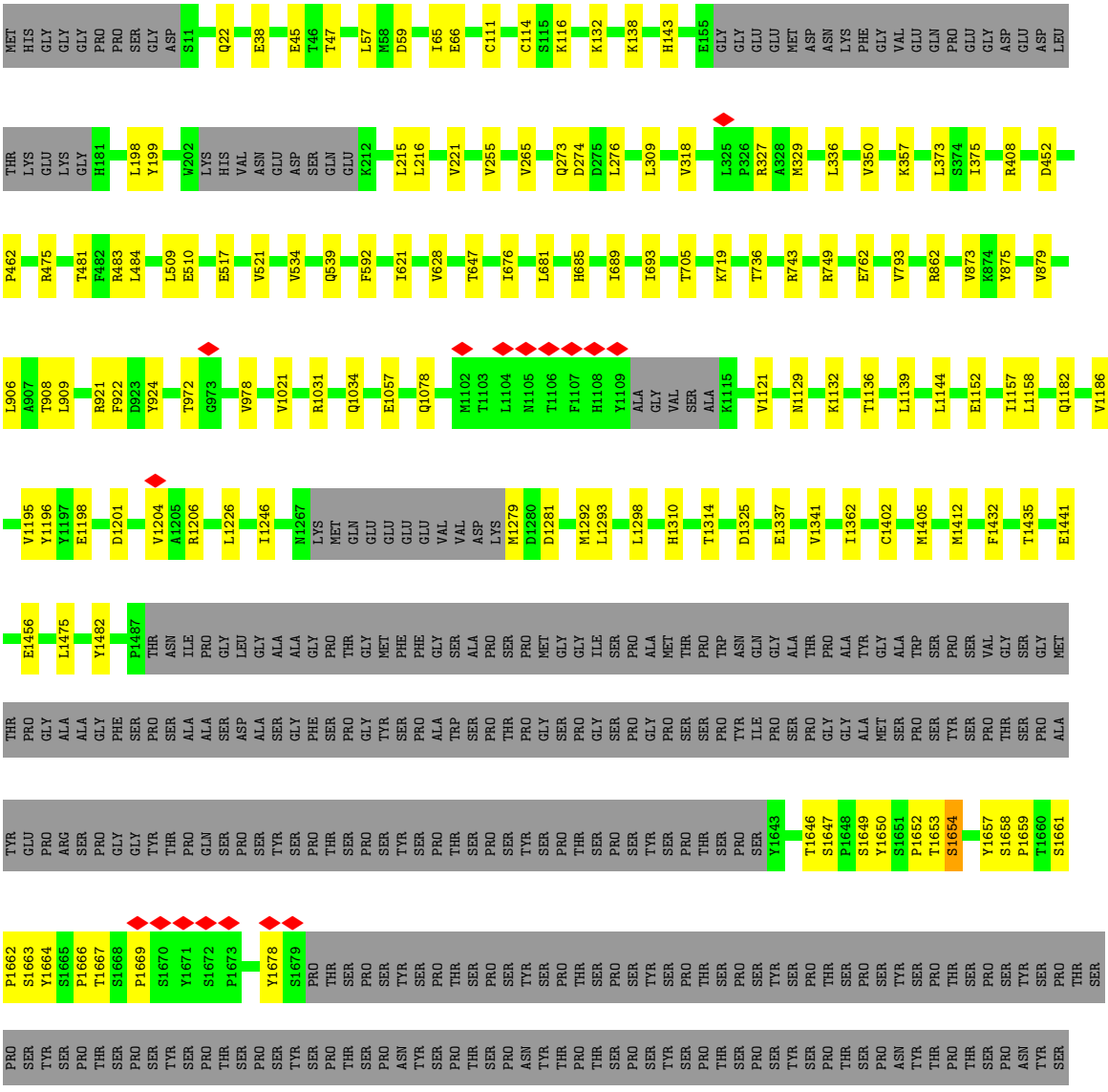
• Molecule 54: DNA (69-MER)

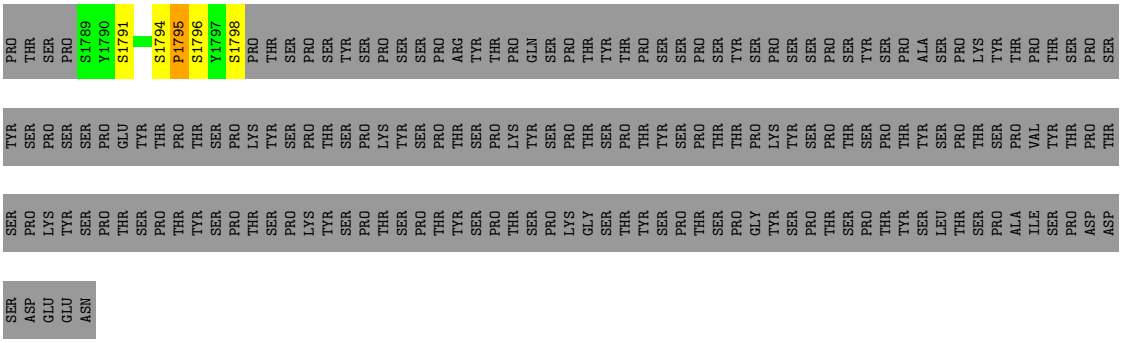
Chain Y:



• Molecule 55: RPB1

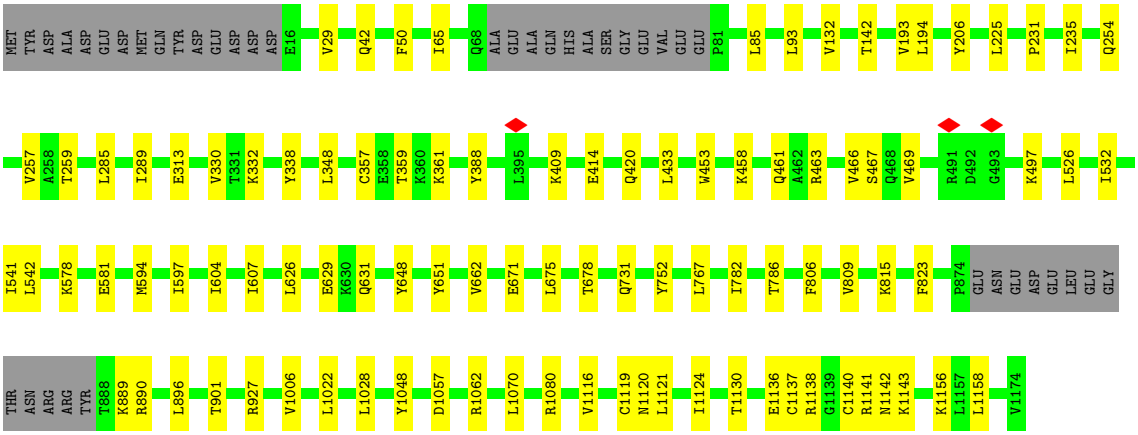
Chain PA:





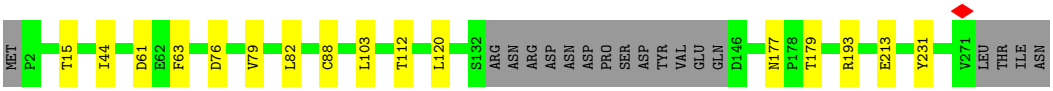
• Molecule 56: DNA-directed RNA polymerase subunit beta

Chain PB:



• Molecule 57: DNA-directed RNA polymerase II subunit RPB3

Chain PC:

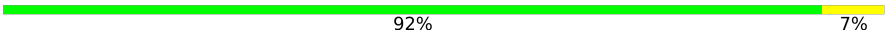


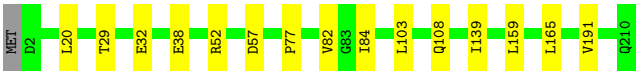
• Molecule 58: DNA-directed RNA polymerase II subunit RPB4

Chain PD:

• Molecule 59: DNA-directed RNA polymerase II subunit E

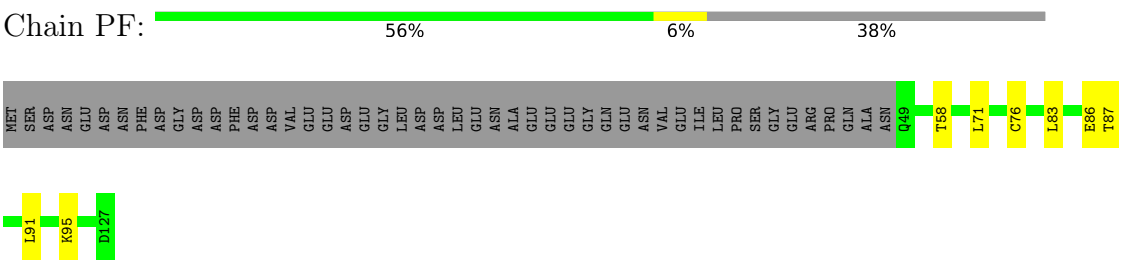
Chain PE:





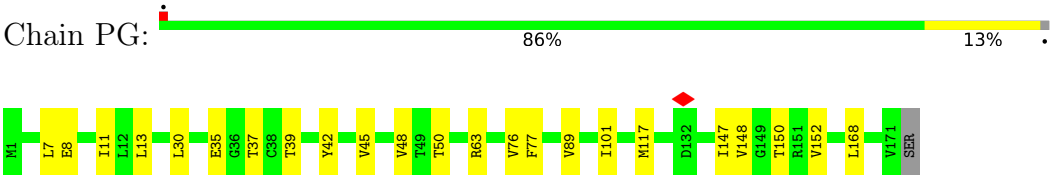
• Molecule 60: DNA-directed RNA polymerase II subunit F

Chain PF:



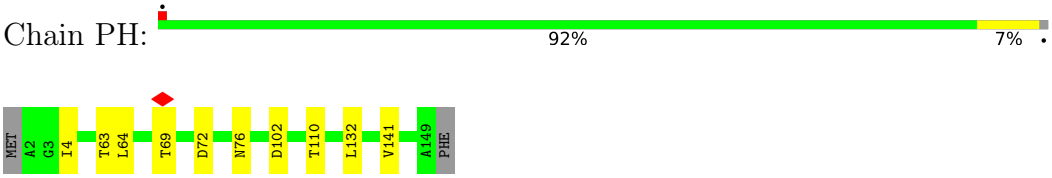
• Molecule 61: DNA-directed RNA polymerase II subunit RPB7

Chain PG:



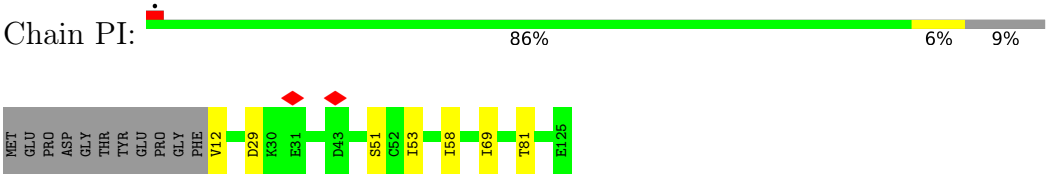
• Molecule 62: DNA-directed RNA polymerases I, II, and III subunit RPABC3

Chain PH:



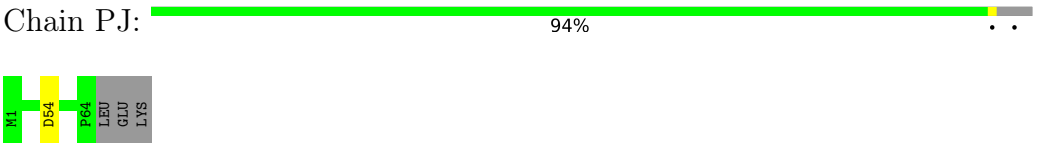
• Molecule 63: DNA-directed RNA polymerase II subunit RPB9

Chain PI:



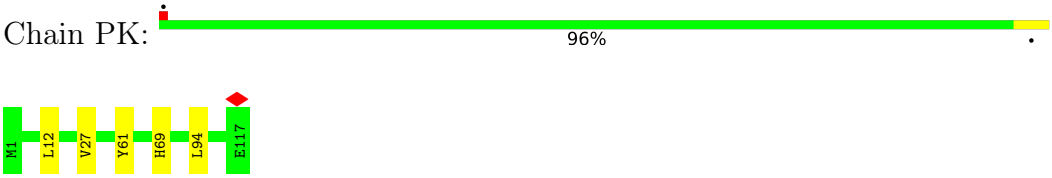
• Molecule 64: RPB10

Chain PJ:



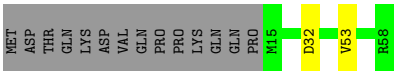
• Molecule 65: RNA_pol_L_2 domain-containing protein

Chain PK:



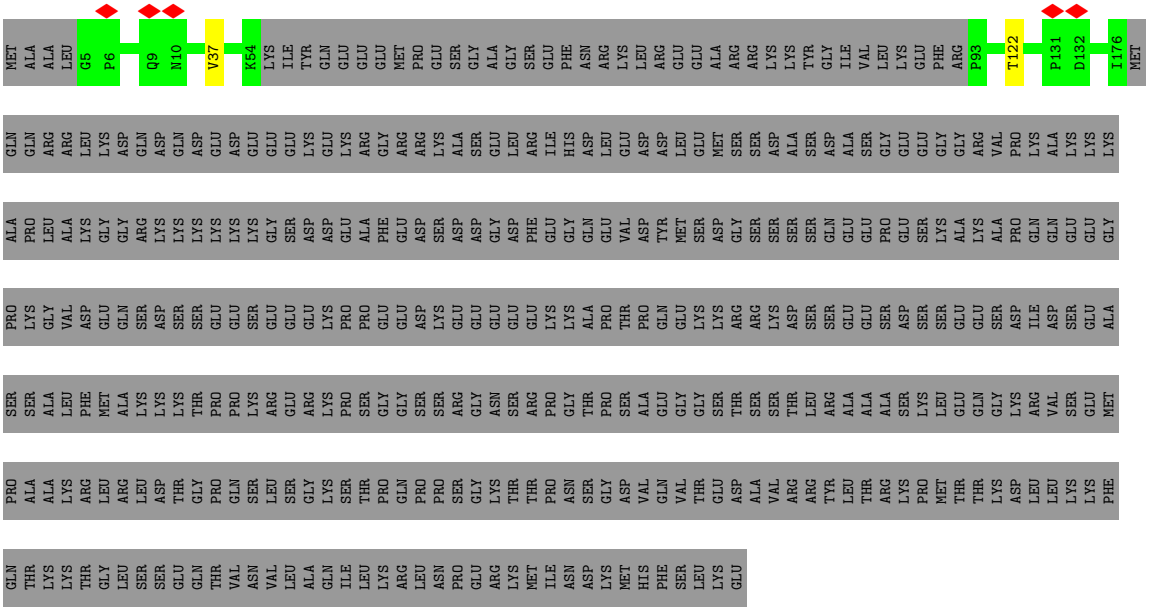
• Molecule 66: RPB12

Chain PL:



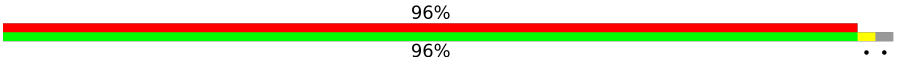
• Molecule 67: General transcription factor IIF subunit 1

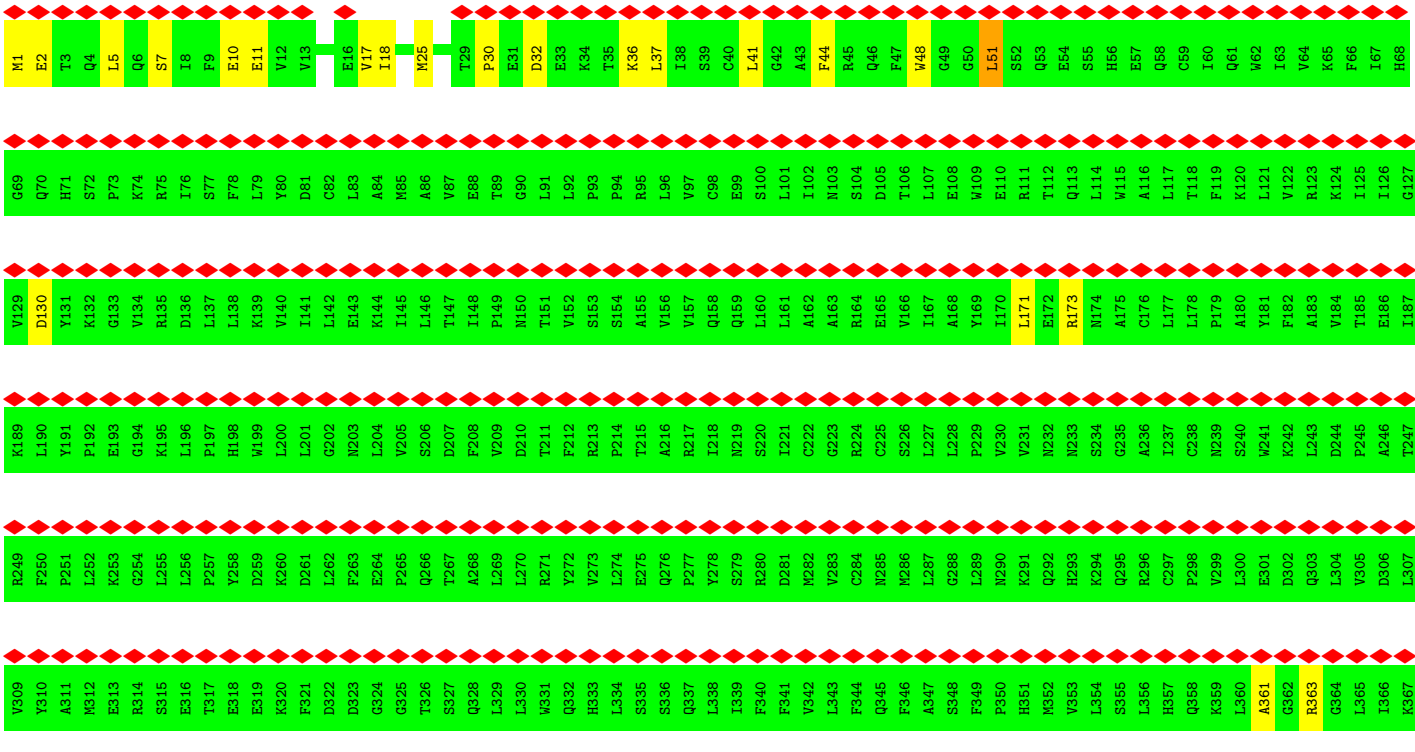
Chain FA:

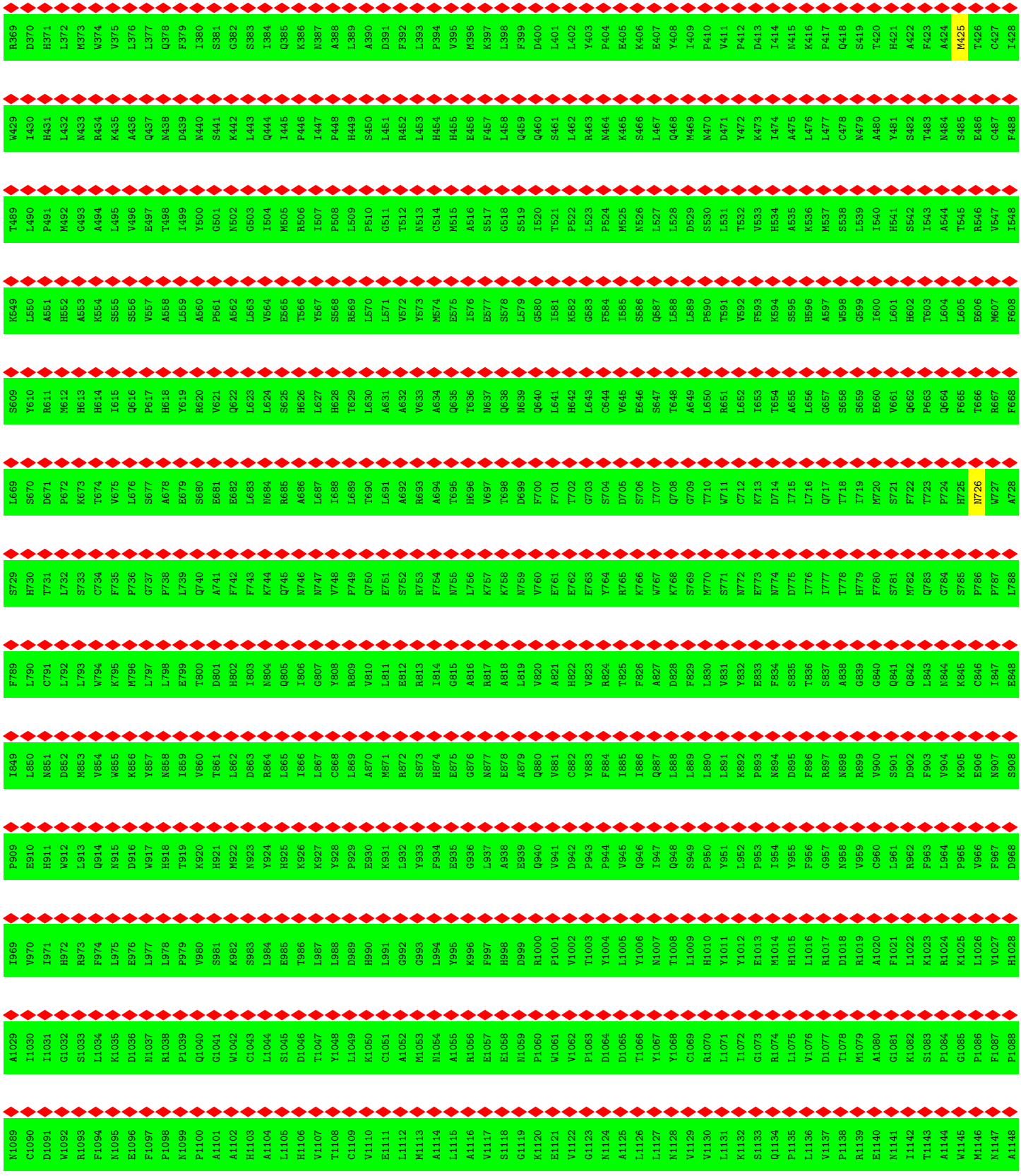


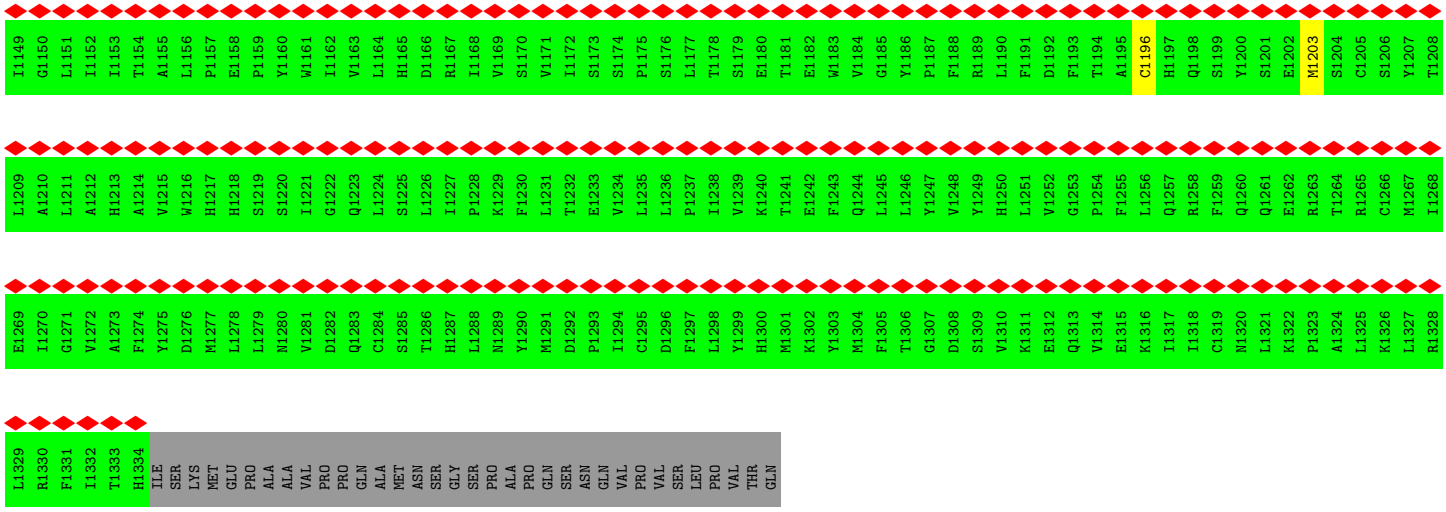
• Molecule 68: Mediator of RNA polymerase II transcription subunit 23

Chain w:



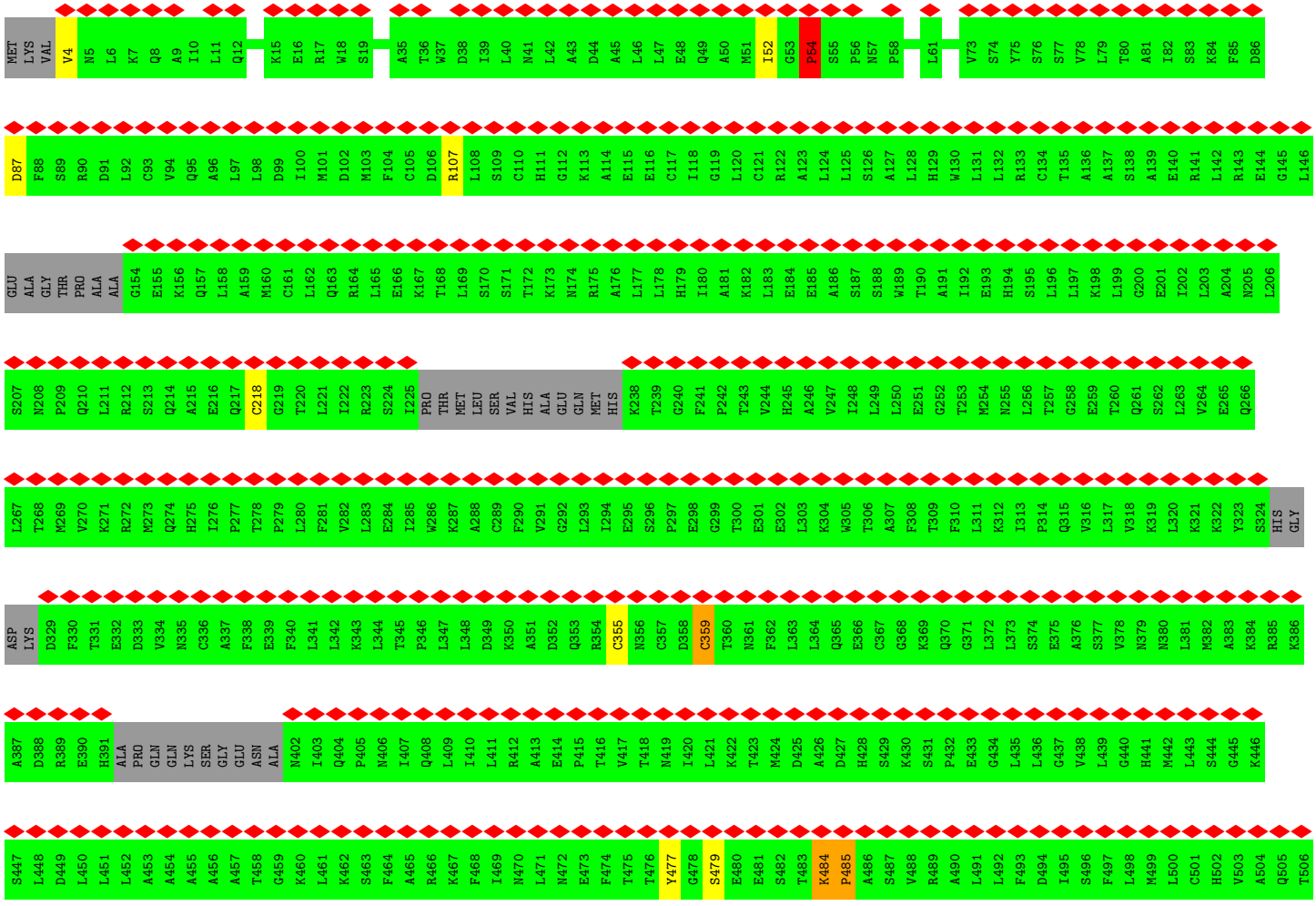


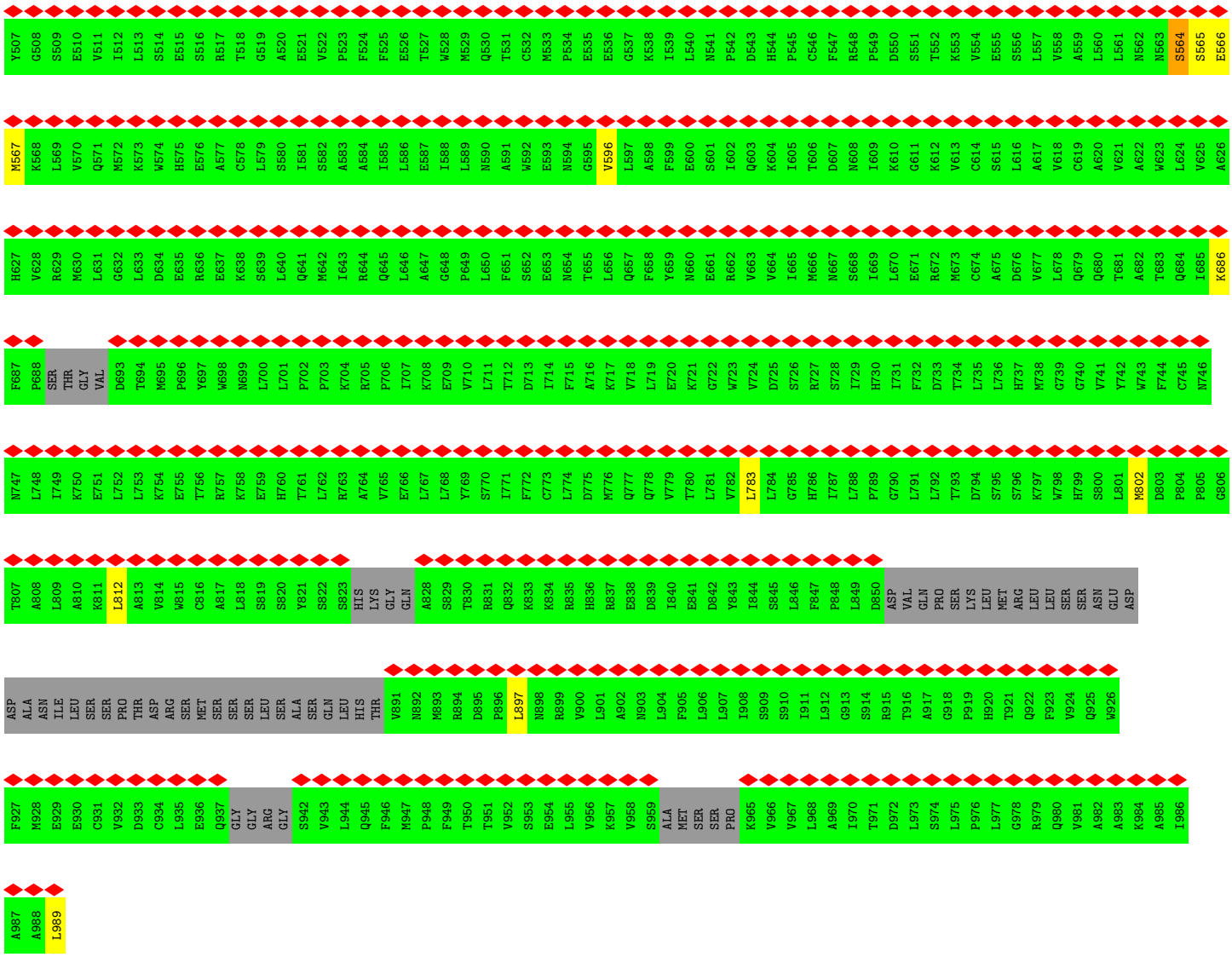

R369 D370 H371 L372 M373 W374 V375 L376 L377 Q378 F379 I380 S381 G382 S383 I384 Q385 K386 N387 A388 L389 A390 D391 F392 L393 P394 V395 M396 K397 L398 F399 D400 L401 L402 Y403 P404 E405 K406 E407 Y408 I409 P410 V411 P412 D413 I414 N415 K416 P417 Q418 S419 T420 H421 A422 F423 A424 M425 T426 C427 I428
W429 I430 H431 L432 N433 R434 K435 A436 Q437 N438 D439 N440 S441 K442 L443 Q444 I445 P446 I447 P448 H449 S450 L451 R452 L453 H454 H455 E456 F457 L458 Q459 Q460 S461 L462 R463 N464 K465 S466 L467 Q468 M469 N470 D471 Y472 K473 I474 A475 L476 L477 C478 N479 A480 Y481 S482 T483 N484 S485 E486 C487 F488
T489 L490 P491 M492 G493 A494 L495 V496 E497 T498 I499 Y500 G501 N502 G503 I504 M505 R506 I507 P508 L509 P510 G511 T512 N513 C514 M515 A516 S517 G518 S519 I520 T521 P522 L523 P524 M525 N526 L527 L528 D529 S530 L531 T532 V533 H534 A535 K536 M537 S538 L539 I540 H541 S542 I543 A544 T545 R546 V547 I548
K549 L550 A551 H552 A553 K554 S555 S556 V557 A558 L559 A560 P561 A562 L563 V564 E565 T566 Y567 S568 R569 L570 L571 V572 Y573 M574 E575 I576 E577 S578 L579 G580 I581 K582 G583 F584 I585 S586 Q587 L588 L589 P590 T591 V592 F593 K594 S595 H596 A597 W598 G599 I600 L601 H602 T603 L604 L605 E606 M607 F608
S609 Y610 R611 M612 H613 H614 I615 Q616 P617 H618 Y619 R620 V621 Q622 L623 L624 S625 H626 L627 H628 T629 L630 A631 A632 V633 A634 Q635 T636 N637 Q638 N639 Q640 L641 H642 L643 C644 V645 E646 S647 T648 A649 L650 R651 L652 I653 T654 A655 L656 G657 S658 S659 E660 V661 Q662 P663 Q664 F665 T666 R667 F668
L669 S670 D671 P672 K673 T674 V675 L676 S677 A678 E679 S680 E681 E682 L683 N684 R685 A686 L687 I688 L689 T690 L691 A692 R693 A694 T695 H696 V697 T698 D699 F700 F701 T702 G703 S704 D705 S706 I707 Q708 G709 T710 W711 C712 K713 D714 I715 L716 Q717 T718 I719 M720 S721 F722 T723 P724 H725 N726 W727 A728
S729 H730 T731 L732 S733 C734 F735 P736 G737 P738 L739 Q740 A741 F742 F743 K744 Q745 N746 N747 V748 P749 Q750 E751 S752 R753 F754 N755 L756 K757 K758 N759 V760 E761 E762 E763 Y764 R765 K766 W767 K768 S769 M770 S771 N772 E773 N774 D775 I776 I777 T778 H779 F780 S781 M782 Q783 G784 S785 P786 F787 L788
F789 L790 C791 L792 L793 W794 K795 M796 L797 L798 E799 T800 D801 H802 I803 N804 Q805 I806 G807 Y808 R809 V810 L811 E812 R813 I814 G815 A816 R817 A818 L819 V820 A821 H822 V823 R824 T825 F826 A827 D828 F829 L830 V831 Y832 E833 F834 S835 T836 S837 A838 G839 G840 Q841 Q842 L843 N844 K845 C846 I847 E848
I849 L850 N851 D852 M853 V854 W855 K856 Y857 N858 I859 V860 T861 L862 D863 R864 L865 I866 L867 C868 L869 A870 M871 R872 S873 H874 E875 G876 N877 E878 A879 Q880 V881 C882 Y883 F884 I885 I886 Q887 L888 L889 L890 L891 K892 P893 N894 D895 F896 R897 N898 R899 V900 S901 D902 F903 V904 K905 E906 N907 S908
P909 E910 H911 W912 L913 Q914 N915 D916 W917 H918 T919 K920 H921 M922 N923 Y924 H925 K926 K927 Y928 P929 E930 K931 L932 Y933 F934 E935 G936 L937 A938 E939 Q940 V941 D942 P943 P944 V945 Q946 I947 Q948 S949 P950 Y951 L952 P953 I954 Y955 F956 G957 N958 V959 C960 L961 R962 F963 L964 P965 V966 F967 D968
I969 V970 I971 W972 R973 F974 L975 E976 L977 L978 P979 V980 S981 K982 S983 L984 E985 T986 L987 L988 D989 H990 L991 G992 G993 L994 Y995 K996 F997 H998 D999 R1000 P1001 V1002 T1003 Y1004 L1005 Y1006 N1007 T1008 L1009 H1010 Y1011 Y1012 E1013 M1014 H1015 L1016 R1017 D1018 R1019 A1020 F1021 L1022 K1023 R1024 K1025 L1026 V1027 H1028
A1029 I1030 I1031 G1032 S1033 L1034 K1035 D1036 N1037 R1038 P1039 Q1040 G1041 W1042 C1043 L1044 S1045 D1046 T1047 Y1048 L1049 K1050 C1051 A1052 M1053 N1054 A1055 R1056 E1057 E1058 N1059 P1060 W1061 V1062 P1063 D1064 D1065 T1066 Y1067 Y1068 C1069 R1070 L1071 I1072 G1073 R1074 L1075 V1076 D1077 T1078 M1079 A1080 G1081 K1082 S1083 P1084 G1085 P1086 F1087 P1088
N1089 C1090 D1091 W1092 R1093 F1094 N1095 E1096 F1097 P1098 N1099 P1100 A1101 A1102 H1103 A1104 L1105 H1106 V1107 T1108 C1109 V1110 E1111 L1112 M1113 A1114 L1115 A1116 V1117 S1118 G1119 K1120 E1121 V1122 G1123 N1124 A1125 L1126 L1127 N1128 V1129 V1130 L1131 K1132 S1133 Q1134 P1135 L1136 V1137 P1138 R1139 E1140 N1141 I1142 T1143 A1144 W1145 M1146 N1147 A1148



• Molecule 69: Mediator of RNA polymerase II transcription subunit 24

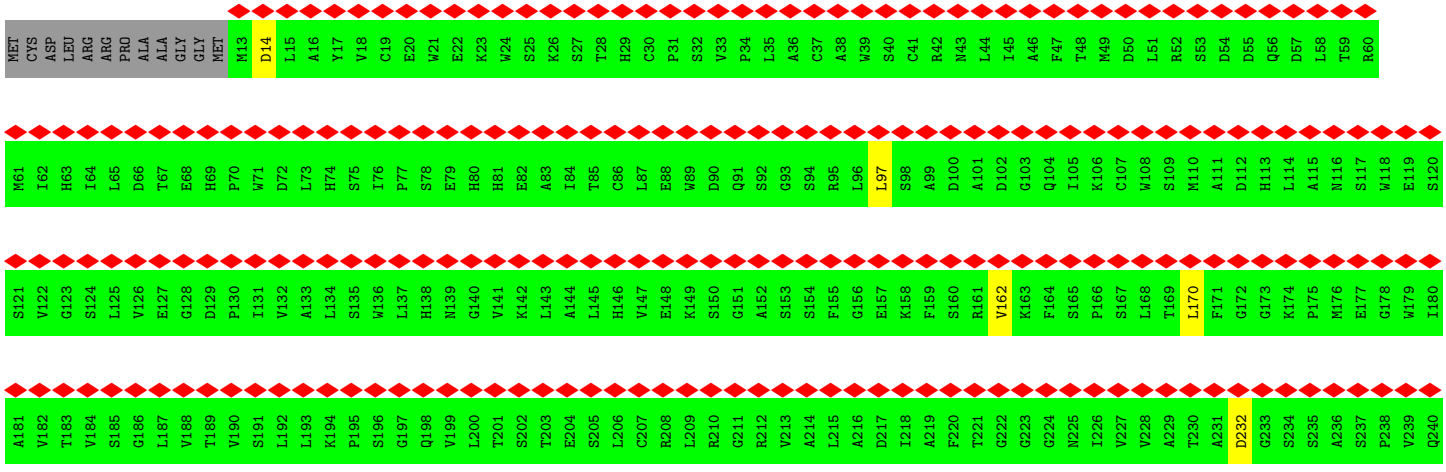
Chain x:

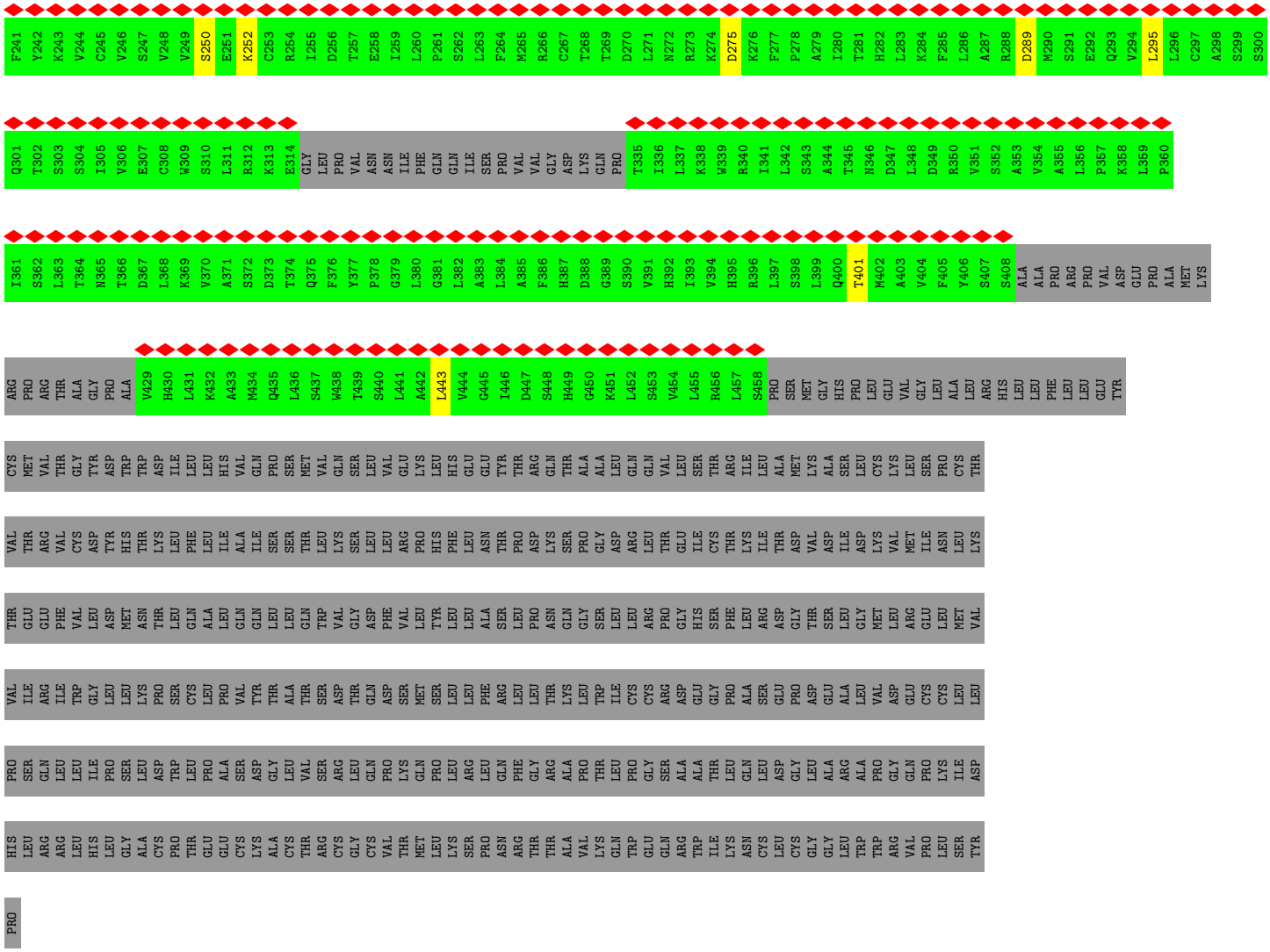




• Molecule 70: Isoform 2 of Mediator of RNA polymerase II transcription subunit 16

Chain p:




F241 Y242 K243 V244 C245 V246 S247 V248 V249 S250 E251 K252 C253 R254 I255 D256 T257 E258 I259 L260 P261 S262 L263 F264 M265 R266 C267 T268 T269 D270 L271 N272 R273 K274 D275 K276 F277 P278 A279 I280 T281 H282 L283 K284 F285 L286 A287 R288 D289 M290 S291 E292 Q293 V294 L295 L296 C297 A298 S299 S300
Q301 T302 S303 S304 I305 V306 E307 C308 W309 S310 L311 R312 K313 E314 GLY LEU PRO VAL ASN ASN ILE PHE GLN GLN ILE SER PRO VAL VAL GLY ASP LYS GLN PRO T335 I336 L337 K338 W339 R340 I341 L342 S343 A344 T345 N346 D347 L348 D349 R350 V351 S352 A353 V354 A355 L356 P357 K358 L359 P360
I361 S362 L363 T364 N365 T366 D367 L368 K369 V370 A371 S372 D373 T374 Q375 F376 Y377 P378 G379 L380 G381 L382 A383 L384 A385 F386 H387 D388 G389 S390 V391 H392 I393 V394 H395 R396 L397 S398 L399 Q400 T401 M402 A403 V404 F405 Y406 S407 S408 ALA ALA PRO ARG PRO VAL ASP GLU PRO ALA MET LYS
ARG PRO ARG THR ALA GLY PRO ALA V429 H430 L431 K432 A433 M434 Q435 L436 S437 W438 T439 S440 L441 A442 L443 V444 G445 I446 D447 S448 H449 G450 K451 L452 S453 V454 L455 R456 L457 S458 PRO SER MET GLY HIS PRO LEU GLU VAL GLY LEU ALA LEU ARG HIS LEU LEU PHE LEU LEU GLU TYR
CYS MET VAL THR GLY TYR ASP TRP TRP ASP ILE LEU LEU HIS VAL GLN PRO SER MET VAL GLN SER LEU VAL GLU LYS LEU HIS GLU GLU TYR THR ARG GLN THR ALA ALA LEU GLN GLN VAL LEU SER THR ARG ILE LEU ALA MET LYS ALA SER LEU CYS LYS LEU SER PRO CYS THR
VAL THR ARG VAL CYS ASP TYR HIS THR LYS LEU LEU PHE LEU ILE ALA ILE SER SER THR LEU LYS SER LEU LEU LEU ARG PRO HIS PHE LEU ASN THR PRO ASP LYS SER PRO GLY ASP ARG LEU THR GLU ILE CYS THR LYS ILE THR ASP VAL ASP ILE ASP LYS VAL MET ILE ASN LEU LYS
THR GLU GLU PHE VAL LEU ASP MET ASN THR LEU GLN ALA LEU GLN GLN LEU LEU LEU GLN TRP VAL GLY ASP PHE VAL LEU TYR LEU LEU ALA SER LEU PRO ASN GLN GLY SER LEU LEU ARG PRO GLY HIS SER PHE LEU ARG ASP GLY THR SER LEU GLY MET LEU ARG GLU LEU MET VAL
VAL ILE ARG ILE TRP GLY LEU LEU LYS PRO SER CYS LEU PRO VAL TYR THR ALA THR SER ASP THR GLN ASP SER MET SER LEU LEU PHE ARG LEU LEU THR LYS LEU TRP ILE CYS CYS ARG ASP GLU GLY PRO ALA SER GLU PRO ASP GLU ALA ALA LEU VAL ASP GLU CYS CYS LEU LEU
PRO SER GLN LEU LEU ILE PRO SER LEU ASP TRP LEU PRO ALA SER ASP GLY LEU VAL SER ARG LEU GLN PRO LYS GLN PRO LEU ARG LEU GLN PHE GLY ARG ALA PRO THR LEU PRO GLY SER ALA ALA THR LEU GLN LEU ASP GLY LEU ALA ARG ALA PRO GLY GLN PRO LYS ILE ASP
HIS LEU ARG ARG LEU HIS LEU GLY ALA CYS PRO THR GLU GLU CYS LYS ALA CYS THR ARG CYS GLY CYS VAL THR MET LEU LYS SER PRO ASN ARG THR THR ALA VAL LYS GLN TRP GLU GLN ARG TRP ILE LYS ASN CYS LEU CYS GLY GLY LEU TRP TRP ARG VAL PRO LEU SER TYR
PRO

4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	67732	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 ($e^-/Å^2$)	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	7.867	Depositor
Minimum map value	-3.734	Depositor
Average map value	-0.002	Depositor
Map value standard deviation	0.101	Depositor
Recommended contour level	0.41	Depositor
Map size (Å)	674.39996, 674.39996, 674.39996	wwPDB
Map dimensions	480, 480, 480	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.405, 1.405, 1.405	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: SF4, ZN, MG

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	a	0.65	0/3645	0.77	1/4952 (0.0%)
2	m	0.27	0/1010	0.37	0/1359
3	d	0.64	0/1277	0.82	0/1714
4	f	0.54	0/1359	0.70	2/1845 (0.1%)
5	g	0.61	0/1411	0.80	0/1901
6	h	0.62	0/1507	0.75	0/2036
7	r	0.61	0/1558	0.73	0/2096
8	t	0.69	0/1530	0.90	0/2066
9	j	0.41	0/1016	0.73	8/1363 (0.6%)
10	k	0.65	0/885	0.60	0/1190
11	n	0.36	0/7371	0.56	18/10037 (0.2%)
12	q	0.48	1/4336 (0.0%)	0.57	4/5865 (0.1%)
13	s	0.54	0/489	0.83	5/663 (0.8%)
14	u	0.48	0/797	0.72	1/1082 (0.1%)
15	v	0.67	0/1092	0.86	0/1468
16	z	0.62	0/781	0.81	0/1067
17	c	0.40	0/2106	0.53	1/2842 (0.0%)
18	e	0.26	0/840	0.36	0/1128
19	b	0.51	0/911	0.62	0/1229
20	l	0.26	0/1048	0.41	0/1405
21	o	0.35	0/1256	0.60	0/1724
22	i	0.66	0/523	0.67	0/692
23	0	0.66	0/2288	0.69	4/3101 (0.1%)
24	8	0.62	0/2437	0.63	0/3306
25	9	0.63	0/2356	0.63	0/3185
26	1	0.72	0/2674	0.66	6/3660 (0.2%)
27	2	0.65	0/2588	0.63	2/3509 (0.1%)
28	3	0.64	0/2102	0.61	0/2844
29	4	0.63	0/3663	0.62	0/4965
30	5	0.64	0/433	0.62	0/585
31	6	0.63	0/4983	0.62	0/6731
32	7	0.63	0/5957	0.62	2/8071 (0.0%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
33	EA	0.62	0/1499	0.63	0/2012
34	EB	0.64	0/1428	0.63	0/1917
35	DA	0.62	0/4627	0.63	1/6248 (0.0%)
36	DB	0.63	0/7993	0.61	0/10836
37	DD	0.62	0/1343	0.64	1/1795 (0.1%)
37	Dd	0.63	0/1321	0.58	0/1772
38	DE	0.64	0/4469	0.64	0/6050
38	De	0.64	0/4433	0.63	0/6004
39	DF	0.65	0/3167	0.65	0/4303
39	Df	0.65	0/3140	0.63	0/4268
40	DG	0.62	0/1199	0.61	0/1612
41	DH	0.64	0/1673	0.62	0/2285
42	DI	0.62	0/981	0.63	0/1332
42	Di	0.61	0/989	0.60	0/1343
43	DJ	0.62	0/736	0.63	1/998 (0.1%)
43	Dj	0.62	0/775	0.62	0/1049
44	DL	0.63	0/622	0.72	3/841 (0.4%)
44	Dl	0.63	0/888	0.69	3/1194 (0.3%)
45	Dc	0.64	0/1035	0.61	0/1406
46	Dk	0.64	0/799	0.59	0/1070
47	Dm	0.63	0/733	0.61	0/977
48	DO	0.65	0/781	0.64	0/1061
49	DP	0.64	0/1438	0.61	0/1935
50	DQ	0.64	0/1013	0.62	0/1366
51	BA	0.65	0/1967	0.62	0/2656
52	FB	0.63	0/1817	0.62	0/2445
53	X	1.14	21/1607 (1.3%)	0.98	1/2481 (0.0%)
54	Y	0.97	11/1565 (0.7%)	1.02	9/2410 (0.4%)
55	PA	0.64	0/11881	0.65	0/16057
56	PB	0.64	0/9243	0.62	0/12475
57	PC	0.63	0/2102	0.62	0/2857
58	PD	0.64	0/1036	0.60	0/1397
59	PE	0.62	0/1751	0.62	0/2366
60	PF	0.63	0/645	0.63	0/871
61	PG	0.65	0/1365	0.64	0/1853
62	PH	0.64	0/1207	0.63	0/1628
63	PI	0.64	0/948	0.63	0/1284
64	PJ	0.63	0/516	0.63	0/696
65	PK	0.62	0/956	0.60	0/1294
66	PL	0.64	0/377	0.60	0/500
67	FA	0.61	0/1130	0.60	0/1528
68	w	0.58	0/11053	0.62	1/15018 (0.0%)
69	x	0.59	0/7179	0.65	6/9712 (0.1%)

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	$\#\|Z\|>5$	RMSZ	$\#\|Z\|>5$
70	p	0.71	0/3191	0.73	4/4333 (0.1%)
All	All	0.62	33/174847 (0.0%)	0.65	84/237216 (0.0%)

All (33) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
53	X	-39	DA	O3'-P	-16.78	1.41	1.61
53	X	-37	DG	C1'-N9	-7.92	1.36	1.47
53	X	-9	DG	C1'-N9	-7.91	1.36	1.47
53	X	-26	DA	C1'-N9	-7.85	1.36	1.47
53	X	-19	DG	C1'-N9	-7.51	1.36	1.47
53	X	-27	DA	C1'-N9	-7.51	1.36	1.47
53	X	-15	DG	C1'-N9	-7.28	1.37	1.47
53	X	-22	DG	C1'-N9	-7.18	1.37	1.47
53	X	-21	DG	C1'-N9	-7.15	1.37	1.47
53	X	-36	DG	C1'-N9	-7.13	1.37	1.47
54	Y	-18	DG	C1'-N9	-7.03	1.37	1.47
54	Y	-27	DG	C1'-N9	-6.84	1.37	1.47
53	X	-17	DG	C1'-N9	-6.76	1.37	1.47
53	X	-11	DG	C1'-N9	-6.68	1.37	1.47
54	Y	-16	DG	C1'-N9	-6.66	1.38	1.47
53	X	29	DG	C1'-N9	-6.66	1.38	1.47
54	Y	7	DA	C1'-N9	-6.65	1.38	1.47
54	Y	-14	DG	C1'-N9	-6.65	1.38	1.47
54	Y	34	DG	C1'-N9	-6.64	1.38	1.47
53	X	21	DG	C1'-N9	-6.63	1.38	1.47
53	X	-5	DG	C1'-N9	-6.62	1.38	1.47
54	Y	4	DA	C1'-N9	-6.61	1.38	1.47
54	Y	1	DA	C1'-N9	-6.55	1.38	1.47
53	X	25	DA	C1'-N9	-6.50	1.38	1.47
53	X	1	DA	C1'-N9	-6.33	1.38	1.47
54	Y	18	DA	C1'-N9	-6.32	1.38	1.47
53	X	-14	DG	C1'-N9	-6.16	1.38	1.47
54	Y	-5	DC	O3'-P	5.67	1.68	1.61
12	q	452	ALA	C-N	5.55	1.46	1.34
54	Y	-7	DC	C1'-N1	5.20	1.56	1.49
53	X	-12	DC	O3'-P	5.14	1.67	1.61
53	X	-4	DT	C1'-N1	5.12	1.55	1.49
53	X	-1	DT	C1'-N1	5.11	1.55	1.49

All (84) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
9	j	77	PRO	CA-N-CD	-8.98	98.92	111.50
69	x	485	PRO	CA-N-CD	-8.43	99.70	111.50
69	x	54	PRO	N-CA-CB	-8.18	93.49	103.30
54	Y	-6	DG	P-O3'-C3'	8.13	129.46	119.70
11	n	1355	PRO	N-CA-CB	6.84	111.51	103.30
11	n	1343	PRO	N-CA-CB	6.78	111.44	103.30
11	n	1351	PRO	N-CA-CB	6.69	111.33	103.30
11	n	1237	PRO	N-CA-CB	6.53	111.14	103.30
54	Y	35	DC	C1'-O4'-C4'	-6.47	103.63	110.10
11	n	1196	PRO	N-CA-CB	6.46	111.06	103.30
53	X	-37	DG	P-O3'-C3'	6.32	127.28	119.70
11	n	1255	PRO	N-CA-CB	6.23	110.78	103.30
11	n	1347	PRO	N-CA-CB	6.20	110.74	103.30
11	n	1267	PRO	N-CA-CB	6.11	110.63	103.30
11	n	1326	PRO	N-CA-CB	6.10	110.62	103.30
68	w	30	PRO	N-CA-CB	6.00	110.51	103.30
70	p	97	LEU	CB-CG-CD1	-6.00	100.80	111.00
54	Y	35	DC	P-O3'-C3'	5.93	126.82	119.70
11	n	1344	PRO	N-CA-CB	5.93	110.42	103.30
35	DA	498	PRO	N-CA-CB	5.92	110.40	103.30
17	c	284	CYS	CB-CA-C	-5.87	98.66	110.40
11	n	1352	PRO	N-CA-CB	5.87	110.34	103.30
23	0	217	PRO	N-CA-CB	5.87	110.34	103.30
11	n	1192	PRO	N-CA-CB	5.83	110.30	103.30
69	x	484	LYS	C-N-CD	5.77	140.51	128.40
11	n	369	PRO	N-CA-C	-5.75	97.16	112.10
54	Y	-8	DT	P-O3'-C3'	-5.74	112.81	119.70
11	n	1206	PRO	N-CA-CB	5.68	110.11	103.30
13	s	135	PRO	N-CA-CB	5.67	110.10	103.30
12	q	393	PRO	N-CA-CB	5.65	110.08	103.30
13	s	158	PRO	N-CA-CB	5.65	110.08	103.30
26	1	507	PRO	N-CA-CB	5.64	110.07	103.30
26	1	276	PRO	N-CA-CB	5.64	110.07	103.30
13	s	113	PRO	N-CA-CB	5.63	110.05	103.30
13	s	134	PRO	N-CA-CB	5.63	110.05	103.30
70	p	443	LEU	CA-CB-CG	5.61	128.19	115.30
12	q	410	PRO	N-CA-CB	5.59	110.00	103.30
13	s	119	PRO	N-CA-CB	5.59	110.00	103.30
12	q	395	PRO	N-CA-CB	5.57	109.98	103.30
11	n	1309	PRO	N-CA-CB	5.54	109.95	103.30
26	1	480	PRO	N-CA-CB	5.54	109.95	103.30
27	2	269	PRO	N-CA-CB	5.53	109.94	103.30
23	0	237	PRO	N-CA-CB	5.53	109.93	103.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
11	n	74	PRO	N-CA-CB	5.51	109.91	103.30
11	n	1348	PRO	N-CA-CB	5.51	109.91	103.30
1	a	32	PRO	N-CA-CB	5.50	109.91	103.30
27	2	282	PRO	N-CA-CB	5.49	109.88	103.30
26	1	265	PRO	N-CA-CB	5.48	109.88	103.30
23	0	215	PRO	N-CA-CB	5.47	109.87	103.30
32	7	308	PRO	N-CA-CB	5.46	109.86	103.30
23	0	220	PRO	N-CA-CB	5.45	109.84	103.30
54	Y	35	DC	O4'-C1'-N1	5.45	111.82	108.00
26	1	484	PRO	N-CA-CB	5.44	109.83	103.30
14	u	107	VAL	CG1-CB-CG2	-5.44	102.20	110.90
26	1	287	PRO	N-CA-CB	5.42	109.80	103.30
69	x	359	CYS	CA-CB-SG	5.36	123.64	114.00
69	x	783	LEU	CA-CB-CG	5.33	127.56	115.30
12	q	399	PRO	N-CA-CB	5.29	109.65	103.30
9	j	50	ASP	CB-CG-OD2	5.28	123.05	118.30
54	Y	36	DC	P-O3'-C3'	5.26	126.01	119.70
70	p	14	ASP	CB-CG-OD2	5.25	123.03	118.30
9	j	72	ASP	CB-CG-OD2	5.24	123.02	118.30
54	Y	35	DC	C2'-C3'-O3'	-5.24	95.32	112.60
11	n	676	ASP	CB-CG-OD2	5.22	123.00	118.30
70	p	275	ASP	CB-CG-OD2	5.21	122.99	118.30
44	DL	79	ASP	CB-CG-OD2	5.20	122.98	118.30
9	j	100	ASP	CB-CG-OD2	5.20	122.98	118.30
9	j	52	ASP	CB-CG-OD2	5.19	122.97	118.30
9	j	28	ASP	CB-CG-OD2	5.19	122.97	118.30
44	DL	89	ASP	CB-CG-OD2	5.19	122.97	118.30
9	j	120	ASP	CB-CG-OD2	5.17	122.96	118.30
9	j	60	ASP	CB-CG-OD2	5.17	122.95	118.30
37	DD	947	PHE	CB-CA-C	5.17	120.74	110.40
32	7	311	PRO	N-CA-CB	5.16	109.49	103.30
44	DL	90	ASP	CB-CG-OD2	5.16	122.94	118.30
4	f	118	ARG	CB-CA-C	5.15	120.71	110.40
44	Dl	89	ASP	CB-CG-OD2	5.15	122.94	118.30
44	Dl	79	ASP	CB-CG-OD2	5.14	122.93	118.30
4	f	31	ASP	CB-CG-OD2	5.12	122.91	118.30
54	Y	35	DC	C3'-C2'-C1'	-5.12	96.36	102.50
54	Y	34	DG	P-O3'-C3'	5.10	125.82	119.70
44	Dl	90	ASP	CB-CG-OD2	5.09	122.88	118.30
43	DJ	118	ASP	CB-CG-OD2	5.09	122.88	118.30
69	x	355	CYS	CA-CB-SG	5.01	123.03	114.00

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	a	457/1581 (29%)	421 (92%)	29 (6%)	7 (2%)	8 39
2	m	110/131 (84%)	106 (96%)	4 (4%)	0	100 100
3	d	154/270 (57%)	143 (93%)	6 (4%)	5 (3%)	3 25
4	f	163/246 (66%)	142 (87%)	15 (9%)	6 (4%)	2 23
5	g	164/233 (70%)	145 (88%)	10 (6%)	9 (6%)	1 18
6	h	188/268 (70%)	167 (89%)	12 (6%)	9 (5%)	2 19
7	r	189/208 (91%)	176 (93%)	10 (5%)	3 (2%)	8 38
8	t	189/212 (89%)	166 (88%)	15 (8%)	8 (4%)	2 21
9	j	120/135 (89%)	110 (92%)	6 (5%)	4 (3%)	3 24
10	k	110/117 (94%)	99 (90%)	9 (8%)	2 (2%)	7 35
11	n	980/1454 (67%)	877 (90%)	86 (9%)	17 (2%)	7 37
12	q	540/651 (83%)	474 (88%)	53 (10%)	13 (2%)	5 30
13	s	69/244 (28%)	60 (87%)	7 (10%)	2 (3%)	3 26
14	u	103/144 (72%)	93 (90%)	8 (8%)	2 (2%)	6 34
15	v	132/200 (66%)	119 (90%)	10 (8%)	3 (2%)	5 31
16	z	93/600 (16%)	84 (90%)	7 (8%)	2 (2%)	5 32
17	c	245/311 (79%)	232 (95%)	13 (5%)	0	100 100
18	e	98/178 (55%)	92 (94%)	4 (4%)	2 (2%)	6 34
19	b	111/200 (56%)	109 (98%)	1 (1%)	1 (1%)	14 50

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
20	l	120/178 (67%)	115 (96%)	5 (4%)	0	100 100
21	o	152/788 (19%)	138 (91%)	10 (7%)	4 (3%)	4 29
22	i	56/146 (38%)	54 (96%)	1 (2%)	1 (2%)	7 35
23	0	304/309 (98%)	285 (94%)	15 (5%)	4 (1%)	10 42
24	8	297/346 (86%)	290 (98%)	7 (2%)	0	100 100
25	9	285/323 (88%)	279 (98%)	6 (2%)	0	100 100
26	1	399/548 (73%)	336 (84%)	53 (13%)	10 (2%)	4 29
27	2	327/395 (83%)	315 (96%)	10 (3%)	2 (1%)	22 59
28	3	259/308 (84%)	257 (99%)	2 (1%)	0	100 100
29	4	447/462 (97%)	431 (96%)	12 (3%)	4 (1%)	14 50
30	5	52/71 (73%)	50 (96%)	2 (4%)	0	100 100
31	6	602/782 (77%)	585 (97%)	14 (2%)	3 (0%)	25 62
32	7	732/760 (96%)	704 (96%)	23 (3%)	5 (1%)	19 56
33	EA	175/439 (40%)	163 (93%)	12 (7%)	0	100 100
34	EB	170/291 (58%)	161 (95%)	4 (2%)	5 (3%)	3 26
35	DA	534/1872 (28%)	523 (98%)	9 (2%)	2 (0%)	30 67
36	DB	959/1199 (80%)	932 (97%)	25 (3%)	2 (0%)	44 77
37	DD	153/1085 (14%)	148 (97%)	4 (3%)	1 (1%)	19 56
37	Dd	154/1085 (14%)	152 (99%)	2 (1%)	0	100 100
38	DE	540/800 (68%)	524 (97%)	16 (3%)	0	100 100
38	De	531/800 (66%)	514 (97%)	16 (3%)	1 (0%)	44 77
39	DF	404/677 (60%)	393 (97%)	9 (2%)	2 (0%)	25 62
39	Df	399/677 (59%)	394 (99%)	4 (1%)	1 (0%)	37 71
40	DG	139/349 (40%)	137 (99%)	2 (1%)	0	100 100
41	DH	207/310 (67%)	199 (96%)	5 (2%)	3 (1%)	9 40
42	DI	118/264 (45%)	116 (98%)	1 (1%)	1 (1%)	16 53
42	Di	119/264 (45%)	118 (99%)	1 (1%)	0	100 100
43	DJ	86/218 (39%)	84 (98%)	2 (2%)	0	100 100
43	Dj	91/218 (42%)	90 (99%)	1 (1%)	0	100 100
44	DL	73/161 (45%)	68 (93%)	2 (3%)	3 (4%)	2 21
44	Dl	105/161 (65%)	104 (99%)	0	1 (1%)	13 47

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
45	Dc	125/929 (14%)	122 (98%)	1 (1%)	2 (2%)	8 38
46	Dk	96/211 (46%)	93 (97%)	3 (3%)	0	100 100
47	Dm	85/124 (68%)	82 (96%)	3 (4%)	0	100 100
48	DO	95/109 (87%)	91 (96%)	2 (2%)	2 (2%)	5 32
49	DP	175/339 (52%)	170 (97%)	4 (2%)	1 (1%)	22 59
50	DQ	118/307 (38%)	115 (98%)	2 (2%)	1 (1%)	16 53
51	BA	247/316 (78%)	244 (99%)	3 (1%)	0	100 100
52	FB	218/249 (88%)	210 (96%)	7 (3%)	1 (0%)	25 62
55	PA	1460/1970 (74%)	1415 (97%)	38 (3%)	7 (0%)	25 62
56	PB	1128/1174 (96%)	1104 (98%)	22 (2%)	2 (0%)	44 77
57	PC	253/275 (92%)	252 (100%)	1 (0%)	0	100 100
58	PD	127/142 (89%)	127 (100%)	0	0	100 100
59	PE	207/210 (99%)	204 (99%)	2 (1%)	1 (0%)	25 62
60	PF	77/127 (61%)	76 (99%)	0	1 (1%)	10 42
61	PG	169/172 (98%)	165 (98%)	4 (2%)	0	100 100
62	PH	146/150 (97%)	144 (99%)	2 (1%)	0	100 100
63	PI	112/125 (90%)	111 (99%)	1 (1%)	0	100 100
64	PJ	62/67 (92%)	61 (98%)	1 (2%)	0	100 100
65	PK	115/117 (98%)	114 (99%)	1 (1%)	0	100 100
66	PL	42/58 (72%)	42 (100%)	0	0	100 100
67	FA	130/517 (25%)	126 (97%)	4 (3%)	0	100 100
68	w	1332/1368 (97%)	1261 (95%)	65 (5%)	6 (0%)	25 62
69	x	876/989 (89%)	820 (94%)	51 (6%)	5 (1%)	22 59
70	p	400/841 (48%)	367 (92%)	32 (8%)	1 (0%)	37 71
All	All	20999/34555 (61%)	19990 (95%)	829 (4%)	180 (1%)	17 50

All (180) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	a	67	LYS
1	a	331	GLU
4	f	25	ASN
4	f	35	GLU
4	f	36	ARG

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Mol	Chain	Res	Type
5	g	31	ALA
6	h	100	PHE
6	h	130	ARG
6	h	161	SER
8	t	99	LYS
9	j	61	ILE
9	j	64	PRO
11	n	154	ILE
11	n	1196	PRO
11	n	1255	PRO
11	n	1266	THR
11	n	1326	PRO
12	q	131	SER
12	q	288	SER
12	q	393	PRO
12	q	398	ALA
12	q	399	PRO
13	s	158	PRO
15	v	42	ILE
23	0	7	PRO
23	0	237	PRO
26	1	264	ASN
26	1	276	PRO
26	1	278	ASP
26	1	287	PRO
26	1	292	SER
27	2	268	LYS
29	4	135	GLN
31	6	421	TRP
32	7	307	ASN
32	7	463	PRO
34	EB	171	ILE
35	DA	498	PRO
36	DB	366	ASP
37	DD	876	ALA
39	DF	442	PRO
44	DL	73	ASN
55	PA	1652	PRO
55	PA	1654	SER
60	PF	76	CYS
68	w	51	LEU
69	x	54	PRO

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Mol	Chain	Res	Type
1	a	334	PRO
1	a	430	LEU
5	g	29	GLY
6	h	37	TYR
7	r	45	ASN
8	t	165	LEU
11	n	169	LEU
11	n	254	VAL
11	n	1351	PRO
12	q	395	PRO
12	q	419	ASN
15	v	139	SER
16	z	544	THR
18	e	146	ILE
21	o	714	ASP
31	6	610	VAL
31	6	622	VAL
32	7	36	GLY
32	7	308	PRO
34	EB	134	ASP
36	DB	427	PRO
48	DO	52	VAL
50	DQ	320	VAL
55	PA	1669	PRO
68	w	32	ASP
68	w	1196	CYS
69	x	485	PRO
69	x	566	GLU
1	a	487	LEU
3	d	144	SER
3	d	146	GLU
4	f	139	TYR
5	g	39	LYS
5	g	41	SER
6	h	41	THR
8	t	120	CYS
9	j	60	ASP
11	n	165	SER
11	n	1206	PRO
12	q	91	SER
12	q	420	SER
12	q	458	PRO

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Mol	Chain	Res	Type
14	u	81	SER
21	o	709	LYS
22	i	139	CYS
26	1	280	GLY
26	1	520	ASN
34	EB	212	VAL
44	DL	114	LYS
45	Dc	117	ALA
56	PB	467	SER
68	w	1203	MET
69	x	484	LYS
70	p	250	SER
1	a	208	VAL
3	d	143	ILE
4	f	138	ARG
5	g	20	GLU
5	g	26	ILE
6	h	170	LYS
7	r	94	GLY
7	r	153	VAL
8	t	47	HIS
8	t	109	LYS
11	n	265	LEU
11	n	528	HIS
11	n	1355	PRO
12	q	127	LEU
12	q	134	ALA
18	e	147	ASN
19	b	100	GLN
23	0	233	ILE
26	1	279	GLU
26	1	369	VAL
34	EB	225	VAL
39	DF	66	LEU
41	DH	129	VAL
45	Dc	100	PRO
39	Df	93	PRO
48	DO	84	VAL
52	FB	38	GLY
55	PA	1662	PRO
68	w	128	GLY
3	d	178	THR

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Mol	Chain	Res	Type
4	f	61	ASN
5	g	74	HIS
8	t	129	VAL
10	k	79	HIS
10	k	81	GLY
11	n	264	ALA
11	n	1343	PRO
13	s	153	ARG
14	u	83	ALA
15	v	51	ALA
16	z	540	LEU
21	o	721	LEU
23	0	192	LEU
29	4	129	TRP
34	EB	174	ALA
44	DL	112	GLU
38	De	510	ALA
69	x	564	SER
6	h	99	VAL
11	n	229	GLU
12	q	89	GLN
26	1	512	ILE
29	4	384	PRO
41	DH	163	PRO
44	Dl	60	LYS
49	DP	207	PRO
55	PA	1659	PRO
56	PB	231	PRO
68	w	361	ALA
5	g	137	VAL
11	n	150	PRO
41	DH	140	ARG
1	a	75	PRO
8	t	172	ALA
21	o	716	PRO
35	DA	504	PRO
55	PA	1795	PRO
3	d	176	TYR
6	h	42	TRP
6	h	98	PRO
8	t	17	VAL
9	j	76	ASN

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Mol	Chain	Res	Type
29	4	189	GLU
32	7	291	GLY
42	DI	85	SER
55	PA	462	PRO
5	g	14	PRO
27	2	259	ILE
59	PE	77	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	a	387/1391 (28%)	322 (83%)	65 (17%)	1 11
2	m	102/115 (89%)	102 (100%)	0	100 100
3	d	138/230 (60%)	100 (72%)	38 (28%)	0 2
4	f	144/223 (65%)	126 (88%)	18 (12%)	3 17
5	g	157/215 (73%)	122 (78%)	35 (22%)	1 5
6	h	168/225 (75%)	128 (76%)	40 (24%)	0 4
7	r	168/183 (92%)	133 (79%)	35 (21%)	1 6
8	t	166/178 (93%)	137 (82%)	29 (18%)	1 10
9	j	113/124 (91%)	109 (96%)	4 (4%)	31 53
10	k	94/98 (96%)	51 (54%)	43 (46%)	0 0
11	n	689/1272 (54%)	651 (94%)	38 (6%)	18 42
12	q	461/577 (80%)	391 (85%)	70 (15%)	2 13
13	s	31/208 (15%)	29 (94%)	2 (6%)	14 37
14	u	78/119 (66%)	67 (86%)	11 (14%)	3 15
15	v	122/173 (70%)	91 (75%)	31 (25%)	0 3
16	z	89/512 (17%)	76 (85%)	13 (15%)	2 14
17	c	231/280 (82%)	223 (96%)	8 (4%)	31 53
18	e	94/152 (62%)	94 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
19	b	102/163 (63%)	92 (90%)	10 (10%)	6 23
20	l	116/155 (75%)	116 (100%)	0	100 100
21	o	141/697 (20%)	141 (100%)	0	100 100
22	i	61/133 (46%)	43 (70%)	18 (30%)	0 2
23	0	209/283 (74%)	193 (92%)	16 (8%)	10 32
24	8	259/299 (87%)	225 (87%)	34 (13%)	3 17
25	9	252/296 (85%)	221 (88%)	31 (12%)	4 18
26	1	176/484 (36%)	163 (93%)	13 (7%)	11 33
27	2	279/352 (79%)	257 (92%)	22 (8%)	10 31
28	3	234/272 (86%)	221 (94%)	13 (6%)	17 41
29	4	387/399 (97%)	366 (95%)	21 (5%)	18 42
30	5	48/64 (75%)	43 (90%)	5 (10%)	5 22
31	6	533/688 (78%)	488 (92%)	45 (8%)	9 30
32	7	616/664 (93%)	571 (93%)	45 (7%)	11 33
33	EA	163/373 (44%)	151 (93%)	12 (7%)	11 33
34	EB	155/261 (59%)	143 (92%)	12 (8%)	10 32
35	DA	488/1665 (29%)	449 (92%)	39 (8%)	10 31
36	DB	876/1083 (81%)	798 (91%)	78 (9%)	8 27
37	DD	144/815 (18%)	138 (96%)	6 (4%)	25 48
37	Dd	146/815 (18%)	138 (94%)	8 (6%)	18 42
38	DE	478/657 (73%)	433 (91%)	45 (9%)	7 24
38	De	475/657 (72%)	424 (89%)	51 (11%)	5 21
39	DF	324/574 (56%)	298 (92%)	26 (8%)	10 31
39	Df	322/574 (56%)	309 (96%)	13 (4%)	27 49
40	DG	133/322 (41%)	117 (88%)	16 (12%)	4 18
41	DH	181/270 (67%)	167 (92%)	14 (8%)	10 32
42	DI	106/235 (45%)	102 (96%)	4 (4%)	28 51
42	Di	107/235 (46%)	103 (96%)	4 (4%)	29 52
43	DJ	79/154 (51%)	76 (96%)	3 (4%)	28 51
43	Dj	83/154 (54%)	80 (96%)	3 (4%)	30 52
44	DL	70/141 (50%)	67 (96%)	3 (4%)	25 48

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
44	Dl	98/141 (70%)	94 (96%)	4 (4%)	26 49
45	Dc	113/833 (14%)	106 (94%)	7 (6%)	15 38
46	Dk	87/182 (48%)	83 (95%)	4 (5%)	23 46
47	Dm	80/106 (76%)	73 (91%)	7 (9%)	8 27
48	DO	84/98 (86%)	80 (95%)	4 (5%)	21 45
49	DP	153/293 (52%)	144 (94%)	9 (6%)	16 40
50	DQ	111/269 (41%)	108 (97%)	3 (3%)	40 60
51	BA	214/268 (80%)	199 (93%)	15 (7%)	12 34
52	FB	196/218 (90%)	177 (90%)	19 (10%)	6 23
55	PA	1303/1748 (74%)	1167 (90%)	136 (10%)	5 22
56	PB	993/1027 (97%)	899 (90%)	94 (10%)	7 24
57	PC	234/252 (93%)	218 (93%)	16 (7%)	13 36
58	PD	108/126 (86%)	92 (85%)	16 (15%)	2 14
59	PE	191/192 (100%)	177 (93%)	14 (7%)	11 33
60	PF	69/111 (62%)	62 (90%)	7 (10%)	6 22
61	PG	147/153 (96%)	124 (84%)	23 (16%)	2 13
62	PH	129/131 (98%)	119 (92%)	10 (8%)	10 31
63	PI	103/112 (92%)	96 (93%)	7 (7%)	13 36
64	PJ	53/56 (95%)	52 (98%)	1 (2%)	52 69
65	PK	106/106 (100%)	101 (95%)	5 (5%)	22 46
66	PL	41/55 (74%)	39 (95%)	2 (5%)	21 44
67	FA	117/448 (26%)	115 (98%)	2 (2%)	56 72
68	w	1202/1232 (98%)	1181 (98%)	21 (2%)	56 72
69	x	787/864 (91%)	769 (98%)	18 (2%)	45 64
70	p	353/736 (48%)	346 (98%)	7 (2%)	50 68
All	All	18247/29966 (61%)	16706 (92%)	1541 (8%)	11 30

All (1541) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	a	77	MET
1	a	93	HIS
1	a	106	ASP

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Mol	Chain	Res	Type
1	a	107	MET
1	a	108	PHE
1	a	109	TYR
1	a	111	GLU
1	a	128	HIS
1	a	131	ASN
1	a	133	VAL
1	a	145	LYS
1	a	160	LEU
1	a	162	ASN
1	a	167	ASN
1	a	168	LYS
1	a	173	MET
1	a	201	ASP
1	a	214	ARG
1	a	226	VAL
1	a	232	LEU
1	a	244	GLU
1	a	246	ASN
1	a	253	MET
1	a	254	ASN
1	a	258	THR
1	a	259	ILE
1	a	267	LYS
1	a	278	HIS
1	a	288	PHE
1	a	297	VAL
1	a	305	LEU
1	a	309	GLN
1	a	325	THR
1	a	327	ILE
1	a	333	GLN
1	a	335	THR
1	a	339	LEU
1	a	348	LEU
1	a	357	LEU
1	a	362	ARG
1	a	367	LEU
1	a	373	CYS
1	a	378	LYS
1	a	384	ASP
1	a	388	LEU

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Mol	Chain	Res	Type
1	a	391	THR
1	a	400	HIS
1	a	421	ILE
1	a	432	GLU
1	a	433	ASP
1	a	434	SER
1	a	437	LEU
1	a	438	LEU
1	a	441	GLU
1	a	443	CYS
1	a	445	LEU
1	a	446	SER
1	a	467	MET
1	a	470	GLN
1	a	472	SER
1	a	479	LEU
1	a	501	CYS
1	a	504	ILE
1	a	509	ARG
1	a	514	LYS
3	d	26	THR
3	d	27	ARG
3	d	28	GLU
3	d	34	LEU
3	d	44	LEU
3	d	62	GLU
3	d	63	ASN
3	d	64	GLN
3	d	66	LEU
3	d	68	LEU
3	d	69	LEU
3	d	71	HIS
3	d	72	ARG
3	d	76	PHE
3	d	77	GLN
3	d	78	GLU
3	d	79	LEU
3	d	80	MET
3	d	84	LEU
3	d	86	GLN
3	d	88	LYS
3	d	89	ILE

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Mol	Chain	Res	Type
3	d	111	GLN
3	d	119	GLN
3	d	121	LEU
3	d	127	GLN
3	d	135	ILE
3	d	137	LYS
3	d	147	GLU
3	d	150	LYS
3	d	151	TYR
3	d	154	ARG
3	d	159	ASN
3	d	162	CYS
3	d	168	VAL
3	d	171	ASP
3	d	179	ASP
3	d	187	LEU
4	f	16	VAL
4	f	24	LEU
4	f	26	SER
4	f	28	SER
4	f	36	ARG
4	f	42	ASP
4	f	43	ARG
4	f	49	VAL
4	f	50	VAL
4	f	51	LYS
4	f	53	GLN
4	f	56	THR
4	f	57	LEU
4	f	58	GLU
4	f	60	LEU
4	f	61	ASN
4	f	62	GLN
4	f	120	LEU
5	g	11	LEU
5	g	15	MET
5	g	17	TYR
5	g	18	ILE
5	g	19	LYS
5	g	25	ASN
5	g	28	GLU
5	g	30	LEU

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Mol	Chain	Res	Type
5	g	33	LYS
5	g	39	LYS
5	g	45	PHE
5	g	49	PHE
5	g	51	CYS
5	g	52	ASP
5	g	54	LEU
5	g	55	ILE
5	g	64	ILE
5	g	72	PHE
5	g	74	HIS
5	g	83	MET
5	g	92	LEU
5	g	110	GLU
5	g	122	LEU
5	g	124	ASN
5	g	127	ARG
5	g	138	MET
5	g	139	MET
5	g	143	LYS
5	g	153	PHE
5	g	155	LYS
5	g	159	ARG
5	g	162	GLU
5	g	163	MET
5	g	166	ASN
5	g	174	ASP
6	h	3	ARG
6	h	7	GLN
6	h	15	LEU
6	h	16	LEU
6	h	17	SER
6	h	18	GLN
6	h	21	ASP
6	h	22	LEU
6	h	23	LYS
6	h	32	LYS
6	h	33	LEU
6	h	34	GLU
6	h	37	TYR
6	h	39	ARG
6	h	46	LEU

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Mol	Chain	Res	Type
6	h	48	SER
6	h	51	LEU
6	h	52	LEU
6	h	53	SER
6	h	56	LEU
6	h	59	LEU
6	h	66	GLU
6	h	85	ARG
6	h	88	ASP
6	h	89	LEU
6	h	91	ARG
6	h	92	GLN
6	h	100	PHE
6	h	101	SER
6	h	102	HIS
6	h	110	ARG
6	h	111	THR
6	h	112	LYS
6	h	139	GLN
6	h	143	LEU
6	h	146	MET
6	h	157	GLU
6	h	170	LYS
6	h	178	THR
6	h	191	LEU
7	r	16	ILE
7	r	17	ASN
7	r	18	MET
7	r	22	LEU
7	r	29	ASP
7	r	32	LEU
7	r	33	GLU
7	r	36	ILE
7	r	37	HIS
7	r	38	ARG
7	r	39	LEU
7	r	54	HIS
7	r	56	MET
7	r	60	LEU
7	r	69	VAL
7	r	88	LEU
7	r	98	ARG

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Mol	Chain	Res	Type
7	r	114	LEU
7	r	116	ASP
7	r	118	LEU
7	r	119	MET
7	r	120	GLU
7	r	121	MET
7	r	124	ARG
7	r	125	MET
7	r	126	ASP
7	r	144	MET
7	r	171	LEU
7	r	193	LEU
7	r	194	LYS
7	r	196	LEU
7	r	197	VAL
7	r	200	GLU
7	r	202	ILE
7	r	206	ARG
8	t	1	MET
8	t	9	MET
8	t	13	GLU
8	t	19	GLN
8	t	39	PHE
8	t	63	MET
8	t	67	HIS
8	t	78	LEU
8	t	79	PHE
8	t	80	GLU
8	t	81	ASN
8	t	84	CYS
8	t	85	LEU
8	t	89	THR
8	t	98	LEU
8	t	110	ILE
8	t	131	MET
8	t	138	ILE
8	t	142	VAL
8	t	143	GLU
8	t	147	CYS
8	t	154	TRP
8	t	157	LEU
8	t	158	LEU

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Mol	Chain	Res	Type
8	t	179	ARG
8	t	194	MET
8	t	195	GLU
8	t	196	LEU
8	t	200	ILE
9	j	20	ARG
9	j	62	THR
9	j	121	MET
9	j	123	LYS
10	k	8	ASN
10	k	10	ARG
10	k	11	LEU
10	k	12	ARG
10	k	14	LEU
10	k	15	GLU
10	k	18	GLU
10	k	19	ARG
10	k	26	GLN
10	k	32	ILE
10	k	33	LEU
10	k	34	GLU
10	k	35	LEU
10	k	36	SER
10	k	37	LYS
10	k	40	THR
10	k	42	GLU
10	k	43	ARG
10	k	44	LEU
10	k	45	LEU
10	k	52	PHE
10	k	57	GLN
10	k	58	HIS
10	k	60	GLU
10	k	75	THR
10	k	82	SER
10	k	83	SER
10	k	86	SER
10	k	87	ARG
10	k	88	LYS
10	k	90	CYS
10	k	91	GLN
10	k	92	MET

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Mol	Chain	Res	Type
10	k	94	LEU
10	k	96	ARG
10	k	97	VAL
10	k	101	ARG
10	k	102	LEU
10	k	103	LYS
10	k	104	LEU
10	k	105	SER
10	k	109	ARG
10	k	114	MET
11	n	149	LEU
11	n	166	TYR
11	n	168	ARG
11	n	169	LEU
11	n	188	LYS
11	n	194	GLN
11	n	195	LEU
11	n	197	GLN
11	n	202	ARG
11	n	206	THR
11	n	212	LEU
11	n	229	GLU
11	n	252	ILE
11	n	253	LEU
11	n	254	VAL
11	n	255	GLU
11	n	261	ASP
11	n	265	LEU
11	n	266	VAL
11	n	267	HIS
11	n	273	PHE
11	n	274	ILE
11	n	276	GLN
11	n	277	LEU
11	n	305	LEU
11	n	306	GLU
11	n	359	ILE
11	n	362	ASP
11	n	366	VAL
11	n	367	SER
11	n	368	LYS
11	n	522	LEU

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Mol	Chain	Res	Type
11	n	523	SER
11	n	525	TYR
11	n	528	HIS
11	n	530	ILE
11	n	532	ASN
11	n	634	MET
12	q	7	VAL
12	q	8	ARG
12	q	16	GLU
12	q	19	VAL
12	q	28	GLU
12	q	29	THR
12	q	31	LEU
12	q	36	MET
12	q	91	SER
12	q	92	LEU
12	q	93	TRP
12	q	98	VAL
12	q	100	ASN
12	q	103	ARG
12	q	107	THR
12	q	109	MET
12	q	110	CYS
12	q	112	LEU
12	q	116	LEU
12	q	118	ILE
12	q	120	ARG
12	q	123	LYS
12	q	124	PHE
12	q	125	MET
12	q	128	ASP
12	q	131	SER
12	q	132	GLN
12	q	133	ASP
12	q	138	LYS
12	q	139	GLN
12	q	141	PRO
12	q	143	THR
12	q	144	LEU
12	q	145	GLN
12	q	146	LEU
12	q	147	ILE

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Mol	Chain	Res	Type
12	q	151	LYS
12	q	152	SER
12	q	159	ILE
12	q	161	LEU
12	q	162	LYS
12	q	165	GLU
12	q	166	ARG
12	q	169	LYS
12	q	172	THR
12	q	183	PHE
12	q	184	ASN
12	q	186	GLU
12	q	187	LEU
12	q	188	LEU
12	q	192	GLN
12	q	195	LYS
12	q	389	SER
12	q	428	LEU
12	q	431	ILE
12	q	432	ILE
12	q	434	GLN
12	q	440	LEU
12	q	441	ARG
12	q	442	SER
12	q	443	ARG
12	q	448	ILE
12	q	451	LEU
12	q	629	LYS
12	q	631	GLU
12	q	633	ARG
12	q	646	LEU
12	q	647	SER
12	q	649	CYS
12	q	651	LEU
13	s	83	LEU
13	s	85	THR
14	u	20	CYS
14	u	26	LEU
14	u	27	GLN
14	u	80	GLU
14	u	109	TYR
14	u	110	ARG

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Mol	Chain	Res	Type
14	u	113	MET
14	u	115	LEU
14	u	117	LYS
14	u	118	ILE
14	u	119	GLN
15	v	15	LEU
15	v	26	ILE
15	v	35	GLU
15	v	42	ILE
15	v	43	GLU
15	v	45	GLU
15	v	46	THR
15	v	50	ARG
15	v	52	THR
15	v	53	GLN
15	v	69	VAL
15	v	70	ARG
15	v	81	ASP
15	v	82	LEU
15	v	83	LYS
15	v	84	GLN
15	v	85	PHE
15	v	92	PRO
15	v	99	ASP
15	v	104	GLN
15	v	110	GLU
15	v	111	GLU
15	v	116	LEU
15	v	118	THR
15	v	119	LEU
15	v	120	ARG
15	v	123	ILE
15	v	130	LEU
15	v	131	GLU
15	v	133	GLU
15	v	138	SER
16	z	492	ARG
16	z	528	LEU
16	z	540	LEU
16	z	544	THR
16	z	547	VAL
16	z	551	ASP

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Mol	Chain	Res	Type
16	z	564	ASN
16	z	567	GLN
16	z	572	ASN
16	z	579	CYS
16	z	582	LEU
16	z	591	LEU
16	z	599	LEU
17	c	16	GLN
17	c	41	ASN
17	c	44	THR
17	c	45	LEU
17	c	72	ARG
17	c	73	LEU
17	c	77	VAL
17	c	258	MET
19	b	57	VAL
19	b	60	TYR
19	b	74	LEU
19	b	82	LEU
19	b	92	GLN
19	b	103	ASP
19	b	122	LEU
19	b	126	CYS
19	b	132	ASP
19	b	184	LYS
22	i	65	PHE
22	i	70	HIS
22	i	72	ILE
22	i	86	ASP
22	i	87	LEU
22	i	88	ASN
22	i	90	LEU
22	i	94	PHE
22	i	95	GLN
22	i	101	ILE
22	i	102	SER
22	i	115	GLN
22	i	117	GLN
22	i	119	GLN
22	i	121	LEU
22	i	122	ARG
22	i	136	LYS

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Mol	Chain	Res	Type
22	i	138	LEU
23	0	6	CYS
23	0	7	PRO
23	0	46	CYS
23	0	68	VAL
23	0	71	GLU
23	0	72	VAL
23	0	73	GLU
23	0	162	ARG
23	0	175	LEU
23	0	183	PHE
23	0	197	LEU
23	0	251	LEU
23	0	254	GLU
23	0	268	ARG
23	0	272	LEU
23	0	288	THR
24	8	17	PHE
24	8	18	LEU
24	8	22	GLN
24	8	26	VAL
24	8	36	GLN
24	8	38	VAL
24	8	56	ASN
24	8	57	ARG
24	8	58	THR
24	8	66	LEU
24	8	96	THR
24	8	103	LYS
24	8	107	LEU
24	8	108	VAL
24	8	112	SER
24	8	132	TRP
24	8	143	LEU
24	8	166	ASN
24	8	167	ARG
24	8	173	VAL
24	8	174	VAL
24	8	176	ARG
24	8	182	GLU
24	8	189	MET
24	8	205	GLU

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Mol	Chain	Res	Type
24	8	206	LEU
24	8	219	LEU
24	8	231	THR
24	8	260	ILE
24	8	262	SER
24	8	267	ASP
24	8	269	LEU
24	8	287	THR
24	8	292	MET
25	9	3	HIS
25	9	7	GLN
25	9	8	LYS
25	9	40	VAL
25	9	41	LEU
25	9	56	LEU
25	9	94	ASN
25	9	100	HIS
25	9	102	ARG
25	9	113	CYS
25	9	122	SER
25	9	126	VAL
25	9	134	LEU
25	9	136	GLN
25	9	153	GLN
25	9	158	LEU
25	9	165	ARG
25	9	167	PHE
25	9	171	LEU
25	9	174	LEU
25	9	177	ARG
25	9	181	LEU
25	9	186	ILE
25	9	188	ARG
25	9	204	TYR
25	9	211	GLN
25	9	227	THR
25	9	245	LEU
25	9	266	ARG
25	9	273	LEU
25	9	279	ARG
26	1	190	SER
26	1	191	ASP

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Mol	Chain	Res	Type
26	1	193	ILE
26	1	216	THR
26	1	220	PHE
26	1	232	ARG
26	1	407	ILE
26	1	414	TYR
26	1	415	THR
26	1	430	THR
26	1	521	LEU
26	1	525	ILE
26	1	535	LYS
27	2	62	TYR
27	2	66	ASP
27	2	69	ARG
27	2	70	THR
27	2	71	MET
27	2	85	LEU
27	2	90	TYR
27	2	104	ILE
27	2	109	THR
27	2	118	THR
27	2	171	PHE
27	2	174	LEU
27	2	182	ILE
27	2	185	LEU
27	2	207	VAL
27	2	234	HIS
27	2	323	HIS
27	2	328	LEU
27	2	333	GLU
27	2	345	CYS
27	2	372	ASP
27	2	379	LEU
28	3	64	ILE
28	3	124	ILE
28	3	131	THR
28	3	132	LEU
28	3	146	ARG
28	3	187	GLN
28	3	195	VAL
28	3	255	CYS
28	3	257	CYS

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Mol	Chain	Res	Type
28	3	258	HIS
28	3	261	LEU
28	3	262	ILE
28	3	287	THR
29	4	34	LEU
29	4	47	GLU
29	4	73	LEU
29	4	75	VAL
29	4	162	PHE
29	4	168	SER
29	4	184	LEU
29	4	188	THR
29	4	205	LEU
29	4	215	PHE
29	4	264	HIS
29	4	265	LEU
29	4	284	THR
29	4	300	THR
29	4	314	ARG
29	4	373	HIS
29	4	383	LEU
29	4	386	THR
29	4	403	PHE
29	4	441	MET
29	4	442	VAL
30	5	16	MET
30	5	24	ASP
30	5	32	LYS
30	5	39	ASP
30	5	60	LEU
31	6	60	ASP
31	6	92	VAL
31	6	93	TYR
31	6	121	TYR
31	6	123	LEU
31	6	152	ILE
31	6	160	THR
31	6	161	VAL
31	6	185	ILE
31	6	198	ARG
31	6	276	MET
31	6	277	ILE

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Mol	Chain	Res	Type
31	6	289	TYR
31	6	297	PHE
31	6	332	ARG
31	6	355	CYS
31	6	369	VAL
31	6	385	ASP
31	6	389	ILE
31	6	401	ILE
31	6	437	LEU
31	6	449	LYS
31	6	472	ARG
31	6	473	GLU
31	6	488	LEU
31	6	504	LYS
31	6	526	LYS
31	6	530	ARG
31	6	534	TYR
31	6	547	LEU
31	6	554	ARG
31	6	555	ASN
31	6	558	ILE
31	6	568	LEU
31	6	598	HIS
31	6	601	LYS
31	6	603	ASN
31	6	608	SER
31	6	613	THR
31	6	621	ASN
31	6	633	ARG
31	6	650	MET
31	6	655	TYR
31	6	676	ARG
31	6	690	ILE
32	7	8	LEU
32	7	20	GLU
32	7	24	TYR
32	7	25	MET
32	7	48	LYS
32	7	49	THR
32	7	52	LEU
32	7	77	VAL
32	7	113	LYS

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Mol	Chain	Res	Type
32	7	121	VAL
32	7	143	ARG
32	7	147	GLN
32	7	155	CYS
32	7	200	LEU
32	7	213	LEU
32	7	220	LEU
32	7	237	HIS
32	7	239	ILE
32	7	251	LEU
32	7	343	ARG
32	7	349	VAL
32	7	361	LEU
32	7	373	ARG
32	7	385	THR
32	7	387	GLU
32	7	416	ILE
32	7	418	ILE
32	7	427	THR
32	7	432	ILE
32	7	444	ILE
32	7	457	THR
32	7	463	PRO
32	7	481	PHE
32	7	485	LEU
32	7	490	LEU
32	7	504	ILE
32	7	518	ARG
32	7	571	THR
32	7	577	THR
32	7	596	LEU
32	7	650	ASP
32	7	654	PHE
32	7	678	VAL
32	7	681	ASP
32	7	724	MET
33	EA	43	VAL
33	EA	121	SER
33	EA	124	ARG
33	EA	128	LYS
33	EA	131	VAL
33	EA	135	THR

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Mol	Chain	Res	Type
33	EA	153	ARG
33	EA	154	CYS
33	EA	157	CYS
33	EA	161	VAL
33	EA	164	ASP
33	EA	187	ILE
34	EB	73	TYR
34	EB	88	ARG
34	EB	97	LEU
34	EB	136	LYS
34	EB	139	PHE
34	EB	188	GLN
34	EB	194	ARG
34	EB	204	ASN
34	EB	209	GLN
34	EB	218	LYS
34	EB	223	VAL
34	EB	224	THR
35	DA	341	TRP
35	DA	396	LEU
35	DA	403	LEU
35	DA	405	VAL
35	DA	470	ILE
35	DA	477	TYR
35	DA	479	ARG
35	DA	487	ASP
35	DA	491	MET
35	DA	493	ARG
35	DA	496	GLU
35	DA	500	LEU
35	DA	502	LEU
35	DA	509	LEU
35	DA	511	LEU
35	DA	588	ILE
35	DA	628	LEU
35	DA	639	LEU
35	DA	661	GLU
35	DA	667	THR
35	DA	675	ASP
35	DA	721	GLU
35	DA	722	THR
35	DA	743	PHE

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Mol	Chain	Res	Type
35	DA	776	LEU
35	DA	828	GLU
35	DA	848	LEU
35	DA	849	CYS
35	DA	863	VAL
35	DA	867	ASP
35	DA	951	THR
35	DA	966	VAL
35	DA	1052	ARG
35	DA	1053	PHE
35	DA	1055	VAL
35	DA	1058	HIS
35	DA	1165	LEU
35	DA	1180	VAL
35	DA	1203	GLU
36	DB	24	ARG
36	DB	66	ASN
36	DB	105	TYR
36	DB	114	VAL
36	DB	125	GLU
36	DB	134	LEU
36	DB	136	LYS
36	DB	138	VAL
36	DB	140	GLU
36	DB	149	ASN
36	DB	166	VAL
36	DB	177	VAL
36	DB	220	LEU
36	DB	221	VAL
36	DB	225	TYR
36	DB	229	MET
36	DB	230	ARG
36	DB	232	LYS
36	DB	286	GLU
36	DB	288	PHE
36	DB	309	ILE
36	DB	314	VAL
36	DB	316	VAL
36	DB	323	SER
36	DB	355	PHE
36	DB	365	SER
36	DB	413	LEU

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Mol	Chain	Res	Type
36	DB	414	LEU
36	DB	418	PHE
36	DB	430	HIS
36	DB	431	LEU
36	DB	435	ILE
36	DB	449	PHE
36	DB	454	HIS
36	DB	484	SER
36	DB	486	GLN
36	DB	487	LYS
36	DB	494	SER
36	DB	501	SER
36	DB	510	VAL
36	DB	566	VAL
36	DB	583	GLU
36	DB	625	LEU
36	DB	626	LEU
36	DB	636	VAL
36	DB	637	LEU
36	DB	638	ARG
36	DB	646	ASP
36	DB	670	GLU
36	DB	671	LYS
36	DB	674	THR
36	DB	678	ARG
36	DB	693	ARG
36	DB	697	SER
36	DB	699	CYS
36	DB	709	MET
36	DB	712	THR
36	DB	760	LEU
36	DB	763	VAL
36	DB	764	HIS
36	DB	785	ARG
36	DB	786	LYS
36	DB	787	ASN
36	DB	788	LYS
36	DB	791	ASP
36	DB	810	VAL
36	DB	812	VAL
36	DB	821	ASN
36	DB	846	TYR

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Mol	Chain	Res	Type
36	DB	851	THR
36	DB	901	ASP
36	DB	916	ASN
36	DB	923	ARG
36	DB	944	LEU
36	DB	945	CYS
36	DB	946	ASN
36	DB	981	LEU
36	DB	983	ARG
37	DD	889	HIS
37	DD	893	GLU
37	DD	894	LEU
37	DD	919	GLU
37	DD	920	THR
37	DD	950	LEU
38	DE	214	TYR
38	DE	224	PHE
38	DE	229	LEU
38	DE	232	HIS
38	DE	235	GLU
38	DE	239	LEU
38	DE	240	PHE
38	DE	268	HIS
38	DE	270	ASP
38	DE	285	LEU
38	DE	307	LEU
38	DE	326	ASN
38	DE	341	ILE
38	DE	359	LEU
38	DE	377	LEU
38	DE	474	THR
38	DE	476	VAL
38	DE	477	ASP
38	DE	507	VAL
38	DE	515	LEU
38	DE	521	ASP
38	DE	523	VAL
38	DE	542	HIS
38	DE	551	PHE
38	DE	559	LEU
38	DE	562	SER
38	DE	567	VAL

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Mol	Chain	Res	Type
38	DE	570	TRP
38	DE	572	LEU
38	DE	585	ASN
38	DE	593	PHE
38	DE	629	ASP
38	DE	635	PHE
38	DE	636	HIS
38	DE	653	LEU
38	DE	668	HIS
38	DE	675	LEU
38	DE	696	TRP
38	DE	715	CYS
38	DE	718	ARG
38	DE	719	PHE
38	DE	747	LEU
38	DE	761	LEU
38	DE	765	SER
38	DE	785	PHE
39	DF	12	THR
39	DF	55	LEU
39	DF	60	MET
39	DF	63	ARG
39	DF	66	LEU
39	DF	83	LEU
39	DF	114	LEU
39	DF	122	LEU
39	DF	136	LEU
39	DF	211	ARG
39	DF	252	LEU
39	DF	253	TYR
39	DF	273	GLN
39	DF	274	ASN
39	DF	279	LEU
39	DF	294	THR
39	DF	297	LEU
39	DF	298	GLU
39	DF	301	VAL
39	DF	304	LEU
39	DF	320	ARG
39	DF	324	ASP
39	DF	342	LYS
39	DF	388	ILE

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Mol	Chain	Res	Type
39	DF	412	LEU
39	DF	427	LEU
40	DG	60	ARG
40	DG	73	VAL
40	DG	90	ASP
40	DG	127	GLU
40	DG	128	LYS
40	DG	129	LYS
40	DG	131	ILE
40	DG	141	LYS
40	DG	143	VAL
40	DG	144	ARG
40	DG	145	LYS
40	DG	146	ARG
40	DG	147	ARG
40	DG	149	ARG
40	DG	150	LYS
40	DG	184	ILE
41	DH	47	GLU
41	DH	50	PHE
41	DH	59	GLU
41	DH	80	CYS
41	DH	104	VAL
41	DH	135	THR
41	DH	142	HIS
41	DH	153	PHE
41	DH	160	ILE
41	DH	161	LYS
41	DH	169	VAL
41	DH	175	LEU
41	DH	200	THR
41	DH	232	LEU
42	DI	60	HIS
42	DI	67	ASP
42	DI	119	ARG
42	DI	132	LEU
43	DJ	127	THR
43	DJ	145	GLU
43	DJ	198	GLU
44	DL	56	GLN
44	DL	59	THR
44	DL	63	LEU

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Mol	Chain	Res	Type
45	Dc	12	VAL
45	Dc	33	LEU
45	Dc	44	GLN
45	Dc	62	ILE
45	Dc	77	LEU
45	Dc	118	GLU
45	Dc	124	ILE
37	Dd	860	VAL
37	Dd	863	LEU
37	Dd	894	LEU
37	Dd	917	ILE
37	Dd	929	LYS
37	Dd	936	GLN
37	Dd	1079	LEU
37	Dd	1084	LEU
38	De	205	TYR
38	De	208	GLN
38	De	238	GLN
38	De	239	LEU
38	De	243	LEU
38	De	268	HIS
38	De	286	THR
38	De	324	LYS
38	De	328	GLN
38	De	334	GLN
38	De	337	LEU
38	De	365	ARG
38	De	369	LYS
38	De	424	GLN
38	De	450	ARG
38	De	453	LEU
38	De	456	ASP
38	De	465	THR
38	De	470	TYR
38	De	476	VAL
38	De	477	ASP
38	De	509	GLN
38	De	522	ASP
38	De	523	VAL
38	De	542	HIS
38	De	551	PHE
38	De	556	ASN

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Mol	Chain	Res	Type
38	De	570	TRP
38	De	585	ASN
38	De	593	PHE
38	De	634	ARG
38	De	635	PHE
38	De	651	VAL
38	De	653	LEU
38	De	662	VAL
38	De	663	ARG
38	De	668	HIS
38	De	675	LEU
38	De	677	PHE
38	De	704	VAL
38	De	719	PHE
38	De	720	SER
38	De	725	ILE
38	De	746	ASP
38	De	747	LEU
38	De	756	THR
38	De	761	LEU
38	De	766	GLN
38	De	778	THR
38	De	785	PHE
38	De	790	LEU
39	Df	64	GLN
39	Df	92	ILE
39	Df	104	LEU
39	Df	109	GLU
39	Df	125	VAL
39	Df	214	HIS
39	Df	317	LEU
39	Df	320	ARG
39	Df	325	ASN
39	Df	337	VAL
39	Df	388	ILE
39	Df	391	LEU
39	Df	403	ILE
42	Di	15	ASP
42	Di	28	ILE
42	Di	31	TYR
42	Di	70	ASP
43	Dj	125	ASP

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Mol	Chain	Res	Type
43	Dj	144	PHE
43	Dj	197	MET
46	Dk	124	TYR
46	Dk	144	THR
46	Dk	146	VAL
46	Dk	178	GLU
44	Dl	59	THR
44	Dl	74	GLU
44	Dl	141	LYS
44	Dl	144	THR
47	Dm	32	PHE
47	Dm	45	ASP
47	Dm	50	TYR
47	Dm	55	ASP
47	Dm	82	GLN
47	Dm	86	ILE
47	Dm	91	ARG
48	DO	31	GLN
48	DO	55	ARG
48	DO	56	VAL
48	DO	59	ARG
49	DP	176	CYS
49	DP	196	ARG
49	DP	197	PHE
49	DP	204	ILE
49	DP	250	PHE
49	DP	278	GLN
49	DP	300	ILE
49	DP	306	VAL
49	DP	323	GLU
50	DQ	311	GLU
50	DQ	317	GLU
50	DQ	340	ASP
51	BA	36	GLU
51	BA	44	ARG
51	BA	48	VAL
51	BA	120	GLU
51	BA	128	ILE
51	BA	138	THR
51	BA	173	VAL
51	BA	176	THR
51	BA	177	PHE

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Mol	Chain	Res	Type
51	BA	193	ARG
51	BA	195	PHE
51	BA	245	VAL
51	BA	280	VAL
51	BA	286	ARG
51	BA	310	VAL
52	FB	4	ARG
52	FB	48	THR
52	FB	51	ARG
52	FB	94	THR
52	FB	106	LEU
52	FB	124	TYR
52	FB	137	LYS
52	FB	141	LEU
52	FB	148	VAL
52	FB	158	ASN
52	FB	160	GLN
52	FB	174	LYS
52	FB	175	ARG
52	FB	177	ARG
52	FB	193	LYS
52	FB	197	TYR
52	FB	206	THR
52	FB	211	VAL
52	FB	225	VAL
55	PA	22	GLN
55	PA	38	GLU
55	PA	45	GLU
55	PA	47	THR
55	PA	57	LEU
55	PA	59	ASP
55	PA	65	ILE
55	PA	66	GLU
55	PA	111	CYS
55	PA	114	CYS
55	PA	116	LYS
55	PA	132	LYS
55	PA	138	LYS
55	PA	143	HIS
55	PA	198	LEU
55	PA	199	TYR
55	PA	215	LEU

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Mol	Chain	Res	Type
55	PA	216	LEU
55	PA	221	VAL
55	PA	255	VAL
55	PA	265	VAL
55	PA	273	GLN
55	PA	274	ASP
55	PA	276	LEU
55	PA	309	LEU
55	PA	318	VAL
55	PA	327	ARG
55	PA	329	MET
55	PA	336	LEU
55	PA	350	VAL
55	PA	357	LYS
55	PA	373	LEU
55	PA	375	ILE
55	PA	408	ARG
55	PA	452	ASP
55	PA	475	ARG
55	PA	481	THR
55	PA	483	ARG
55	PA	484	LEU
55	PA	509	LEU
55	PA	510	GLU
55	PA	517	GLU
55	PA	521	VAL
55	PA	534	VAL
55	PA	539	GLN
55	PA	592	PHE
55	PA	621	ILE
55	PA	628	VAL
55	PA	647	THR
55	PA	676	ILE
55	PA	681	LEU
55	PA	685	HIS
55	PA	689	ILE
55	PA	693	ILE
55	PA	705	THR
55	PA	719	LYS
55	PA	736	THR
55	PA	743	ARG
55	PA	749	ARG

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Mol	Chain	Res	Type
55	PA	762	GLU
55	PA	793	VAL
55	PA	862	ARG
55	PA	873	VAL
55	PA	875	TYR
55	PA	879	VAL
55	PA	906	LEU
55	PA	908	THR
55	PA	909	LEU
55	PA	921	ARG
55	PA	922	PHE
55	PA	924	TYR
55	PA	972	THR
55	PA	978	VAL
55	PA	1021	VAL
55	PA	1031	ARG
55	PA	1034	GLN
55	PA	1057	GLU
55	PA	1078	GLN
55	PA	1121	VAL
55	PA	1129	ASN
55	PA	1132	LYS
55	PA	1136	THR
55	PA	1139	LEU
55	PA	1144	LEU
55	PA	1152	GLU
55	PA	1157	ILE
55	PA	1158	LEU
55	PA	1182	GLN
55	PA	1186	VAL
55	PA	1195	VAL
55	PA	1196	TYR
55	PA	1198	GLU
55	PA	1201	ASP
55	PA	1204	VAL
55	PA	1206	ARG
55	PA	1226	LEU
55	PA	1246	ILE
55	PA	1279	MET
55	PA	1281	ASP
55	PA	1292	MET
55	PA	1293	LEU

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Mol	Chain	Res	Type
55	PA	1298	LEU
55	PA	1310	HIS
55	PA	1314	THR
55	PA	1325	ASP
55	PA	1337	GLU
55	PA	1341	VAL
55	PA	1362	ILE
55	PA	1402	CYS
55	PA	1405	MET
55	PA	1412	MET
55	PA	1432	PHE
55	PA	1435	THR
55	PA	1441	GLU
55	PA	1456	GLU
55	PA	1475	LEU
55	PA	1482	TYR
55	PA	1646	THR
55	PA	1647	SER
55	PA	1649	SER
55	PA	1650	TYR
55	PA	1653	THR
55	PA	1654	SER
55	PA	1657	TYR
55	PA	1658	SER
55	PA	1661	SER
55	PA	1663	SER
55	PA	1664	TYR
55	PA	1666	PRO
55	PA	1667	THR
55	PA	1678	TYR
55	PA	1791	SER
55	PA	1794	SER
55	PA	1795	PRO
55	PA	1796	SER
55	PA	1798	SER
56	PB	29	VAL
56	PB	42	GLN
56	PB	50	PHE
56	PB	65	ILE
56	PB	85	LEU
56	PB	93	LEU
56	PB	132	VAL

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Mol	Chain	Res	Type
56	PB	142	THR
56	PB	193	VAL
56	PB	194	LEU
56	PB	206	TYR
56	PB	225	LEU
56	PB	235	ILE
56	PB	254	GLN
56	PB	257	VAL
56	PB	259	THR
56	PB	285	LEU
56	PB	289	ILE
56	PB	313	GLU
56	PB	330	VAL
56	PB	332	LYS
56	PB	338	TYR
56	PB	348	LEU
56	PB	357	CYS
56	PB	359	THR
56	PB	361	LYS
56	PB	388	TYR
56	PB	409	LYS
56	PB	414	GLU
56	PB	420	GLN
56	PB	433	LEU
56	PB	453	TRP
56	PB	458	LYS
56	PB	461	GLN
56	PB	463	ARG
56	PB	466	VAL
56	PB	469	VAL
56	PB	497	LYS
56	PB	526	LEU
56	PB	532	ILE
56	PB	541	ILE
56	PB	542	LEU
56	PB	578	LYS
56	PB	581	GLU
56	PB	594	MET
56	PB	597	ILE
56	PB	604	ILE
56	PB	607	ILE
56	PB	626	LEU

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Mol	Chain	Res	Type
56	PB	629	GLU
56	PB	631	GLN
56	PB	648	TYR
56	PB	651	TYR
56	PB	662	VAL
56	PB	671	GLU
56	PB	675	LEU
56	PB	678	THR
56	PB	731	GLN
56	PB	752	TYR
56	PB	767	LEU
56	PB	782	ILE
56	PB	786	THR
56	PB	806	PHE
56	PB	809	VAL
56	PB	815	LYS
56	PB	823	PHE
56	PB	889	LYS
56	PB	890	ARG
56	PB	896	LEU
56	PB	901	THR
56	PB	927	ARG
56	PB	1006	VAL
56	PB	1022	LEU
56	PB	1028	LEU
56	PB	1048	TYR
56	PB	1057	ASP
56	PB	1062	ARG
56	PB	1070	LEU
56	PB	1080	ARG
56	PB	1116	VAL
56	PB	1119	CYS
56	PB	1120	ASN
56	PB	1121	LEU
56	PB	1124	ILE
56	PB	1130	THR
56	PB	1136	GLU
56	PB	1137	CYS
56	PB	1138	ARG
56	PB	1140	CYS
56	PB	1141	ARG
56	PB	1142	ASN

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Mol	Chain	Res	Type
56	PB	1143	LYS
56	PB	1156	LYS
56	PB	1158	LEU
57	PC	15	THR
57	PC	44	ILE
57	PC	61	ASP
57	PC	63	PHE
57	PC	76	ASP
57	PC	79	VAL
57	PC	82	LEU
57	PC	88	CYS
57	PC	103	LEU
57	PC	112	THR
57	PC	120	LEU
57	PC	177	ASN
57	PC	179	THR
57	PC	193	ARG
57	PC	213	GLU
57	PC	231	TYR
58	PD	15	GLU
58	PD	32	LEU
58	PD	41	LEU
58	PD	42	GLU
58	PD	45	LYS
58	PD	54	GLU
58	PD	67	TYR
58	PD	73	ARG
58	PD	74	PHE
58	PD	95	PHE
58	PD	103	LEU
58	PD	107	THR
58	PD	110	GLU
58	PD	118	LEU
58	PD	131	LEU
58	PD	135	GLN
59	PE	20	LEU
59	PE	29	THR
59	PE	32	GLU
59	PE	38	GLU
59	PE	52	ARG
59	PE	57	ASP
59	PE	82	VAL

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Mol	Chain	Res	Type
59	PE	84	ILE
59	PE	103	LEU
59	PE	108	GLN
59	PE	139	ILE
59	PE	159	LEU
59	PE	165	LEU
59	PE	191	VAL
60	PF	58	THR
60	PF	71	LEU
60	PF	83	LEU
60	PF	86	GLU
60	PF	87	THR
60	PF	91	LEU
60	PF	95	LYS
61	PG	7	LEU
61	PG	8	GLU
61	PG	11	ILE
61	PG	13	LEU
61	PG	30	LEU
61	PG	35	GLU
61	PG	37	THR
61	PG	39	THR
61	PG	42	TYR
61	PG	45	VAL
61	PG	48	VAL
61	PG	50	THR
61	PG	63	ARG
61	PG	76	VAL
61	PG	77	PHE
61	PG	89	VAL
61	PG	101	ILE
61	PG	117	MET
61	PG	147	ILE
61	PG	148	VAL
61	PG	150	THR
61	PG	152	VAL
61	PG	168	LEU
62	PH	4	ILE
62	PH	63	THR
62	PH	64	LEU
62	PH	69	THR
62	PH	72	ASP

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Mol	Chain	Res	Type
62	PH	76	ASN
62	PH	102	ASP
62	PH	110	THR
62	PH	132	LEU
62	PH	141	VAL
63	PI	12	VAL
63	PI	29	ASP
63	PI	51	SER
63	PI	53	ILE
63	PI	58	ILE
63	PI	69	ILE
63	PI	81	THR
64	PJ	54	ASP
65	PK	12	LEU
65	PK	27	VAL
65	PK	61	TYR
65	PK	69	HIS
65	PK	94	LEU
66	PL	32	ASP
66	PL	53	VAL
67	FA	37	VAL
67	FA	122	THR
68	w	1	MET
68	w	2	GLU
68	w	5	LEU
68	w	7	SER
68	w	10	GLU
68	w	11	GLU
68	w	17	VAL
68	w	18	ILE
68	w	25	MET
68	w	36	LYS
68	w	37	LEU
68	w	41	LEU
68	w	44	PHE
68	w	48	TRP
68	w	51	LEU
68	w	130	ASP
68	w	171	LEU
68	w	173	ARG
68	w	363	ARG
68	w	425	MET

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Mol	Chain	Res	Type
68	w	726	ASN
69	x	4	VAL
69	x	52	ILE
69	x	54	PRO
69	x	87	ASP
69	x	107	ARG
69	x	218	CYS
69	x	359	CYS
69	x	477	TYR
69	x	479	SER
69	x	564	SER
69	x	565	SER
69	x	567	MET
69	x	596	VAL
69	x	686	LYS
69	x	802	MET
69	x	812	LEU
69	x	897	LEU
69	x	989	LEU
70	p	162	VAL
70	p	170	LEU
70	p	232	ASP
70	p	252	LYS
70	p	289	ASP
70	p	295	LEU
70	p	401	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (353) such sidechains are listed below:

Mol	Chain	Res	Type
1	a	56	GLN
1	a	87	GLN
1	a	131	ASN
1	a	146	ASN
1	a	162	ASN
1	a	167	ASN
1	a	254	ASN
1	a	333	GLN
1	a	359	HIS
1	a	439	GLN
1	a	459	ASN
2	m	26	GLN

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Mol	Chain	Res	Type
2	m	80	GLN
2	m	100	GLN
2	m	106	GLN
2	m	116	GLN
2	m	124	GLN
3	d	113	GLN
3	d	119	GLN
3	d	127	GLN
3	d	191	ASN
4	f	61	ASN
4	f	72	HIS
4	f	84	GLN
4	f	87	GLN
4	f	107	GLN
5	g	25	ASN
5	g	50	GLN
5	g	88	ASN
5	g	124	ASN
5	g	142	GLN
5	g	166	ASN
6	h	18	GLN
6	h	65	HIS
6	h	102	HIS
6	h	139	GLN
6	h	144	ASN
7	r	30	HIS
7	r	54	HIS
7	r	134	HIS
8	t	19	GLN
8	t	103	GLN
8	t	192	GLN
8	t	204	GLN
9	j	11	HIS
9	j	38	ASN
9	j	92	ASN
10	k	41	ASN
10	k	66	GLN
10	k	77	GLN
10	k	91	GLN
11	n	189	GLN
11	n	201	HIS
11	n	270	GLN

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Mol	Chain	Res	Type
11	n	304	GLN
11	n	311	GLN
11	n	330	HIS
11	n	411	GLN
11	n	507	GLN
11	n	590	GLN
11	n	668	HIS
11	n	698	GLN
11	n	841	ASN
11	n	880	ASN
11	n	909	GLN
12	q	139	GLN
12	q	262	GLN
12	q	290	HIS
12	q	292	GLN
12	q	367	HIS
12	q	437	HIS
12	q	461	GLN
12	q	496	ASN
12	q	506	HIS
12	q	519	GLN
12	q	533	GLN
12	q	547	GLN
12	q	565	ASN
12	q	595	GLN
12	q	611	GLN
12	q	626	GLN
12	q	634	ASN
14	u	7	GLN
14	u	21	ASN
14	u	97	ASN
15	v	16	GLN
15	v	32	ASN
15	v	53	GLN
15	v	56	GLN
15	v	58	ASN
15	v	89	ASN
16	z	483	ASN
16	z	527	GLN
16	z	549	GLN
16	z	567	GLN
16	z	585	HIS

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Mol	Chain	Res	Type
16	z	592	ASN
17	c	10	ASN
17	c	41	ASN
17	c	237	GLN
17	c	278	GLN
17	c	306	HIS
17	c	311	GLN
18	e	97	GLN
18	e	132	HIS
18	e	140	GLN
19	b	66	GLN
19	b	129	GLN
19	b	136	HIS
20	l	72	GLN
20	l	102	ASN
20	l	151	GLN
21	o	701	ASN
21	o	705	HIS
21	o	753	HIS
22	i	85	GLN
23	0	156	GLN
23	0	160	GLN
23	0	281	GLN
23	0	294	HIS
23	0	298	GLN
24	8	33	ASN
24	8	56	ASN
24	8	113	HIS
24	8	130	GLN
24	8	166	ASN
25	9	3	HIS
25	9	7	GLN
25	9	37	ASN
25	9	93	ASN
25	9	136	GLN
25	9	153	GLN
25	9	183	ASN
25	9	211	GLN
26	1	309	HIS
26	1	384	HIS
27	2	147	ASN
27	2	324	HIS

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Mol	Chain	Res	Type
27	2	380	HIS
28	3	18	ASN
28	3	46	ASN
28	3	108	ASN
28	3	185	GLN
28	3	187	GLN
30	5	36	GLN
31	6	377	GLN
31	6	497	GLN
31	6	586	GLN
31	6	603	ASN
32	7	60	GLN
32	7	154	HIS
32	7	262	ASN
32	7	328	HIS
32	7	562	GLN
33	EA	65	ASN
33	EA	143	GLN
33	EA	181	ASN
34	EB	160	GLN
34	EB	193	ASN
34	EB	204	ASN
34	EB	209	GLN
35	DA	401	ASN
35	DA	569	ASN
35	DA	606	HIS
35	DA	693	GLN
35	DA	837	HIS
35	DA	860	ASN
35	DA	896	GLN
36	DB	30	HIS
36	DB	66	ASN
36	DB	123	ASN
36	DB	147	HIS
36	DB	183	GLN
36	DB	235	HIS
36	DB	279	HIS
36	DB	285	HIS
36	DB	353	GLN
36	DB	439	HIS
36	DB	486	GLN
36	DB	509	ASN

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Mol	Chain	Res	Type
36	DB	576	ASN
36	DB	599	ASN
36	DB	608	ASN
36	DB	652	GLN
36	DB	750	GLN
36	DB	823	ASN
36	DB	864	ASN
36	DB	882	HIS
37	DD	912	ASN
37	DD	925	ASN
37	DD	936	GLN
37	DD	1075	HIS
38	DE	232	HIS
38	DE	294	ASN
38	DE	334	GLN
38	DE	351	GLN
38	DE	424	GLN
38	DE	542	HIS
38	DE	585	ASN
38	DE	668	HIS
38	DE	760	ASN
39	DF	119	ASN
39	DF	221	GLN
39	DF	244	GLN
39	DF	270	ASN
39	DF	275	ASN
39	DF	349	ASN
40	DG	53	HIS
41	DH	82	HIS
41	DH	145	HIS
42	DI	38	GLN
42	DI	60	HIS
42	DI	76	GLN
42	DI	98	GLN
42	DI	126	ASN
43	DJ	160	GLN
44	DL	117	GLN
45	Dc	27	GLN
45	Dc	44	GLN
45	Dc	94	HIS
37	Dd	912	ASN
37	Dd	1069	ASN

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Mol	Chain	Res	Type
38	De	254	ASN
38	De	294	ASN
38	De	336	HIS
38	De	368	ASN
38	De	424	GLN
38	De	542	HIS
38	De	556	ASN
38	De	585	ASN
38	De	638	ASN
38	De	668	HIS
38	De	782	HIS
39	Df	87	HIS
39	Df	119	ASN
39	Df	142	GLN
39	Df	292	ASN
39	Df	325	ASN
42	Di	81	GLN
43	Dj	160	GLN
43	Dj	173	HIS
44	Dl	64	GLN
44	Dl	73	ASN
44	Dl	148	HIS
48	DO	16	GLN
48	DO	31	GLN
48	DO	54	ASN
48	DO	77	ASN
49	DP	193	ASN
49	DP	278	GLN
50	DQ	60	HIS
50	DQ	359	ASN
51	BA	140	ASN
51	BA	234	HIS
52	FB	29	GLN
52	FB	86	GLN
52	FB	91	GLN
52	FB	112	GLN
52	FB	158	ASN
52	FB	181	GLN
55	PA	22	GLN
55	PA	123	ASN
55	PA	296	ASN
55	PA	461	GLN

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Mol	Chain	Res	Type
55	PA	465	HIS
55	PA	485	ASN
55	PA	507	GLN
55	PA	539	GLN
55	PA	739	ASN
55	PA	765	ASN
55	PA	780	ASN
55	PA	861	GLN
55	PA	904	GLN
55	PA	1101	GLN
55	PA	1105	ASN
55	PA	1310	HIS
55	PA	1410	HIS
55	PA	1445	HIS
56	PB	23	GLN
56	PB	90	GLN
56	PB	197	GLN
56	PB	227	ASN
56	PB	452	ASN
56	PB	460	HIS
56	PB	537	GLN
56	PB	582	GLN
56	PB	639	HIS
56	PB	642	GLN
56	PB	683	GLN
56	PB	716	HIS
56	PB	731	GLN
56	PB	749	HIS
56	PB	817	GLN
56	PB	930	GLN
56	PB	941	GLN
56	PB	1009	GLN
56	PB	1094	GLN
56	PB	1115	GLN
56	PB	1145	GLN
57	PC	6	GLN
57	PC	83	GLN
57	PC	217	GLN
57	PC	262	GLN
57	PC	268	GLN
58	PD	47	GLN
58	PD	135	GLN

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Mol	Chain	Res	Type
59	PE	95	GLN
59	PE	108	GLN
61	PG	139	GLN
62	PH	130	ASN
63	PI	45	GLN
64	PJ	26	GLN
65	PK	89	ASN
67	FA	121	ASN
68	w	113	GLN
68	w	293	HIS
68	w	357	HIS
68	w	358	GLN
68	w	378	GLN
68	w	421	HIS
68	w	513	ASN
68	w	726	ASN
68	w	783	GLN
68	w	822	HIS
68	w	851	ASN
68	w	874	HIS
68	w	921	HIS
68	w	923	ASN
68	w	925	HIS
68	w	972	HIS
68	w	1059	ASN
68	w	1134	GLN
68	w	1300	HIS
68	w	1320	ASN
69	x	8	GLN
69	x	111	HIS
69	x	217	GLN
69	x	266	GLN
69	x	361	ASN
69	x	380	ASN
69	x	402	ASN
69	x	404	GLN
69	x	472	ASN
69	x	502	HIS
69	x	544	HIS
70	p	63	HIS
70	p	80	HIS
70	p	225	ASN

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Mol	Chain	Res	Type
70	p	272	ASN
70	p	282	HIS
70	p	387	HIS
70	p	400	GLN
70	p	435	GLN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates (i)

There are no oligosaccharides 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	$\#\|Z\| > 2$
72	SF4	7	1000	32	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
72	SF4	7	1000	32	-	-	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

There are no such residues in this entry.

5.8 Polymer linkage issues

There are no chain breaks in this entry.

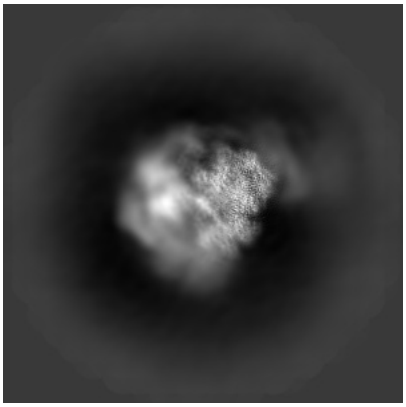
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-31207. These allow visual inspection of the internal detail of the map and identification of artifacts.

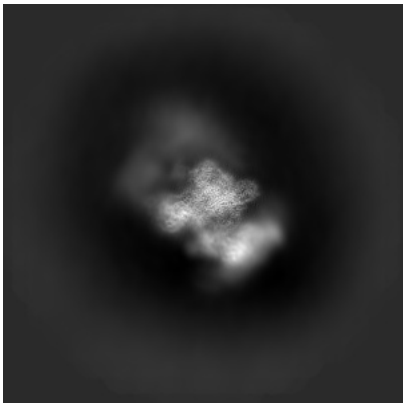
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

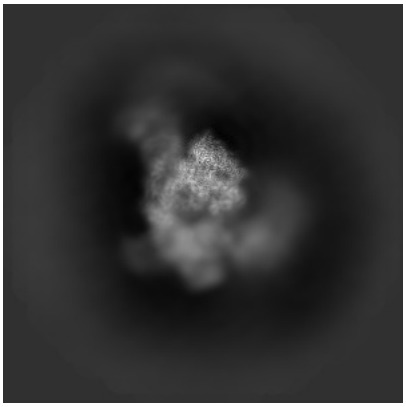
6.1.1 Primary map



X



Y

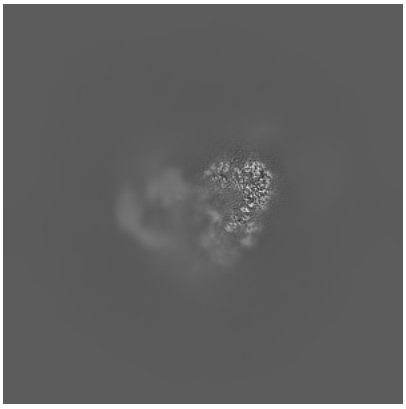


Z

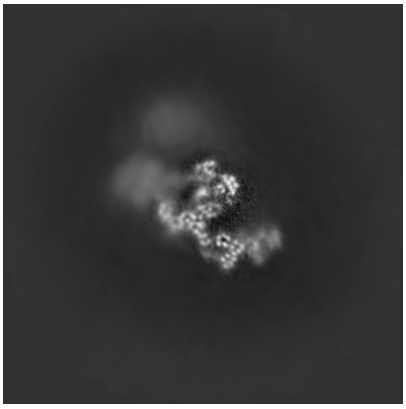
The images above show the map projected in three orthogonal directions.

6.2 Central slices

6.2.1 Primary map



X Index: 240



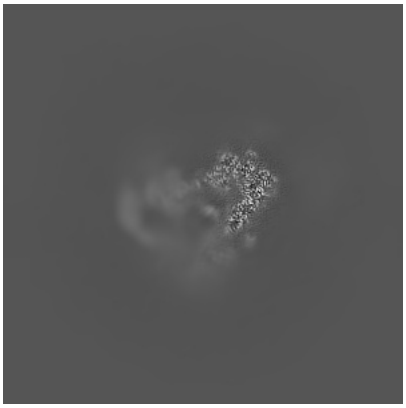
Y Index: 240

Z Index: 240

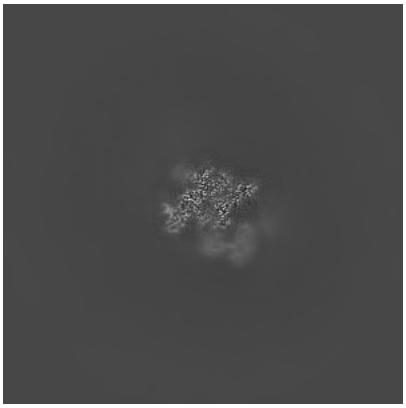
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

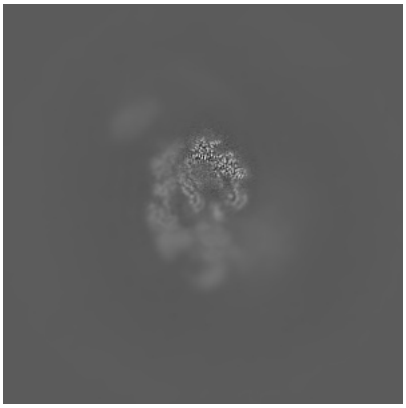
6.3.1 Primary map



X Index: 246



Y Index: 287

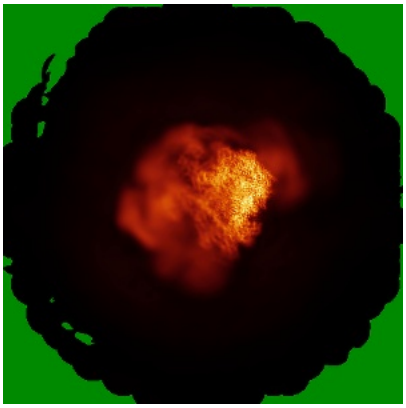


Z Index: 247

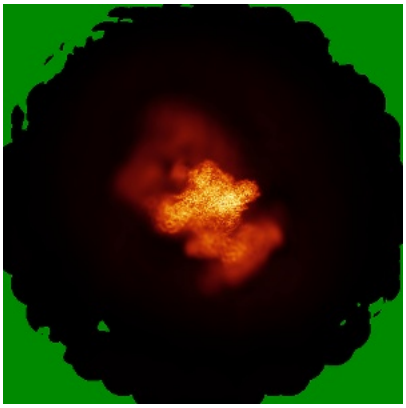
The images above show the largest variance slices of the map in three orthogonal directions.

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

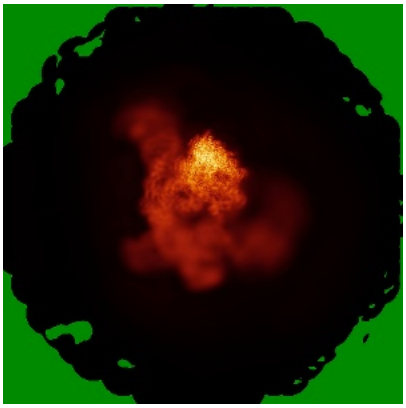
6.4.1 Primary map



X



Y

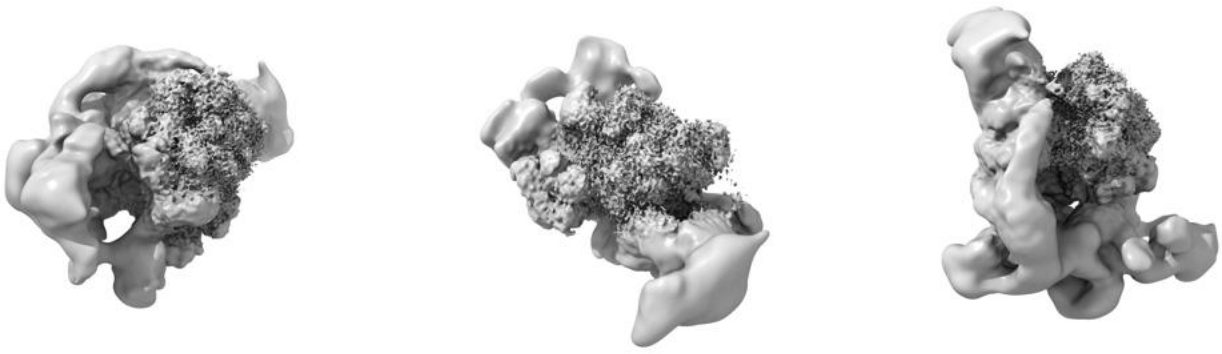


Z

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 0.41. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

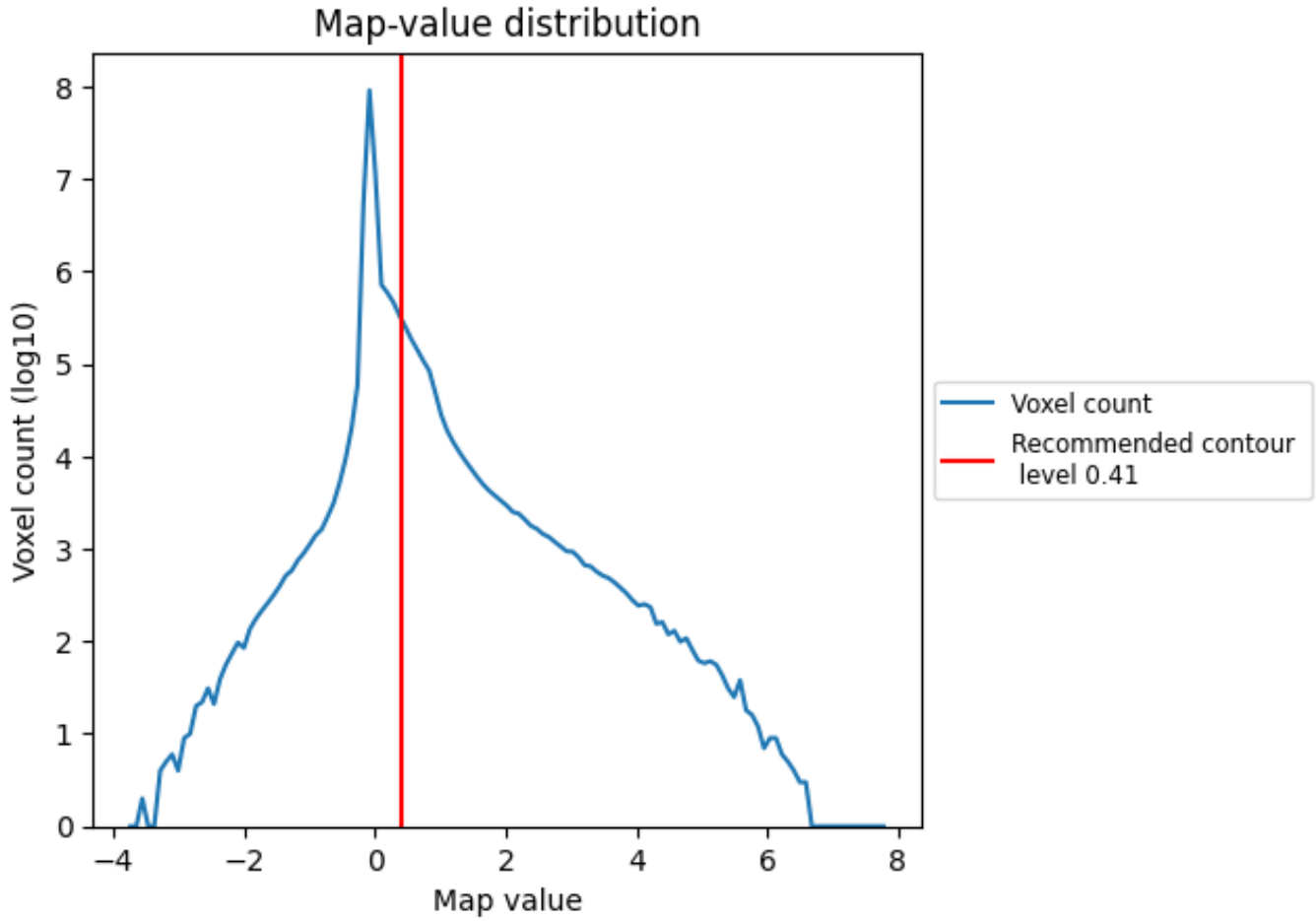
6.6 Mask visualisation (i)

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

7 Map analysis

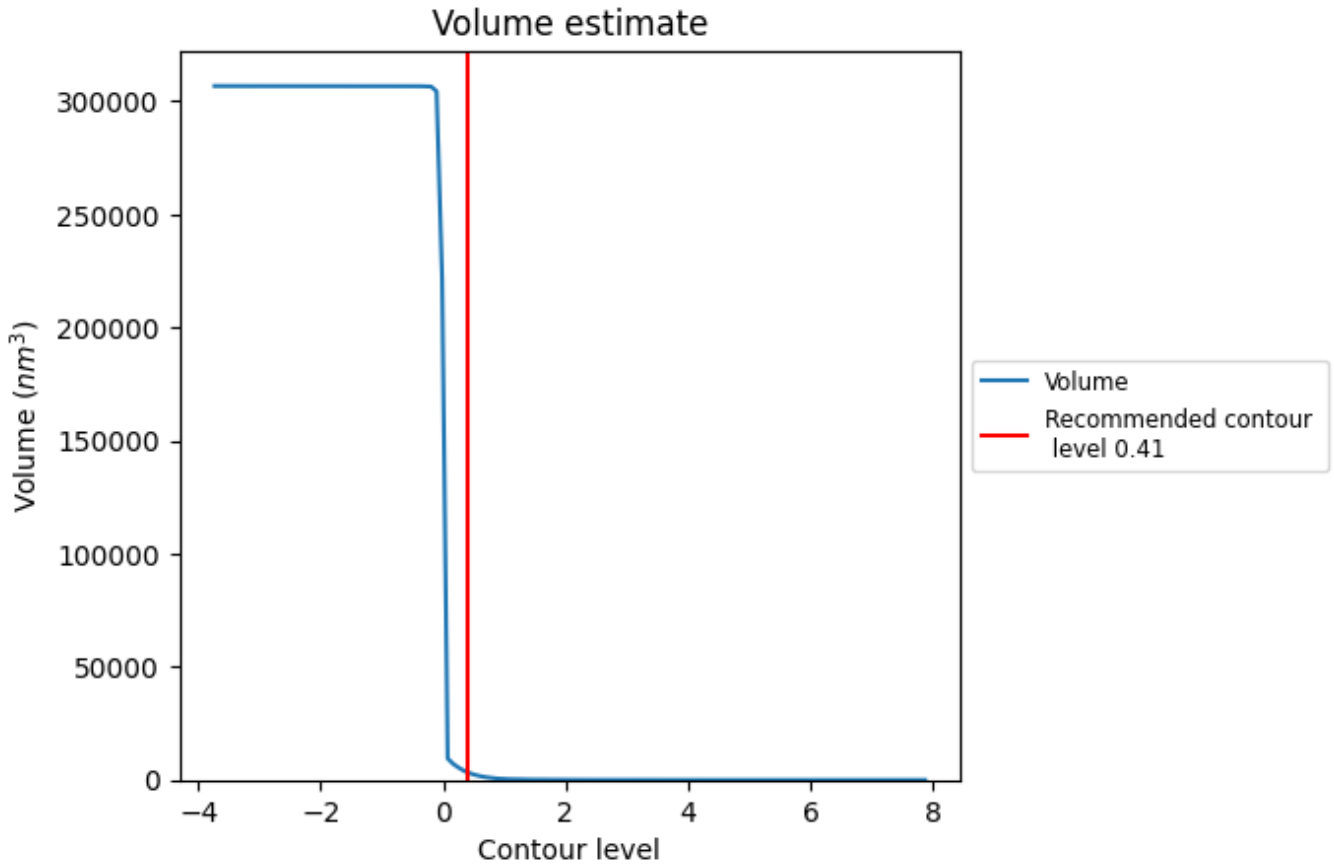
This section contains the results of statistical analysis of the map.

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.

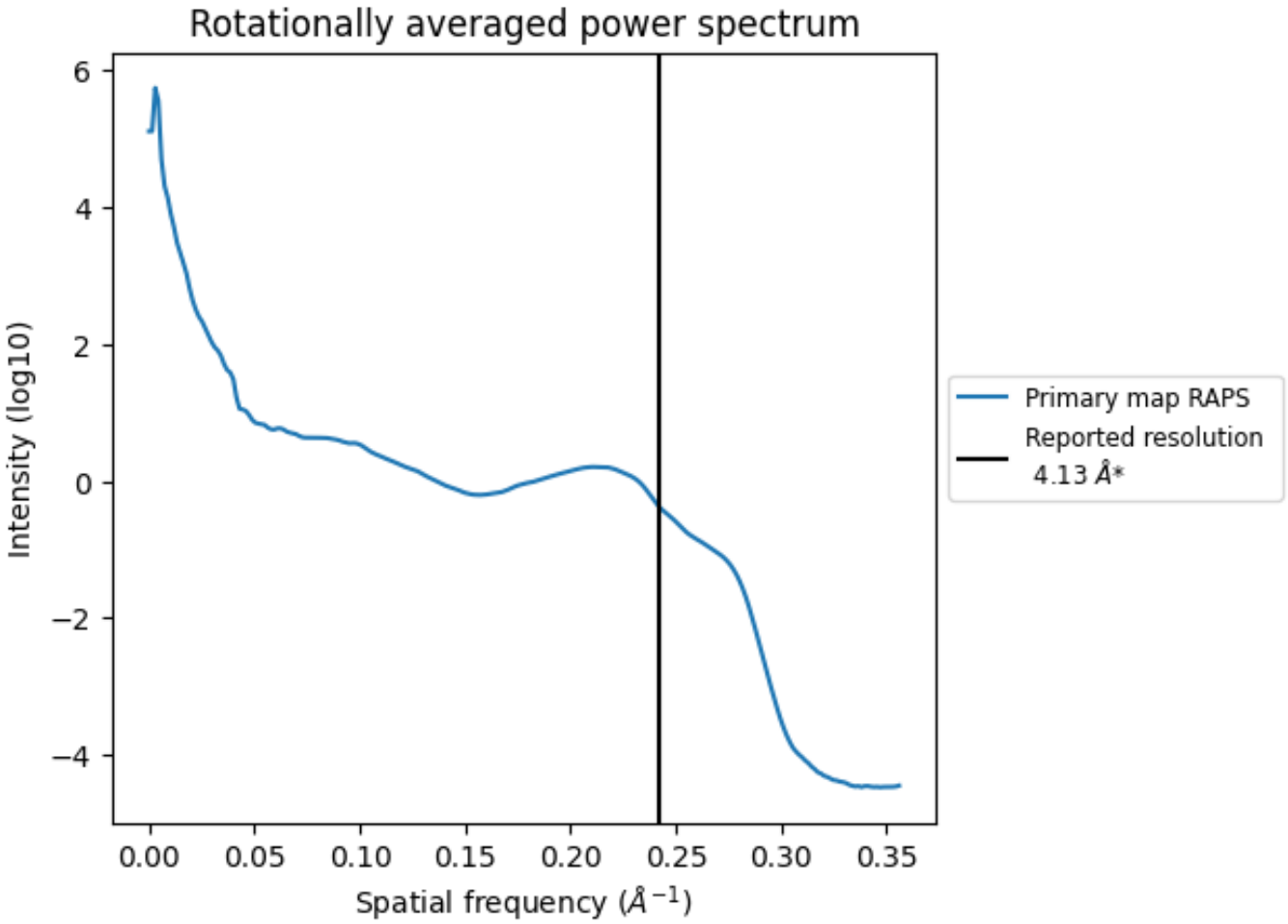
7.2 Volume estimate



The volume at the recommended contour level is 3240 nm^3; this corresponds to an approximate mass of 2927 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 0.242 Å^{-1}

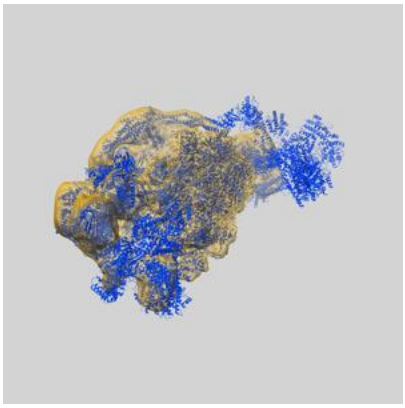
8 Fourier-Shell correlation (i)

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

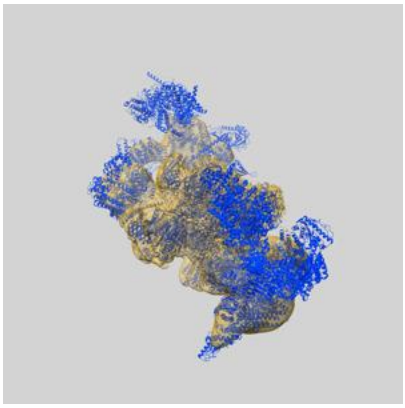
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-31207 and PDB model 7ENC. Per-residue inclusion information can be found in section 3 on page 18.

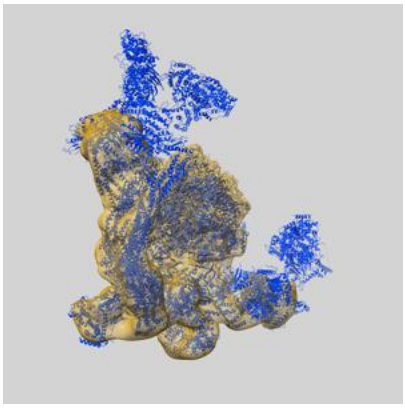
9.1 Map-model overlay



X



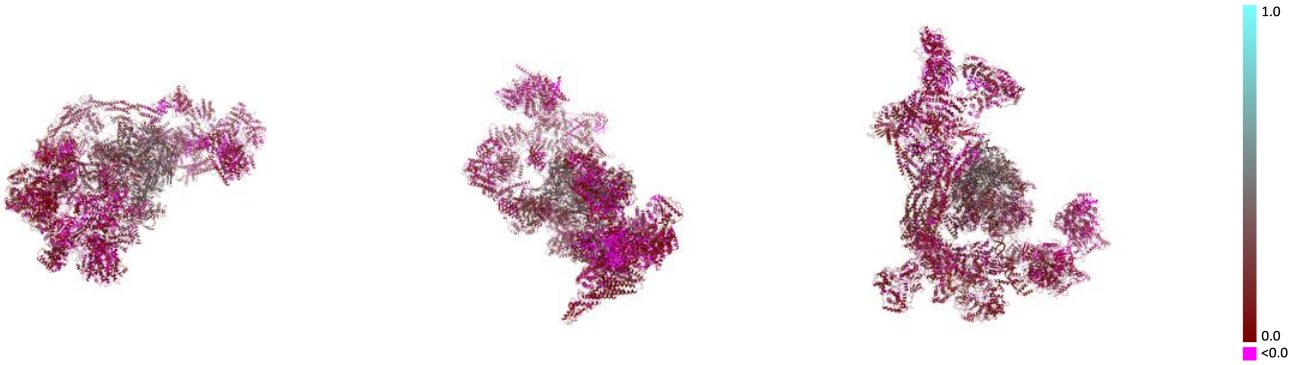
Y



Z

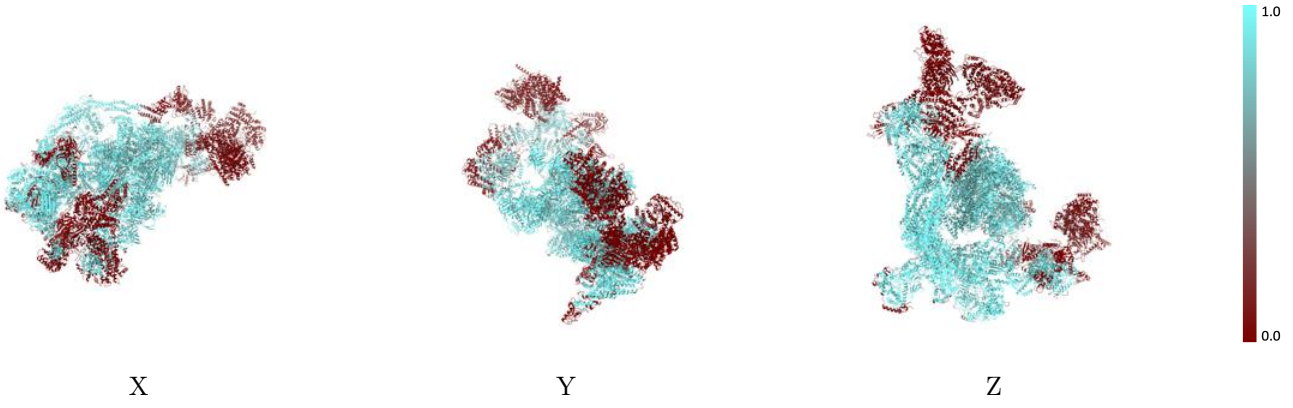
The images above show the 3D surface view of the map at the recommended contour level 0.41 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

9.2 Q-score mapped to coordinate model (i)



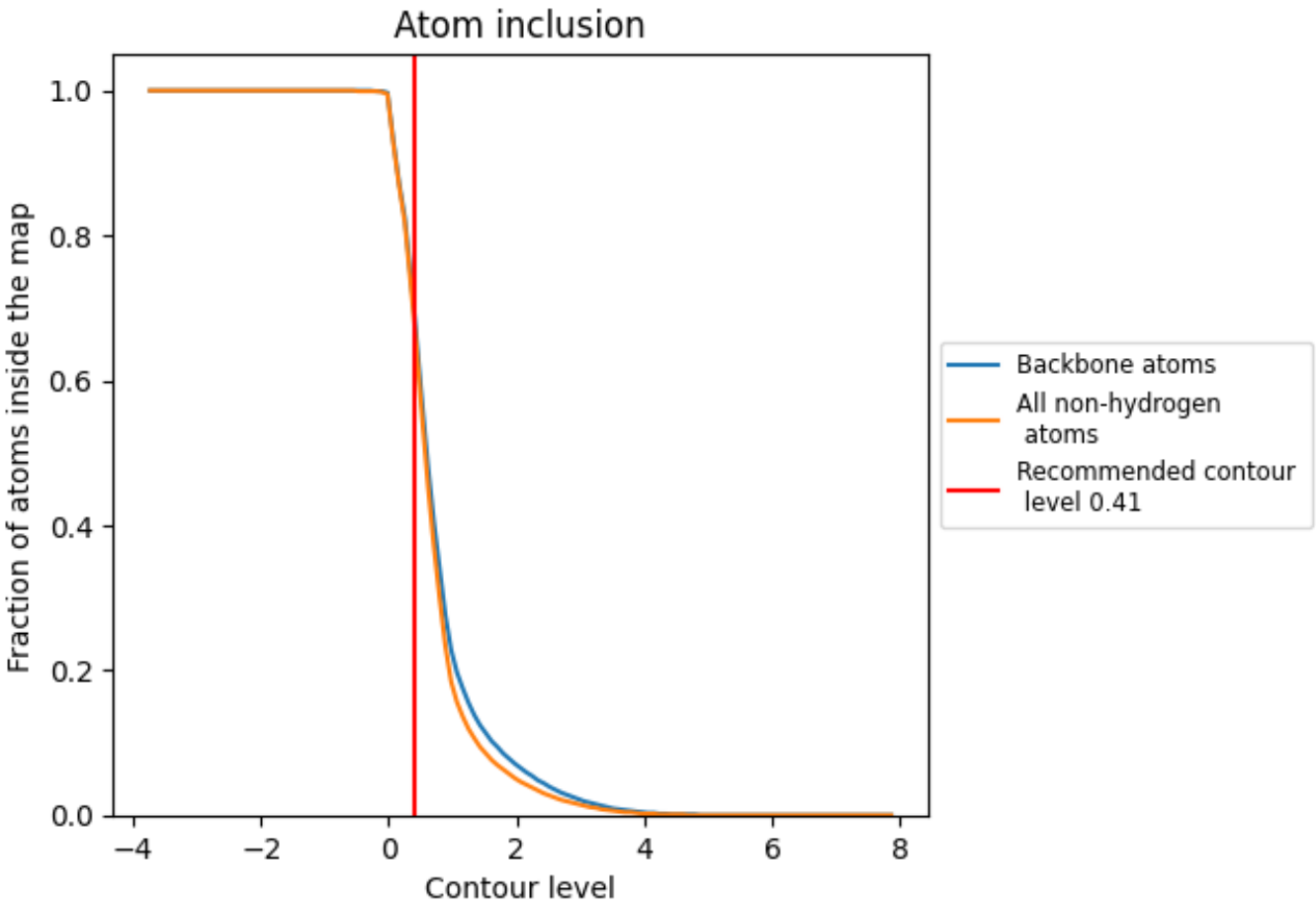
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions 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 (0.41).

9.4 Atom inclusion (i)



At the recommended contour level, 69% of all backbone atoms, 67% 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 (0.41) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.6730	0.1030
0	0.8870	0.0830
1	0.9000	0.0380
2	0.9830	0.0690
3	0.9750	0.0630
4	0.9620	0.0740
5	0.9790	0.0560
6	0.9800	0.0700
7	0.9840	0.0970
8	0.9410	0.0760
9	0.7290	0.0650
BA	0.9130	0.2020
DA	0.2540	0.0410
DB	0.8240	0.0560
DD	0.6080	0.0580
DE	0.6890	0.0520
DF	0.5060	0.0580
DG	0.0200	0.0240
DH	0.6950	0.0550
DI	0.5240	0.0260
DJ	0.5820	0.0500
DL	0.0280	0.0310
DO	0.9350	0.1010
DP	0.9670	0.1650
DQ	0.8710	0.0990
Dc	0.0000	0.0330
Dd	0.0000	0.0140
De	0.0000	0.0180
Df	0.2940	0.0470
Di	0.0000	0.0440
Dj	0.0000	0.0320
Dk	0.0000	-0.0020
Dl	0.0000	0.0200
Dm	0.0000	0.0190
EA	0.9800	0.1020

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Chain	Atom inclusion	Q-score
EB	0.9870	0.1230
FA	0.9480	0.0680
FB	0.9520	0.1150
PA	0.9230	0.2390
PB	0.9390	0.3370
PC	0.9300	0.3250
PD	0.9370	0.1590
PE	0.9560	0.2170
PF	0.8880	0.2560
PG	0.9480	0.1770
PH	0.9240	0.3110
PI	0.9260	0.1450
PJ	0.9090	0.3050
PK	0.8800	0.2840
PL	0.9180	0.2750
X	0.9990	0.1760
Y	0.9950	0.2000
a	0.0030	0.0340
b	0.5510	0.0380
c	0.8450	0.0550
d	0.7480	0.0840
e	0.9600	0.0930
f	0.9870	0.1340
g	0.9810	0.1050
h	0.9870	0.1610
i	0.5010	0.0850
j	0.9190	0.0640
k	0.9560	0.1540
l	0.9170	0.0710
m	0.9990	0.0910
n	0.8740	0.0690
o	0.6690	0.0440
p	0.0000	-0.0260
q	0.9870	0.0940
r	0.9750	0.0870
s	0.9040	0.0620
t	0.9280	0.0540
u	0.9920	0.0930
v	0.9890	0.1300
w	0.0110	0.0280
x	0.0360	0.0360
z	0.8980	0.0450