wwPDB EM Validation Summary Report ⓘ

Nov 11, 2024 – 06:32 PM JST

PDB ID	:	7EGB
EMDB ID	:	EMD-31111
Title	:	TFIID-based holo PIC on SCP promoter
Authors	:	Chen, X.; Wu, Z.; Hou, H.; Qi, Y.; Wang, X.; Li, J.; Xu, Y.
Deposited on	:	2021-03-24
Resolution	:	3.30 Å(reported)

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

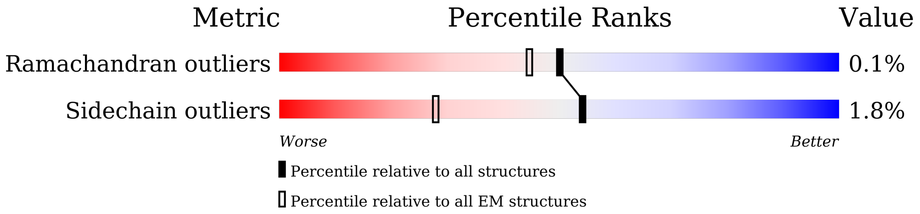
EMDB validation analysis	:	0.0.1.dev113
Mogul	:	1.8.5 (274361), CSD as541be (2020)
MolProbity	:	4.02b-467
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al.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

1 Overall quality at a glance ⓘ

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

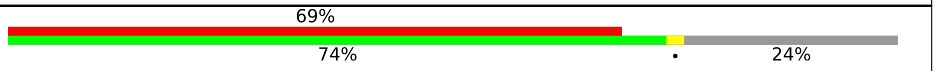
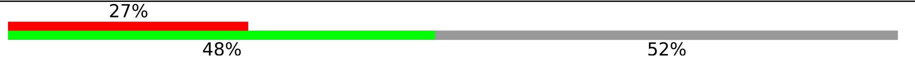
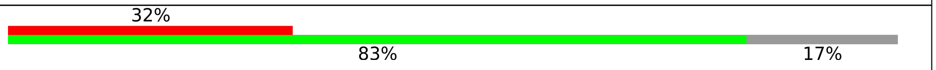
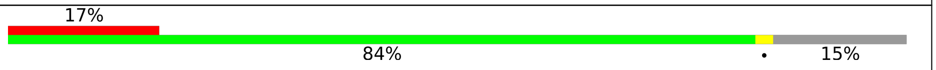
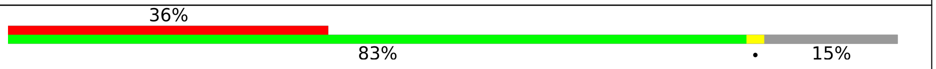
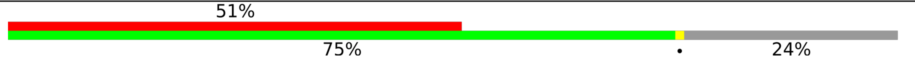
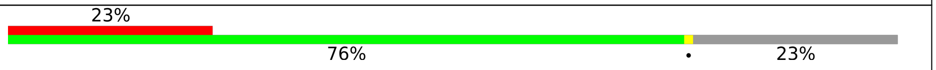
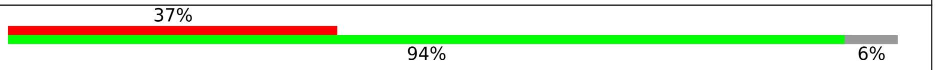
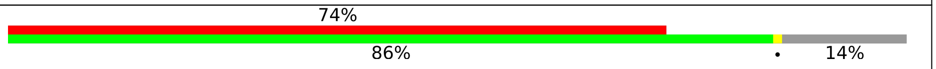
The reported resolution of this entry is 3.30 Å.

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	0	309	
2	1	548	
3	2	395	
4	3	308	
5	4	462	
6	5	71	
7	6	782	
8	7	760	
9	8	346	

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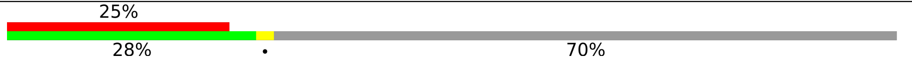
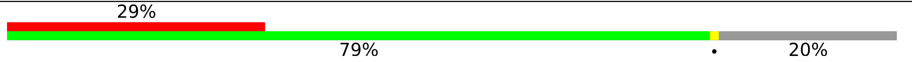
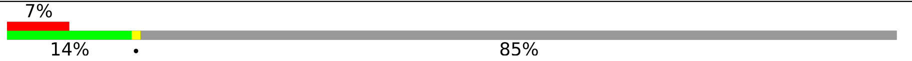
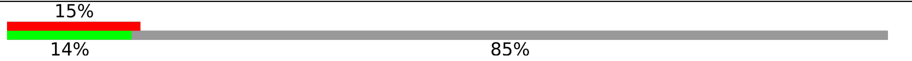
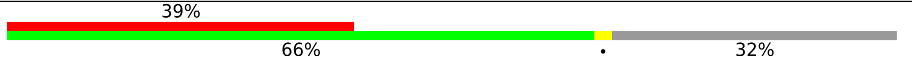
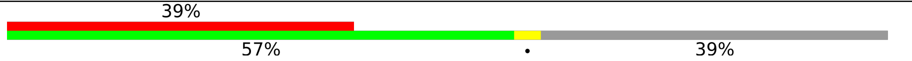
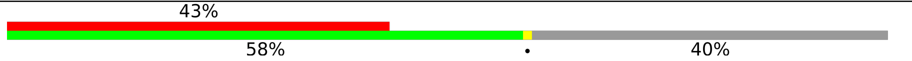
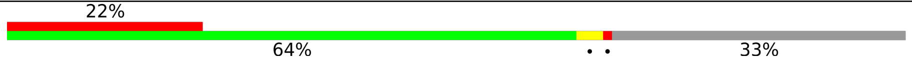
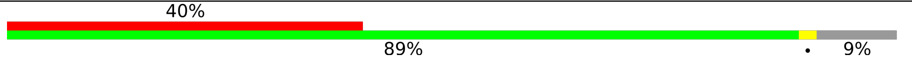
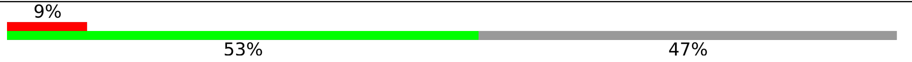
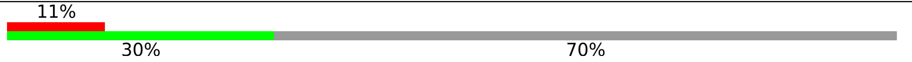
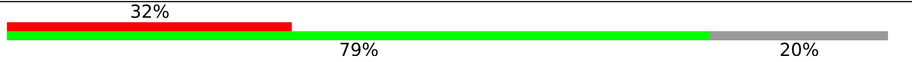
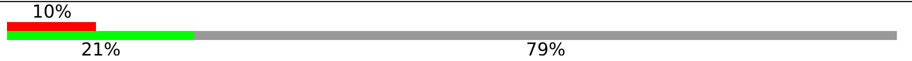
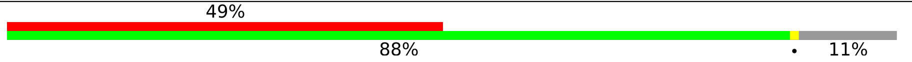
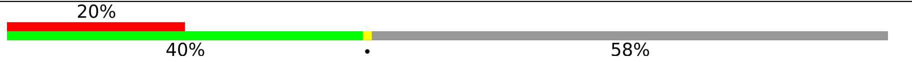
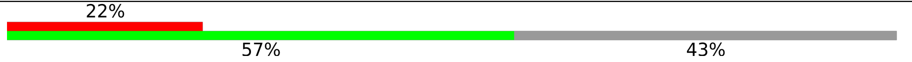
Mol	Chain	Length	Quality of chain
10	9	323	
11	A	1872	
12	B	1199	
13	D	1085	
13	d	1085	
14	E	800	
14	e	800	
15	F	677	
15	f	677	
16	G	349	
17	H	310	
18	I	264	
18	i	264	
19	J	218	
19	j	218	
20	L	161	
20	l	161	
21	O	109	
22	P	339	
23	Q	376	
24	R	316	
25	S	517	
26	T	249	
27	U	439	
28	V	291	

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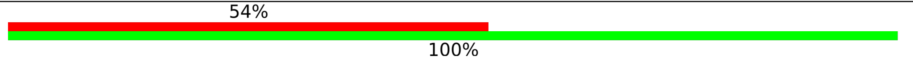
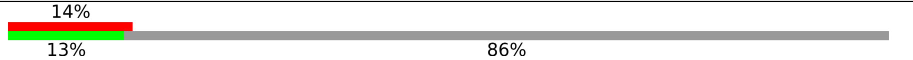
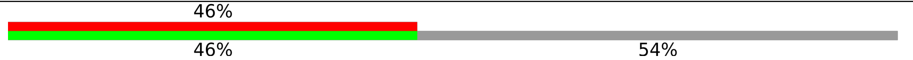
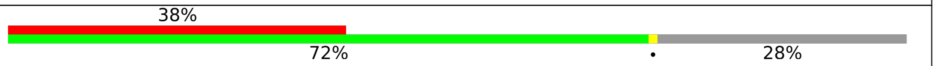
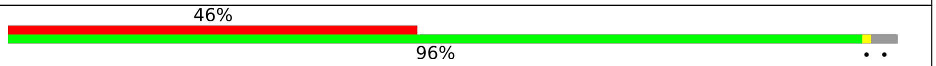
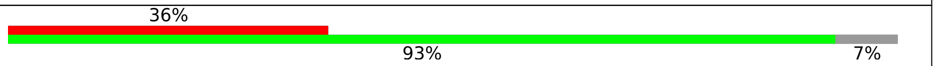
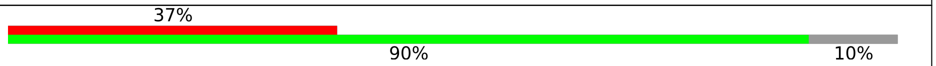
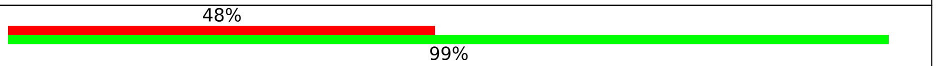
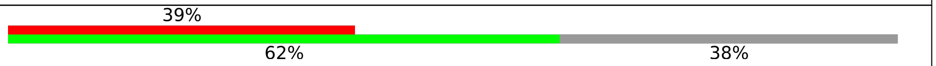
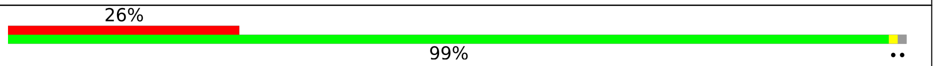
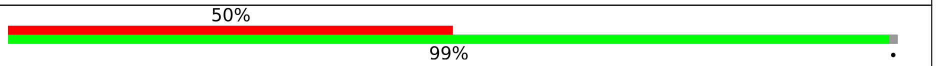
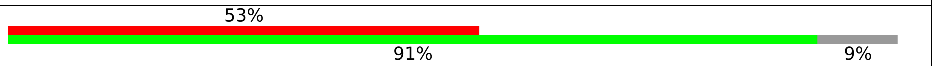
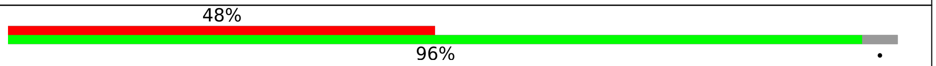
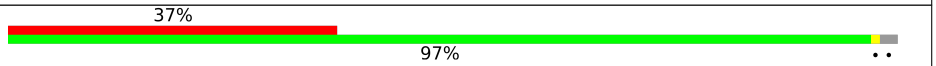
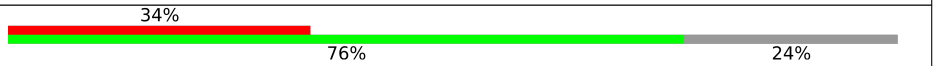
Mol	Chain	Length	Quality of chain
29	X	94	
30	Y	69	
31	c	929	
32	k	211	
33	m	124	
34	o	1970	
35	p	1174	
36	q	275	
37	r	142	
38	s	210	
39	t	127	
40	u	172	
41	v	150	
42	w	125	
43	x	67	
44	y	117	
45	z	58	

2 Entry composition

There are 48 unique types of molecules in this entry. The entry contains 112409 atoms, of which 0 are hydrogens and 0 are deuteriums.

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

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

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	0	236	1932	1211	336	373	12	0	0

- Molecule 2 is a protein called General transcription factor IIH subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	1	265	2167	1382	378	395	12	0	0

- Molecule 3 is a protein called General transcription factor IIH subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	2	329	2567	1621	440	479	27	0	0

- Molecule 4 is a protein called General transcription factor IIH subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	3	263	2066	1323	344	380	19	0	0

- Molecule 5 is a protein called General transcription factor IIH subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	4	394	3189	2068	552	557	12	0	0

- Molecule 6 is a protein called General transcription factor IIH subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	5	54	428	277	67	82	2	0	0

- Molecule 7 is a protein called General transcription and DNA repair factor IIH helicase subunit XPB.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
7	6	605	4890	3127	848	885	30	0	0

- Molecule 8 is a protein called General transcription and DNA repair factor IIH helicase subunit XPD.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
8	7	714	5751	3683	999	1040	29	0	0

- Molecule 9 is a protein called Cyclin-dependent kinase 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
9	8	298	2376	1537	404	423	12	0	0

- Molecule 10 is a protein called Cyclin-H.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
10	9	281	2293	1465	394	416	18	0	0

- Molecule 11 is a protein called Transcription initiation factor TFIID subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
11	A	559	4580	2924	795	834	27	0	0

- Molecule 12 is a protein called Transcription initiation factor TFIID subunit 2.

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

- Molecule 13 is a protein called Transcription initiation factor TFIID subunit 4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
13	D	160	1337	834	249	251	3	0	0

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Mol	Chain	Residues	Atoms					AltConf	Trace
13	d	158	Total	C	N	O	S	0	0
			1307	814	238	252	3		

- Molecule 14 is a protein called Transcription initiation factor TFIID subunit 5.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	E	547	Total	C	N	O	S	0	0
			4376	2774	759	822	21		
14	e	539	Total	C	N	O	S	0	0
			4327	2746	748	814	19		

- Molecule 15 is a protein called Transcription initiation factor TFIID subunit 6.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	F	412	Total	C	N	O	S	0	0
			3143	1994	548	583	18		
15	f	403	Total	C	N	O	S	0	0
			3081	1954	533	576	18		

- Molecule 16 is a protein called Transcription initiation factor TFIID subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	G	144	Total	C	N	O	S	0	0
			1171	742	215	210	4		

- Molecule 17 is a protein called Transcription initiation factor TFIID subunit 8.

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

- Molecule 18 is a protein called Transcription initiation factor TFIID subunit 9.

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

- Molecule 19 is a protein called Transcription initiation factor TFIID subunit 10.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	J	90	Total	C	N	O	S	0	0
			720	466	115	135	4		
19	j	95	Total	C	N	O	S	0	0
			759	488	124	143	4		

- Molecule 20 is a protein called Transcription initiation factor TFIID subunit 12.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	L	76	Total	C	N	O	S	0	0
			622	388	109	122	3		
20	l	107	Total	C	N	O	S	0	0
			876	547	158	166	5		

- Molecule 21 is a protein called Transcription initiation factor IIA subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	O	99	Total	C	N	O	S	0	0
			806	510	142	151	3		

- Molecule 22 is a protein called TATA-box-binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	P	179	Total	C	N	O	S	0	0
			1422	923	251	241	7		

- Molecule 23 is a protein called Transcription initiation factor IIA subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	Q	113	Total	C	N	O	S	0	0
			930	585	152	189	4		

- Molecule 24 is a protein called Transcription initiation factor IIB.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	R	252	Total	C	N	O	S	0	0
			1953	1224	346	366	17		

- Molecule 25 is a protein called General transcription factor IIF subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
25	S	108	Total	C	N	O	S	0	0
			872	558	153	159	2		

- Molecule 26 is a protein called General transcription factor IIF subunit 2.

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

- Molecule 27 is a protein called General transcription factor IIE subunit 1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
27	U	184	1520	957	272	280	11	0	0

- Molecule 28 is a protein called Transcription initiation factor IIE subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
28	V	165	1357	865	235	253	4	0	0

- Molecule 29 is a DNA chain called DNA (69-MER).

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

- Molecule 30 is a DNA chain called DNA (69-MER).

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

- Molecule 31 is a protein called Transcription initiation factor TFIID subunit 3.

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

- Molecule 32 is a protein called Transcription initiation factor TFIID subunit 11.

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

- Molecule 33 is a protein called Transcription initiation factor TFIID subunit 13.

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

- Molecule 34 is a protein called DNA-directed RNA polymerase II subunit RPB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
34	o	1423	11274	7092	2016	2094	72	0	0

- Molecule 35 is a protein called DNA-directed RNA polymerase subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
35	p	1135	9068	5735	1596	1673	64	0	0

- Molecule 36 is a protein called DNA-directed RNA polymerase II subunit RPB3.

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

- Molecule 37 is a protein called DNA-directed RNA polymerase II subunit RPB4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
37	r	128	1050	656	178	212	4	0	0

- Molecule 38 is a protein called DNA-directed RNA polymerase II subunit E.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
38	s	209	1721	1089	300	324	8	0	0

- Molecule 39 is a protein called DNA-directed RNA polymerase II subunit F.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
39	t	79	636	406	108	117	5	0	0

- Molecule 40 is a protein called DNA-directed RNA polymerase II subunit RPB7.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
40	u	171	1351	875	219	249	8	0	0

- Molecule 41 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

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

- Molecule 42 is a protein called DNA-directed RNA polymerase II subunit RPB9.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
42	w	114	928	571	166	180	11	0	0

- Molecule 43 is a protein called RPB10.

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

- Molecule 44 is a protein called RNA_pol_L_2 domain-containing protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
44	y	115	920	593	152	173	2	0	0

- Molecule 45 is a protein called RPB12.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
45	z	44	373	231	72	64	6	0	0

- Molecule 46 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
			Total	Zn	
46	0	2	2	2	0
46	2	3	3	3	0
46	3	2	2	2	0

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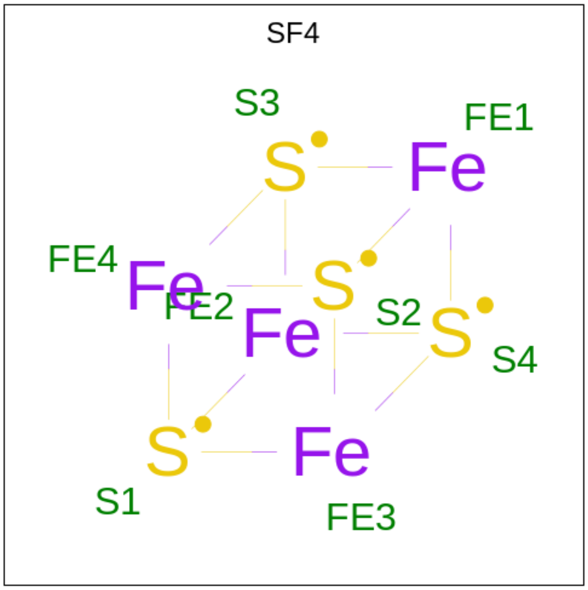
Mol	Chain	Residues	Atoms	AltConf
46	R	1	Total Zn 1 1	0
46	U	1	Total Zn 1 1	0
46	o	2	Total Zn 2 2	0
46	p	1	Total Zn 1 1	0
46	q	1	Total Zn 1 1	0
46	w	2	Total Zn 2 2	0
46	x	1	Total Zn 1 1	0
46	z	1	Total Zn 1 1	0

- Molecule 47 is IRON/SULFUR CLUSTER (three-letter code: SF4) (formula: Fe_4S_4).



Mol	Chain	Residues	Atoms	AltConf
47	7	1	Total Fe S 8 4 4	0

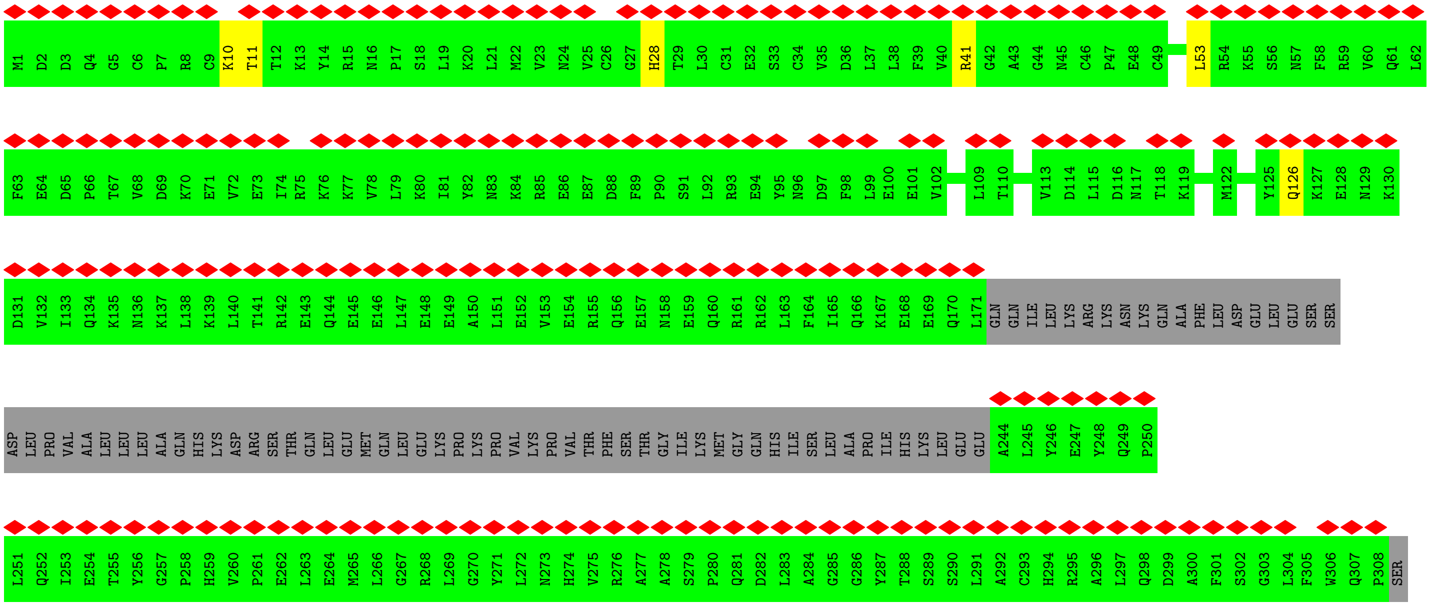
- Molecule 48 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		AltConf
			Total	Mg	
48	o	1	1	1	0

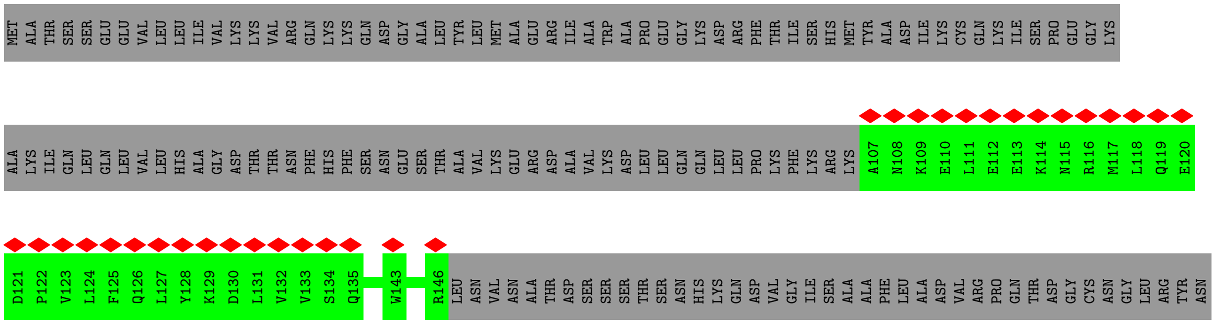
3 Residue-property plots ⓘ

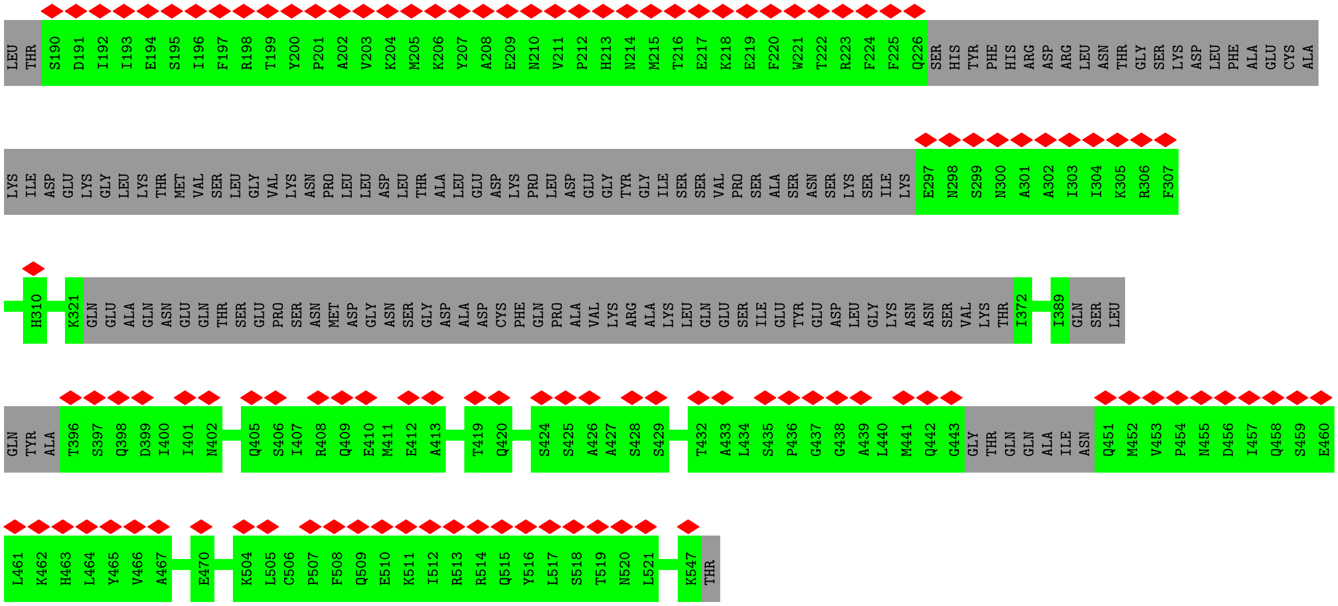
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and atom inclusion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

- Molecule 1: CDK-activating kinase assembly factor MAT1



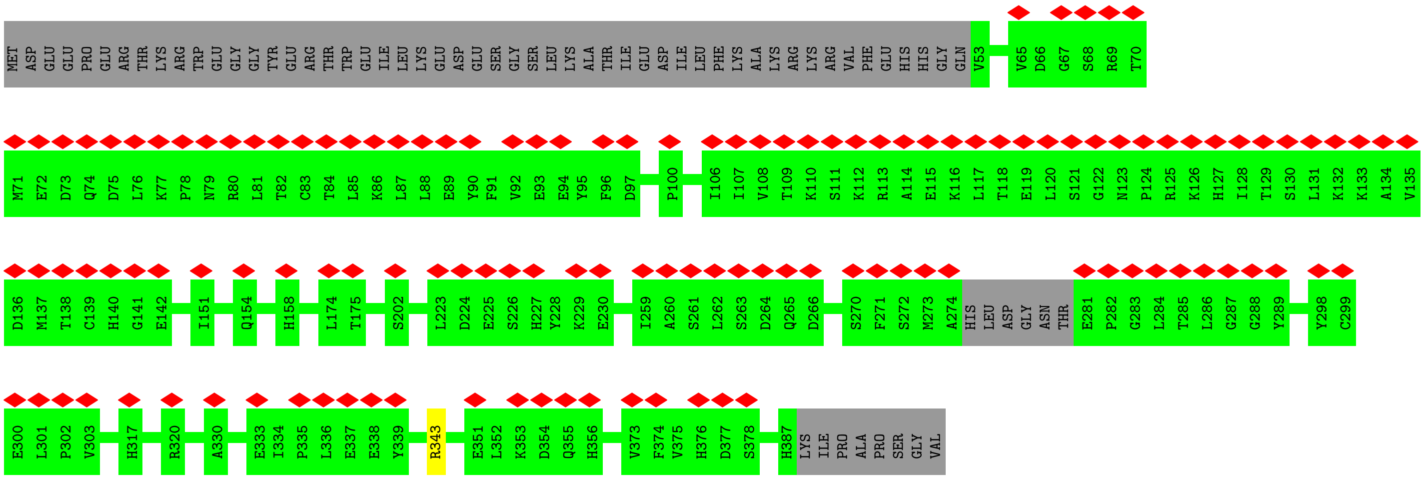
- Molecule 2: General transcription factor IIH subunit 1





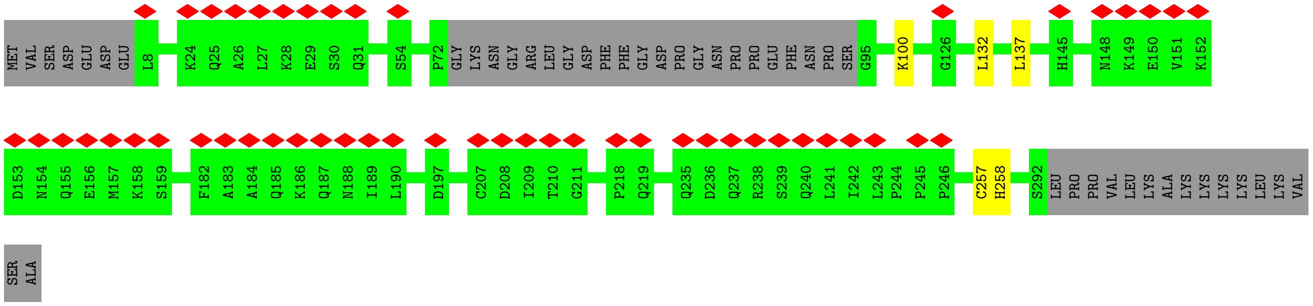
- Molecule 3: General transcription factor IIH subunit 2

Chain 2:

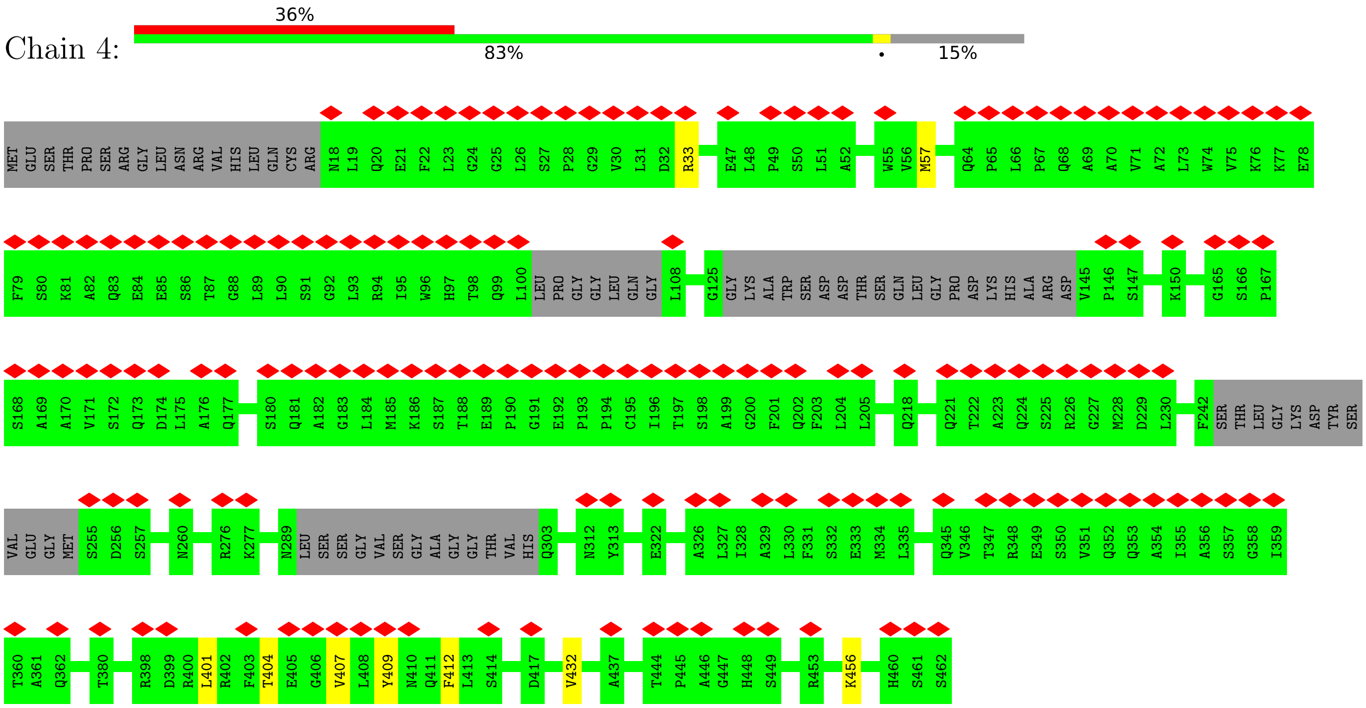


- Molecule 4: General transcription factor IIH subunit 3

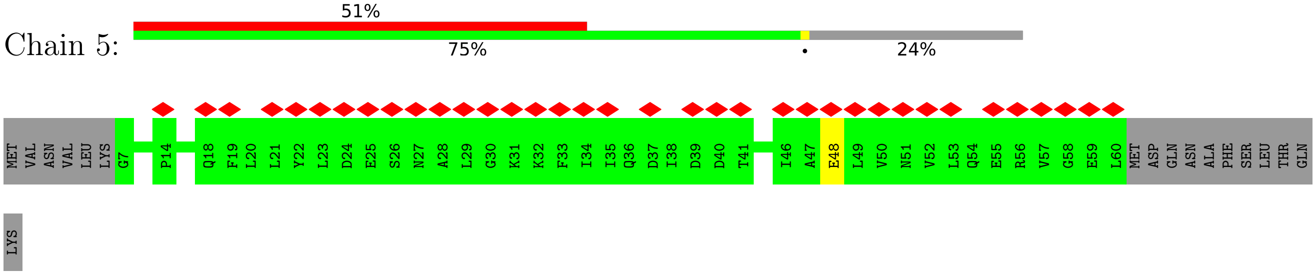
Chain 3:



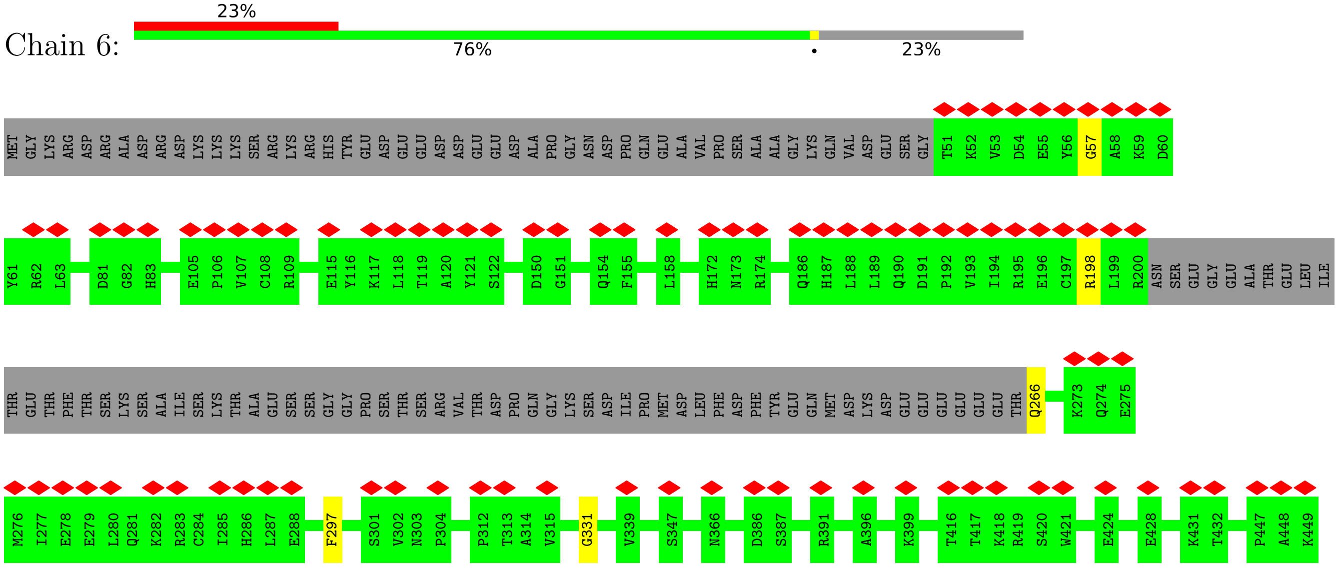
- Molecule 5: General transcription factor IIH subunit 4

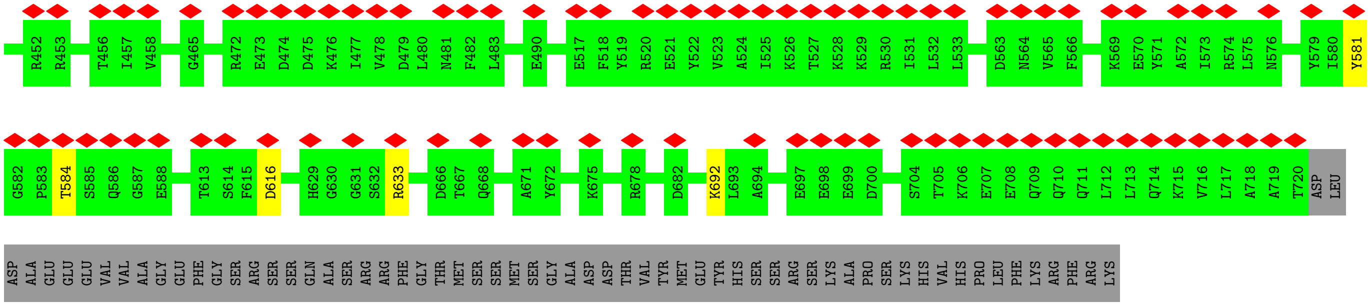


- Molecule 6: General transcription factor IIH subunit 5



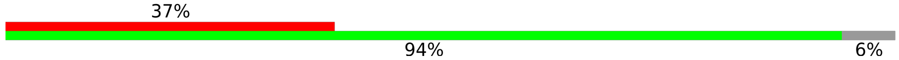
- Molecule 7: General transcription and DNA repair factor IIH helicase subunit XPB

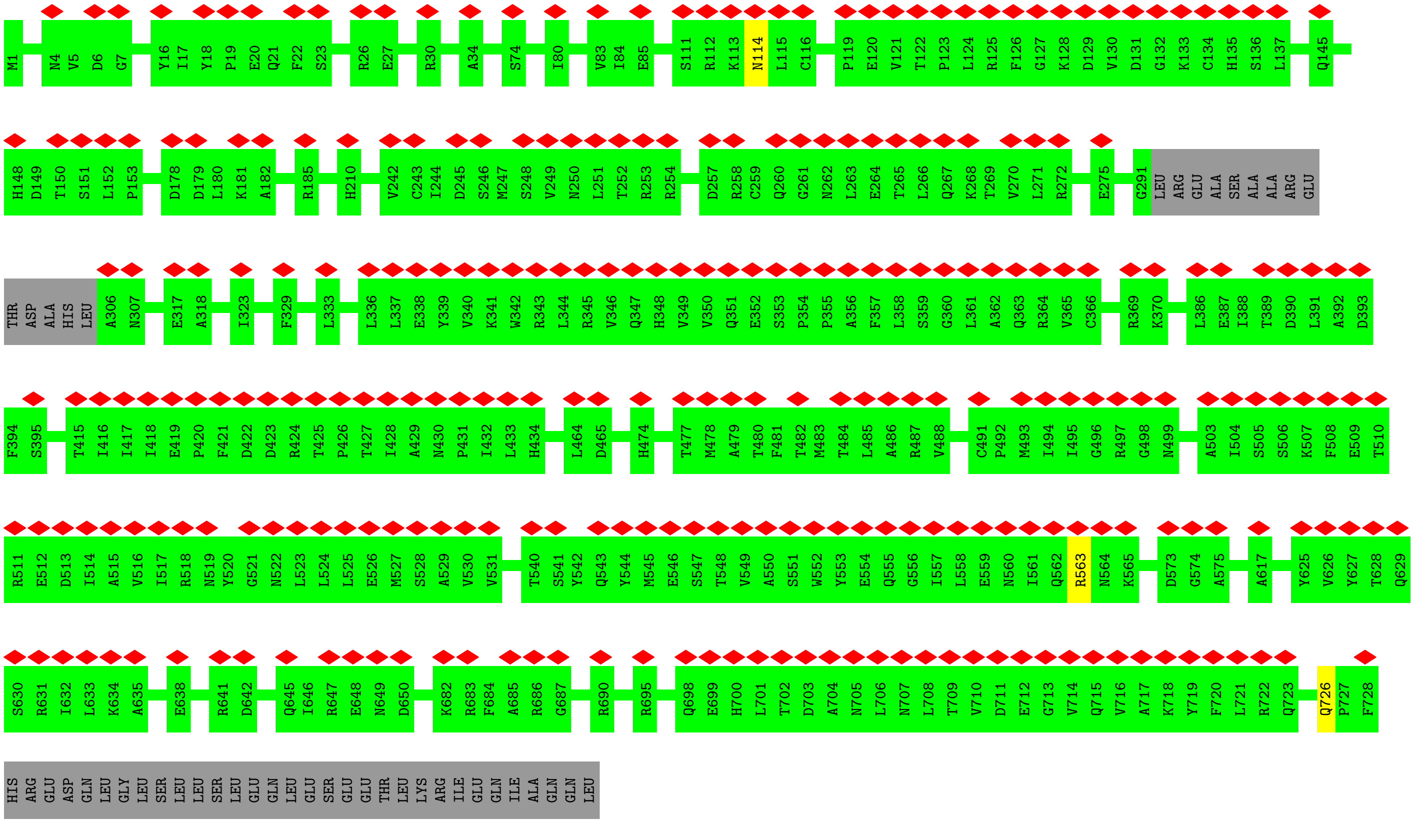




- Molecule 8: General transcription and DNA repair factor IIH helicase subunit XPD

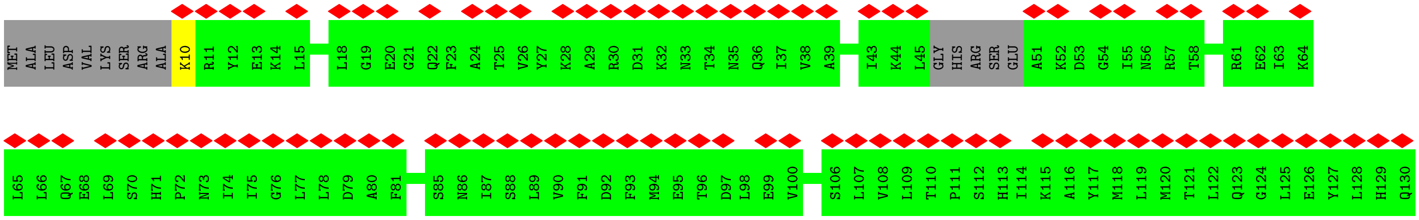
Chain 7:

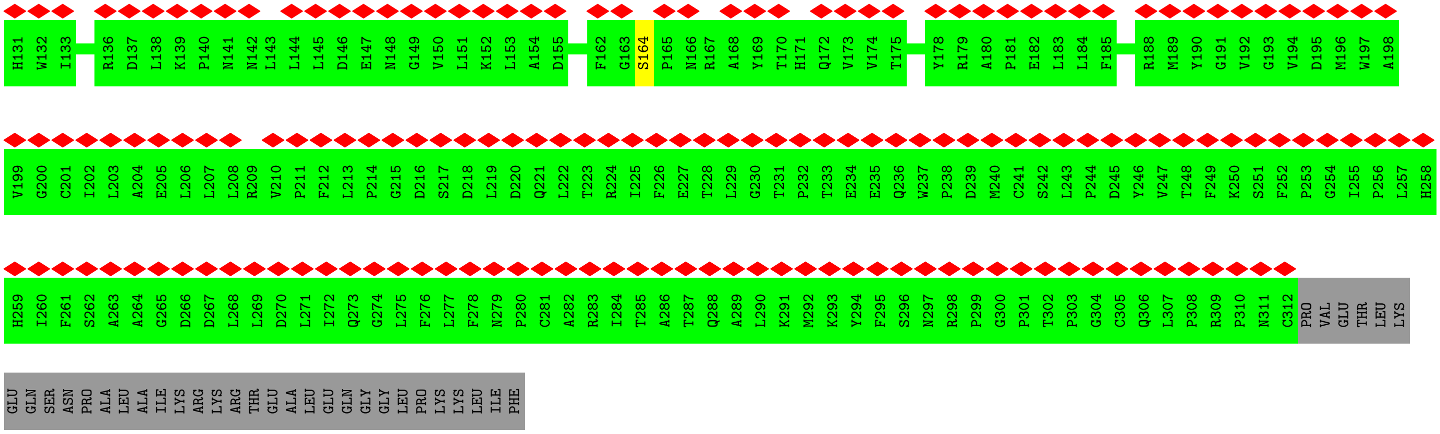




- Molecule 9: Cyclin-dependent kinase 7

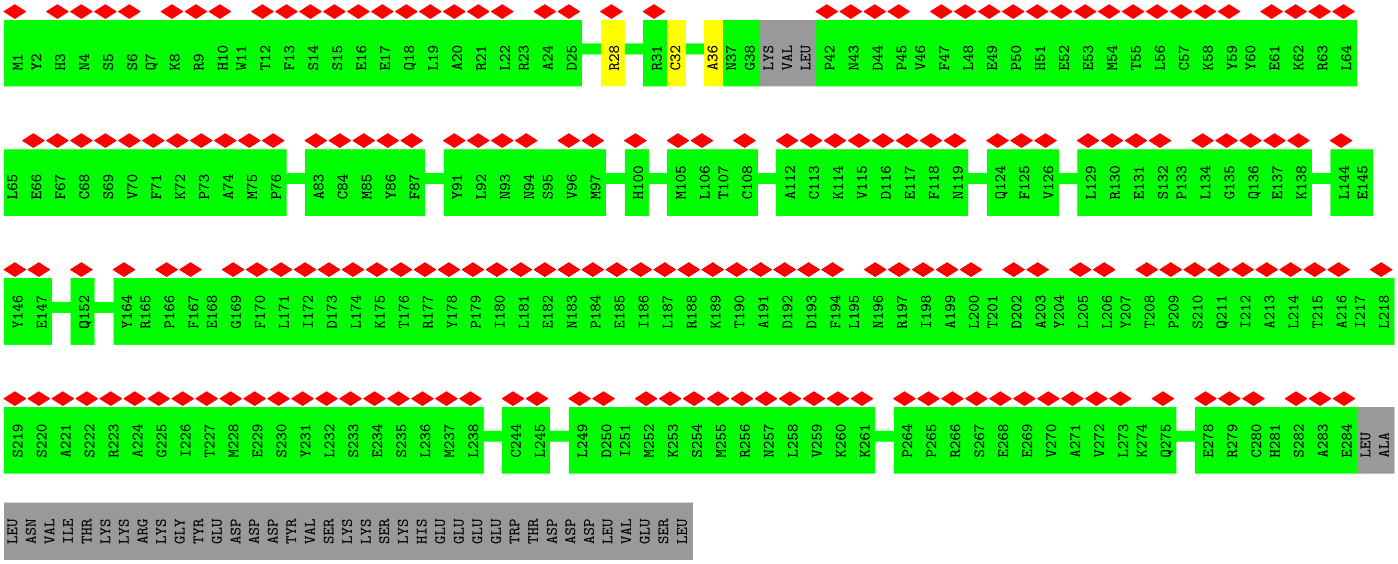
Chain 8:





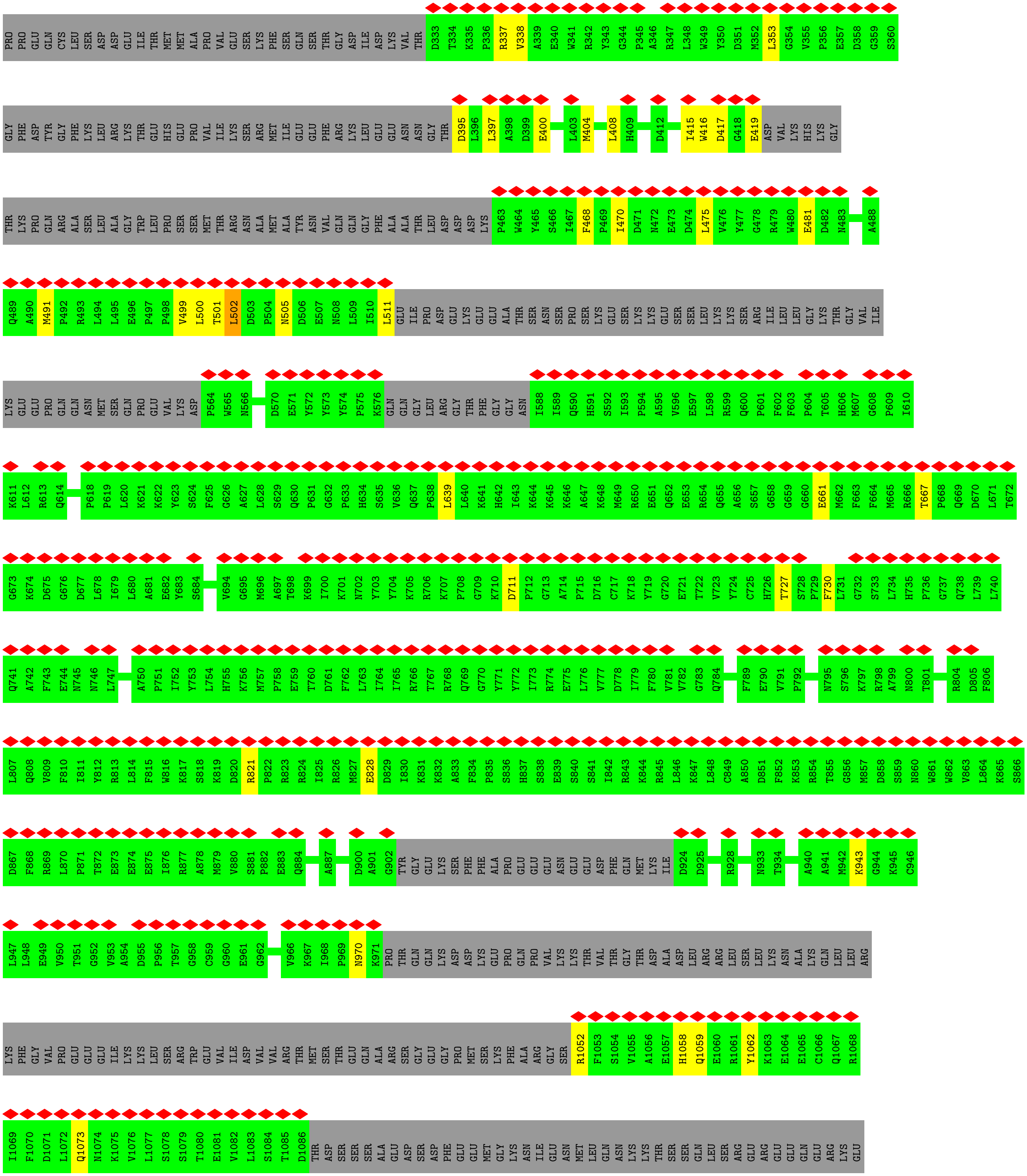
- Molecule 10: Cyclin-H

Chain 9:



- Molecule 11: Transcription initiation factor TFIID subunit 1

Chain A: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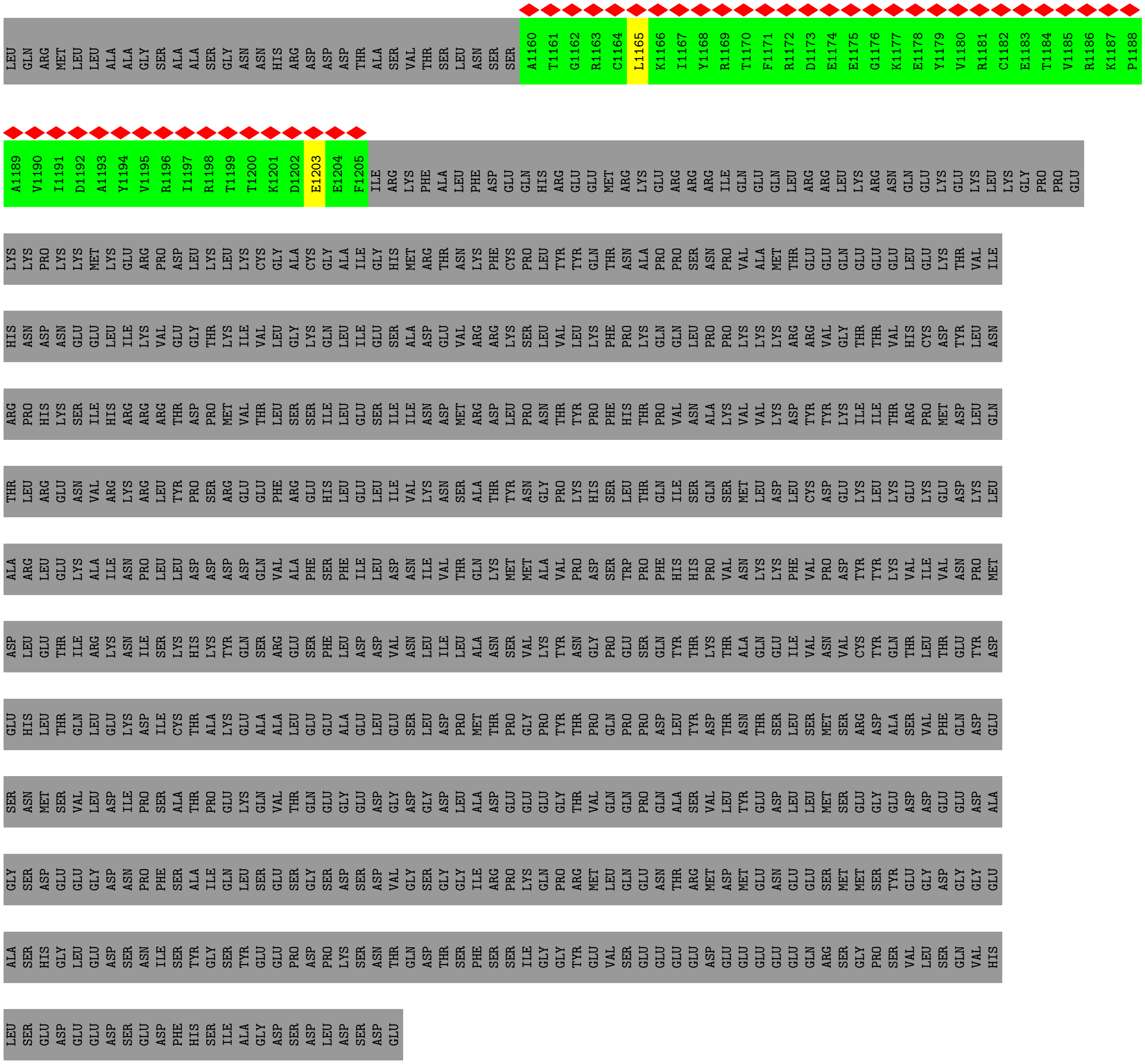
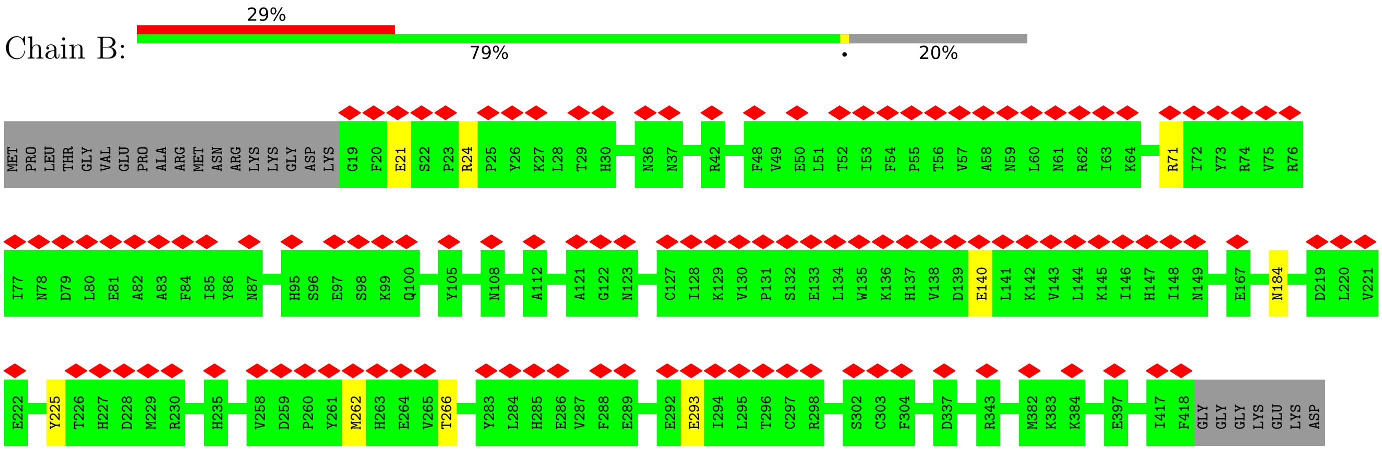
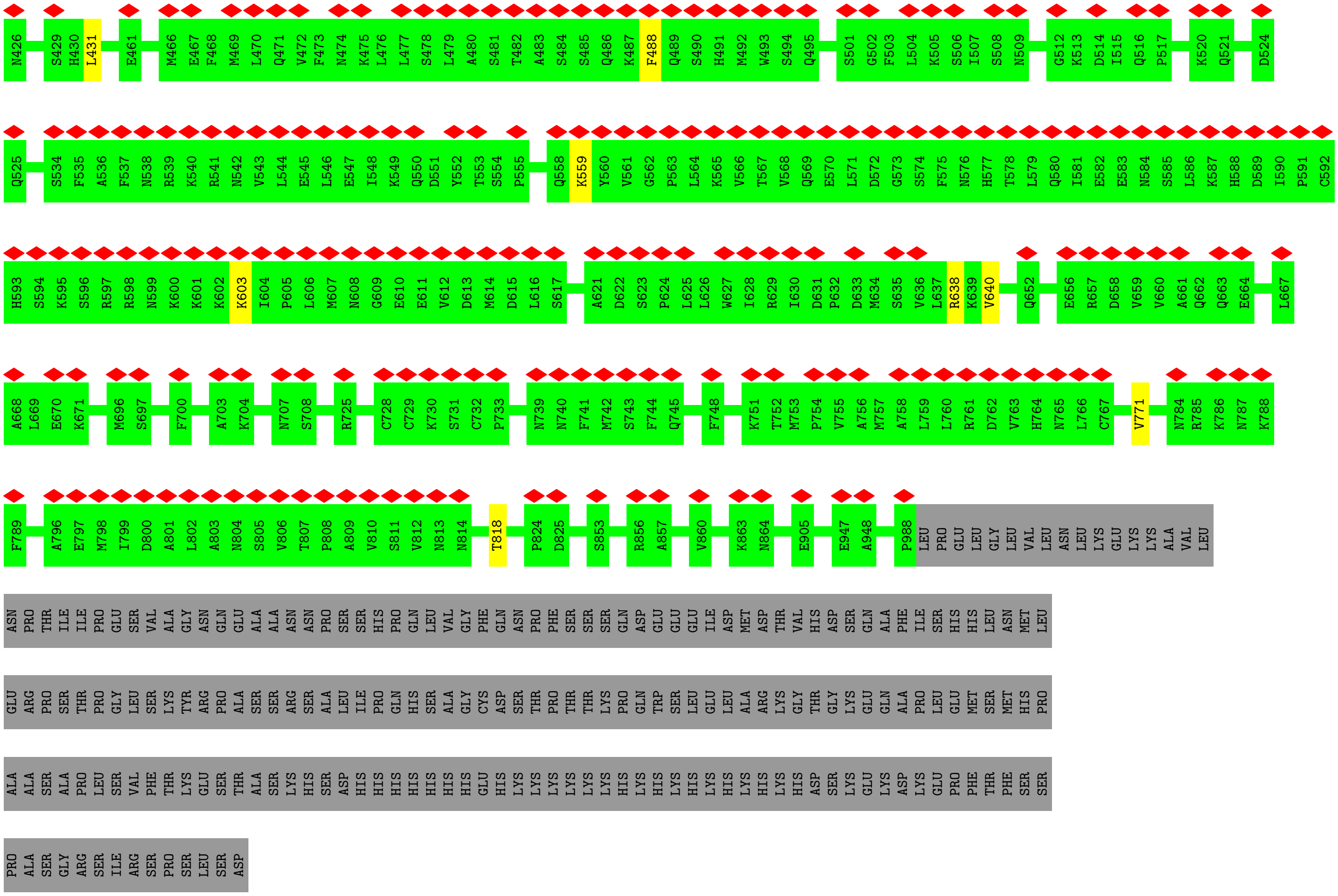
GLY PHE ASP TYR GLY PHE LYS LEU ARG LYS THR GLU HIS GLU PRO VAL ILE LYS SER ARG MET ILE GLU GLU PHE ARG LYS LEU GLU GLU ASN ASN GLY THR D395 L396 L397 A398 D399 E400 L403 M404 L408 H409 D412 I415 W416 D417 G418 E419 ASP VAL LYS HIS LYS GLY
THR LYS PRO GLN ARG ALA SER LEU ALA GLY TRP LEU PRO SER SER MET THR ARG ASN ALA MET ALA TYR ASN VAL GLN GLN GLY PHE ALA ALA THR LEU ASP ASP LYS P463 W464 Y465 S466 I467 F468 P469 I470 D471 N472 E473 D474 L475 V476 Y477 G478 R479 W480 E481 D482 N483 A488
Q489 A490 M491 P492 R493 L494 L495 E496 P497 P498 V499 L500 T501 L502 D503 P504 N505 D506 E507 N508 L509 I510 L511 GLU ILE PRO ASP GLU LYS GLU GLU ALA THR SER ASN SER PRO SER LYS GLU SER LYS LYS GLU SER SER LEU LYS LYS SER ARG ILE LEU LEU GLY LYS THR GLY VAL ILE
LYS GLU GLU PRO GLN GLN ASN MET SER GLN PRO GLU VAL LYS ASP P564 W565 N566 D570 E571 Y572 Y573 Y574 P575 K576 GLN GLN GLY LEU ARG GLY THR PHE GLY GLY ASN I588 I589 Q590 H591 S592 I593 P594 A595 V596 E597 L598 R599 Q600 P601 F602 F603 P604 T605 H606 M607 G608 P609 I610
K611 L612 R613 Q614 P618 P619 L620 K621 K622 Y623 S624 F625 G626 A627 L628 S629 Q630 P631 G632 P633 H634 S635 V636 Q637 P638 L639 L640 K641 H642 I643 K644 K645 K646 A647 K648 M649 R650 E651 Q652 E653 R654 Q655 A656 S657 G658 G659 G660 E661 M662 F663 F664 M665 R666 T667 P668 Q669 D670 L671 T672
G673 K674 D675 G676 D677 L678 I679 L680 A681 E682 Y683 S684 V694 G695 M696 A697 T698 K699 I700 K701 N702 Y703 Y704 K705 R706 K707 P708 G709 K710 D711 P712 G713 A714 P715 D716 C717 K718 Y719 G720 E721 T722 V723 Y724 C725 H726 T727 S728 P729 F730 L731 G732 S733 L734 H735 P736 G737 Q738 L739 L740
Q741 A742 F743 E744 N745 N746 L747 A750 P751 I752 Y753 L754 H755 K756 M757 P758 E759 T760 D761 F762 L763 I764 I765 R766 T767 R768 Q769 G770 Y771 Y772 I773 R774 E775 L776 V777 D778 I779 F780 V781 V782 G783 Q784 F789 E790 V791 P792 N795 S796 K797 R798 A799 N800 T801 R804 D805 F806
L807 Q808 V809 F810 I811 Y812 R813 L814 F815 W816 K817 S818 K819 D820 R821 P822 R823 R824 I825 R826 M827 E828 D829 I830 K831 K832 A833 F834 P835 S836 H837 S838 E839 S840 S841 I842 R843 K844 R845 L846 K847 L848 C849 A850 D851 F852 K853 R854 T855 G856 M857 D858 S859 N860 W861 W862 V863 L864 K865 S866
D867 F868 R869 L870 P871 T872 E873 E874 E875 I876 R877 A878 M879 V880 S881 P882 E883 Q884 A887 D900 A901 G902 TYR GLY LYS SER PHE PHE ALA PRO GLU GLU ASN GLU GLU ASP PHE GLN MET LYS ILE D924 D925 R928 N933 T934 A940 A941 M942 K943 G944 K945 C946
L947 L948 E949 V950 T951 G952 V953 A954 D955 P956 T957 G958 C959 G960 E961 G962 V966 K967 I968 P969 N970 K971 PRO THR GLN GLN LYS ASP ASP LYS GLU PRO GLN PRO VAL LYS LYS THR VAL THR GLY THR ASP ALA ASP LEU ARG ARG LEU SER LEU LYS ASN ALA LYS GLN LEU LEU ARG
LYS PHE GLY VAL PRO GLU GLU GLU ILE LYS LYS LEU SER ARG TRP GLU VAL ILE ASP VAL VAL ARG THR MET SER THR GLU GLN ALA ARG SER GLY GLU GLY PRO MET SER LYS PHE ALA ARG GLY SER R1052 F1053 S1054 V1055 A1056 E1057 H1058 Q1059 E1060 R1061 Y1062 K1063 E1064 E1065 C1066 Q1067 R1068
I1069 F1070 D1071 L1072 Q1073 N1074 K1075 V1076 L1077 S1078 S1079 T1080 E1081 V1082 L1083 S1084 T1085 D1086 THR ASP SER SER SER ALA GLU ASP SER ASP PHE GLU GLU MET GLY LYS ASN ILE GLU ASN MET LEU GLN ASN LYS LYS THR SER SER GLN LEU SER ARG GLU ARG GLU GLN GLU ARG LYS GLU

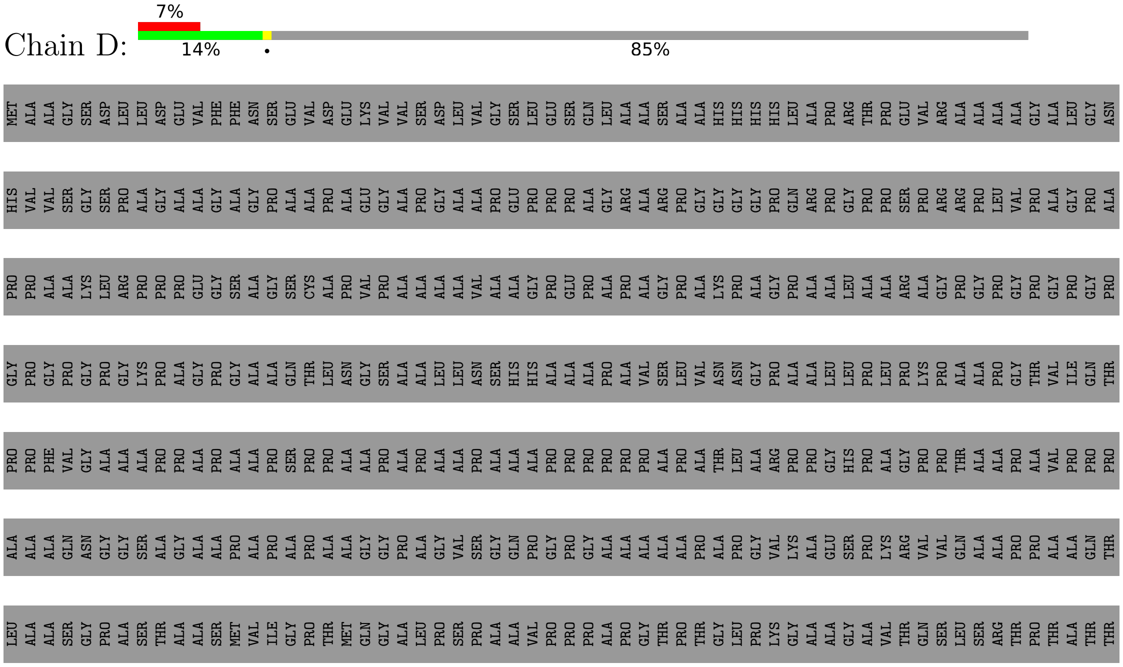


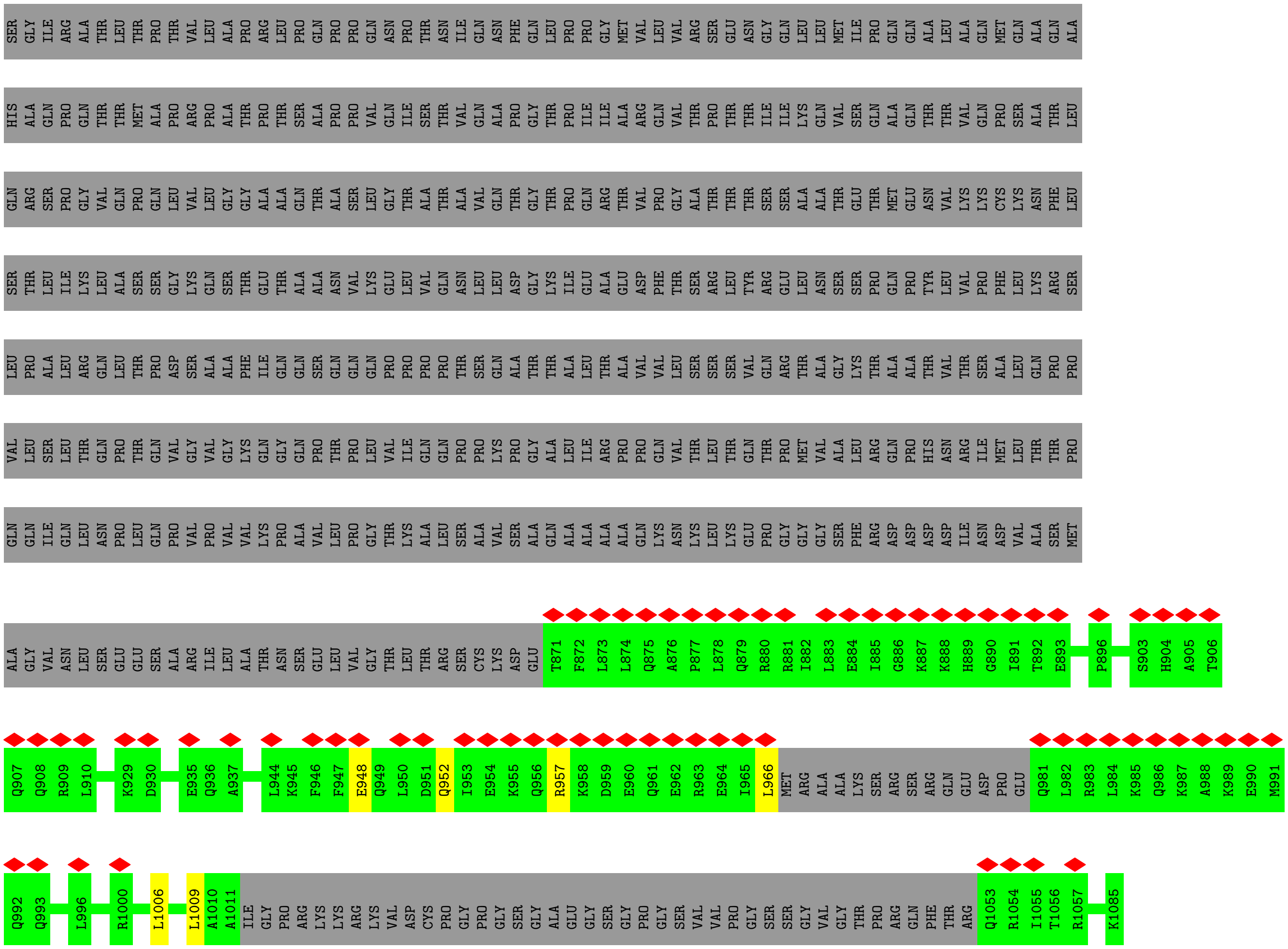
- Molecule 12: Transcription initiation factor TFIID subunit 2



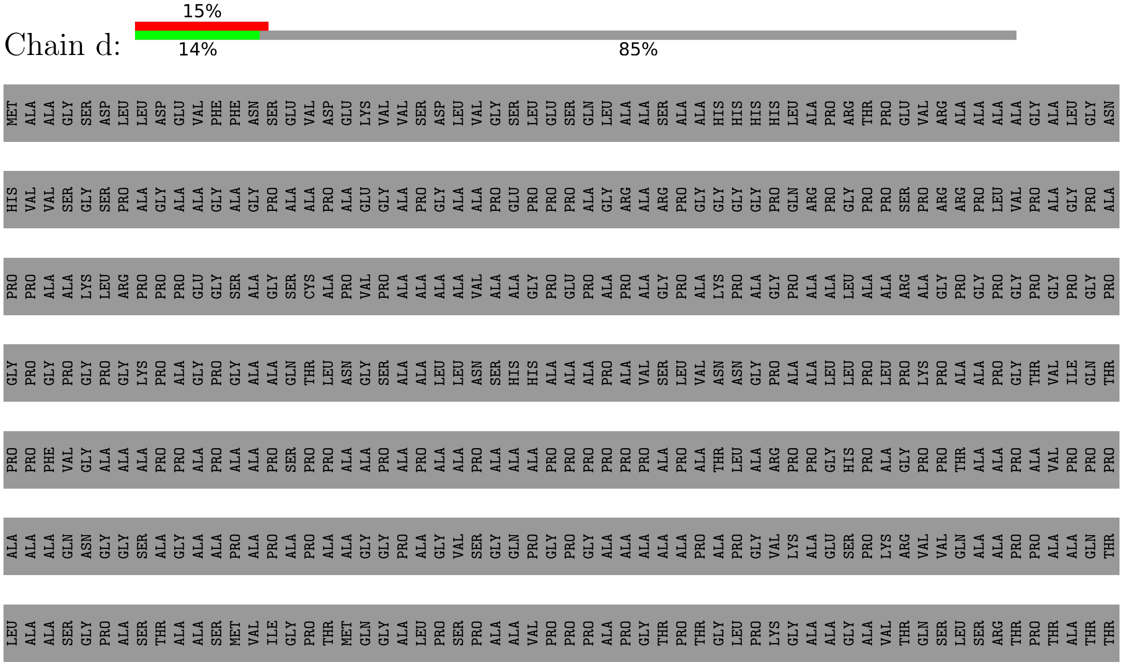


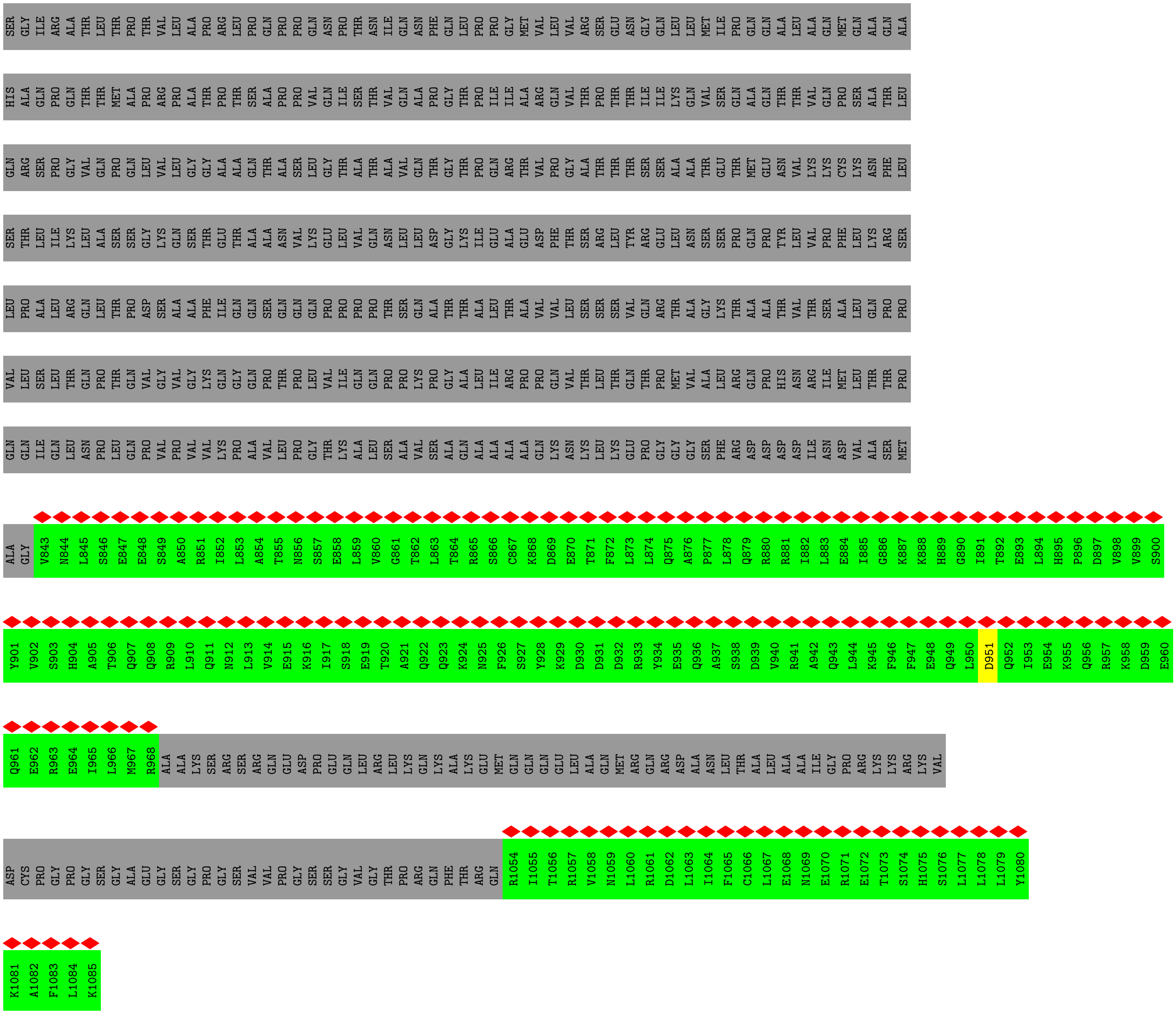
- Molecule 13: Transcription initiation factor TFIID subunit 4





- Molecule 13: Transcription initiation factor TFIID subunit 4





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HIS ALA GLN PRO GLN THR THR MET ALA PRO ARG PRO ALA THR PRO THR SER ALA PRO PRO VAL GLN ILE SER THR VAL GLN ALA PRO GLY THR PRO ILE ILE ALA ARG GLN VAL THR PRO THR THR ILE ILE LYS GLN VAL SER GLN ALA GLN THR THR VAL GLN PRO SER ALA THR LEU

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

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

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

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ALA GLY V843 N844 L845 S846 E847 E848 S849 A850 R851 I852 L853 A854 T855 N856 S857 E858 L859 V860 G861 T862 L863 T864 R865 S866 C867 K868 D869 E870 T871 F872 L873 L874 Q875 A876 P877 L878 Q879 R880 R881 I882 L883 E884 I885 G886 K887 K888 H889 G890 I891 T892 E893 L894 H895 P896 D897 V898 V899 S900

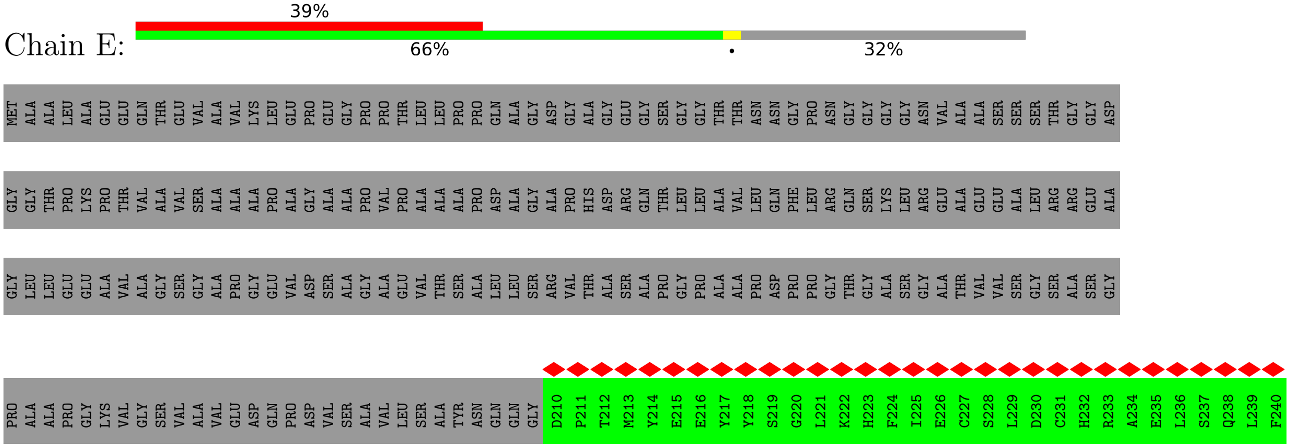
Y901 V902 S903 H904 A905 T906 Q907 Q908 R909 L910 Q911 N912 L913 V914 E915 K916 I917 S918 E919 T920 A921 Q922 Q923 K924 N925 F926 S927 Y928 K929 D930 D931 D932 R933 Y934 E935 Q936 A937 S938 D939 V940 R941 A942 Q943 L944 K945 F946 F947 E948 Q949 L950 D951 Q952 I953 E954 K955 Q956 R957 K958 D959 E960

Q961 E962 R963 E964 I965 L966 M967 R968 ALA ALA LYS SER ARG SER ARG GLN GLU ASP PRO GLU GLN LEU ARG LEU LYS GLN LYS ALA LYS GLU MET GLN GLN GLN GLU LEU ALA GLN MET ARG GLN ARG ASP ALA ASN LEU THR ALA LEU ALA ALA ILE GLY PRO ARG LYS LYS ARG LYS VAL

ASP CYS PRO GLY PRO GLY SER GLY ALA GLU GLY SER GLY PRO GLY SER VAL VAL PRO GLY SER SER GLY VAL GLY THR PRO ARG GLN PHE THR ARG GLN R1054 I1055 T1056 R1057 V1058 N1059 L1060 R1061 D1062 L1063 I1064 F1065 C1066 L1067 E1068 N1069 E1070 R1071 E1072 T1073 S1074 H1075 S1076 L1077 L1078 L1079 Y1080

K1081 A1082 F1083 L1084 K1085

- Molecule 14: Transcription initiation factor TFIID subunit 5



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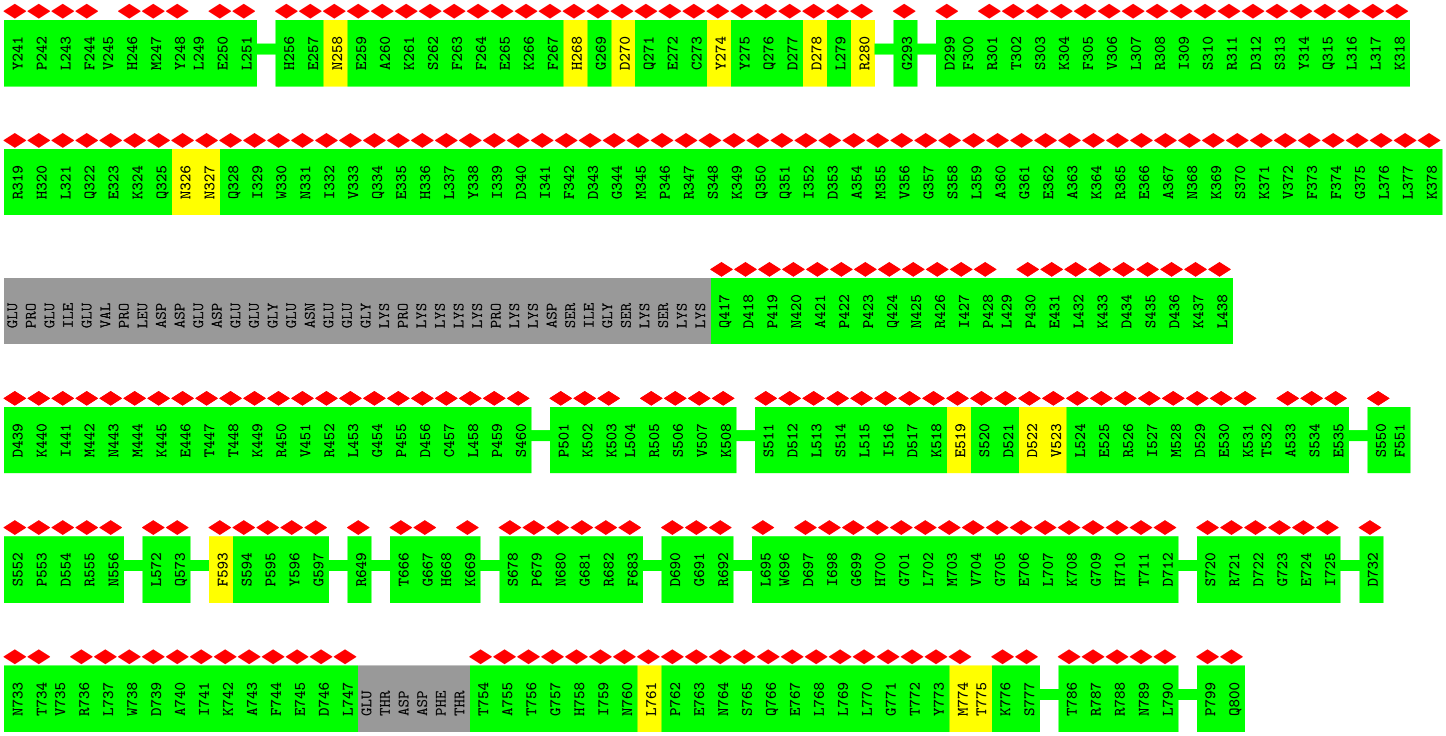
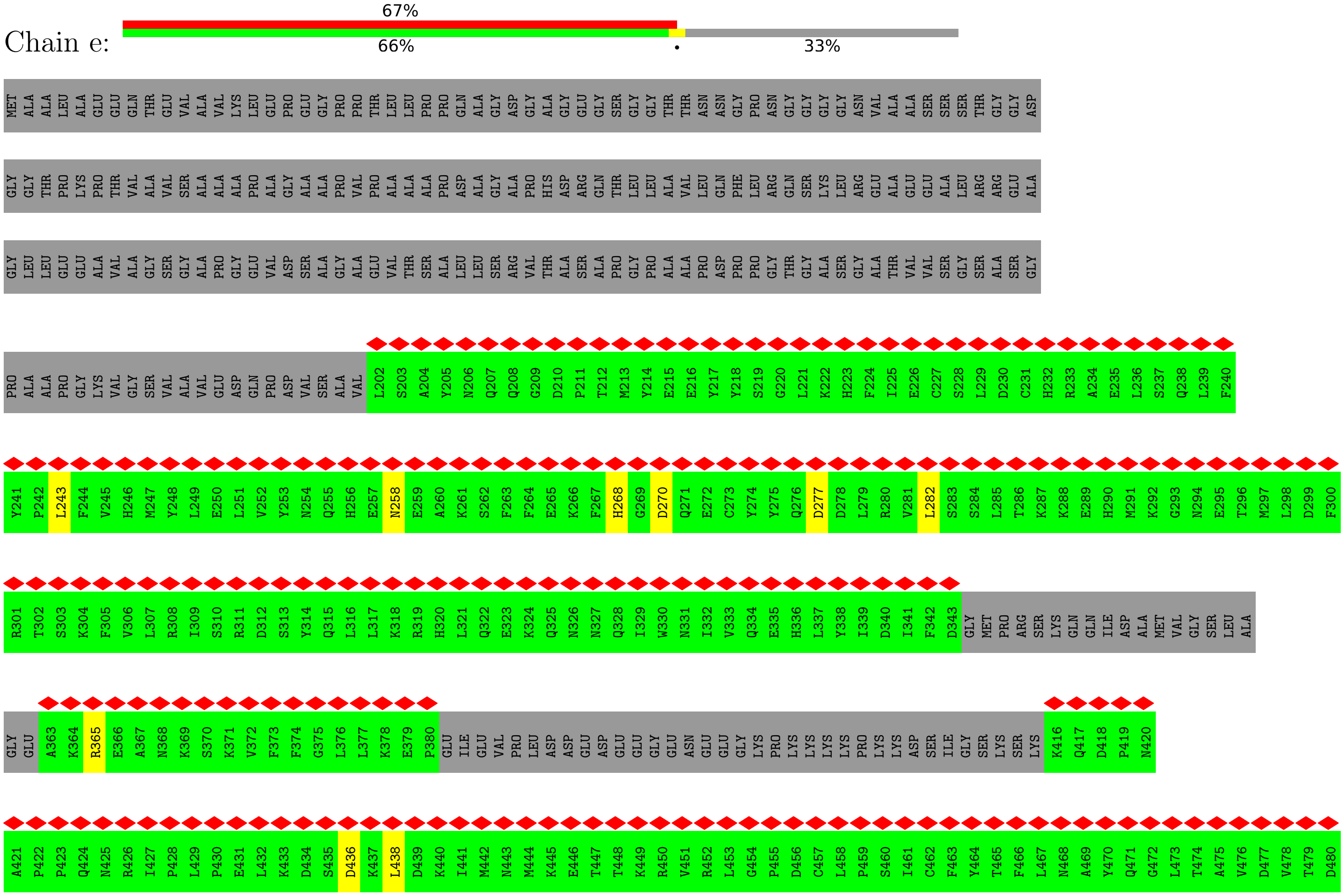
GLY GLY THR PRO LYS PRO THR VAL ALA VAL SER ALA ALA ALA PRO ALA GLY ALA ALA PRO VAL PRO ALA ALA ALA PRO ASP ALA GLY ALA PRO HIS ASP ARG GLN THR LEU LEU ALA VAL LEU GLN PHE LEU ARG GLN SER LYS LEU ARG GLU ALA GLU GLU ALA LEU ARG ARG GLU ALA

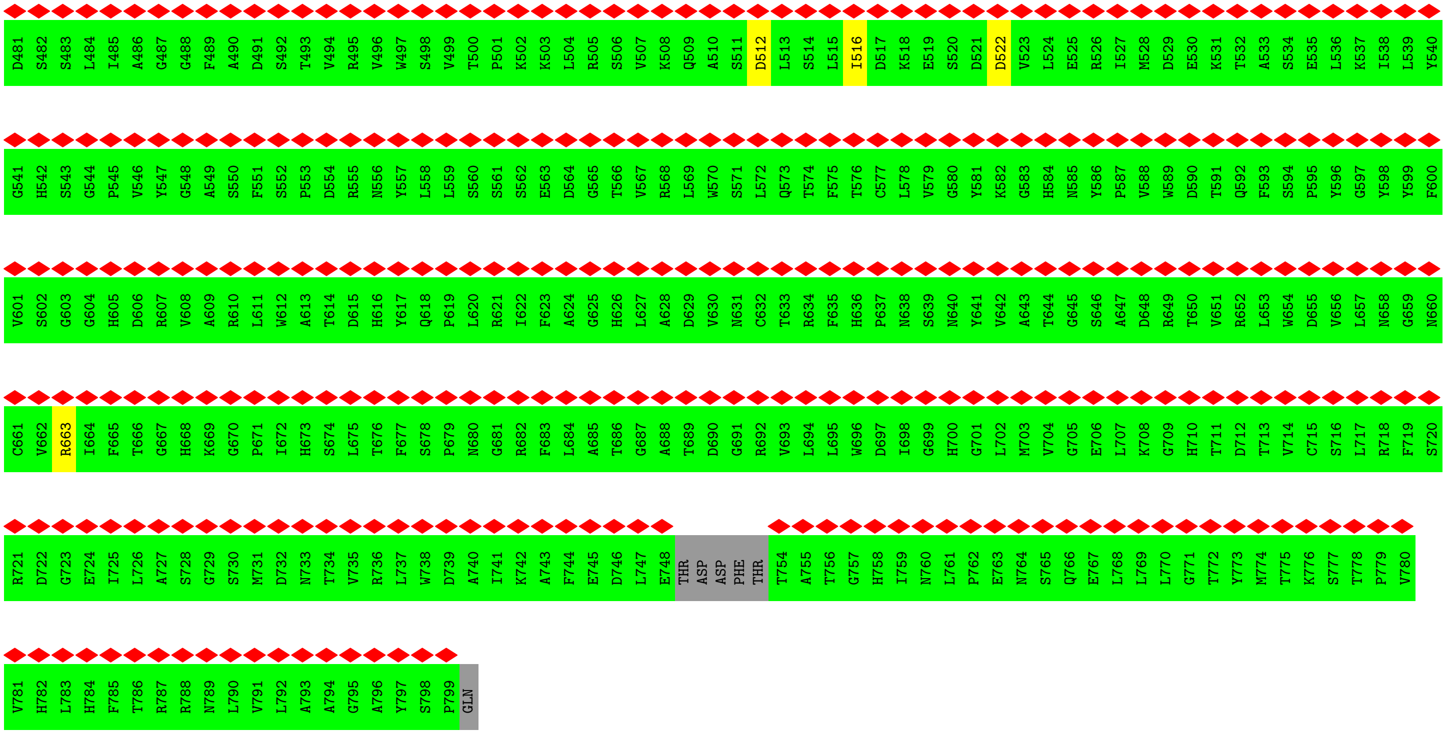
GLY LEU LEU GLU GLU ALA VAL ALA GLY SER GLY ALA PRO GLY GLU VAL ASP SER ALA GLY ALA GLU VAL THR SER ALA LEU LEU SER ARG VAL THR ALA SER ALA PRO GLY PRO ALA ALA PRO ASP PRO PRO GLY THR GLY ALA SER GLY ALA THR VAL VAL SER GLY SER ALA SER GLY

PRO ALA ALA PRO GLY LYS VAL GLY SER VAL ALA VAL GLU ASP GLN PRO ASP VAL SER ALA VAL LEU SER ALA TYR ASN GLN GLY D210 P211 T212 M213 Y214 E215 E216 Y217 Y218 S219 G220 L221 K222 H223 F224 I225 E226 C227 S228 L229 D230 C231 H232 R233 A234 E235 L236 S237 Q238 L239 F240



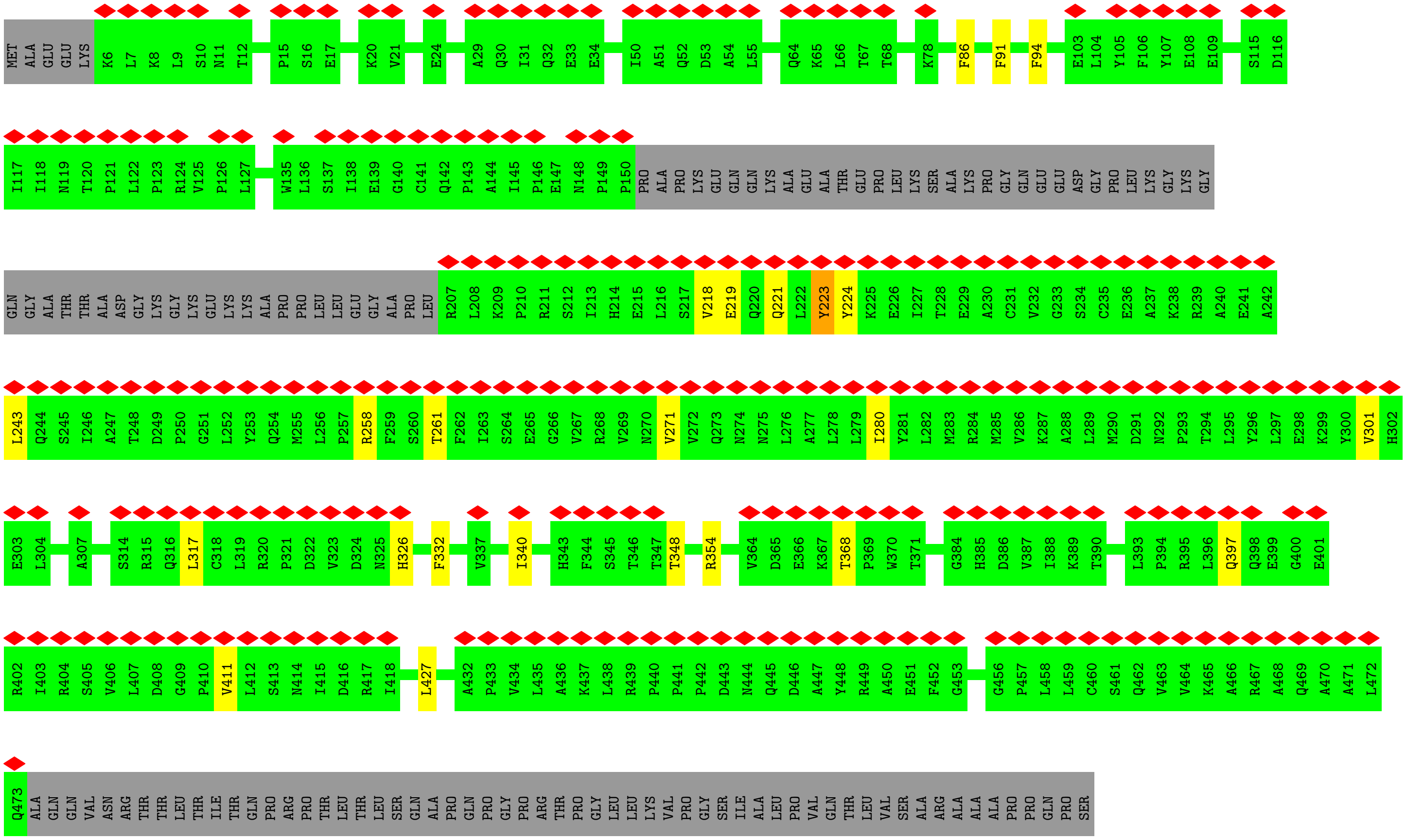
- Molecule 14: Transcription initiation factor TFIID subunit 5

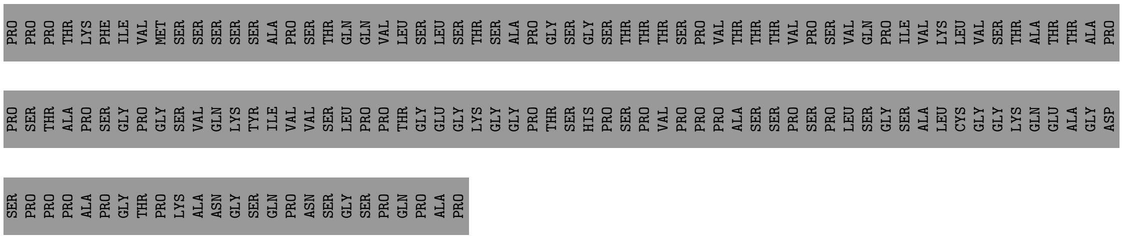




- Molecule 15: Transcription initiation factor TFIID subunit 6

Chain F:





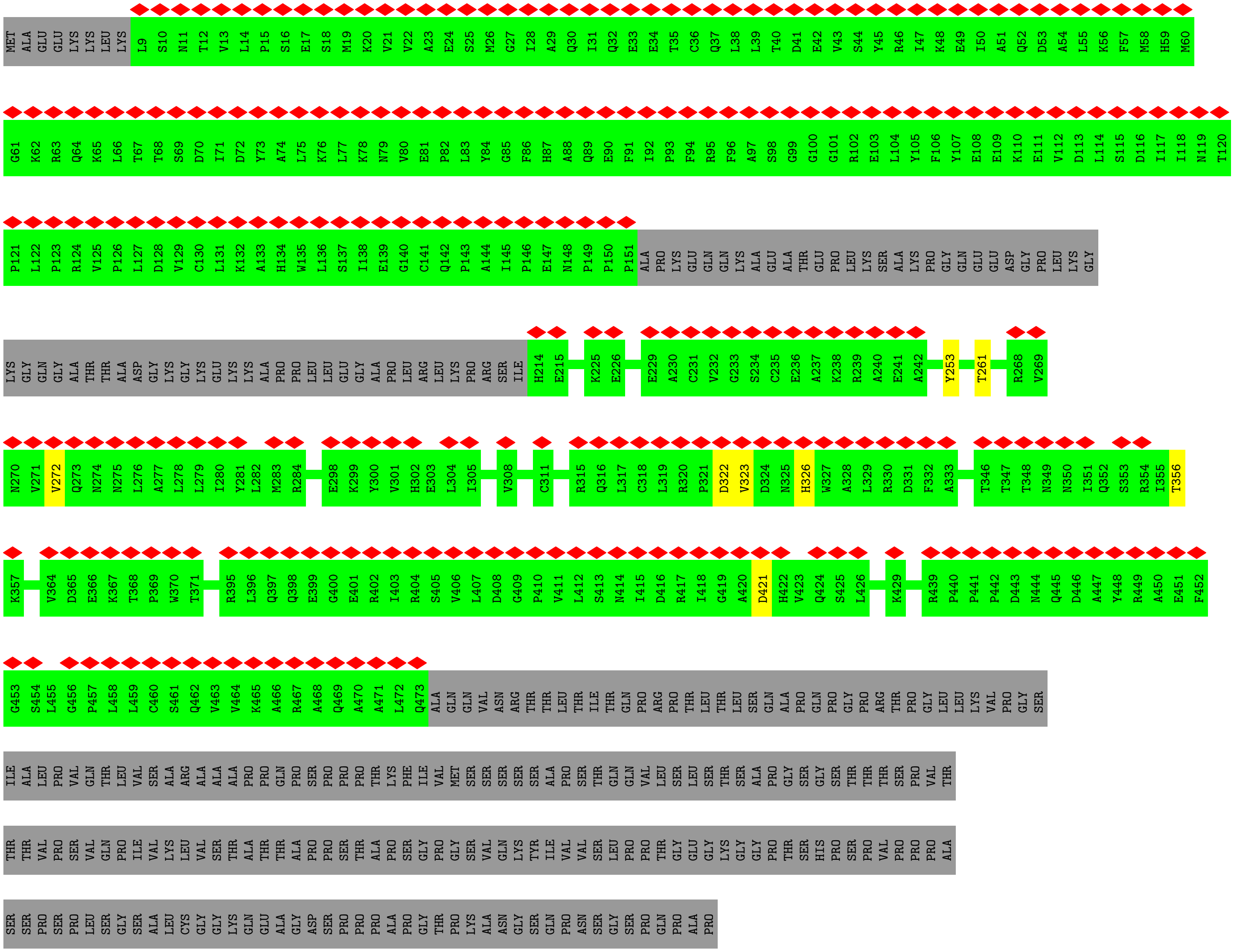
PRO PRO PRO THR LYS PHE ILE VAL MET SER SER SER SER ALA PRO SER THR GLN GLN VAL LEU SER LEU SER THR SER ALA PRO GLY SER GLY SER THR THR THR SER PRO VAL THR THR THR VAL PRO SER VAL GLN PRO ILE VAL LYS LEU VAL SER THR ALA THR THR ALA PRO

PRO SER THR ALA PRO SER GLY PRO GLY SER VAL GLN LYS TYR ILE VAL VAL SER LEU PRO PRO THR GLY GLU GLY LYS GLY GLY PRO THR SER HIS PRO SER PRO VAL PRO PRO PRO ALA SER SER PRO SER PRO LEU SER GLY SER ALA LEU CYS GLY GLY LYS GLN GLU ALA GLY ASP

SER PRO PRO PRO ALA PRO GLY THR PRO LYS ALA ASN GLY SER GLN PRO ASN SER GLY SER PRO GLN PRO ALA PRO

- Molecule 15: Transcription initiation factor TFIID subunit 6

Chain f:



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G61 K62 R63 Q64 K65 L66 T67 T68 S69 D70 I71 D72 Y73 A74 L75 K76 L77 K78 N79 V80 E81 P82 L83 Y84 G85 F86 H87 A88 Q89 E90 F91 I92 P93 F94 R95 F96 A97 S98 G99 G100 G101 R102 E103 L104 Y105 F106 Y107 E108 E109 K110 E111 V112 D113 L114 S115 D116 I117 I118 N119 T120

P121 L122 P123 R124 V125 P126 L127 D128 V129 C130 L131 K132 A133 H134 W135 L136 S137 I138 E139 G140 C141 Q142 P143 A144 I145 P146 E147 N148 P149 P150 P151 ALA PRO LYS GLU GLN GLN LYS ALA GLU ALA THR GLU PRO LEU LYS SER ALA LYS PRO GLY GLN GLU GLU ASP GLY PRO LEU LYS GLY

LYS GLY GLN GLY ALA THR THR ALA ASP GLY LYS GLY LYS GLU LYS LYS ALA PRO PRO LEU LEU GLU GLY ALA PRO LEU ARG LEU LYS PRO ARG SER ILE H214 E215 K225 E226 E229 A230 C231 V232 G233 S234 C235 E236 A237 K238 R239 A240 E241 A242 Y253 T261 R268 V269

N270 V271 V272 Q273 N274 N275 L276 A277 L278 L279 I280 Y281 L282 M283 R284 E298 K299 Y300 V301 H302 E303 L304 I305 V308 C311 R315 Q316 L317 C318 L319 R320 P321 D322 V323 D324 N325 H326 W327 A328 L329 R330 D331 F332 A333 T346 T347 T348 N349 N350 I351 Q352 S353 R354 I355 T356

K357 V364 D365 E366 K367 T368 P369 W370 T371 R395 L396 Q397 Q398 E399 G400 E401 R402 I403 R404 S405 V406 L407 D408 G409 P410 V411 L412 S413 N414 I415 D416 R417 I418 G419 A420 D421 H422 V423 Q424 S425 L426 K429 R439 P440 P441 P442 D443 N444 Q445 D446 A447 Y448 R449 A450 E451 F452

G453 S454 L455 G456 P457 L458 L459 C460 S461 Q462 V463 V464 K465 A466 R467 A468 Q469 A470 A471 L472 Q473 ALA GLN GLN VAL ASN ARG THR THR LEU THR ILE THR GLN PRO ARG PRO THR LEU THR LEU SER GLN ALA PRO GLN PRO GLY PRO ARG THR PRO GLY LEU LEU LYS VAL PRO GLY SER

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

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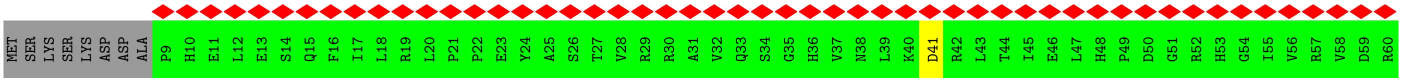
SER SER PRO SER PRO LEU SER GLY SER ALA LEU CYS GLY GLY LYS GLN GLU ALA GLY ASP SER PRO PRO PRO ALA PRO GLY THR PRO LYS ALA ASN GLY SER GLN PRO ASN SER GLY SER PRO GLN PRO ALA PRO

- Molecule 16: Transcription initiation factor TFIID subunit 7

Chain G:



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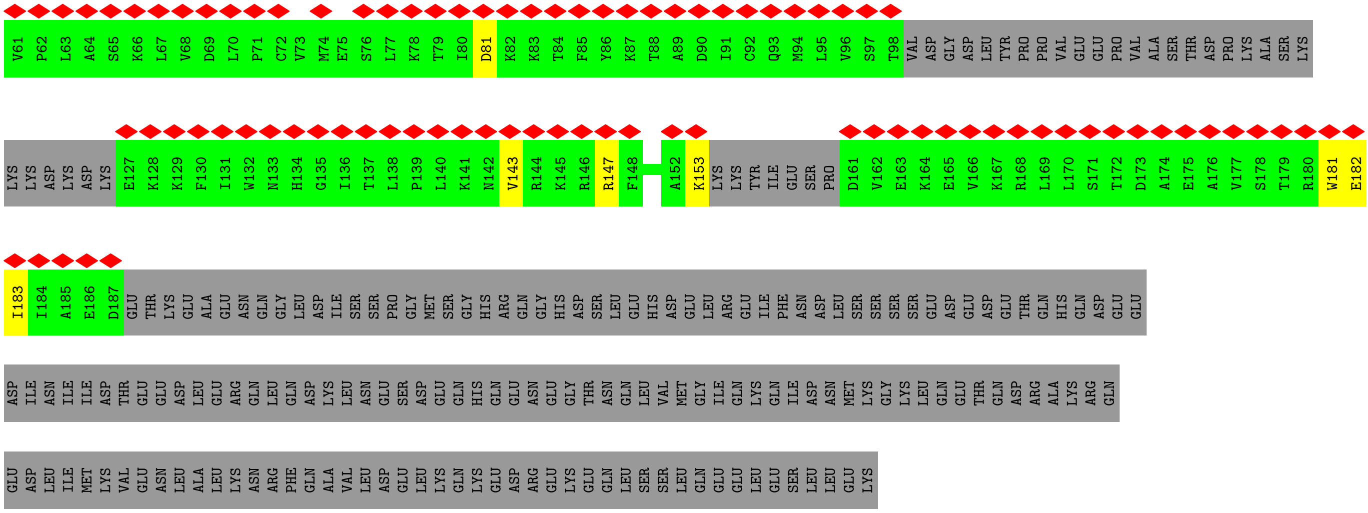
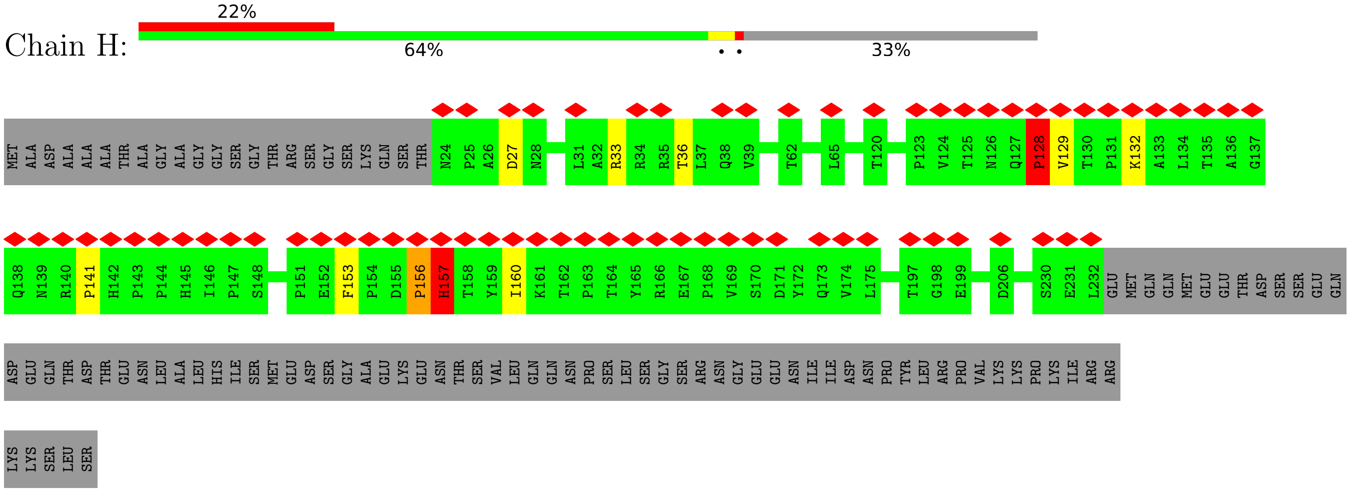
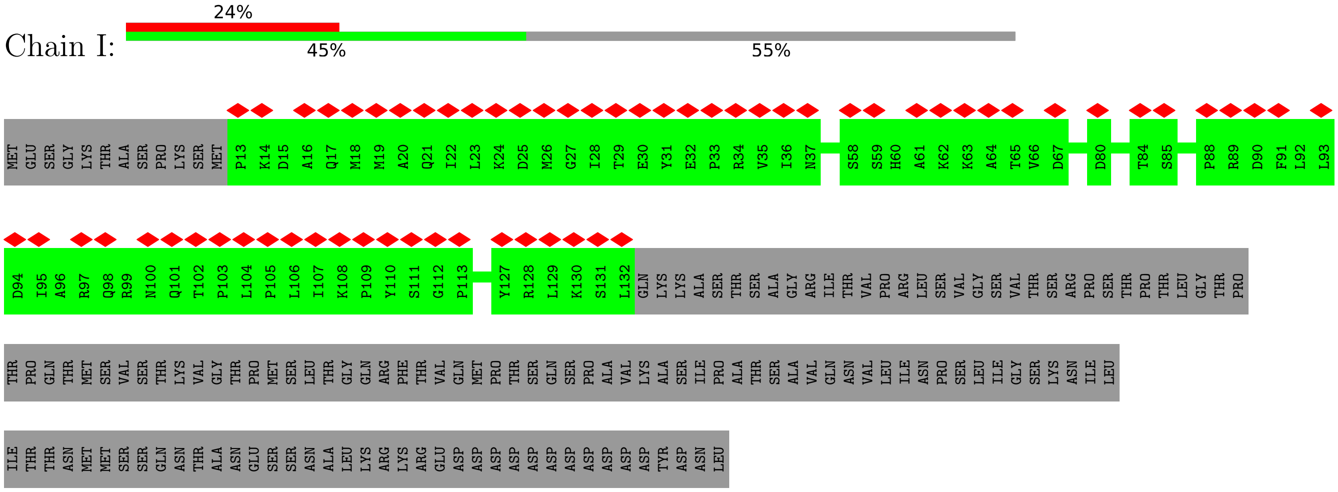


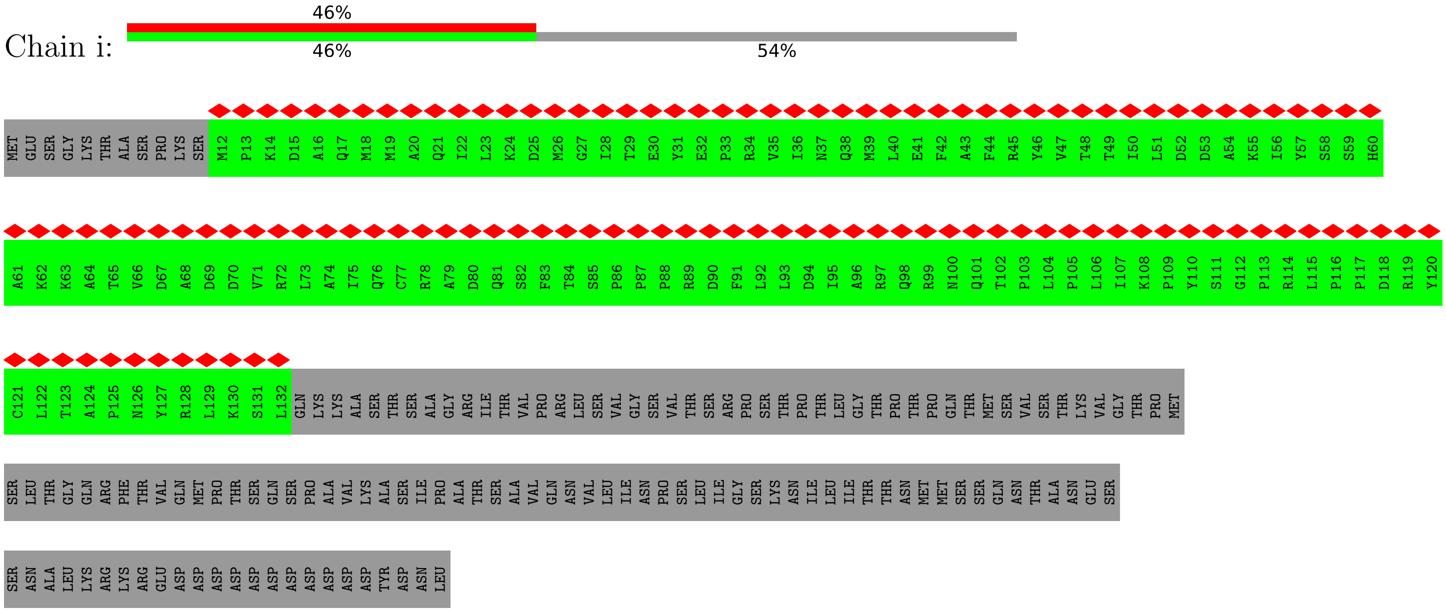
- Molecule 17: Transcription initiation factor TFIID subunit 8



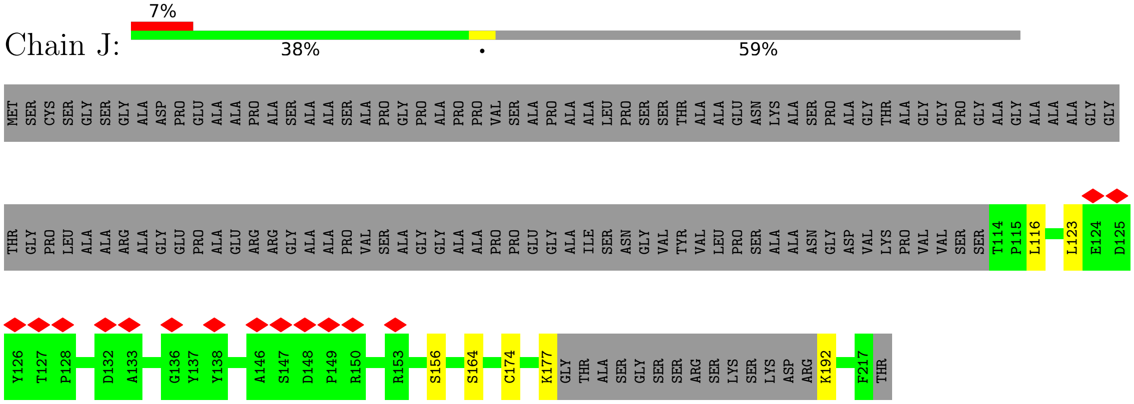
- Molecule 18: Transcription initiation factor TFIID subunit 9



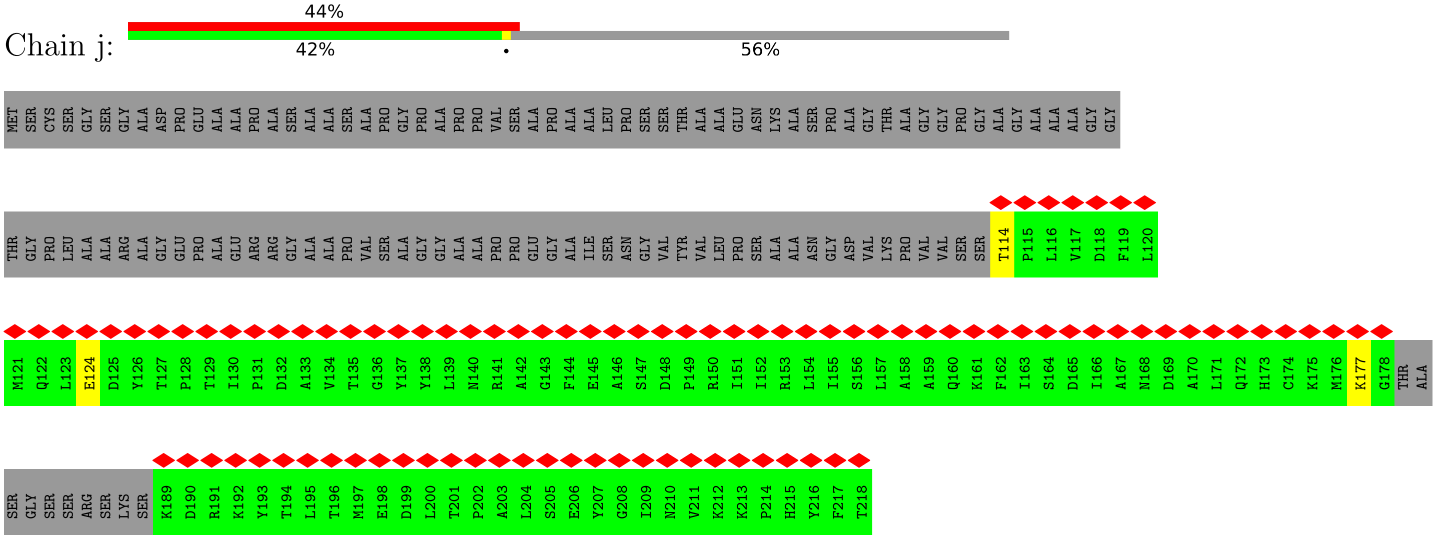
- Molecule 18: Transcription initiation factor TFIID subunit 9



- Molecule 19: Transcription initiation factor TFIID subunit 10

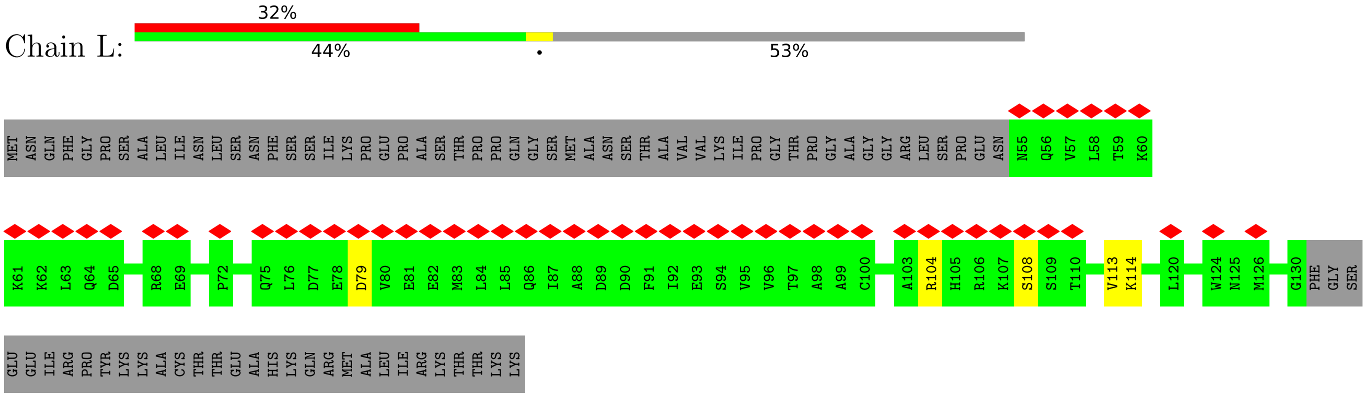


- Molecule 19: Transcription initiation factor TFIID subunit 10



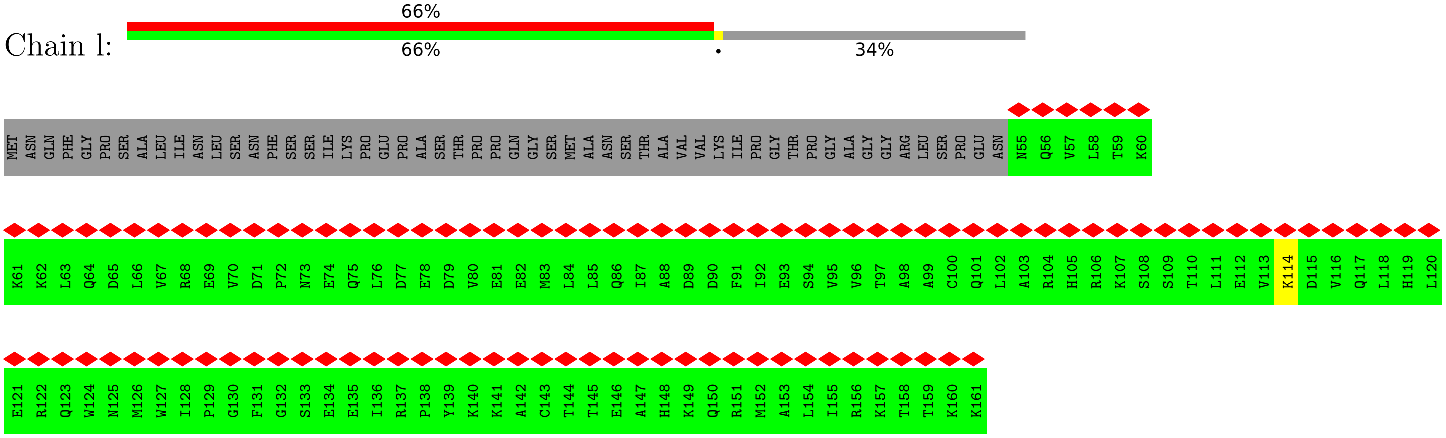
- Molecule 20: Transcription initiation factor TFIID subunit 12

Chain L:



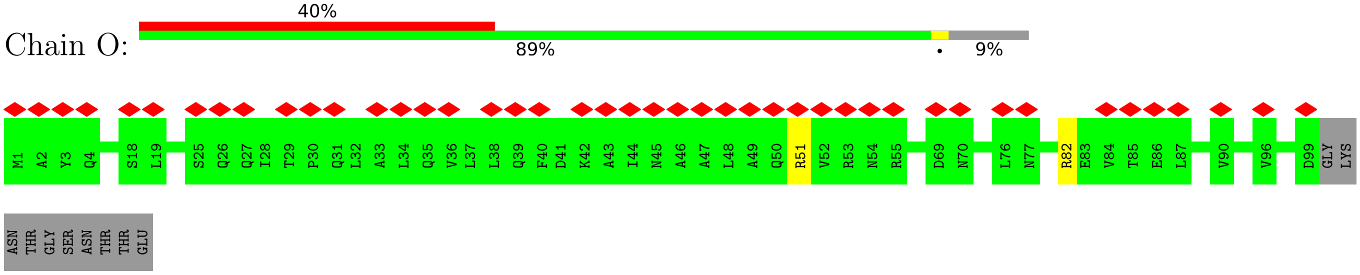
- Molecule 20: Transcription initiation factor TFIID subunit 12

Chain l:



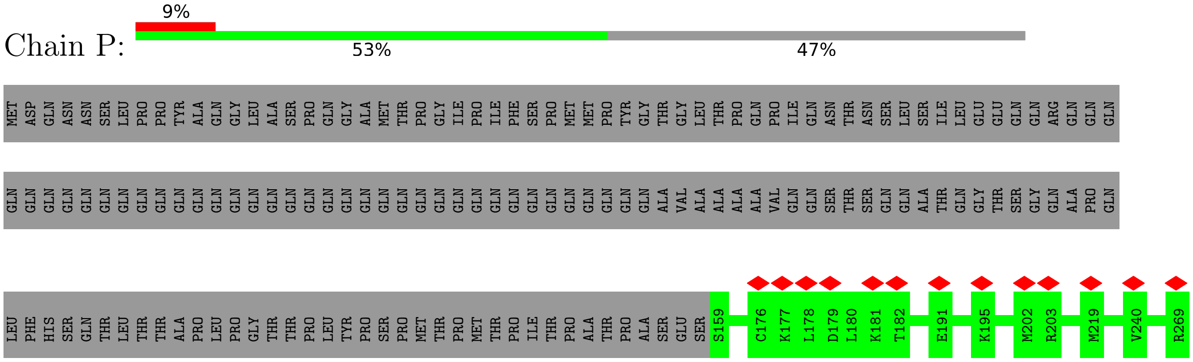
- Molecule 21: Transcription initiation factor IIA subunit 2

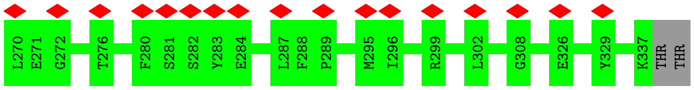
Chain O:



- Molecule 22: TATA-box-binding protein

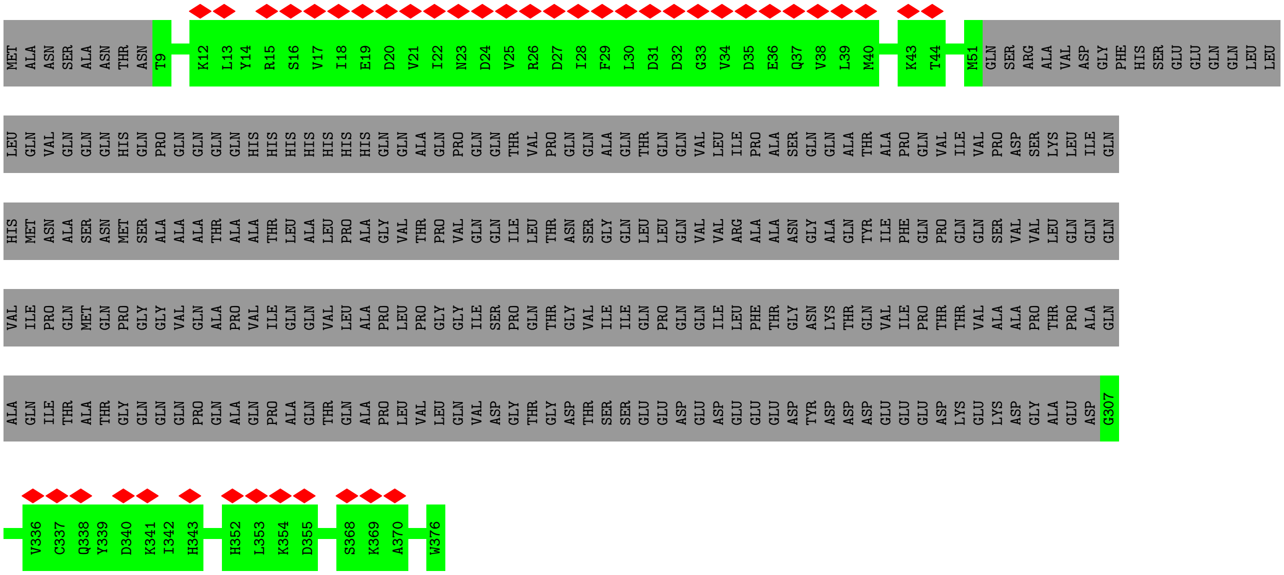
Chain P:





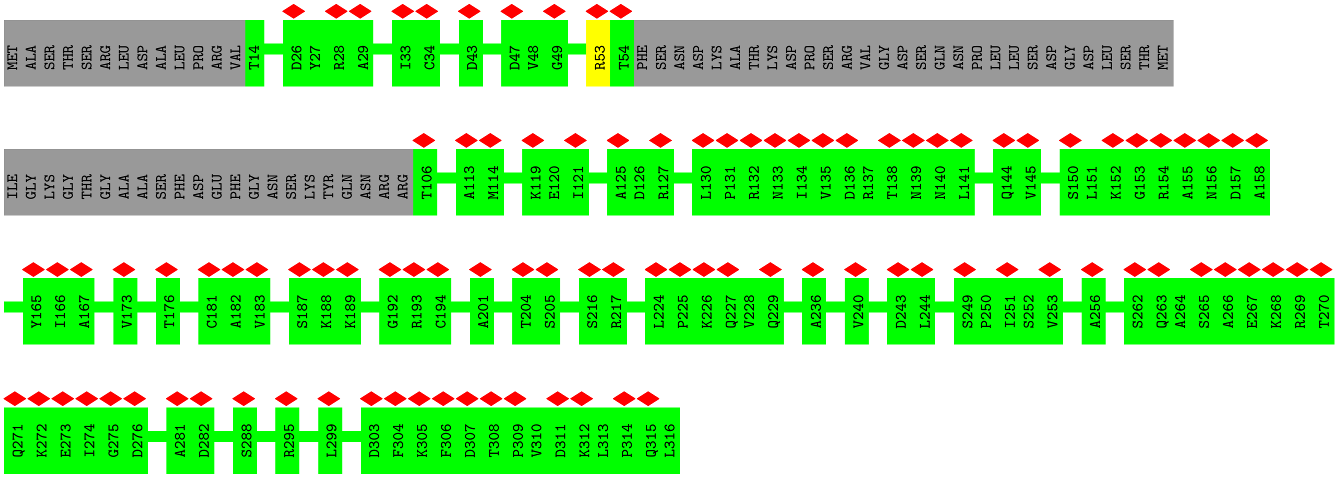
- Molecule 23: Transcription initiation factor IIA subunit 1

Chain Q:



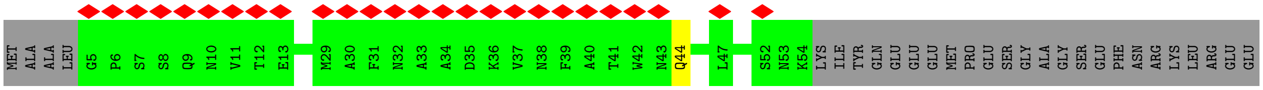
- Molecule 24: Transcription initiation factor IIB

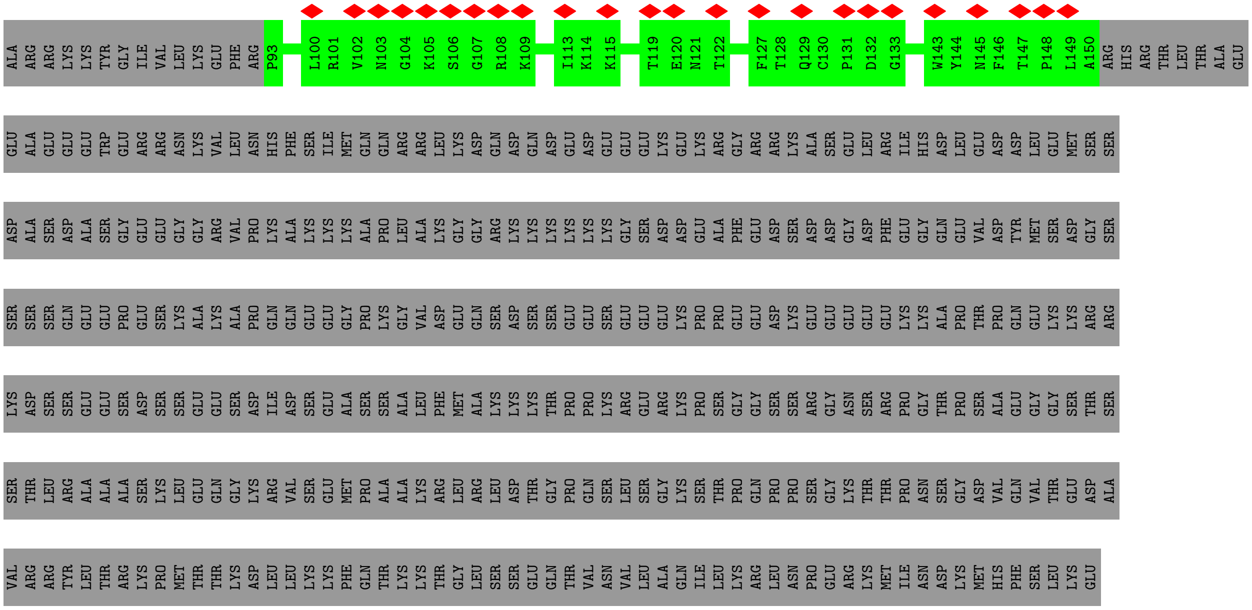
Chain R:



- Molecule 25: General transcription factor IIF subunit 1

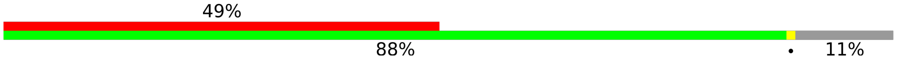
Chain S:

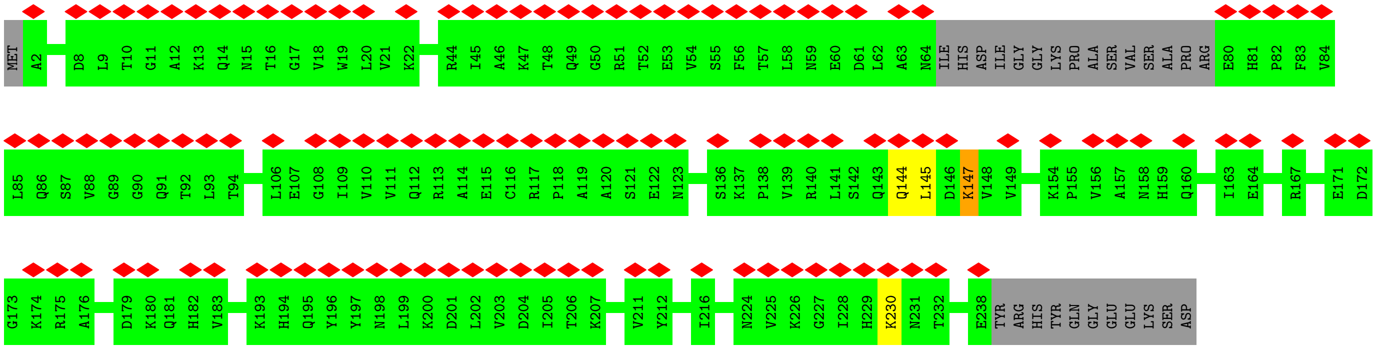




- Molecule 26: General transcription factor IIF subunit 2

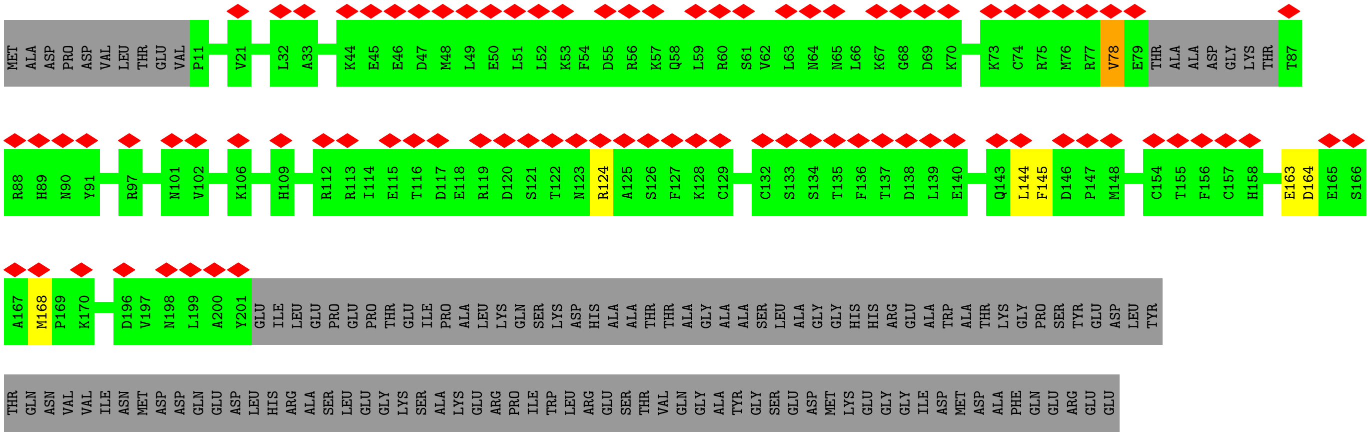
Chain T:

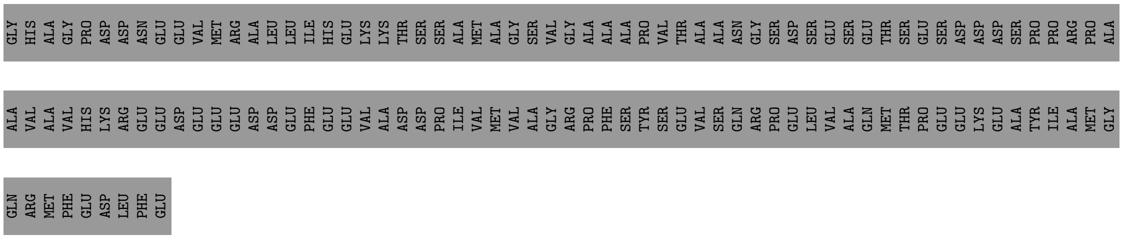




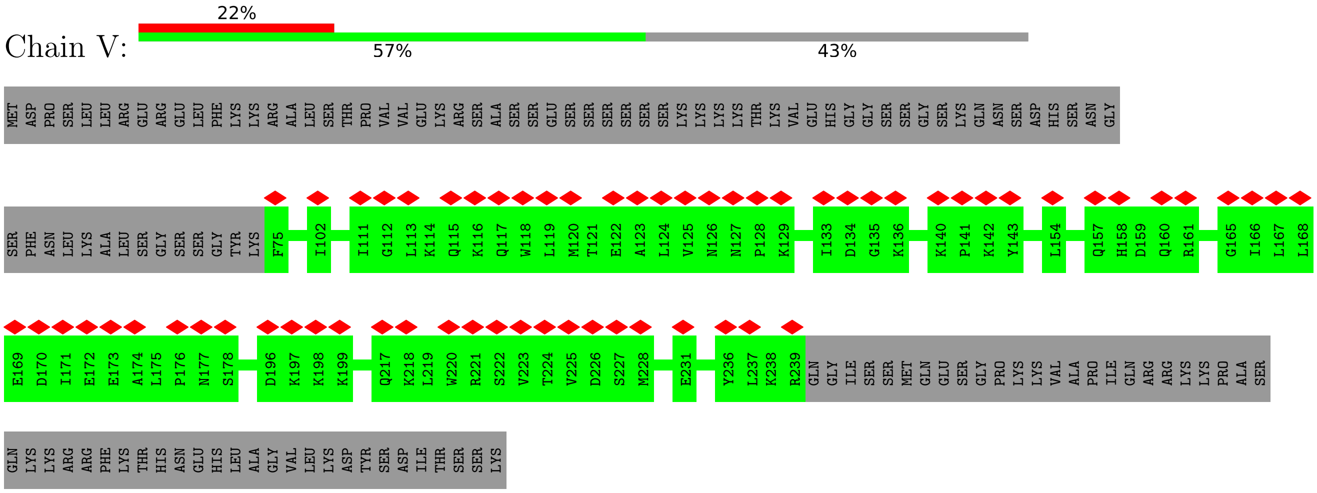
- Molecule 27: General transcription factor IIE subunit 1

Chain U:

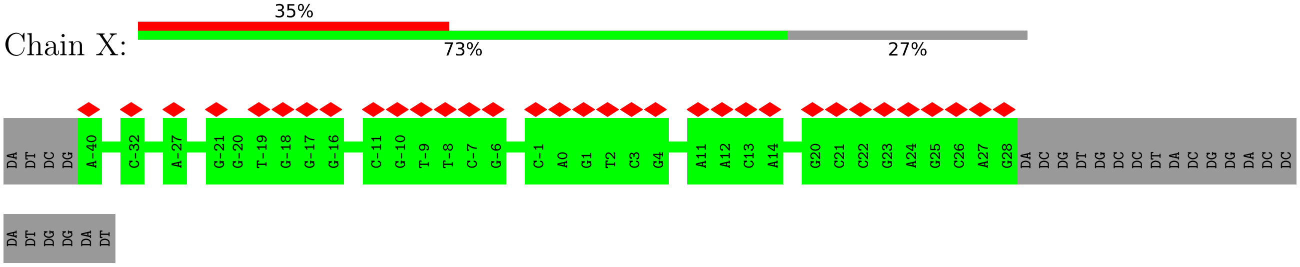




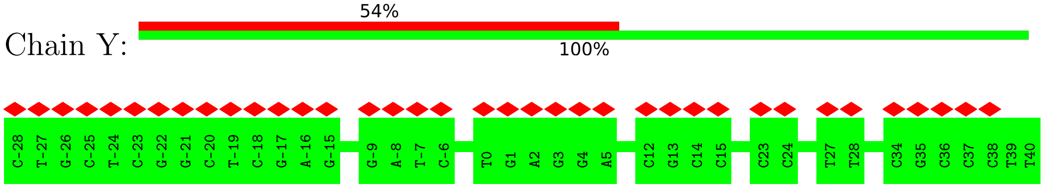
- Molecule 28: Transcription initiation factor IIE subunit beta



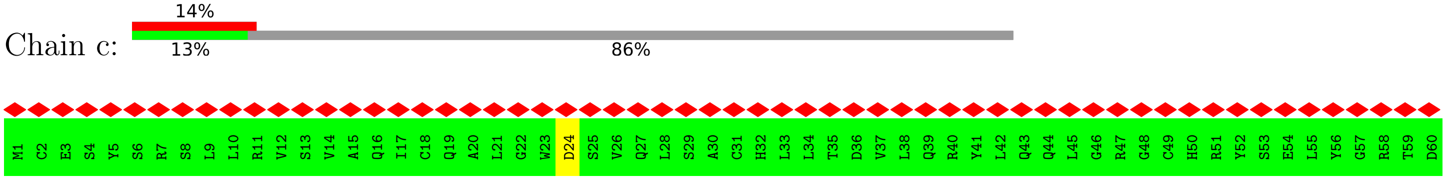
- Molecule 29: DNA (69-MER)

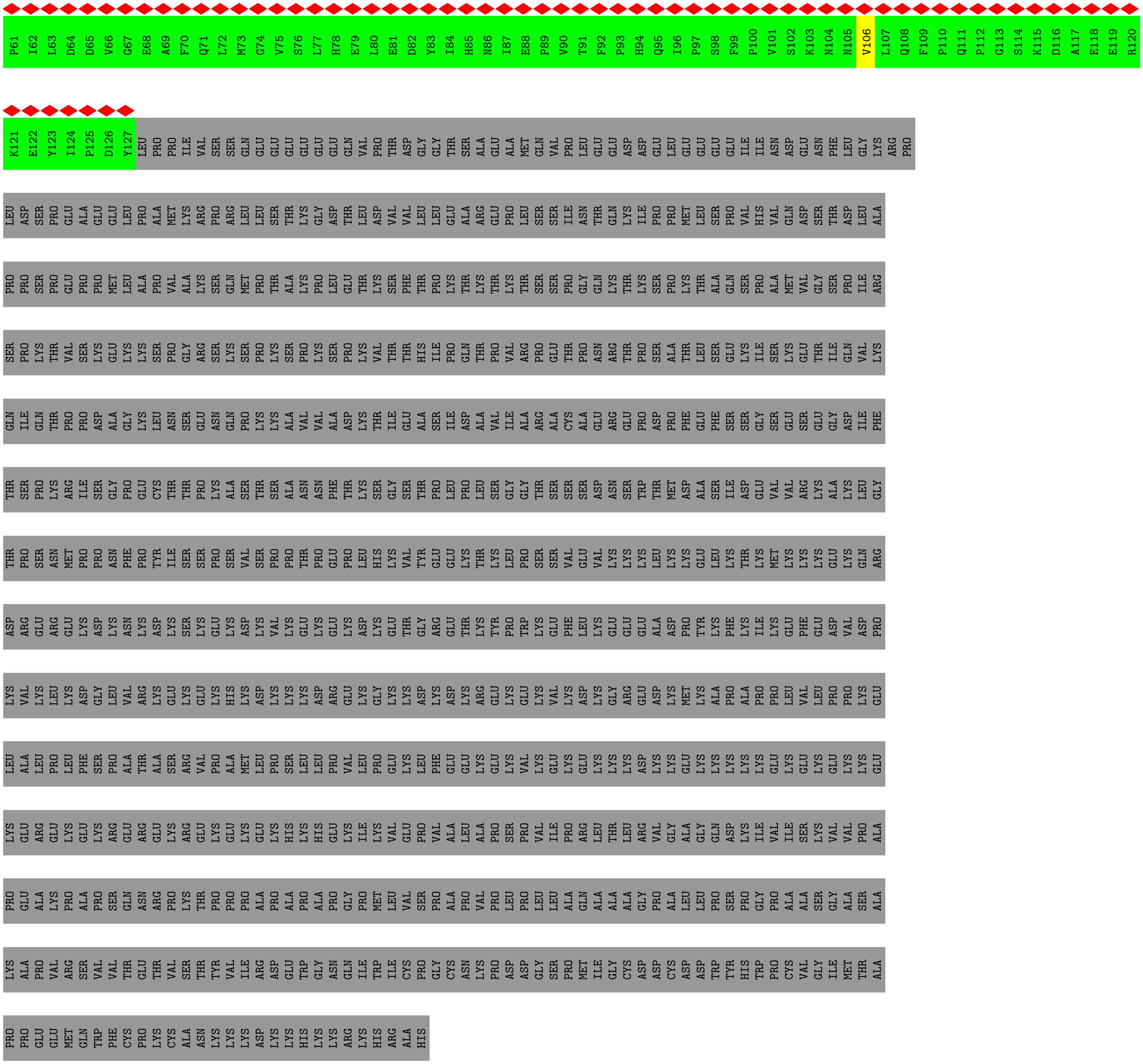


- Molecule 30: DNA (69-MER)



- Molecule 31: Transcription initiation factor TFIID subunit 3





P61 I62 L63 D64 D65 V66 G67 E68 A69 F70 Q71 L72 M73 G74 V75 S76 L77 H78 E79 L80 E81 D82 Y83 I84 H85 N86 I87 E88 P89 V90 T91 F92 P93 H94 Q95 I96 P97 S98 F99 P100 V101 S102 K103 N104 N105 V106 L107 Q108 F109 P110 Q111 P112 G113 S114 K115 D116 A117 E118 E119 R120

K121 E122 Y123 I124 P125 D126 Y127 LEU PRO PRO ILE VAL SER SER GLN GLU GLU GLU GLU GLU GLU GLN VAL PRO THR ASP GLY GLY THR SER ALA GLU ALA MET GLN VAL PRO LEU GLU GLU ASP ASP GLU LEU GLU GLU GLU GLU ILE ILE ASN ASP GLU ASN PHE LEU GLY LYS ARG PRO

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

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

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

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

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

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

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

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

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

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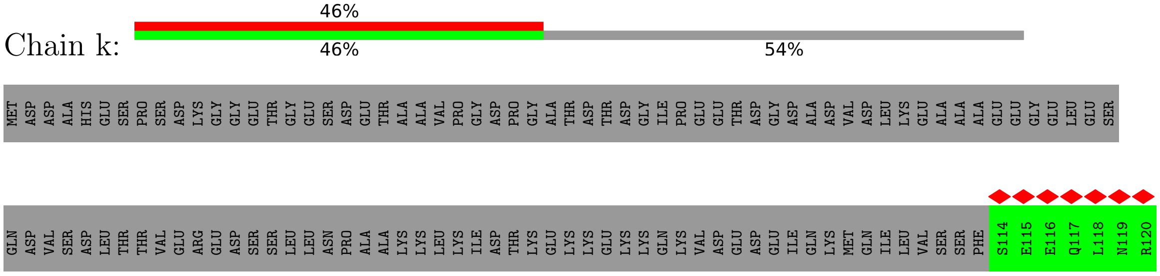
- Molecule 32: Transcription initiation factor TFIID subunit 11



Chain k:

46%

46%

54%

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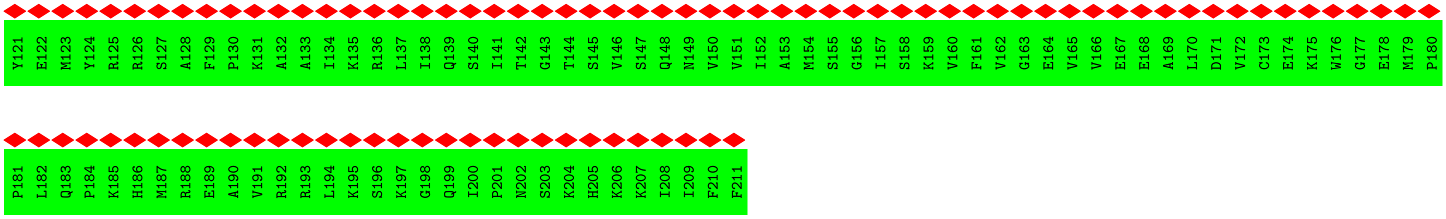
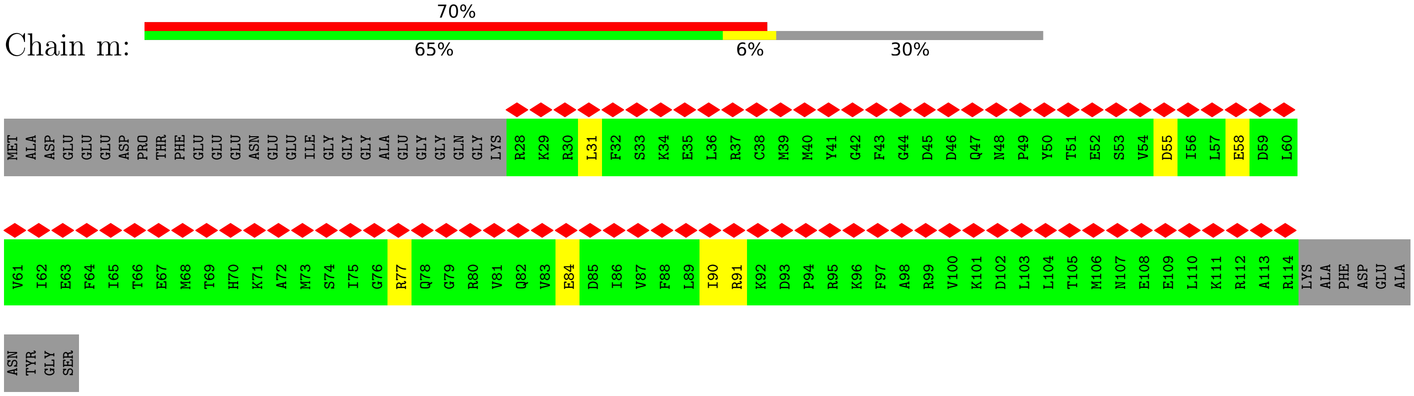
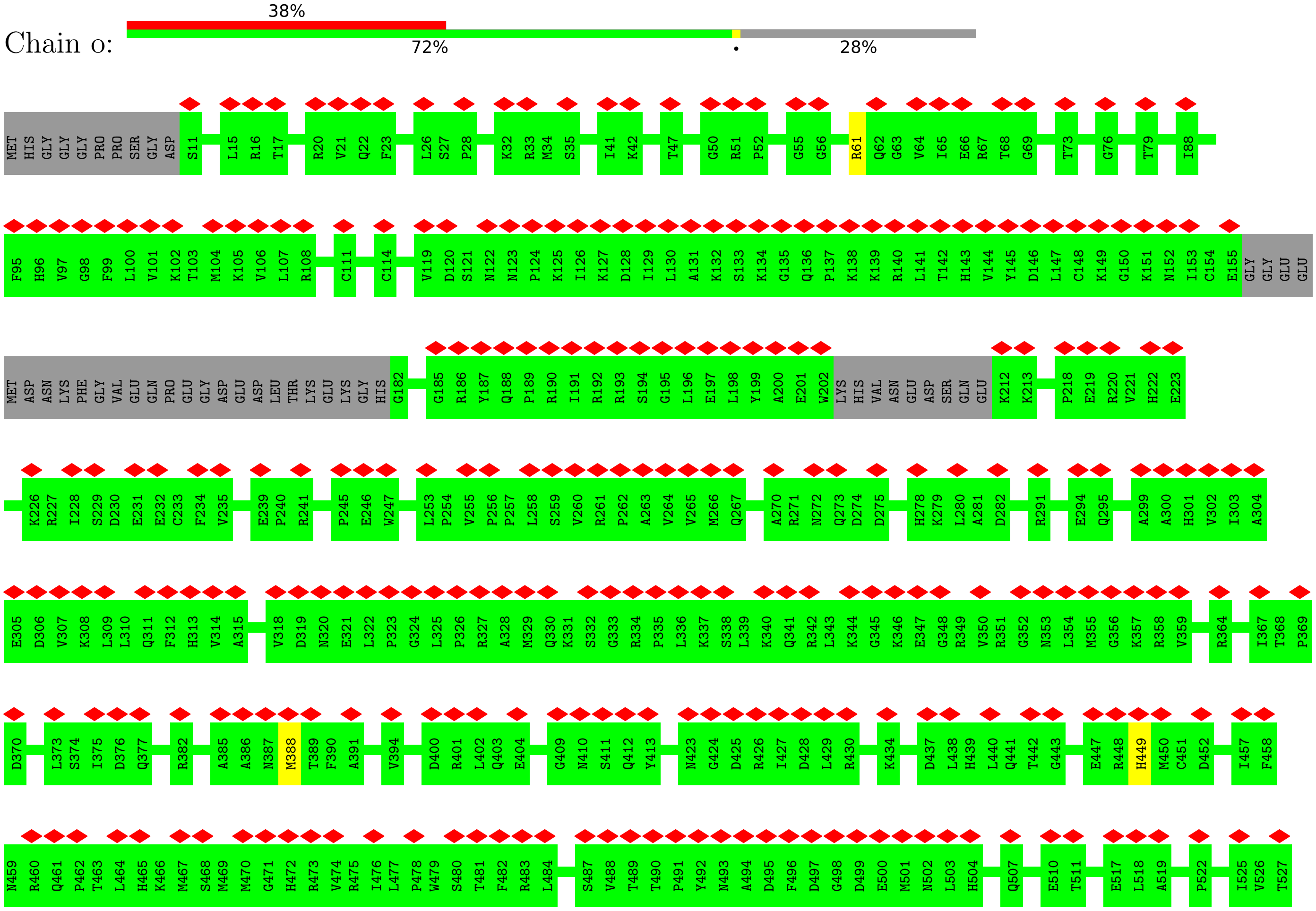
GLN ASP VAL SER ASP LEU THR THR VAL GLU ARG GLU ASP SER SER LEU LEU ASN PRO ALA ALA LYS LYS LEU LYS ILE ASP THR LYS GLU LYS LYS GLU LYS LYS GLN LYS VAL ASP GLU ASP GLU ILE GLN LYS MET GLN ILE LEU VAL SER SER PHE S114 E115 E116 Q117 L118 N119 R120



- Molecule 33: Transcription initiation factor TFIID subunit 13



- Molecule 34: DNA-directed RNA polymerase II subunit RPB1

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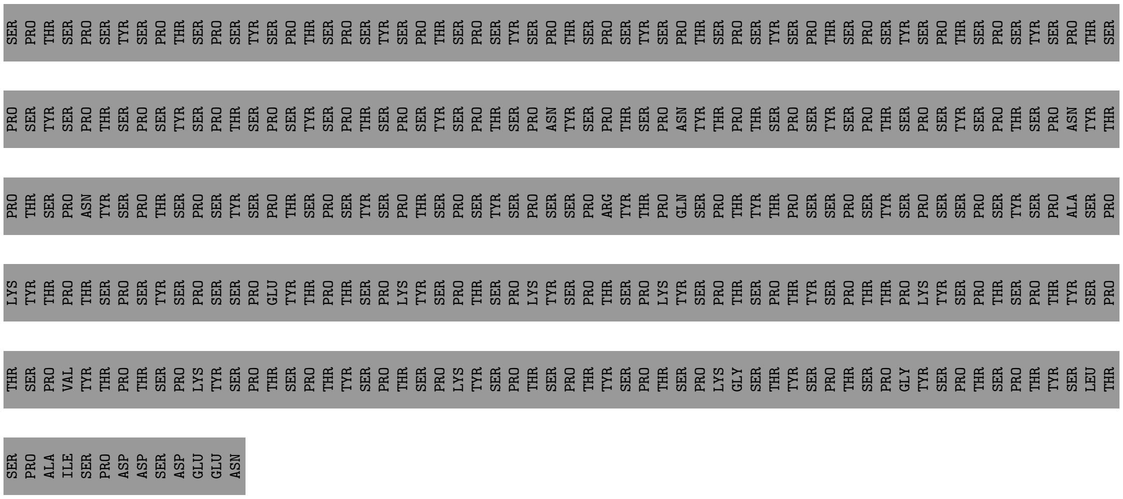
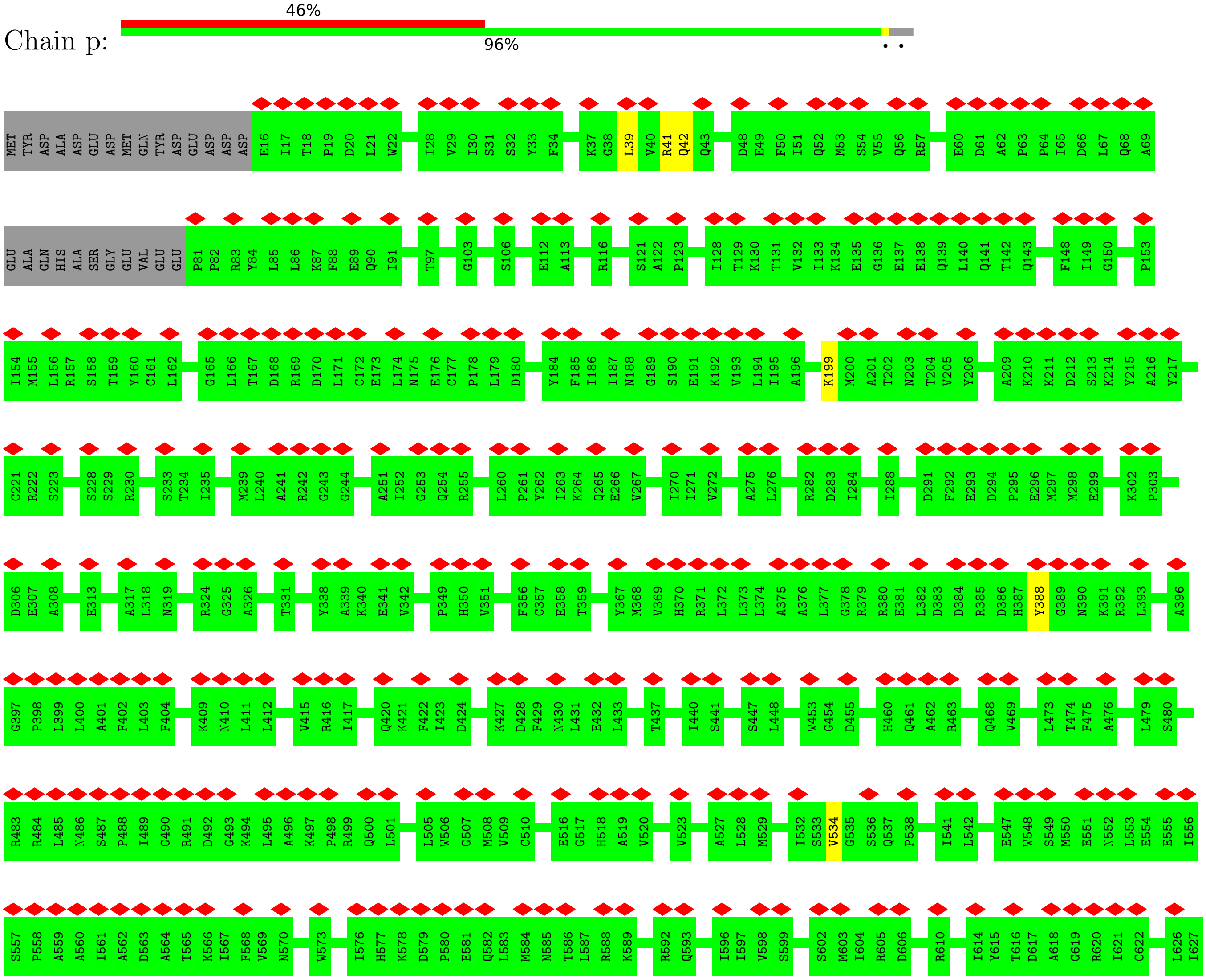
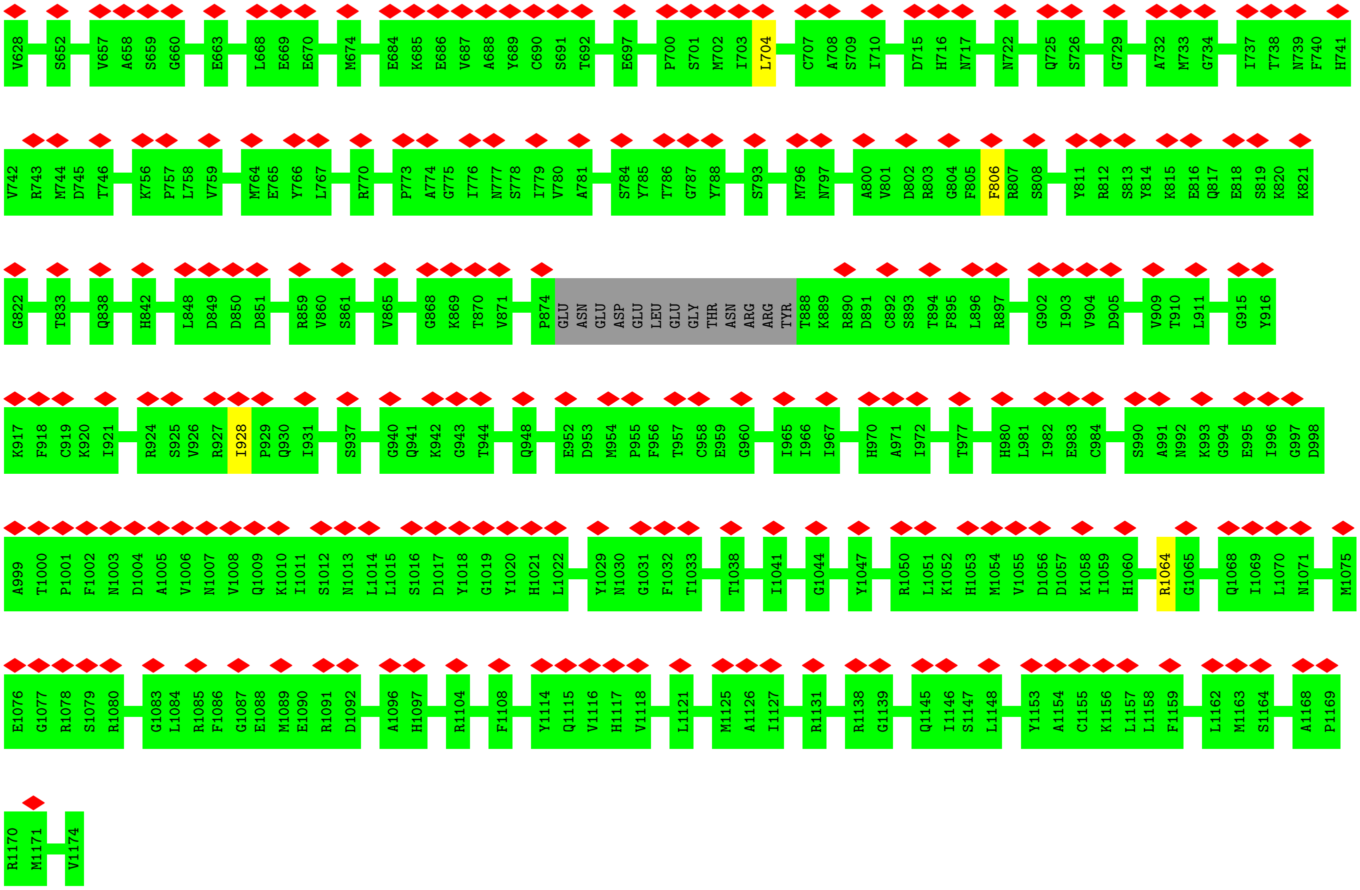
Q1146 S1147 A1148 R1149 D1150 A1151 E1152 R1153 A1154 K1155 D1156 R1160 T1165 L1166 A1171 N1172 T1173 A1174 N1180 P1181 Q1182 S1183 T1184 V1185 V1186 A1187 E1188 D1189 Q1190 E1191 W1192 V1193 N1194 V1195 Y1196 Y1197 E1198 M1199 P1200 D1201 V1204 A1205 R1206 R1218 K1219 H1220 M1221 T1222 D1223 R1224 K1225 L1226 T1227 M1228
E1229 Q1230 I1231 A1232 E1233 K1234 I1235 N1236 A1237 G1238 F1239 G1240 D1241 F1247 N1248 D1249 D1250 N1251 A1252 E1253 K1254 M1262 N1267 LYS MET GLN GLU GLU GLU VAL VAL ASP K1278 M1279 V1283 E1289 S1290 N1291 M1292 L1293 M1296 T1297 L1298 Q1299 S1305 Y1308 L1311 P1312 Q1313
K1319 I1320 I1321 I1322 T1323 E1324 D1325 G1326 E1327 F1328 K1329 A1330 L1331 Q1332 E1333 W1334 G1340 V1341 S1342 L1343 M1344 R1345 K1350 D1351 V1352 R1356 V1363 E1364 I1365 L1369 G1370 I1371 V1374 A1377 L1378 E1379 R1380 E1381 L1382 Y1383 H1384 V1385 I1386 S1387 F1388 D1389 G1390 S1391 Y1392 V1393 N1394 Y1395 R1396
H1397 L1398 A1399 T1404 M1405 T1406 C1407 M1412 A1413 G1418 D1423 T1424 G1425 P1426 L1427 M1428 K1429 C1430 S1431 F1432 E1433 E1434 T1435 V1436 D1437 V1438 L1439 M1440 E1441 A1442 A1443 A1444 H1445 G1446 E1447 S1448 D1449 G1453 E1456 N1457 I1458 M1459 L1460 G1461 Q1462 L1463 A1464 P1465 A1466 G1467 T1468 L1473
A1477 E1478 K1479 C1480 K1481 Y1482 G1483 I1486 P1487 THR ASN ILE PRO GLY LEU GLY ALA ALA GLY PRO THR GLY MET PHE PHE GLY SER ALA PRO SER PRO MET GLY GLY ILE SER PRO ALA MET THR PRO TRP ASN GLN GLY ALA THR PRO ALA TYR GLY ALA TRP SER PRO SER VAL GLY SER
GLY MET THR PRO GLY ALA ALA GLY PHE SER PRO SER ALA ALA SER ASP ALA SER GLY PHE SER PRO GLY TYR SER PRO ALA TRP SER PRO THR PRO GLY SER PRO GLY SER PRO GLY PRO SER SER PRO TYR ILE PRO SER PRO GLY GLY ALA MET SER PRO SER TYR SER PRO THR SER
PRO ALA TYR GLU PRO ARG SER PRO GLY GLY TYR THR PRO GLN SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO ASN TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO SER TYR SER PRO THR SER PRO SER TYR

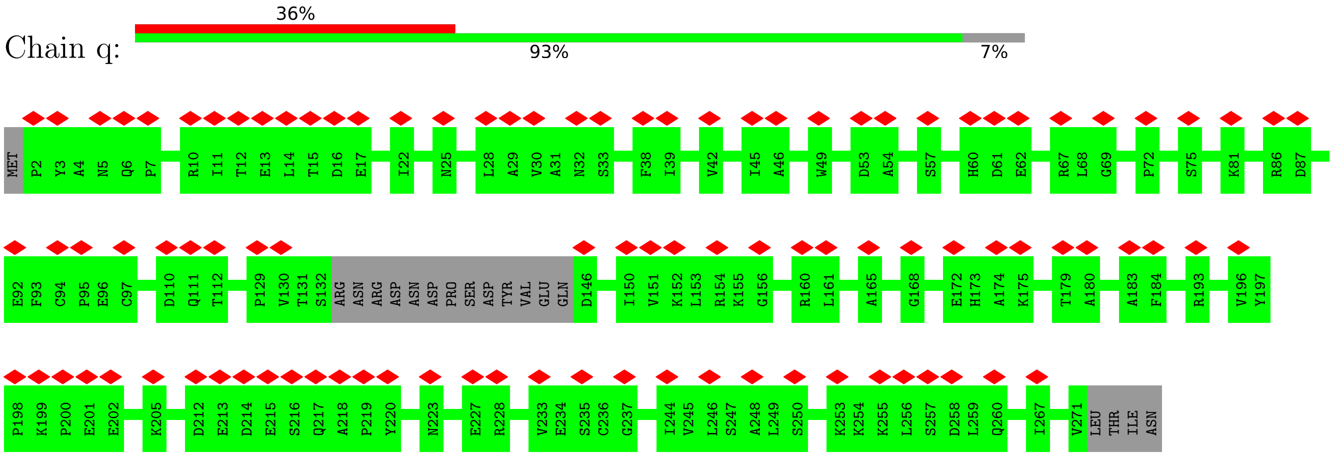


- Molecule 35: DNA-directed RNA polymerase subunit beta

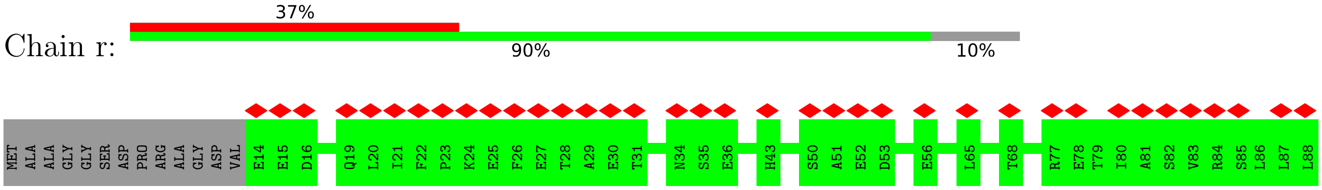


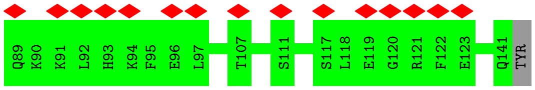


- Molecule 36: DNA-directed RNA polymerase II subunit RPB3



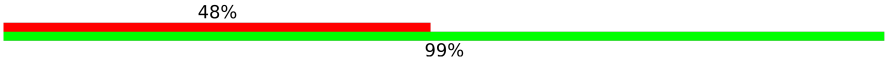
- Molecule 37: DNA-directed RNA polymerase II subunit RPB4

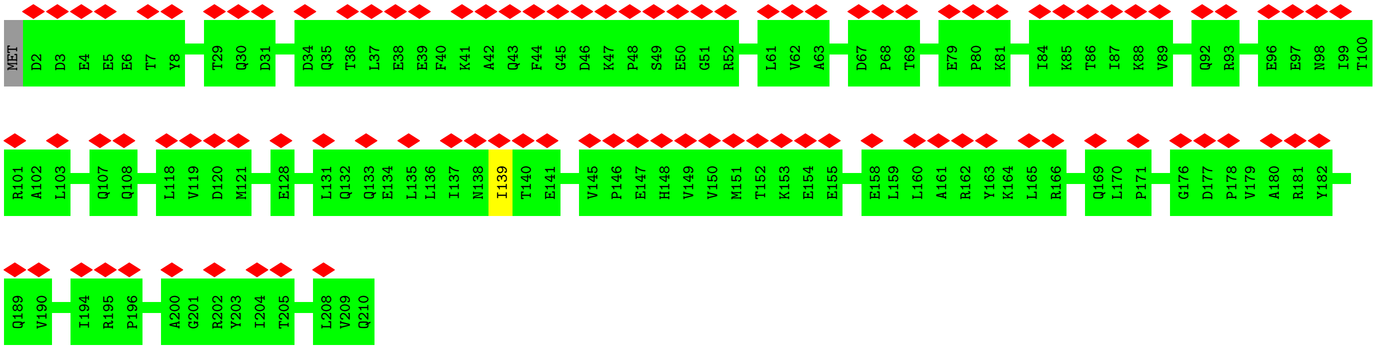




- Molecule 38: DNA-directed RNA polymerase II subunit E

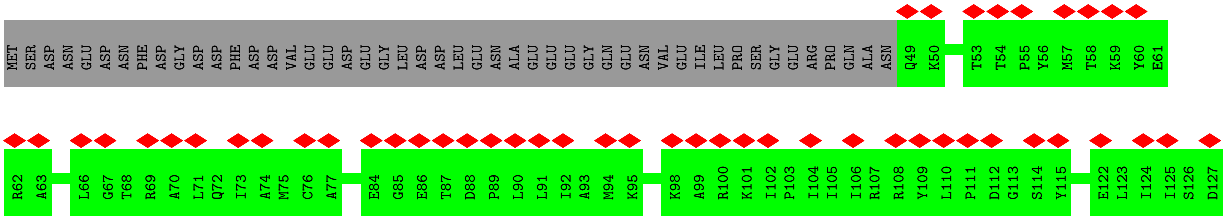
Chain s:





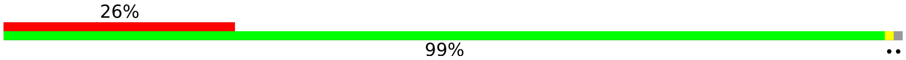
- Molecule 39: DNA-directed RNA polymerase II subunit F

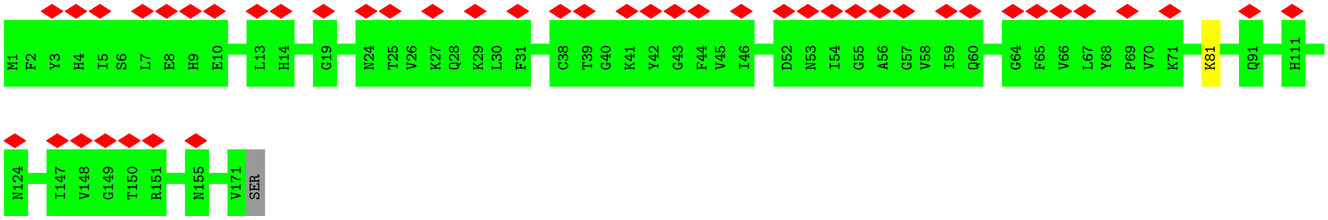
Chain t:



- Molecule 40: DNA-directed RNA polymerase II subunit RPB7

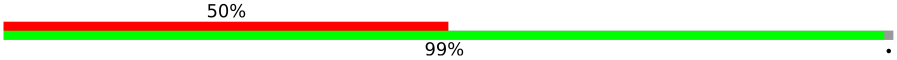
Chain u:

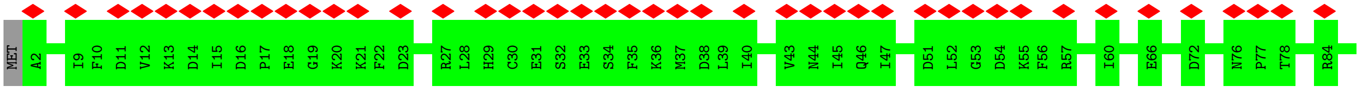


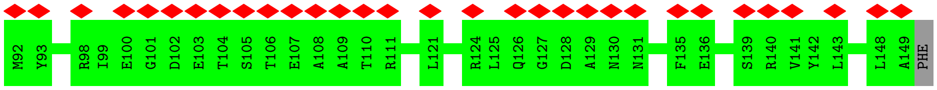


- Molecule 41: DNA-directed RNA polymerases I, II, and III subunit RPABC3

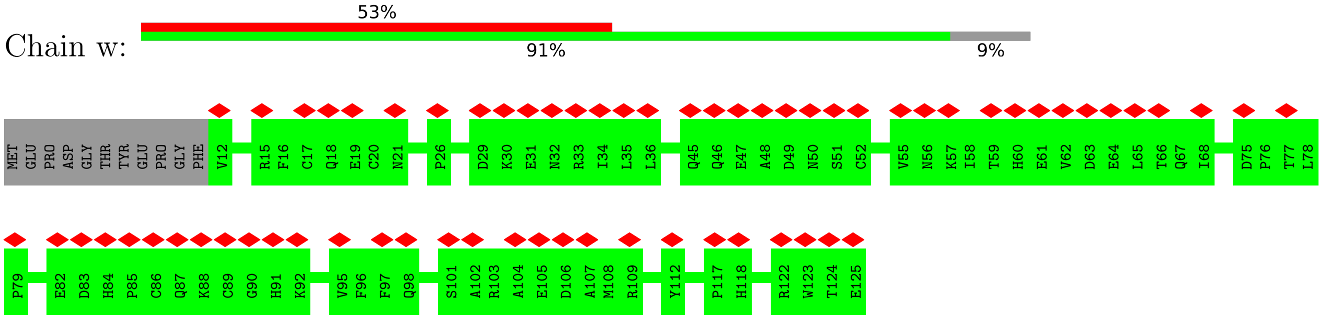
Chain v:



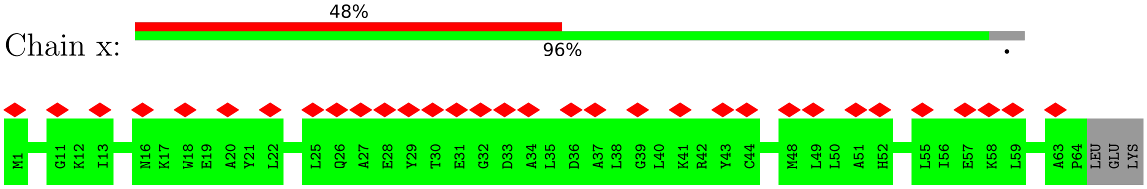




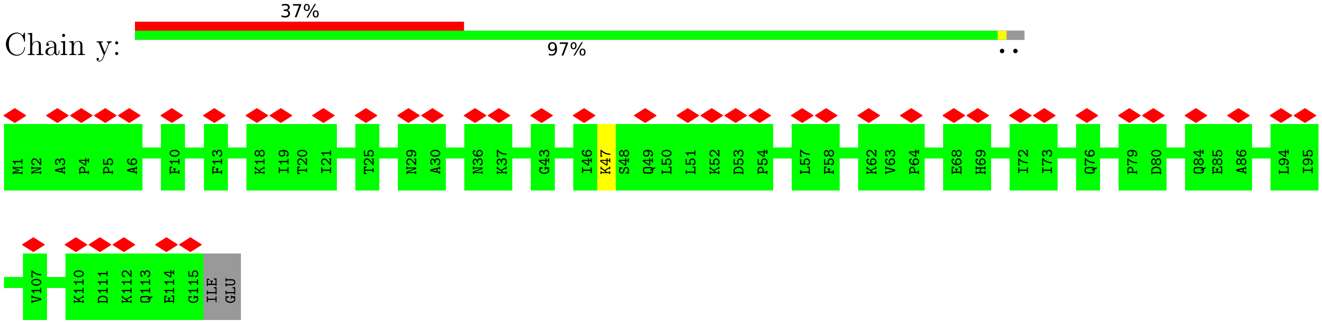
- Molecule 42: DNA-directed RNA polymerase II subunit RPB9



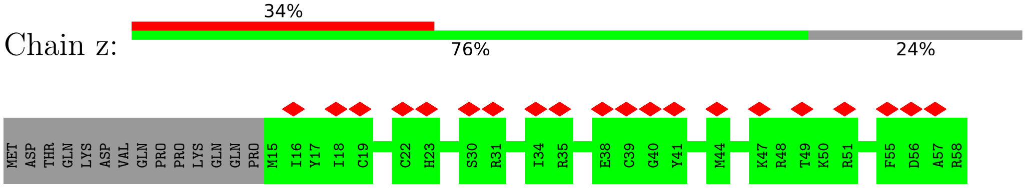
- Molecule 43: RPB10



- Molecule 44: RNA_pol_L_2 domain-containing protein



- Molecule 45: RPB12



4 Experimental information ⓘ

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	92806	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	NONE	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose $(e^-/\text{Å}^2)$	50.0	Depositor
Minimum defocus (nm)	1500	Depositor
Maximum defocus (nm)	2500	Depositor
Magnification	Not provided	
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	6.811	Depositor
Minimum map value	-4.382	Depositor
Average map value	-0.000	Depositor
Map value standard deviation	0.084	Depositor
Recommended contour level	0.3	Depositor
Map size (Å)	542.72, 542.72, 542.72	wwPDB
Map dimensions	512, 512, 512	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.06, 1.06, 1.06	Depositor

5 Model quality (i)

5.1 Standard geometry (i)

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, SF4, 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	0	0.37	0/1965	0.53	0/2646
2	1	0.28	0/2210	0.42	0/2975
3	2	0.26	0/2624	0.42	0/3555
4	3	0.32	0/2103	0.49	0/2846
5	4	0.31	0/3262	0.46	1/4418 (0.0%)
6	5	0.32	0/433	0.51	0/585
7	6	0.29	0/4994	0.47	3/6745 (0.0%)
8	7	0.27	0/5875	0.43	0/7955
9	8	0.38	0/2434	0.55	0/3300
10	9	0.45	0/2342	0.58	1/3159 (0.0%)
11	A	0.50	0/4698	0.67	0/6345
12	B	0.46	0/7993	0.61	0/10836
13	D	0.41	0/1350	0.57	0/1805
13	d	0.39	0/1321	0.53	0/1772
14	E	0.39	0/4482	0.59	0/6069
14	e	0.44	0/4433	0.60	0/6004
15	F	0.49	0/3201	0.73	1/4347 (0.0%)
15	f	0.41	0/3140	0.63	0/4268
16	G	0.51	0/1190	0.62	0/1601
17	H	0.47	0/1673	0.72	3/2285 (0.1%)
18	I	0.28	0/981	0.47	0/1332
18	i	0.30	0/989	0.46	0/1343
19	J	0.57	0/736	0.69	0/998
19	j	0.54	0/775	0.63	0/1049
20	L	0.48	0/630	0.71	0/852
20	l	0.44	0/888	0.55	0/1194
21	O	0.28	0/816	0.46	0/1105
22	P	0.26	0/1448	0.42	0/1948
23	Q	0.26	0/945	0.43	0/1274
24	R	0.27	0/1983	0.43	0/2679
25	S	0.25	0/896	0.41	0/1213
26	T	0.26	0/1817	0.44	0/2445

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
27	U	0.35	0/1545	0.53	0/2075
28	V	0.28	0/1380	0.53	0/1854
29	X	0.22	0/1607	0.74	0/2481
30	Y	0.23	0/1565	0.73	0/2410
31	c	0.39	0/1035	0.54	0/1406
32	k	0.30	0/799	0.47	0/1070
33	m	0.59	0/733	0.64	0/977
34	o	0.34	5/11479 (0.0%)	0.50	14/15496 (0.1%)
35	p	0.35	4/9249 (0.0%)	0.46	3/12482 (0.0%)
36	q	0.25	0/2102	0.43	0/2857
37	r	0.26	0/1064	0.39	0/1428
38	s	0.28	1/1752 (0.1%)	0.50	3/2366 (0.1%)
39	t	0.25	0/646	0.39	0/871
40	u	0.28	0/1382	0.44	0/1874
41	v	0.25	0/1207	0.43	0/1628
42	w	0.28	0/949	0.46	0/1284
43	x	0.27	0/516	0.41	0/696
44	y	0.28	0/939	0.41	0/1271
45	z	0.28	0/378	0.41	0/500
All	All	0.37	10/114954 (0.0%)	0.54	29/155974 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand.A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	0	0	1
26	T	0	1
27	U	0	1
All	All	0	3

The worst 5 of 10 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
35	p	704	LEU	C-N	13.21	1.56	1.33
34	o	1466	ALA	C-N	10.01	1.51	1.33
35	p	806	PHE	C-N	9.67	1.56	1.34
34	o	1424	THR	C-N	9.42	1.50	1.33
35	p	928	ILE	C-N	8.81	1.50	1.34

The worst 5 of 29 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
38	s	139	ILE	O-C-N	-10.06	106.61	122.70
34	o	1082	HIS	O-C-N	-8.74	104.49	121.10
34	o	893	GLU	O-C-N	-8.54	109.04	122.70
17	H	156	PRO	N-CA-C	-8.46	90.10	112.10
34	o	1424	THR	CA-C-N	-7.29	101.61	116.20

There are no chirality outliers.

All (3) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	0	126	GLN	Mainchain
26	T	144	GLN	Mainchain
27	U	78	VAL	Peptide

5.2 Too-close contacts ⓘ

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

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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

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

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	0	232/309 (75%)	215 (93%)	17 (7%)	0	100	100
2	1	253/548 (46%)	245 (97%)	8 (3%)	0	100	100
3	2	325/395 (82%)	313 (96%)	12 (4%)	0	100	100
4	3	259/308 (84%)	251 (97%)	8 (3%)	0	100	100
5	4	384/462 (83%)	367 (96%)	17 (4%)	0	100	100
6	5	52/71 (73%)	47 (90%)	4 (8%)	1 (2%)	6	29
7	6	601/782 (77%)	576 (96%)	23 (4%)	2 (0%)	37	66
8	7	710/760 (93%)	683 (96%)	26 (4%)	1 (0%)	48	76
9	8	294/346 (85%)	277 (94%)	17 (6%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
10	9	277/323 (86%)	268 (97%)	9 (3%)	0	100	100
11	A	543/1872 (29%)	519 (96%)	23 (4%)	1 (0%)	44	71
12	B	959/1199 (80%)	911 (95%)	48 (5%)	0	100	100
13	D	154/1085 (14%)	148 (96%)	6 (4%)	0	100	100
13	d	154/1085 (14%)	149 (97%)	5 (3%)	0	100	100
14	E	541/800 (68%)	517 (96%)	23 (4%)	1 (0%)	44	71
14	e	531/800 (66%)	482 (91%)	48 (9%)	1 (0%)	44	71
15	F	408/677 (60%)	389 (95%)	18 (4%)	1 (0%)	44	71
15	f	399/677 (59%)	380 (95%)	19 (5%)	0	100	100
16	G	138/349 (40%)	135 (98%)	3 (2%)	0	100	100
17	H	207/310 (67%)	189 (91%)	14 (7%)	4 (2%)	6	29
18	I	118/264 (45%)	115 (98%)	3 (2%)	0	100	100
18	i	119/264 (45%)	115 (97%)	4 (3%)	0	100	100
19	J	86/218 (39%)	82 (95%)	4 (5%)	0	100	100
19	j	91/218 (42%)	85 (93%)	4 (4%)	2 (2%)	5	26
20	L	74/161 (46%)	72 (97%)	2 (3%)	0	100	100
20	l	105/161 (65%)	100 (95%)	5 (5%)	0	100	100
21	O	97/109 (89%)	97 (100%)	0	0	100	100
22	P	177/339 (52%)	175 (99%)	2 (1%)	0	100	100
23	Q	109/376 (29%)	102 (94%)	7 (6%)	0	100	100
24	R	248/316 (78%)	246 (99%)	2 (1%)	0	100	100
25	S	104/517 (20%)	104 (100%)	0	0	100	100
26	T	218/249 (88%)	211 (97%)	6 (3%)	1 (0%)	25	56
27	U	180/439 (41%)	152 (84%)	26 (14%)	2 (1%)	12	40
28	V	163/291 (56%)	139 (85%)	24 (15%)	0	100	100
31	c	125/929 (14%)	116 (93%)	9 (7%)	0	100	100
32	k	96/211 (46%)	91 (95%)	5 (5%)	0	100	100
33	m	85/124 (68%)	82 (96%)	3 (4%)	0	100	100
34	o	1413/1970 (72%)	1369 (97%)	44 (3%)	0	100	100
35	p	1129/1174 (96%)	1089 (96%)	40 (4%)	0	100	100
36	q	253/275 (92%)	241 (95%)	12 (5%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
37	r	126/142 (89%)	122 (97%)	4 (3%)	0	100	100
38	s	207/210 (99%)	203 (98%)	4 (2%)	0	100	100
39	t	77/127 (61%)	76 (99%)	1 (1%)	0	100	100
40	u	169/172 (98%)	166 (98%)	3 (2%)	0	100	100
41	v	146/150 (97%)	143 (98%)	3 (2%)	0	100	100
42	w	112/125 (90%)	103 (92%)	9 (8%)	0	100	100
43	x	62/67 (92%)	61 (98%)	1 (2%)	0	100	100
44	y	113/117 (97%)	112 (99%)	1 (1%)	0	100	100
45	z	42/58 (72%)	41 (98%)	1 (2%)	0	100	100
All	All	13465/22931 (59%)	12871 (96%)	577 (4%)	17 (0%)	50	76

5 of 17 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
6	5	48	GLU
14	E	523	VAL
17	H	128	PRO
14	e	522	ASP
19	j	124	GLU

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	0	216/283 (76%)	211 (98%)	5 (2%)	45	68
2	1	241/484 (50%)	241 (100%)	0	100	100
3	2	295/352 (84%)	294 (100%)	1 (0%)	91	94
4	3	234/272 (86%)	229 (98%)	5 (2%)	48	70
5	4	346/399 (87%)	338 (98%)	8 (2%)	45	68
6	5	48/64 (75%)	48 (100%)	0	100	100
7	6	536/688 (78%)	531 (99%)	5 (1%)	75	85

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
8	7	624/664 (94%)	622 (100%)	2 (0%)	91	94
9	8	259/299 (87%)	257 (99%)	2 (1%)	79	87
10	9	256/296 (86%)	254 (99%)	2 (1%)	79	87
11	A	496/1665 (30%)	456 (92%)	40 (8%)	9	31
12	B	876/1083 (81%)	859 (98%)	17 (2%)	52	72
13	D	145/815 (18%)	139 (96%)	6 (4%)	26	54
13	d	146/815 (18%)	145 (99%)	1 (1%)	81	88
14	E	480/657 (73%)	466 (97%)	14 (3%)	37	63
14	e	475/657 (72%)	463 (98%)	12 (2%)	42	67
15	F	328/574 (57%)	305 (93%)	23 (7%)	12	37
15	f	322/574 (56%)	314 (98%)	8 (2%)	42	67
16	G	132/322 (41%)	124 (94%)	8 (6%)	15	42
17	H	181/270 (67%)	172 (95%)	9 (5%)	20	48
18	I	106/235 (45%)	106 (100%)	0	100	100
18	i	107/235 (46%)	107 (100%)	0	100	100
19	J	79/154 (51%)	72 (91%)	7 (9%)	8	28
19	j	83/154 (54%)	82 (99%)	1 (1%)	67	80
20	L	71/141 (50%)	66 (93%)	5 (7%)	12	37
20	l	98/141 (70%)	97 (99%)	1 (1%)	73	84
21	O	90/98 (92%)	88 (98%)	2 (2%)	47	69
22	P	154/293 (53%)	154 (100%)	0	100	100
23	Q	105/324 (32%)	105 (100%)	0	100	100
24	R	215/268 (80%)	214 (100%)	1 (0%)	86	91
25	S	93/448 (21%)	92 (99%)	1 (1%)	70	82
26	T	196/218 (90%)	193 (98%)	3 (2%)	60	77
27	U	167/373 (45%)	162 (97%)	5 (3%)	36	62
28	V	150/261 (58%)	150 (100%)	0	100	100
31	c	113/833 (14%)	111 (98%)	2 (2%)	54	74
32	k	87/182 (48%)	87 (100%)	0	100	100
33	m	80/106 (76%)	73 (91%)	7 (9%)	8	28
34	o	1254/1748 (72%)	1247 (99%)	7 (1%)	84	90

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
35	p	993/1027 (97%)	990 (100%)	3 (0%)	91	94
36	q	234/252 (93%)	234 (100%)	0	100	100
37	r	118/126 (94%)	118 (100%)	0	100	100
38	s	191/192 (100%)	191 (100%)	0	100	100
39	t	69/111 (62%)	69 (100%)	0	100	100
40	u	152/153 (99%)	151 (99%)	1 (1%)	81	88
41	v	129/131 (98%)	129 (100%)	0	100	100
42	w	103/112 (92%)	103 (100%)	0	100	100
43	x	53/56 (95%)	53 (100%)	0	100	100
44	y	104/106 (98%)	103 (99%)	1 (1%)	73	84
45	z	41/55 (74%)	41 (100%)	0	100	100
All	All	12071/19766 (61%)	11856 (98%)	215 (2%)	54	74

5 of 215 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
15	F	243	LEU
17	H	153	PHE
33	m	77	ARG
15	F	280	ILE
16	G	41	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 107 such sidechains are listed below:

Mol	Chain	Res	Type
15	F	59	HIS
20	L	117	GLN
33	m	70	HIS
15	F	89	GLN
16	G	48	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 19 ligands modelled in this entry, 18 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	$\#\|Z\| > 2$
47	SF4	7	1000	8	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
47	SF4	7	1000	8	-	-	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.

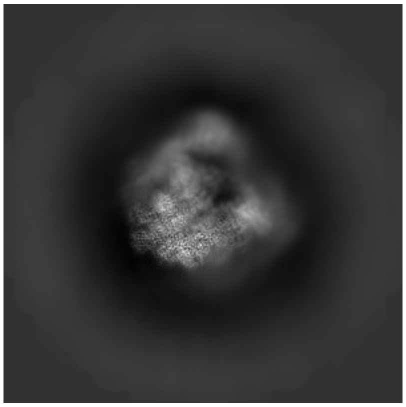
6 Map visualisation ⓘ

This section contains visualisations of the EMDB entry EMD-31111. These allow visual inspection of the internal detail of the map and identification of artifacts.

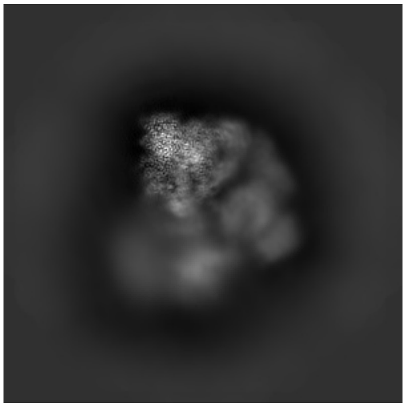
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections ⓘ

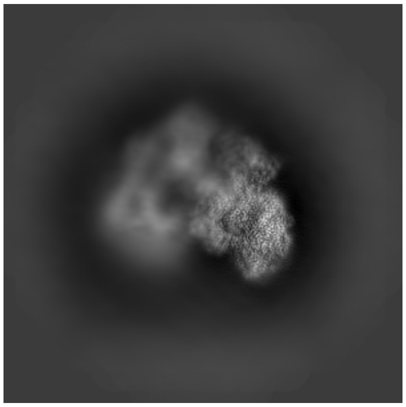
6.1.1 Primary map



X



Y

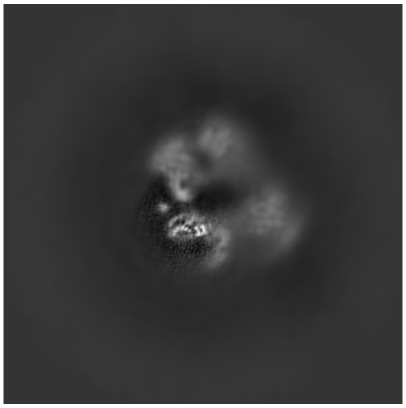


Z

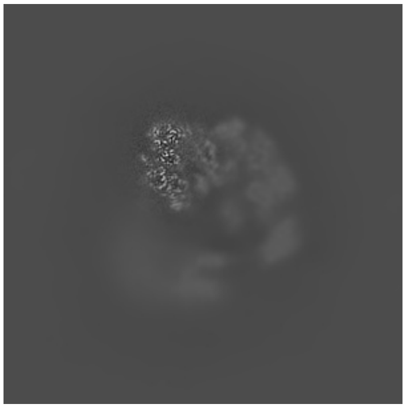
The images above show the map projected in three orthogonal directions.

6.2 Central slices ⓘ

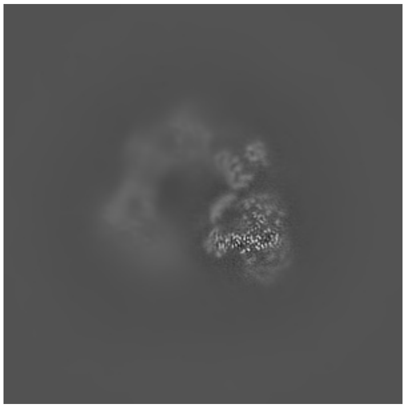
6.2.1 Primary map



X Index: 256



Y Index: 256

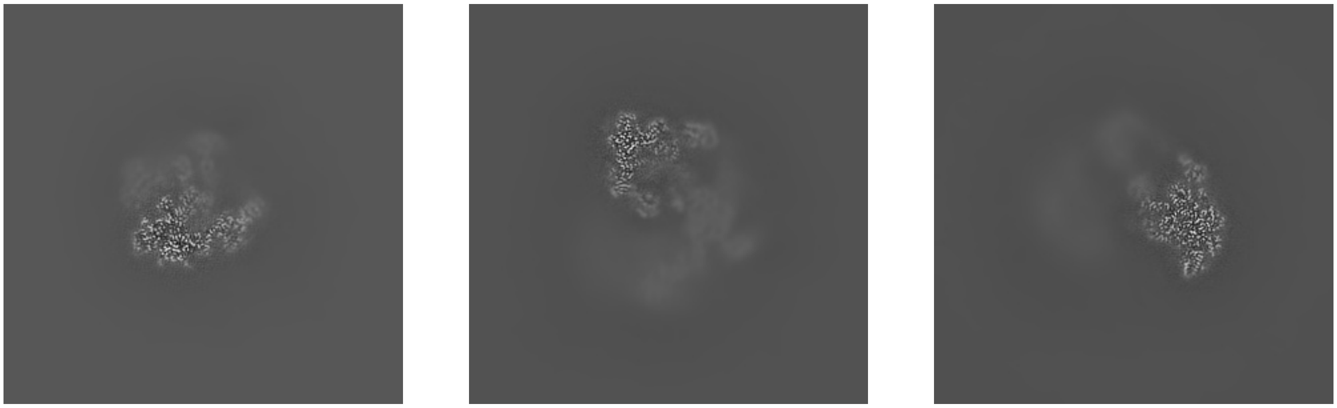


Z Index: 256

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

6.3 Largest variance slices ⓘ

6.3.1 Primary map

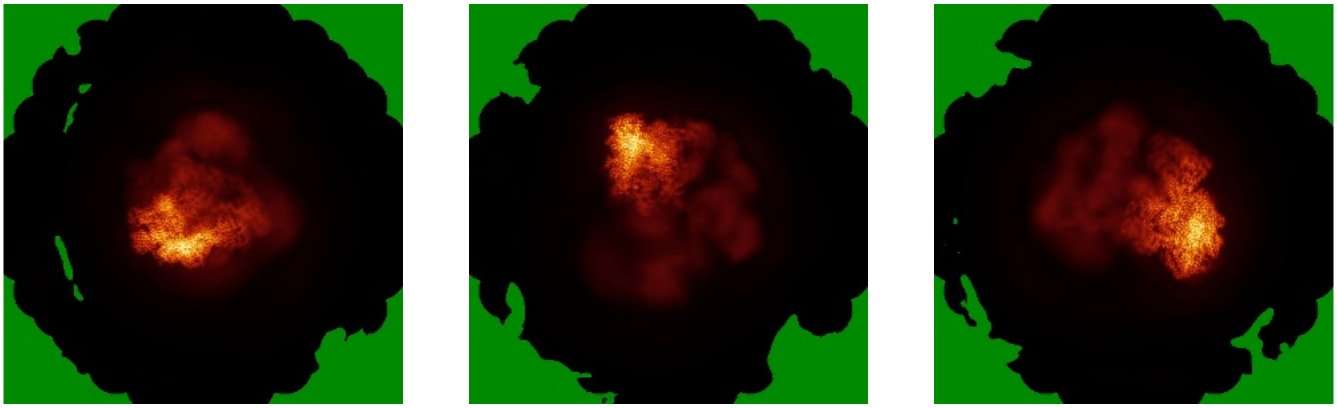


X Index: 331 Y Index: 229 Z Index: 206

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

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

6.4.1 Primary map



X Y Z

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 ⓘ

6.5.1 Primary map

X

Y

Z

The images above show the 3D surface view of the map at the recommended contour level 0.3. These images, in conjunction with the slice images, may facilitate assessment of whether an appropriate contour level has been provided.

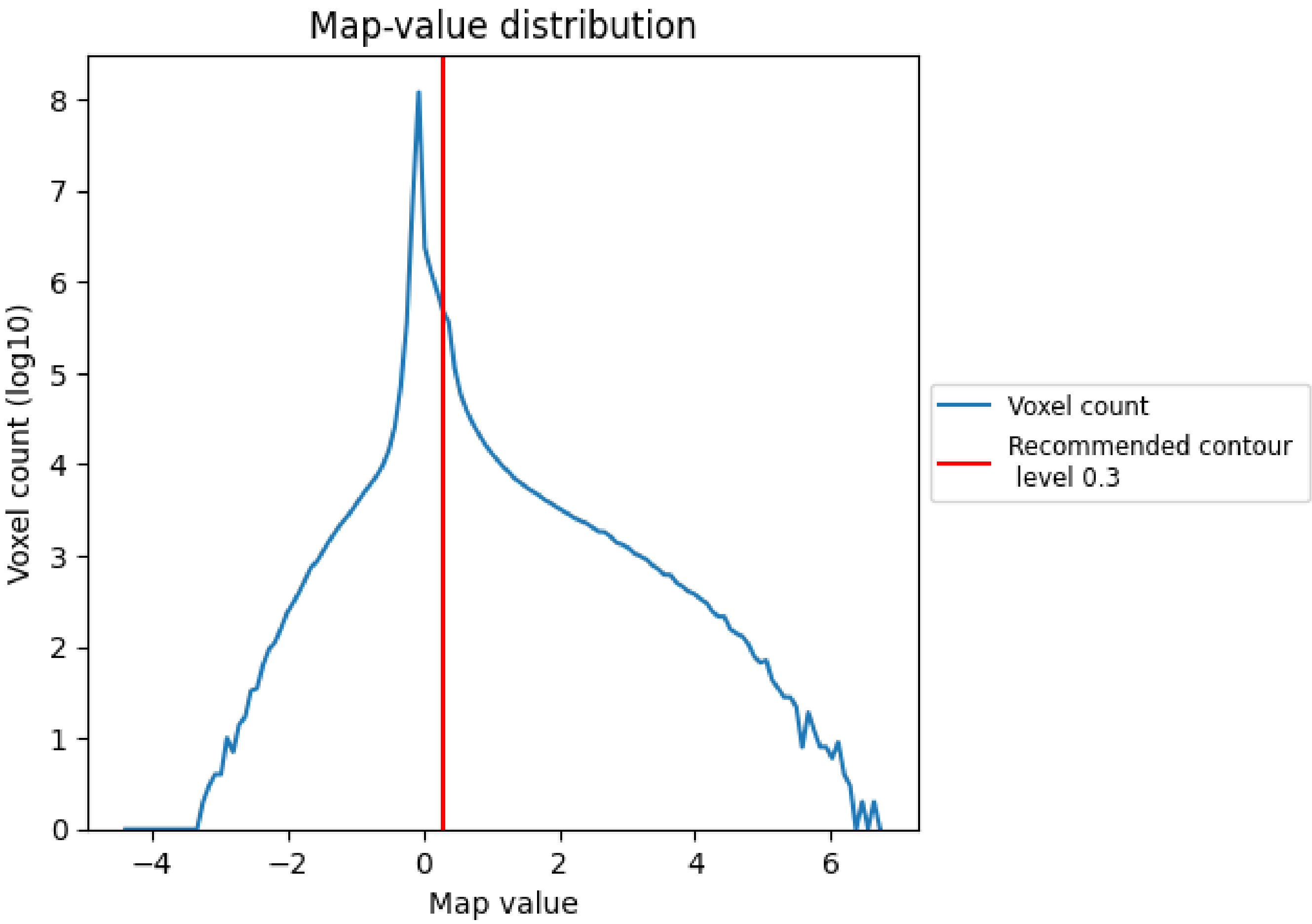
6.6 Mask visualisation ⓘ

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

7 Map analysis ⓘ

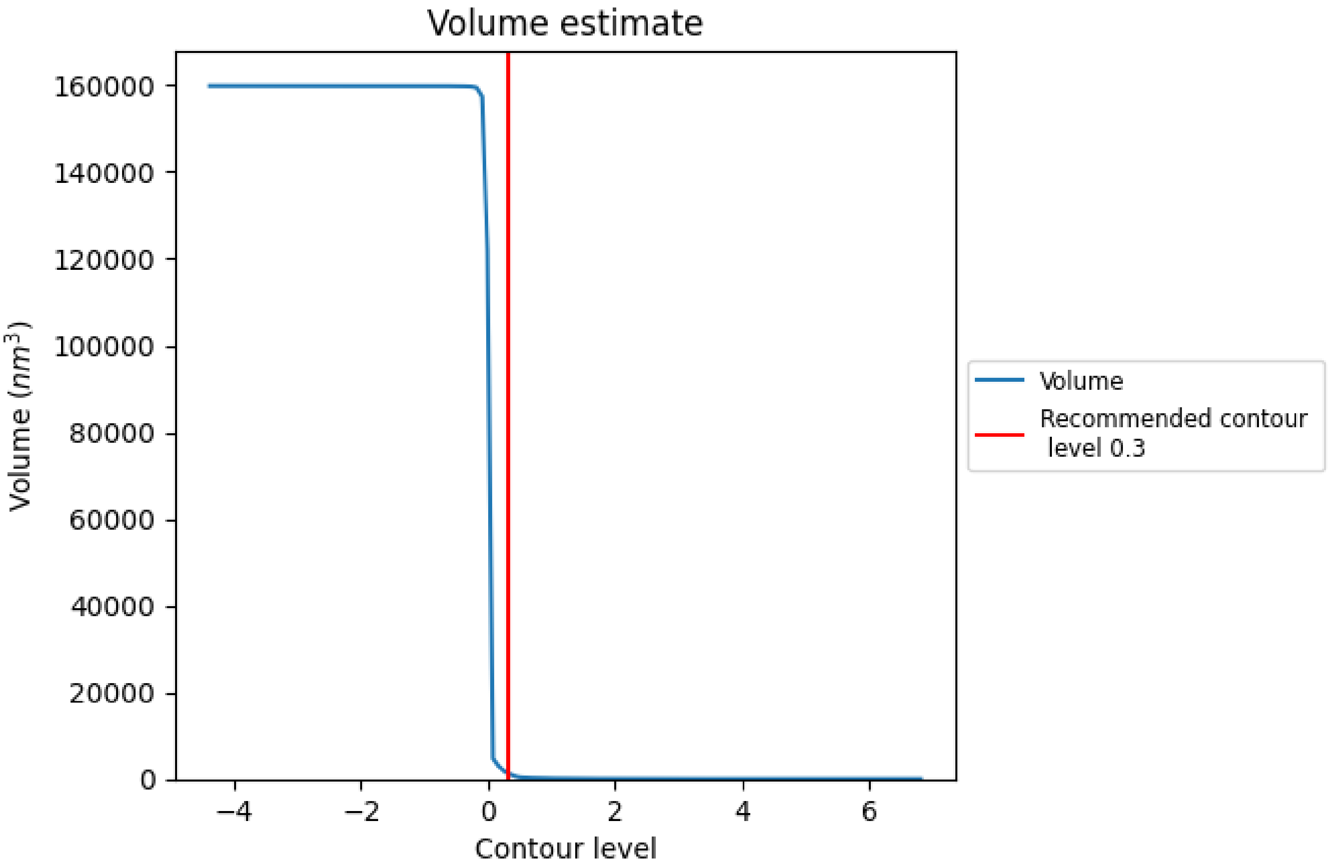
This section contains the results of statistical analysis of the map.

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.

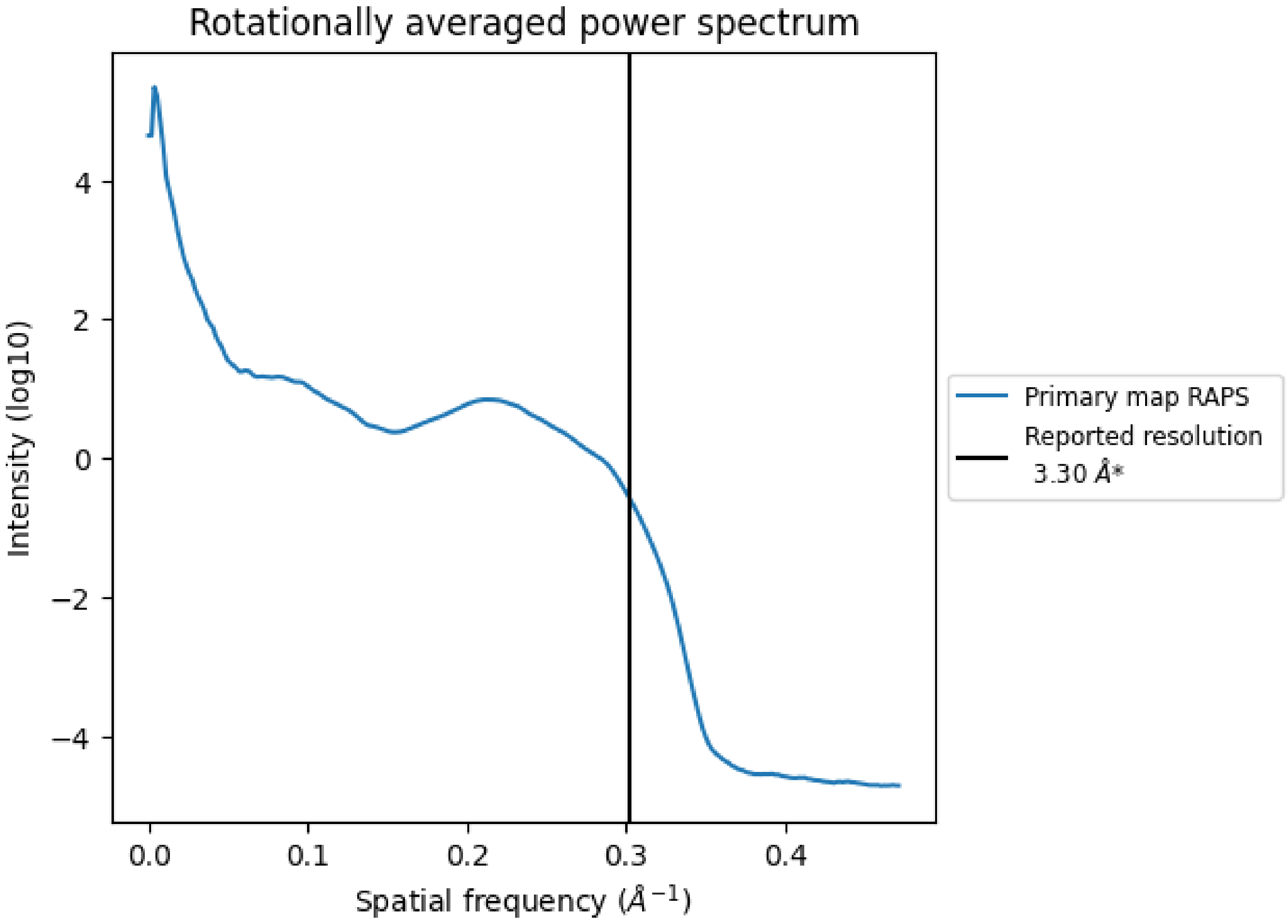
7.2 Volume estimate ⓘ



The volume at the recommended contour level is 1427 nm^3; this corresponds to an approximate mass of 1289 kDa.

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

7.3 Rotationally averaged power spectrum ⓘ



*Reported resolution corresponds to spatial frequency of 0.303 $\AA^{-1}$

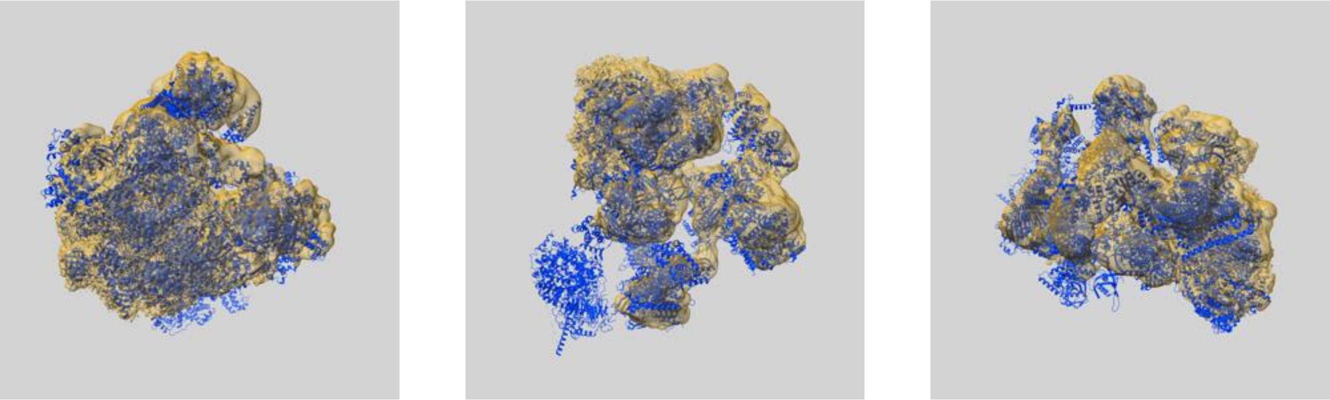
8 Fourier-Shell correlation ⓘ

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

9 Map-model fit ⓘ

This section contains information regarding the fit between EMDB map EMD-31111 and PDB model 7EGB. Per-residue inclusion information can be found in section 3 on page 14.

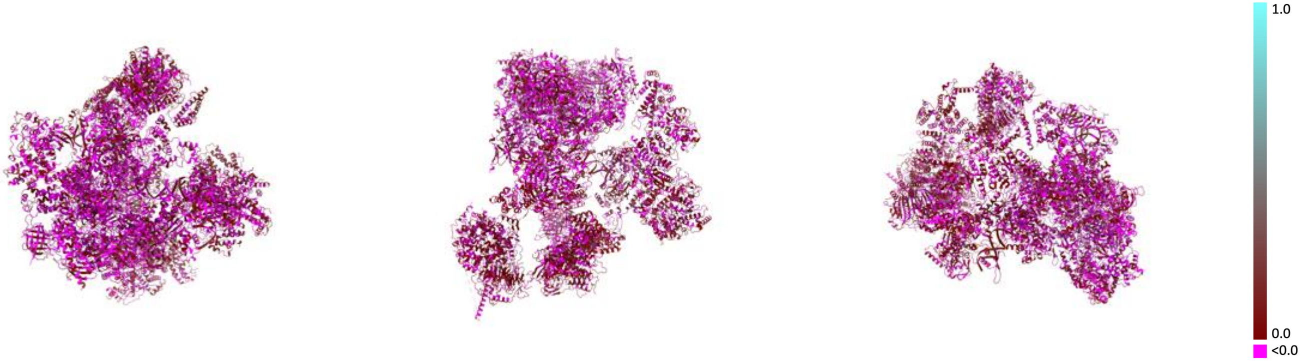
9.1 Map-model overlay ⓘ



X Y Z

The images above show the 3D surface view of the map at the recommended contour level 0.3 at 50% transparency in yellow overlaid with a ribbon representation of the model coloured in blue. These images allow for the visual assessment of the quality of fit between the atomic model and the map.

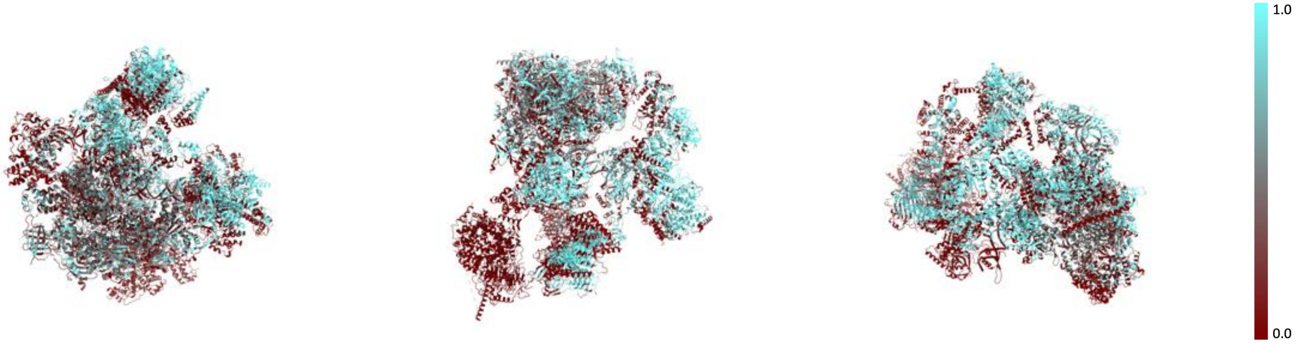
9.2 Q-score mapped to coordinate model ⓘ



X Y Z

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

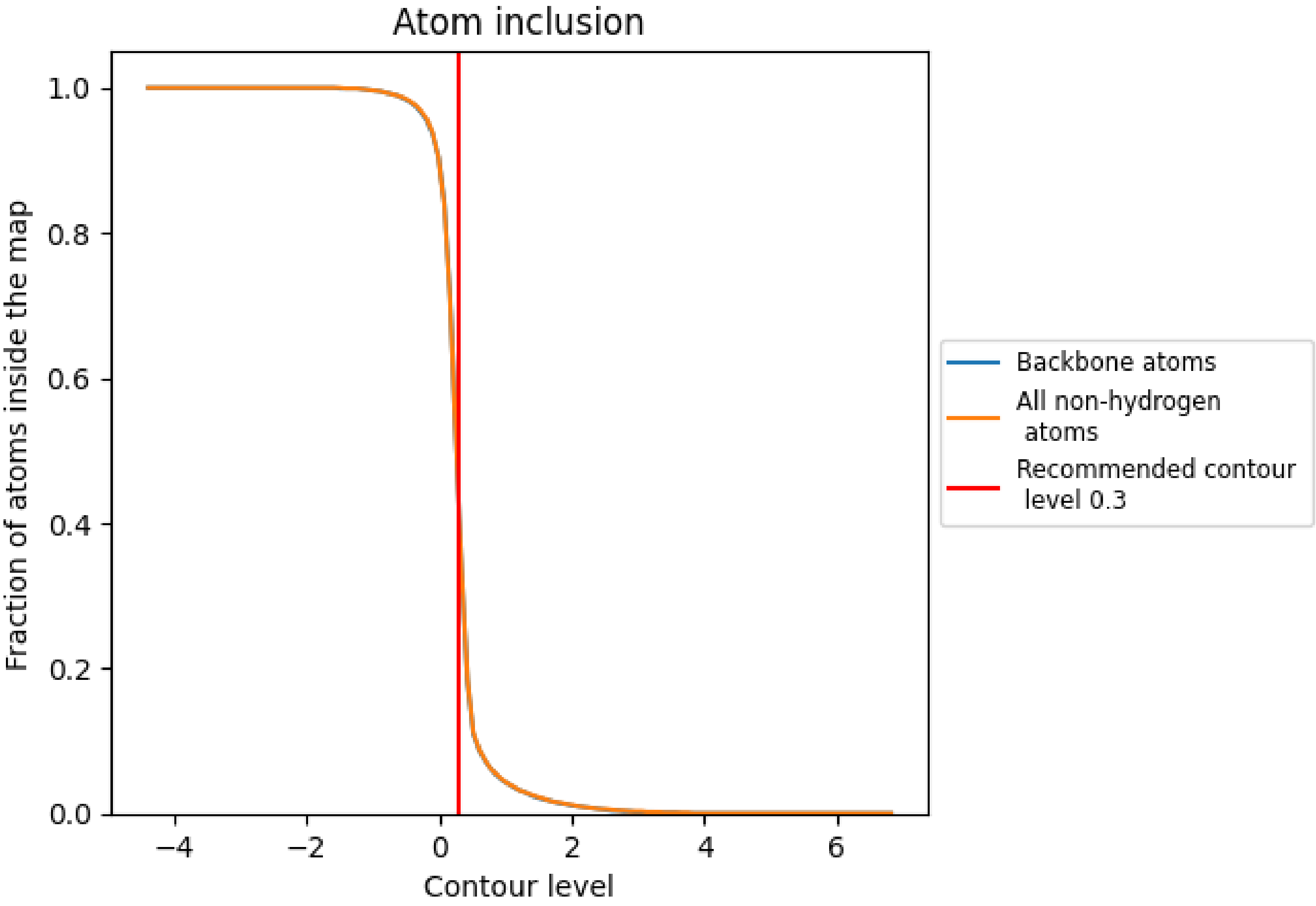
9.3 Atom inclusion mapped to coordinate model ⓘ



X Y Z

The images above show the model with each residue coloured according to its atom inclusion. This shows to what extent they are inside the map at the recommended contour level (0.3).

9.4 Atom inclusion ⓘ



At the recommended contour level, 41% of all backbone atoms, 41% 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 (0.3) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.4140	0.0120
0	0.0890	-0.0020
1	0.4320	0.0430
2	0.5810	0.0260
3	0.7830	0.0500
4	0.5720	0.0510
5	0.3110	-0.0010
6	0.6730	0.0420
7	0.5860	0.0310
8	0.1610	0.0120
9	0.2780	0.0070
A	0.1510	0.0250
B	0.6230	0.0280
D	0.5050	0.0280
E	0.4020	0.0310
F	0.3590	0.0460
G	0.0300	0.0170
H	0.6440	0.0390
I	0.4490	-0.0180
J	0.8020	0.0260
L	0.3170	-0.0230
O	0.5370	-0.0150
P	0.7170	-0.0160
Q	0.5570	0.0160
R	0.4940	-0.0010
S	0.5220	0.0290
T	0.4100	0.0270
U	0.4650	-0.0380
V	0.6180	0.0190
X	0.4470	0.0500
Y	0.4070	0.0480
c	0.0000	0.0340
d	0.0000	0.0100
e	0.0000	0.0340
f	0.2680	0.0380

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Chain	Atom inclusion	Q-score
i	0.0000	0.0300
j	0.0000	0.0070
k	0.0000	0.0130
l	0.0000	0.0230
m	0.0000	0.0150
o	0.4030	-0.0240
p	0.4300	-0.0300
q	0.4700	0.0000
r	0.5270	-0.0370
s	0.4330	-0.0260
t	0.3740	-0.0310
u	0.6640	-0.0100
v	0.4060	-0.0110
w	0.3780	-0.0350
x	0.4220	0.0140
y	0.4850	-0.0190
z	0.4710	0.0040