wwPDB EM Validation Summary Report

Mar 20, 2026 – 03:50 AM UTC

PDB ID	:	5OQM / pdb_00005oqm
EMDB ID	:	EMD-3850
Title	:	STRUCTURE OF YEAST TRANSCRIPTION PRE-INITIATION COMPLEX WITH TFIIH AND CORE MEDIATOR
Authors	:	Schilbach, S.; Hantsche, M.; Tegunov, D.; Dienemann, C.; Wigge, C.; Urlaub, H.; Cramer, P.
Deposited on	:	2017-08-13
Resolution	:	5.80 Å(reported)

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

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/EMValidationReportHelp
with specific help available everywhere you see the (i) 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 (1)) were used in the production of this report:

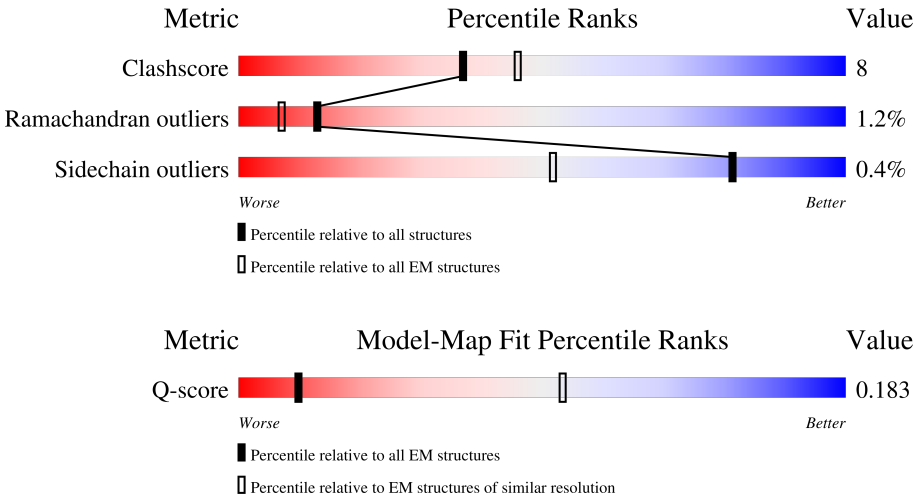
EMDB validation analysis	:	0.0.1.dev132
Mogul	:	2022.3.0, CSD as543be (2022)
MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
EM percentile statistics	:	202505.v01 (Using data in the EMDB archive up until May 2025)
MapQ	:	1.9.13
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

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 5.80 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)	Similar EM resolution (#Entries, resolution range(Å))
Clashscore	229148	23984	-
Ramachandran outliers	224038	23583	-
Sidechain outliers	223484	23102	-
Q-score	-	25397	511 (5.30 - 6.30)

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	1733	65% 15% 19%
2	B	1224	73% 21% 6%
3	C	318	65% 18% 18%
4	D	221	62% 9% 29%

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Mol	Chain	Length	Quality of chain
5	E	215	87% 12%
6	F	155	42% 12% 46%
7	G	171	68% 32%
8	H	146	70% 23% 7%
9	I	122	73% 20% 5%
10	J	70	81% 11% 7%
11	K	120	77% 17% 7%
12	L	70	50% 14% 36%
13	M	345	62% 18% 19%
14	N	106	40% 32% 28%
15	O	240	60% 15% 25%
16	Q	747	15% 5% 80%
17	R	400	38% 9% 52%
18	T	106	5% 40% 28% 32%
19	U	286	24% 8% 68%
20	V	122	70% 12% 18%
21	W	541	40% 7% 52%
22	X	328	44% 5% 51%
23	0	778	75% 14% 10%
24	1	510	5% 88% 8%
25	2	553	68% 29%
26	3	321	39% 57%
27	4	333	83% 11%
28	5	72	6% 65% 25% 8%
29	6	461	67% 6% 27%

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Mol	Chain	Length	Quality of chain
30	7	843	36% 12% 52%
31	Z	43	88% 12%
32	a	295	48% 49%
33	b	223	67% 29%
34	c	115	66% 20% 14%
35	d	687	54% 10% 36%
36	e	307	61% 15% 24%
37	f	210	74% 22%
38	g	121	56% 14% 30%
39	h	300	44% 56%
40	i	223	51% 10% 39%
41	j	149	44% 56%
42	k	157	77% 19%
43	l	745	60% 37%
44	m	220	44% 53%
45	n	140	87% 10%
46	o	151	59% 7% 34%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
49	SF4	0	901	-	-	X	-

2 Entry composition (i)

There are 49 unique types of molecules in this entry. The entry contains 79757 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 DNA-directed RNA polymerase II subunit RPB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
1	A	1398	10997	6931	1927	2078	61	0	0

- Molecule 2 is a protein called DNA-directed RNA polymerase II subunit RPB2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
2	B	1152	9178	5807	1608	1708	55	0	0

- Molecule 3 is a protein called DNA-directed RNA polymerase II subunit RPB3.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
3	C	262	2061	1299	343	406	13	0	0

- Molecule 4 is a protein called DNA-directed RNA polymerase II subunit RPB4.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
4	D	157	1253	779	220	252	2	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC1.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
5	E	213	1744	1107	308	318	11	0	0

- Molecule 6 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC2.

Mol	Chain	Residues	Atoms					AltConf	Trace
			Total	C	N	O	S		
6	F	83	670	428	114	125	3	0	0

- Molecule 7 is a protein called DNA-directed RNA polymerase II subunit RPB7.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	171	Total	C	N	O	S	0	0
			1340	861	222	249	8		

- Molecule 8 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC3.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	136	Total	C	N	O	S	0	0
			1089	686	184	215	4		

- Molecule 9 is a protein called DNA-directed RNA polymerase II subunit RPB9.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	116	Total	C	N	O	S	0	0
			944	581	172	181	10		

- Molecule 10 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC5.

Mol	Chain	Residues	Atoms					AltConf	Trace
10	J	65	Total	C	N	O	S	0	0
			532	339	93	94	6		

- Molecule 11 is a protein called DNA-directed RNA polymerase II subunit RPB11.

Mol	Chain	Residues	Atoms					AltConf	Trace
11	K	112	Total	C	N	O	S	0	0
			904	580	154	168	2		

- Molecule 12 is a protein called DNA-directed RNA polymerases I, II, and III subunit RPABC4.

Mol	Chain	Residues	Atoms					AltConf	Trace
12	L	45	Total	C	N	O	S	0	0
			358	221	71	62	4		

- Molecule 13 is a protein called Transcription initiation factor IIB.

Mol	Chain	Residues	Atoms					AltConf	Trace
13	M	279	Total	C	N	O	S	0	0
			2175	1382	373	403	17		

- Molecule 14 is a DNA chain called NONTEMPLATE DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
14	N	76	Total	C	N	O	P	0	0
			1533	747	288	422	76		

- Molecule 15 is a protein called TATA-box-binding protein.

Mol	Chain	Residues	Atoms					AltConf	Trace
15	O	180	Total	C	N	O	S	0	0
			1416	921	242	247	6		

- Molecule 16 is a protein called Transcription initiation factor IIF subunit alpha.

Mol	Chain	Residues	Atoms					AltConf	Trace
16	Q	148	Total	C	N	O	S	0	0
			1144	733	195	212	4		

- Molecule 17 is a protein called Transcription initiation factor IIF subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
17	R	190	Total	C	N	O	S	0	0
			1303	812	238	246	7		

- Molecule 18 is a DNA chain called TEMPLATE DNA.

Mol	Chain	Residues	Atoms					AltConf	Trace
18	T	72	Total	C	N	O	P	0	0
			1440	706	254	408	72		

- Molecule 19 is a protein called Transcription initiation factor IIA large subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
19	U	92	Total	C	N	O	S	0	0
			757	474	130	150	3		

- Molecule 20 is a protein called Transcription initiation factor IIA subunit 2.

Mol	Chain	Residues	Atoms					AltConf	Trace
20	V	100	Total	C	N	O	S	0	0
			782	492	130	156	4		

- Molecule 21 is a protein called Transcription factor TFIIE subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
21	W	258	Total	C	N	O	S	0	0
			1825	1147	321	351	6		

- Molecule 22 is a protein called Transcription initiation factor IIE subunit beta.

Mol	Chain	Residues	Atoms					AltConf	Trace
22	X	160	Total	C	N	O	S	0	0
			1004	620	184	196	4		

- Molecule 23 is a protein called General transcription and DNA repair factor IIH helicase subunit XPD.

Mol	Chain	Residues	Atoms					AltConf	Trace
23	0	698	Total	C	N	O	S	0	0
			4844	3051	856	907	30		

- Molecule 24 is a protein called General transcription and DNA repair factor IIH subunit TFB1.

Mol	Chain	Residues	Atoms					AltConf	Trace
24	1	491	Total	C	N	O	S	0	0
			3060	1893	570	590	7		

- Molecule 25 is a protein called General transcription and DNA repair factor IIH subunit TFB2.

Mol	Chain	Residues	Atoms				AltConf	Trace
25	2	395	Total	C	N	O	0	0
			2160	1317	413	430		

- Molecule 26 is a protein called RNA polymerase II transcription factor B subunit 3.

Mol	Chain	Residues	Atoms					AltConf	Trace
26	3	138	Total	C	N	O	S	0	0
			860	533	160	160	7		

- Molecule 27 is a protein called General transcription and DNA repair factor IIH subunit TFB4.

Mol	Chain	Residues	Atoms					AltConf	Trace
27	4	297	Total	C	N	O	S	0	0
			1475	877	297	297	4		

- Molecule 28 is a protein called General transcription and DNA repair factor IIH subunit TFB5.

Mol	Chain	Residues	Atoms					AltConf	Trace
28	5	66	Total	C	N	O	S	0	0
			498	314	89	93	2		

- Molecule 29 is a protein called General transcription and DNA repair factor IIH subunit SSL1.

Mol	Chain	Residues	Atoms					AltConf	Trace
29	6	335	Total	C	N	O	S	0	0
			2197	1355	399	422	21		

- Molecule 30 is a protein called General transcription and DNA repair factor IIH helicase subunit XPB.

Mol	Chain	Residues	Atoms					AltConf	Trace
30	7	408	Total	C	N	O	S	0	0
			3148	2000	557	572	19		

- Molecule 31 is a protein called Unknown protein.

Mol	Chain	Residues	Atoms				AltConf	Trace
31	Z	43	Total	C	N	O	0	0
			215	129	43	43		

- Molecule 32 is a protein called Mediator of RNA polymerase II transcription subunit 6.

Mol	Chain	Residues	Atoms				AltConf	Trace
32	a	149	Total	C	N	O	0	0
			741	443	149	149		

- Molecule 33 is a protein called Mediator of RNA polymerase II transcription subunit 8.

Mol	Chain	Residues	Atoms				AltConf	Trace
33	b	158	Total	C	N	O	0	0
			839	511	161	167		

- Molecule 34 is a protein called Mediator of RNA polymerase II transcription subunit 11.

Mol	Chain	Residues	Atoms					AltConf	Trace
34	c	99	Total	C	N	O	S	0	0
			809	506	137	163	3		

- Molecule 35 is a protein called Mediator of RNA polymerase II transcription subunit 17.

Mol	Chain	Residues	Atoms					AltConf	Trace
35	d	442	Total	C	N	O	S	0	0
			3065	1942	539	577	7		

- Molecule 36 is a protein called Mediator of RNA polymerase II transcription subunit 18.

Mol	Chain	Residues	Atoms					AltConf	Trace
36	e	232	Total	C	N	O	S	0	0
			1822	1161	297	355	9		

- Molecule 37 is a protein called Mediator of RNA polymerase II transcription subunit 20.

Mol	Chain	Residues	Atoms					AltConf	Trace
37	f	203	Total	C	N	O	S	0	0
			1560	987	263	305	5		

- Molecule 38 is a protein called Mediator of RNA polymerase II transcription subunit 22.

Mol	Chain	Residues	Atoms					AltConf	Trace
38	g	85	Total	C	N	O	S	1	0
			667	420	110	133	4		

- Molecule 39 is a protein called Mediator of RNA polymerase II transcription subunit 4.

Mol	Chain	Residues	Atoms				AltConf	Trace
39	h	131	Total	C	N	O	0	0
			654	392	131	131		

- Molecule 40 is a protein called Mediator of RNA polymerase II transcription subunit 7.

Mol	Chain	Residues	Atoms					AltConf	Trace
40	i	136	Total	C	N	O	S	0	0
			1096	704	190	197	5		

There are 4 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
i	14	SER	-	insertion	UNP Q08278
i	16	THR	PRO	conflict	UNP Q08278
i	17	SER	PRO	conflict	UNP Q08278
i	19	SER	PRO	conflict	UNP Q08278

- Molecule 41 is a protein called Mediator of RNA polymerase II transcription subunit 9.

Mol	Chain	Residues	Atoms				AltConf	Trace
41	j	66	Total	C	N	O	0	0
			328	196	66	66		

- Molecule 42 is a protein called Mediator of RNA polymerase II transcription subunit 10.

Mol	Chain	Residues	Atoms				AltConf	Trace
42	k	127	Total	C	N	O	0	0
			630	376	127	127		

- Molecule 43 is a protein called Mediator of RNA polymerase II transcription subunit 14.

Mol	Chain	Residues	Atoms				AltConf	Trace
43	l	471	Total	C	N	O	0	0
			2344	1402	471	471		

- Molecule 44 is a protein called Mediator of RNA polymerase II transcription subunit 19.

Mol	Chain	Residues	Atoms				AltConf	Trace
44	m	103	Total	C	N	O	0	0
			512	306	103	103		

- Molecule 45 is a protein called Mediator of RNA polymerase II transcription subunit 21.

Mol	Chain	Residues	Atoms					AltConf	Trace
45	n	136	Total	C	N	O	S	0	0
			999	623	171	201	4		

- Molecule 46 is a protein called Mediator of RNA polymerase II transcription subunit 31,Mediator of RNA polymerase II transcription subunit 31.

Mol	Chain	Residues	Atoms					AltConf	Trace
46	o	99	Total	C	N	O	S	0	0
			760	499	121	136	4		

- Molecule 47 is ZINC ION (CCD ID: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		AltConf
47	A	2	Total	Zn	0
			2	2	

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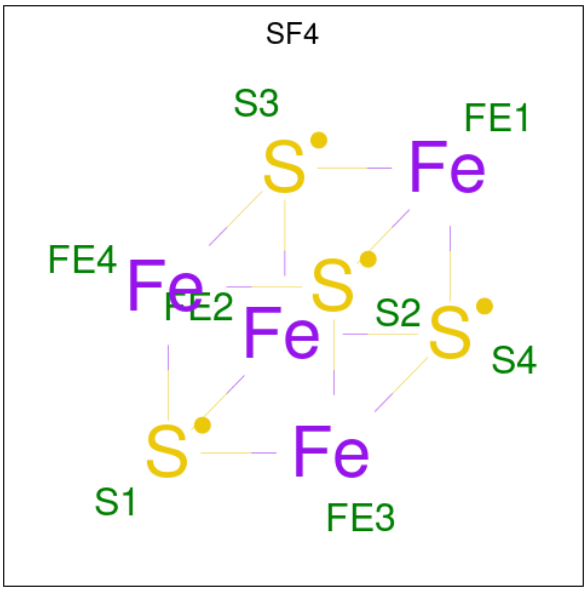
Mol	Chain	Residues	Atoms	AltConf
47	B	1	Total Zn 1 1	0
47	C	1	Total Zn 1 1	0
47	I	2	Total Zn 2 2	0
47	J	1	Total Zn 1 1	0
47	L	1	Total Zn 1 1	0
47	M	1	Total Zn 1 1	0
47	W	1	Total Zn 1 1	0
47	3	2	Total Zn 2 2	0
47	4	1	Total Zn 1 1	0
47	6	3	Total Zn 3 3	0

- Molecule 48 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

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

- Molecule 49 is IRON/SULFUR CLUSTER (CCD ID: SF4) (formula: Fe_4S_4).



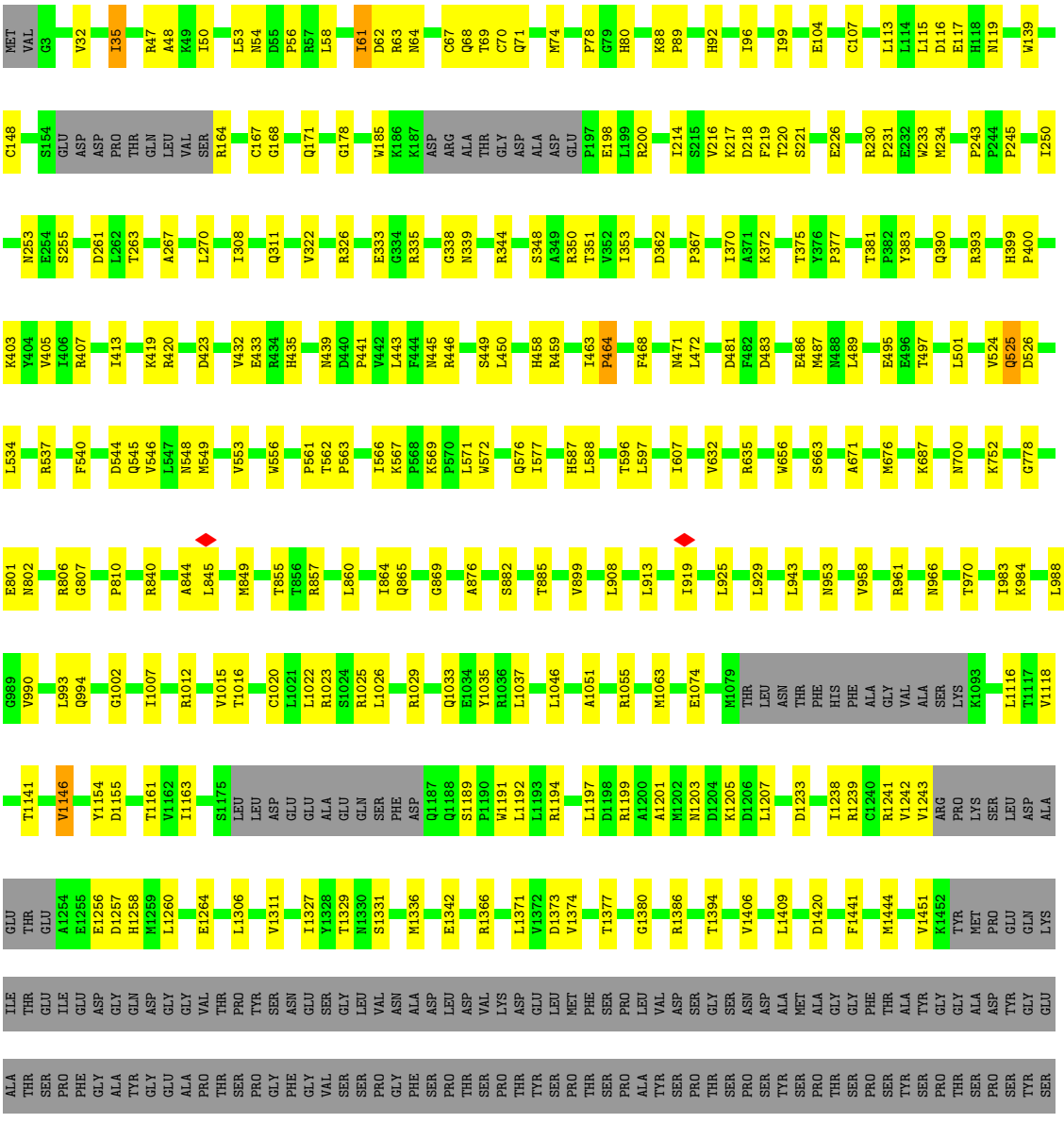
Mol	Chain	Residues	Atoms			AltConf
49	0	1	Total	Fe	S	0
			8	4	4	

3 Residue-property plots (i)

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

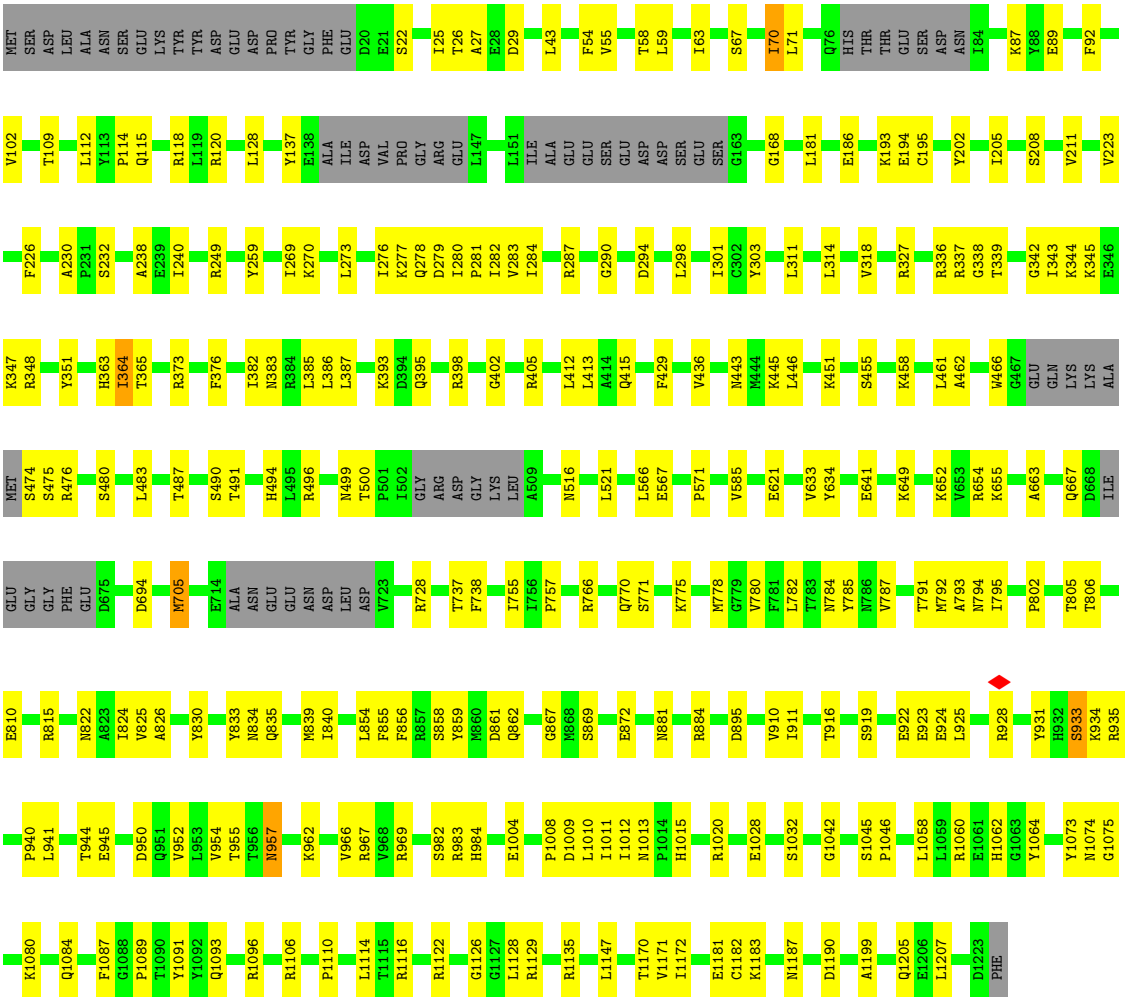
- Molecule 1: DNA-directed RNA polymerase II subunit RPB1

Chain A:



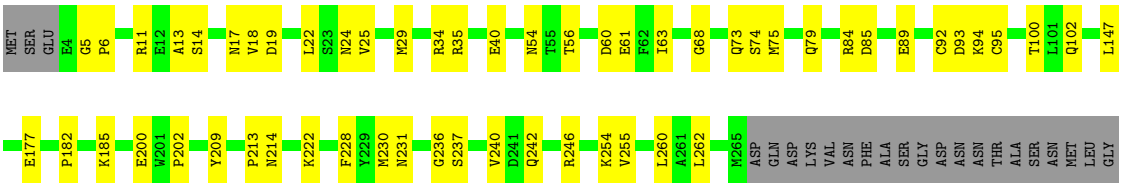
• Molecule 2: DNA-directed RNA polymerase II subunit RPB2

Chain B:



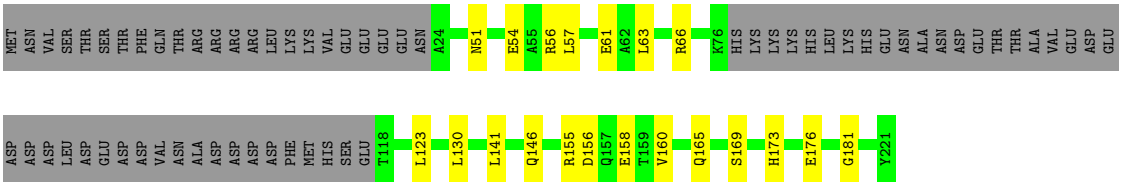
• Molecule 3: DNA-directed RNA polymerase II subunit RPB3

Chain C:



• Molecule 4: DNA-directed RNA polymerase II subunit RPB4

Chain D:

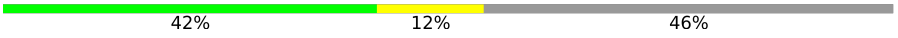


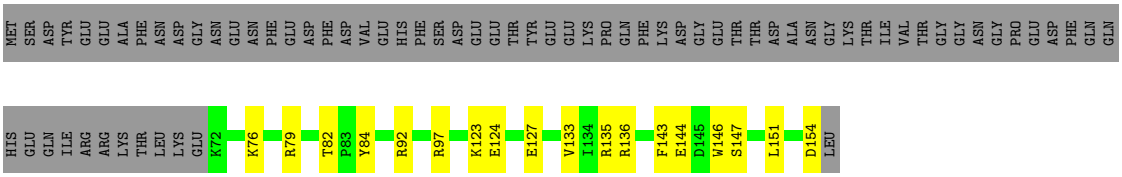
• Molecule 5: DNA-directed RNA polymerases I, II, and III subunit RPABC1

Chain E:

• Molecule 6: DNA-directed RNA polymerases I, II, and III subunit RPABC2

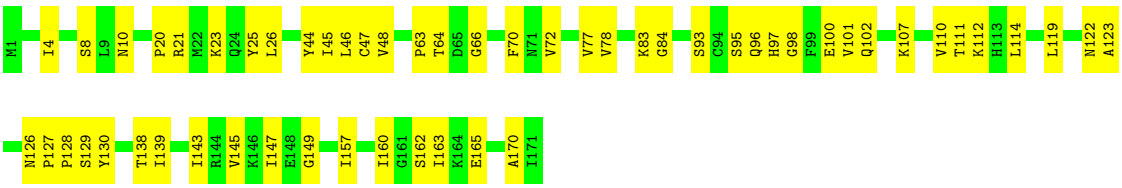
Chain F:





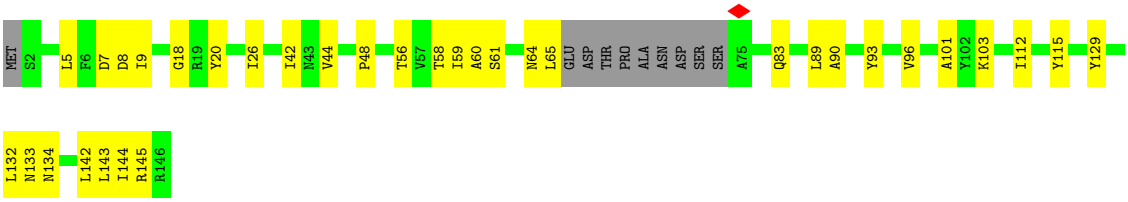
• Molecule 7: DNA-directed RNA polymerase II subunit RPB7

Chain G:



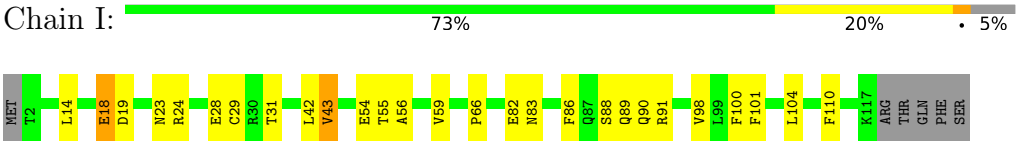
• Molecule 8: DNA-directed RNA polymerases I, II, and III subunit RPABC3

Chain H:



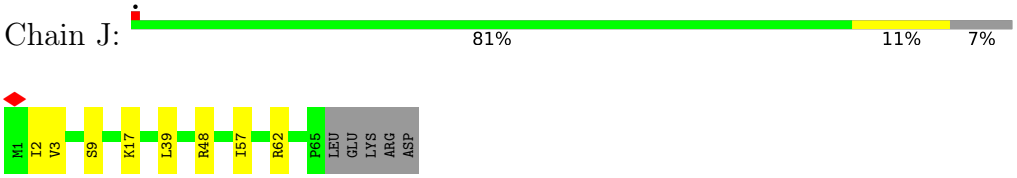
• Molecule 9: DNA-directed RNA polymerase II subunit RPB9

Chain I:



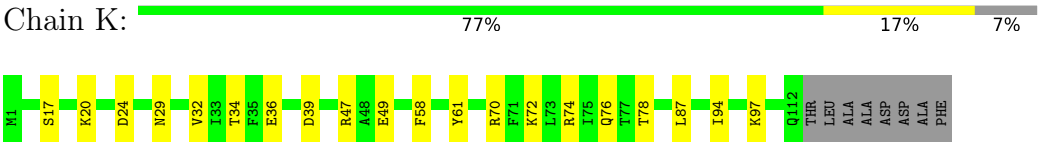
• Molecule 10: DNA-directed RNA polymerases I, II, and III subunit RPABC5

Chain J:



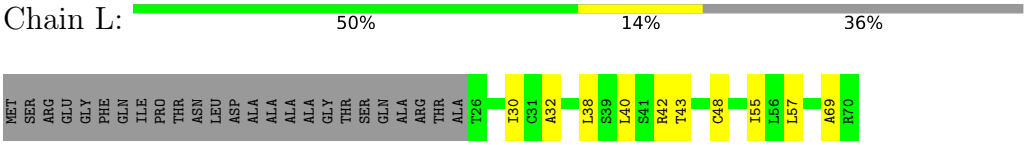
• Molecule 11: DNA-directed RNA polymerase II subunit RPB11

Chain K:



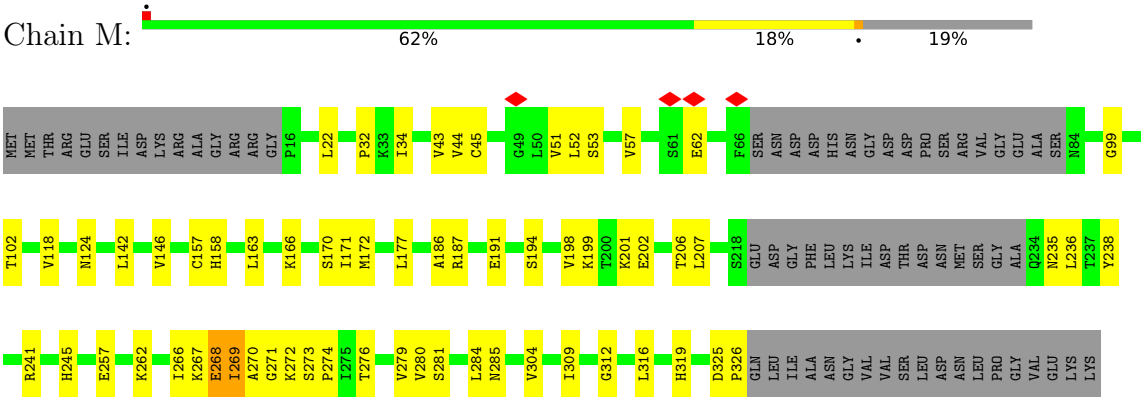
• Molecule 12: DNA-directed RNA polymerases I, II, and III subunit RPABC4

Chain L:



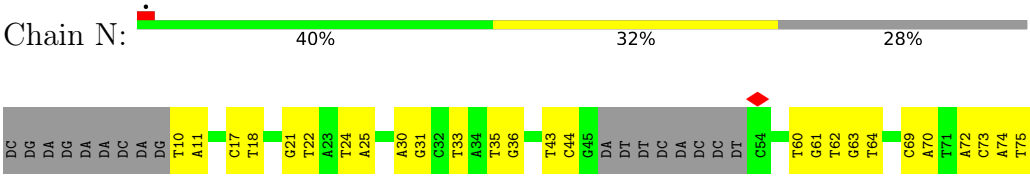
• Molecule 13: Transcription initiation factor IIB

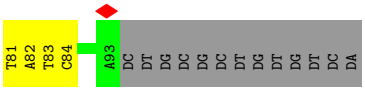
Chain M:



• Molecule 14: NONTEMPLATE DNA

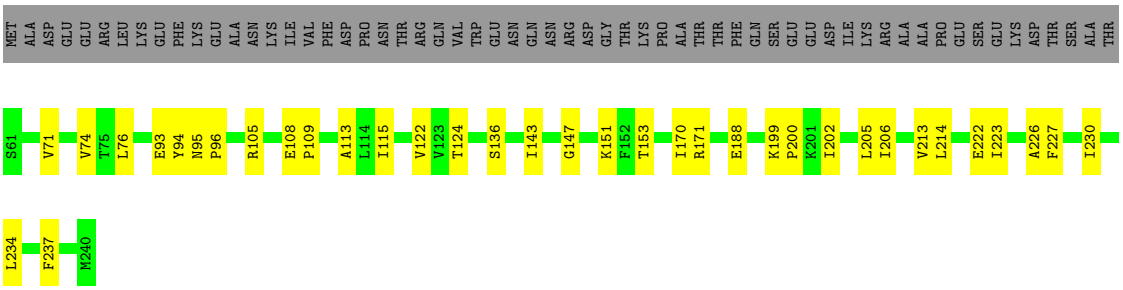
Chain N:





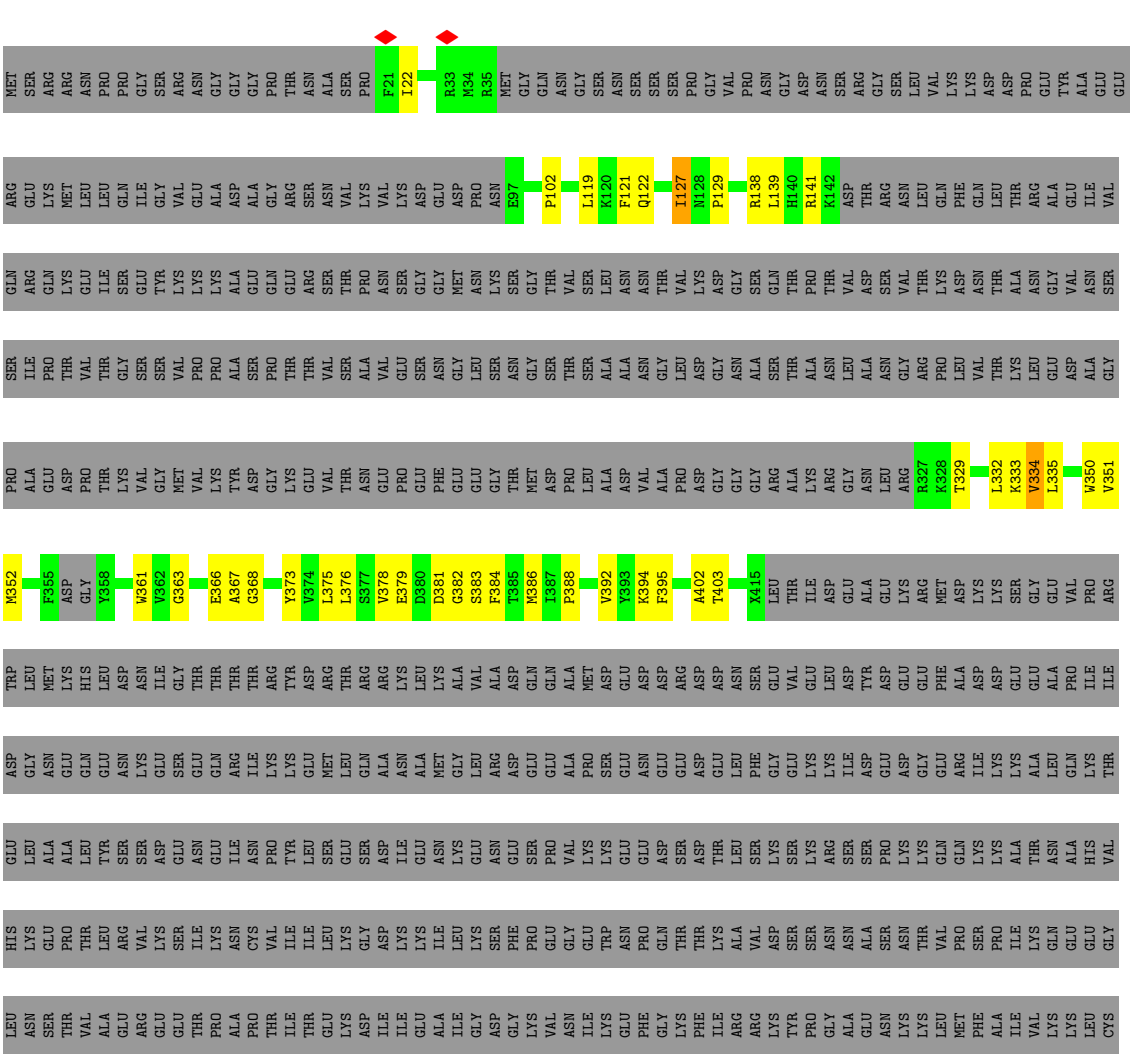
• Molecule 15: TATA-box-binding protein

Chain O:



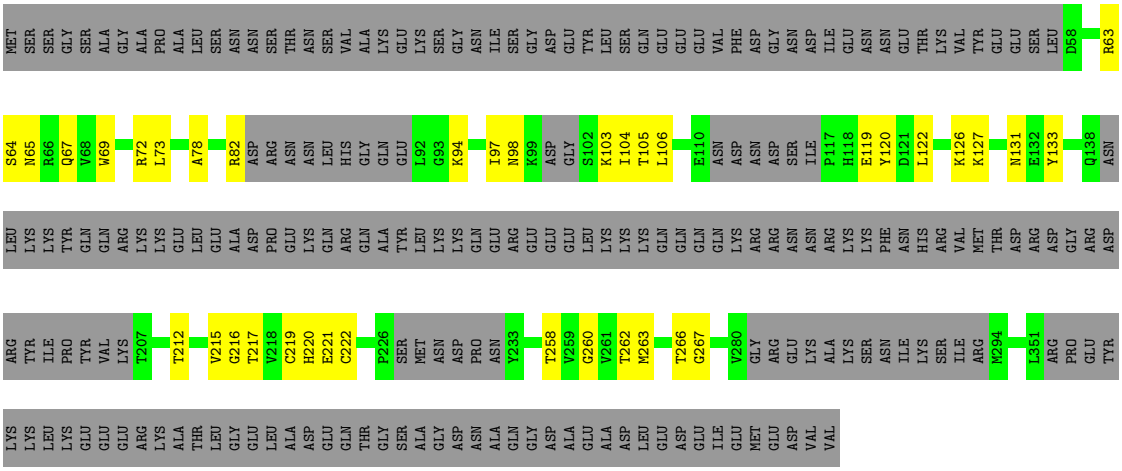
• Molecule 16: Transcription initiation factor IIF subunit alpha

Chain Q:



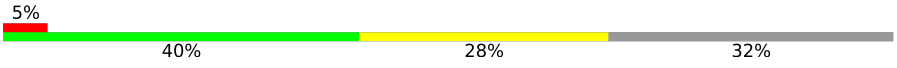
• Molecule 17: Transcription initiation factor IIF subunit beta

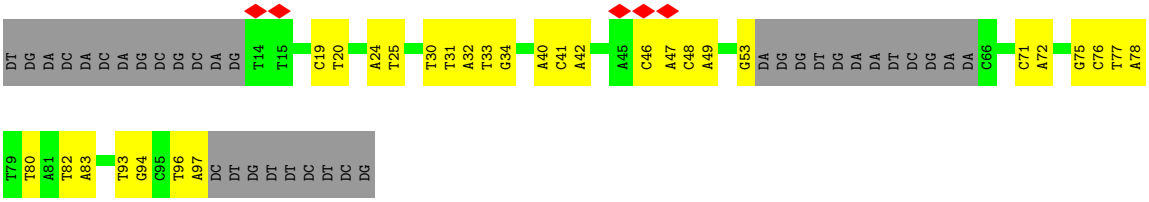
Chain R:



• Molecule 18: TEMPLATE DNA

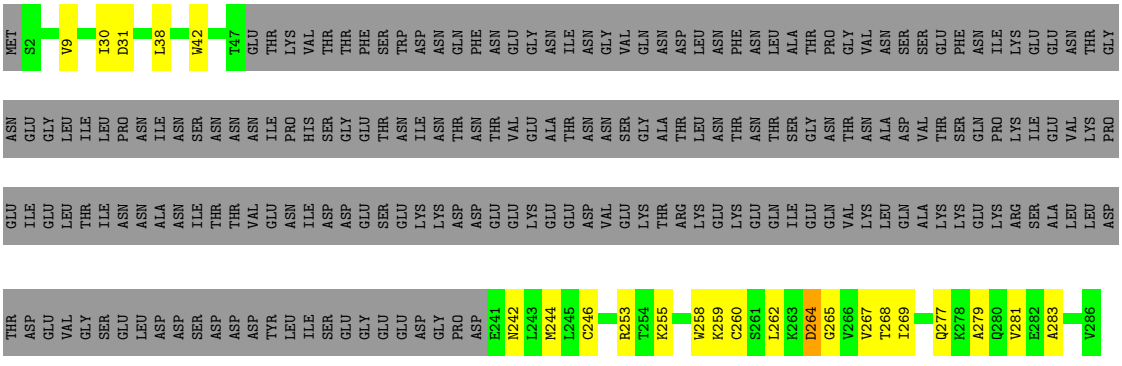
Chain T:





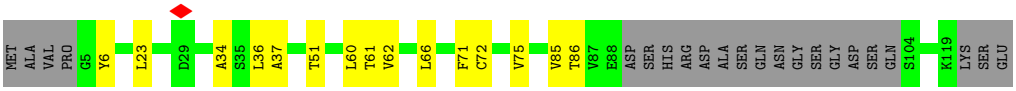
• Molecule 19: Transcription initiation factor IIA large subunit

Chain U:



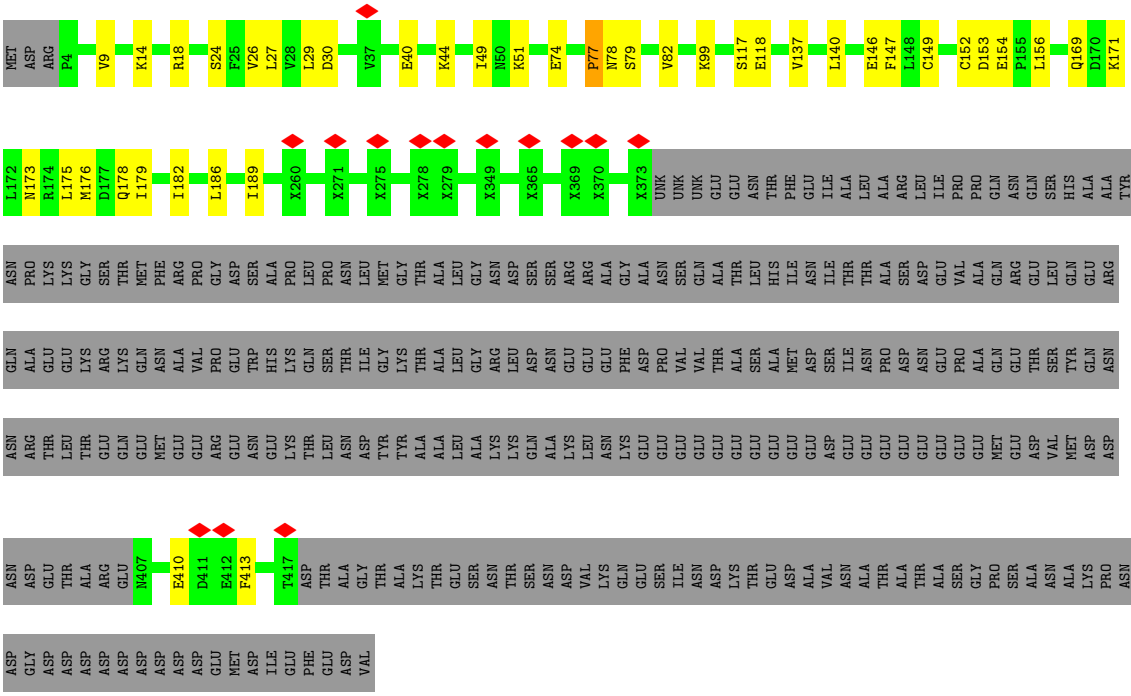
• Molecule 20: Transcription initiation factor IIA subunit 2

Chain V:



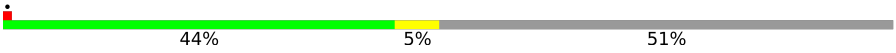
• Molecule 21: Transcription factor TFIIE subunit

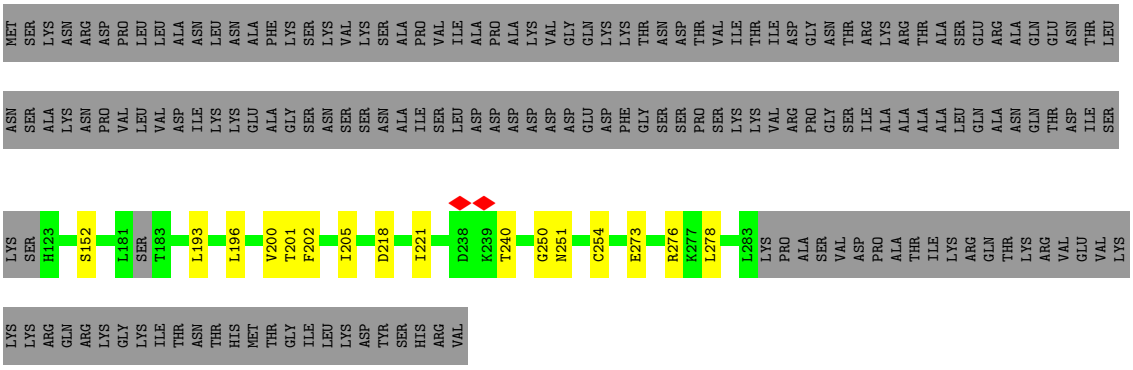
Chain W:



• Molecule 22: Transcription initiation factor IIE subunit beta

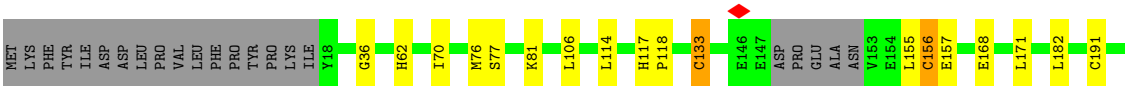
Chain X:

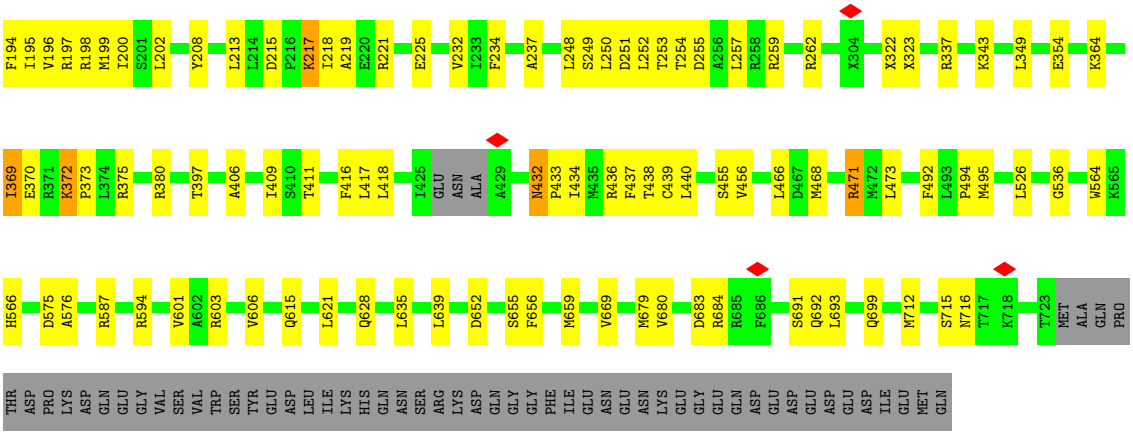




• Molecule 23: General transcription and DNA repair factor IIH helicase subunit XPD

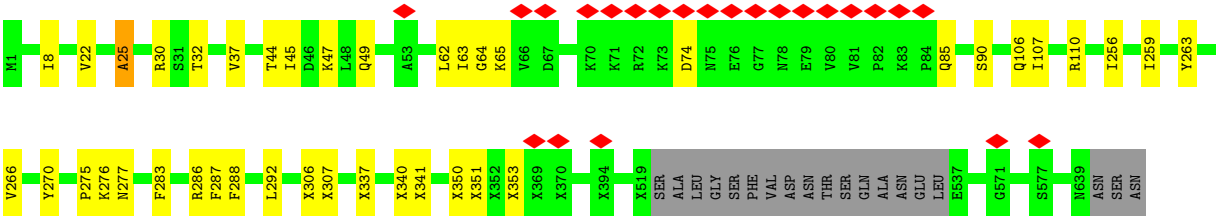
Chain 0:





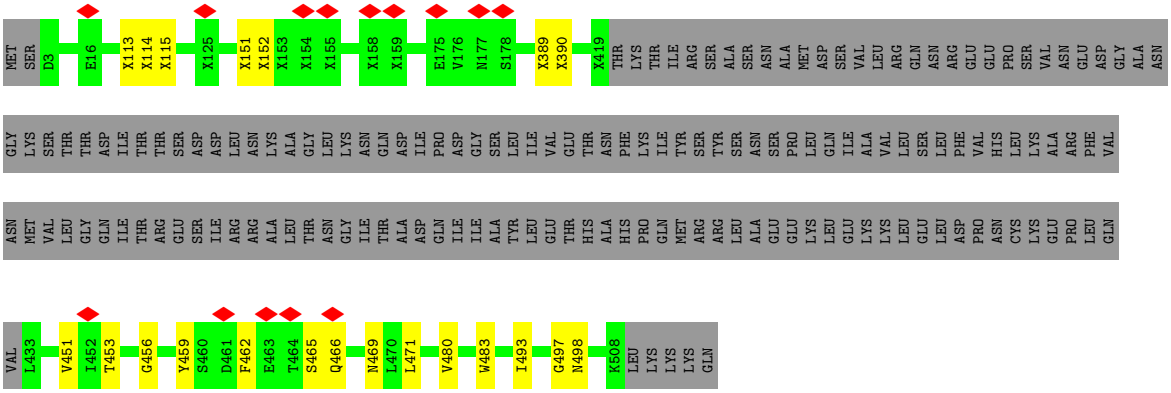
• Molecule 24: General transcription and DNA repair factor IIH subunit TFB1

Chain 1:



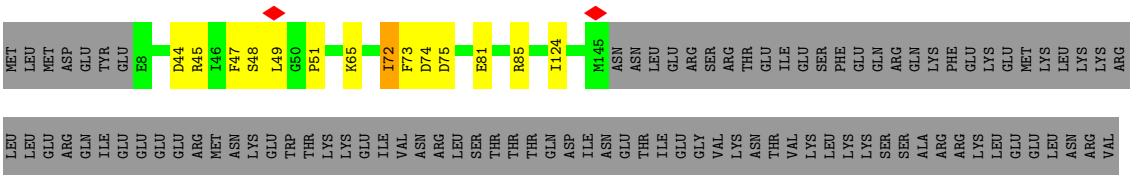
• Molecule 25: General transcription and DNA repair factor IIH subunit TFB2

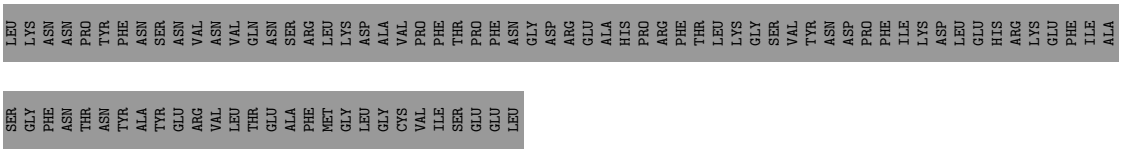
Chain 2:



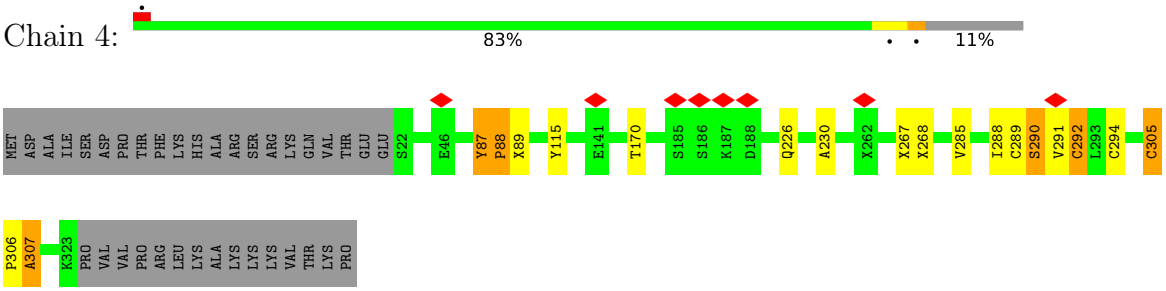
• Molecule 26: RNA polymerase II transcription factor B subunit 3

Chain 3:

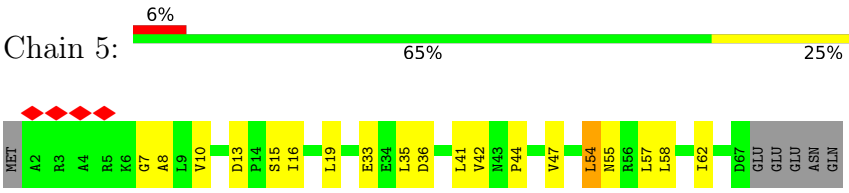




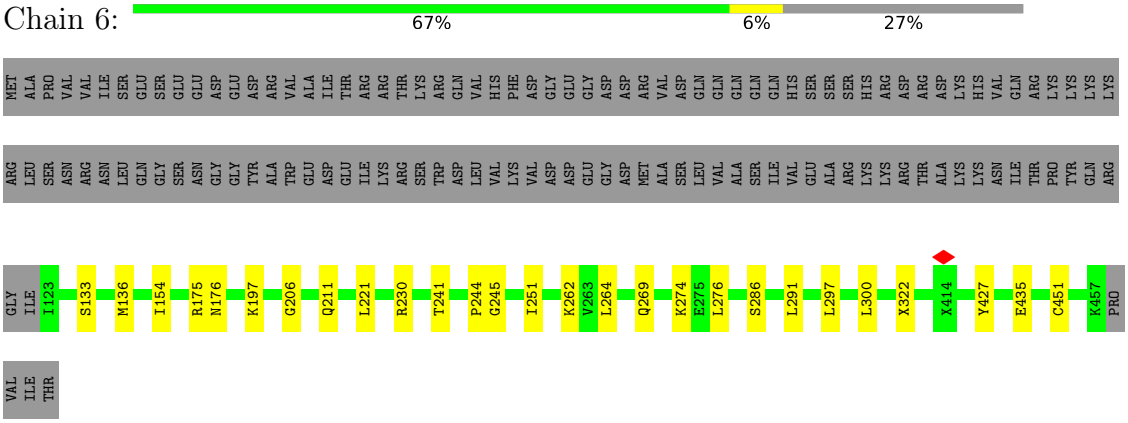
• Molecule 27: General transcription and DNA repair factor IIH subunit TFB4



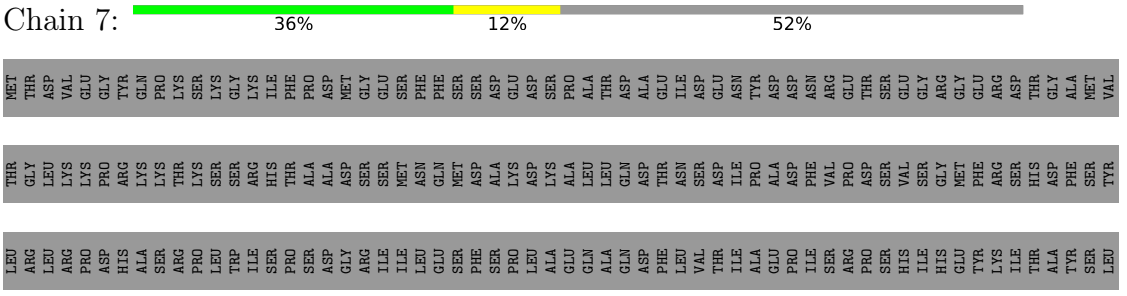
• Molecule 28: General transcription and DNA repair factor IIH subunit TFB5

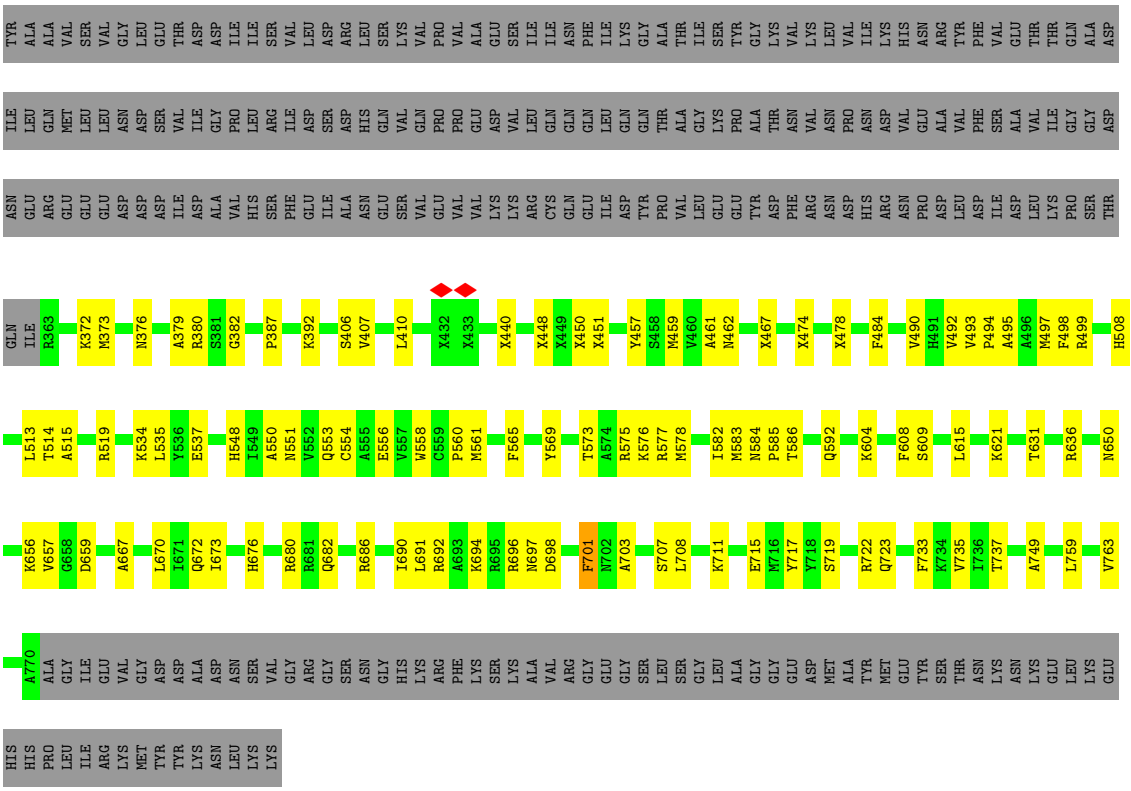


• Molecule 29: General transcription and DNA repair factor IIH subunit SSL1



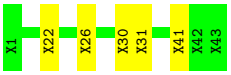
• Molecule 30: General transcription and DNA repair factor IIH helicase subunit XPB





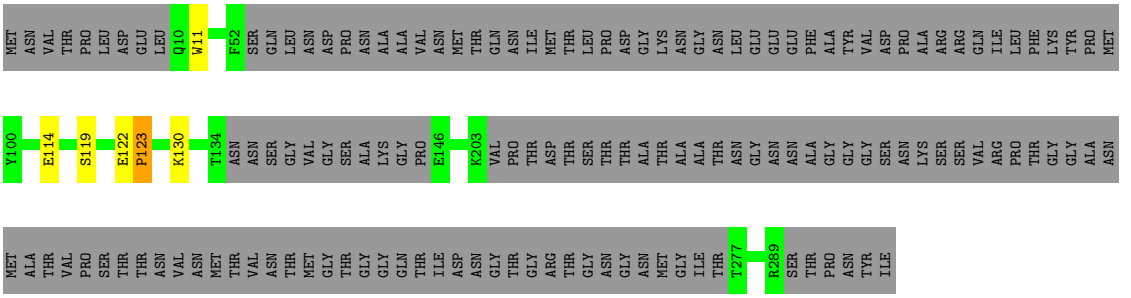
• Molecule 31: Unknown protein

Chain Z:



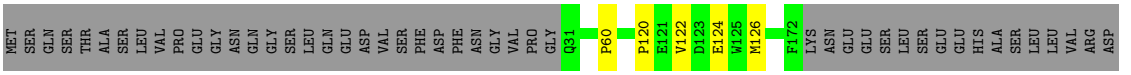
• Molecule 32: Mediator of RNA polymerase II transcription subunit 6

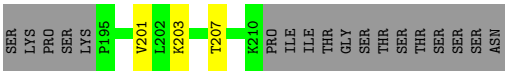
Chain a:



• Molecule 33: Mediator of RNA polymerase II transcription subunit 8

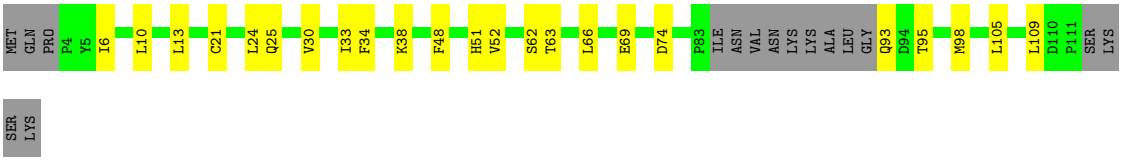
Chain b:





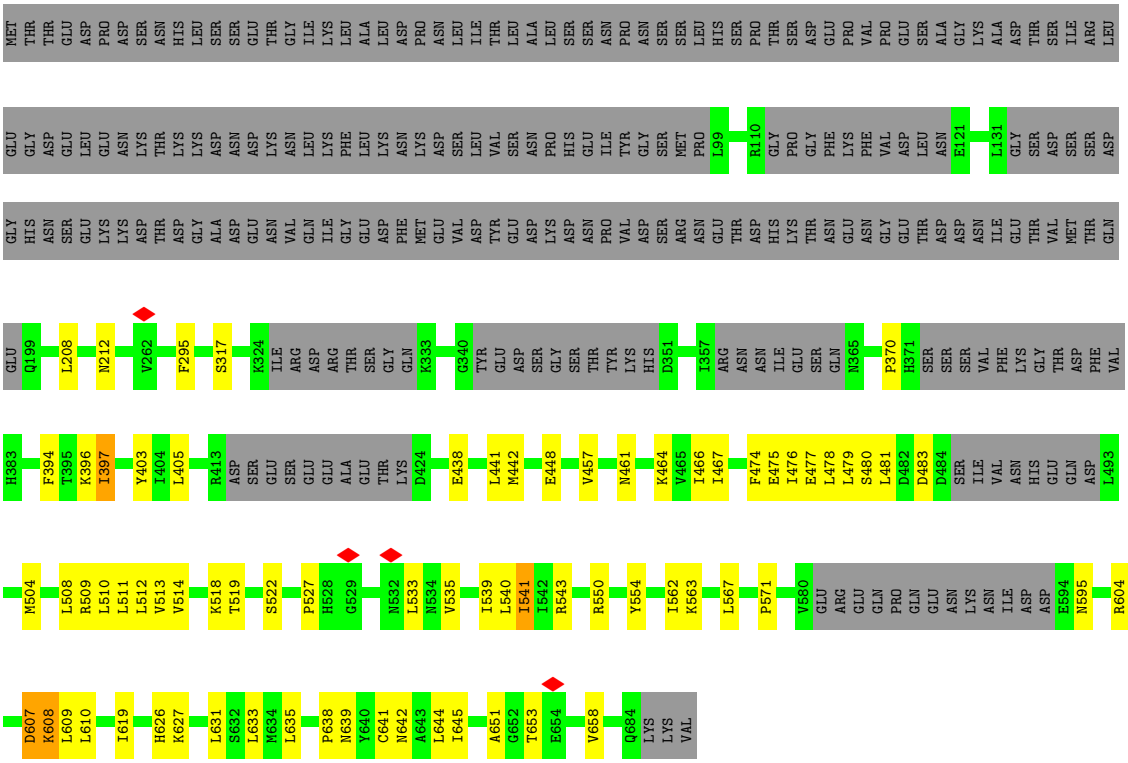
• Molecule 34: Mediator of RNA polymerase II transcription subunit 11

Chain c:



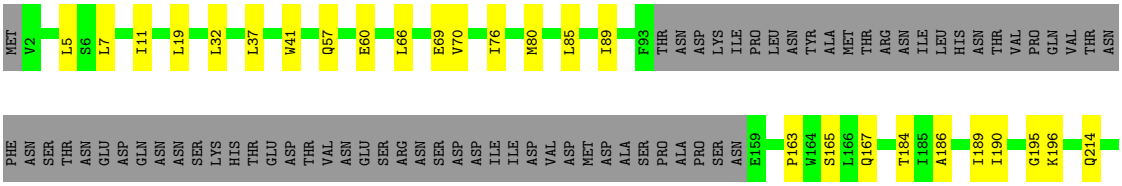
• Molecule 35: Mediator of RNA polymerase II transcription subunit 17

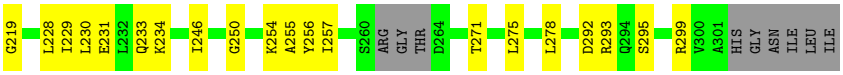
Chain d:



• Molecule 36: Mediator of RNA polymerase II transcription subunit 18

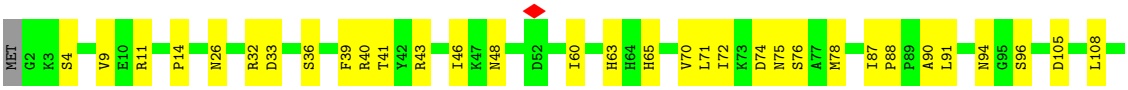
Chain e:

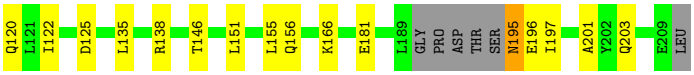




• Molecule 37: Mediator of RNA polymerase II transcription subunit 20

Chain f:



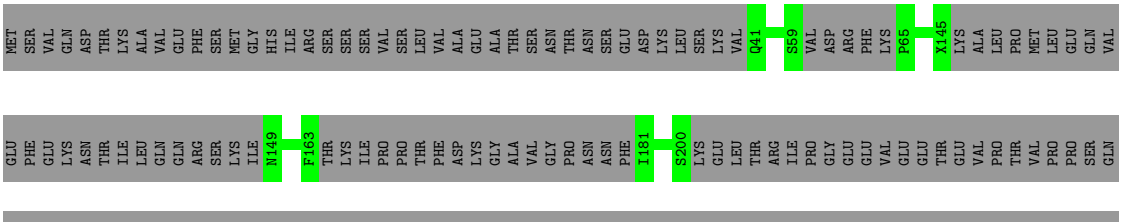


• Molecule 38: Mediator of RNA polymerase II transcription subunit 22

Chain g:

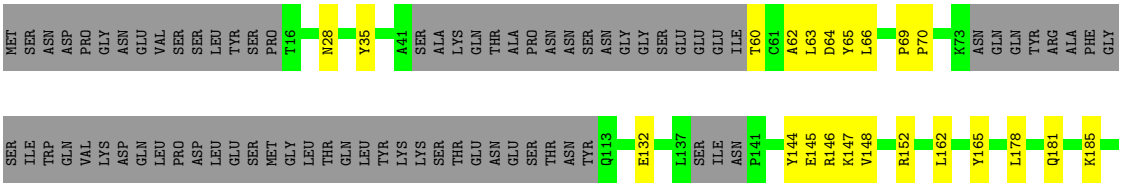
• Molecule 39: Mediator of RNA polymerase II transcription subunit 4

Chain h:



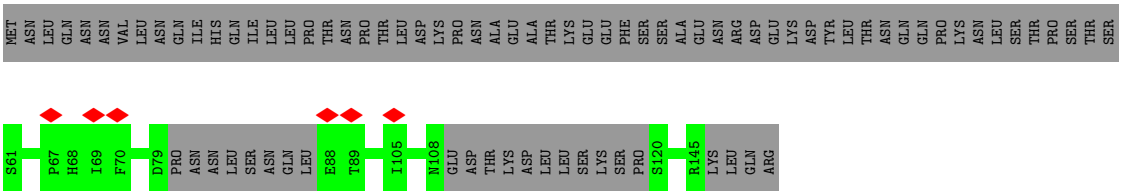
• Molecule 40: Mediator of RNA polymerase II transcription subunit 7

Chain i:



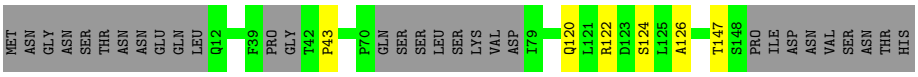
• Molecule 41: Mediator of RNA polymerase II transcription subunit 9

Chain j:



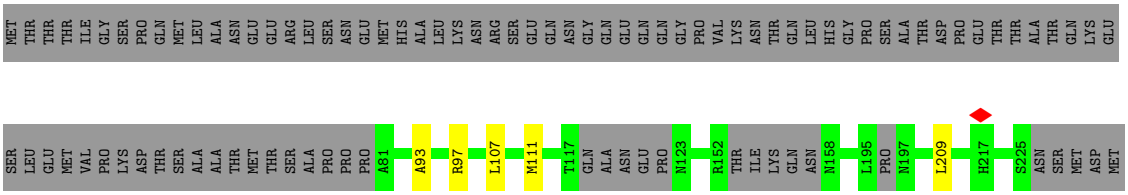
• Molecule 42: Mediator of RNA polymerase II transcription subunit 10

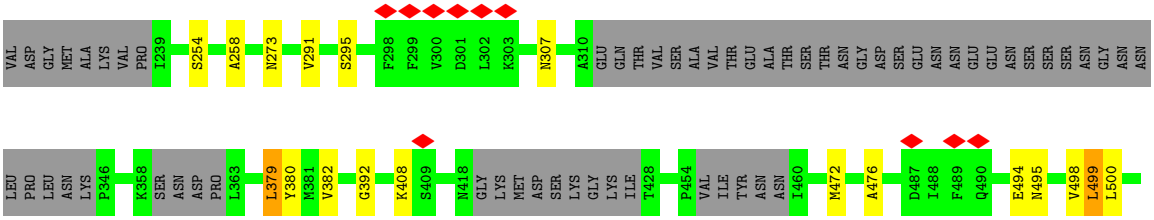
Chain k:

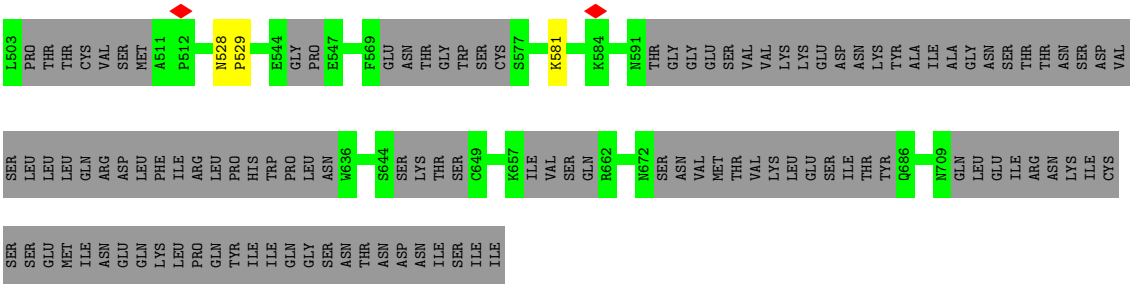


• Molecule 43: Mediator of RNA polymerase II transcription subunit 14

Chain l:

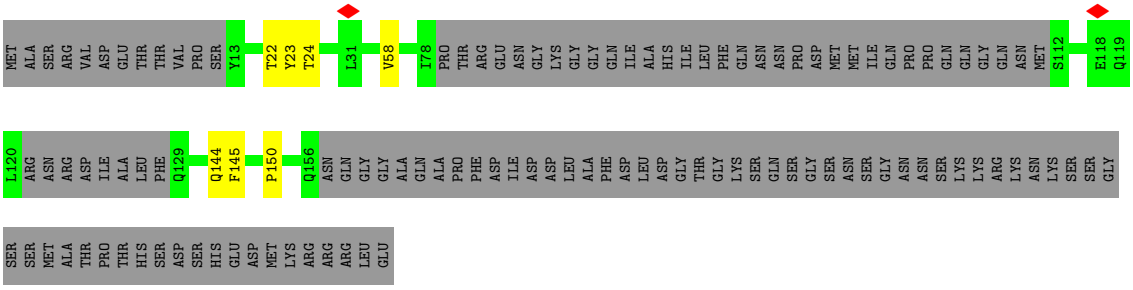




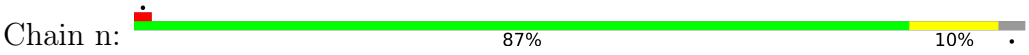


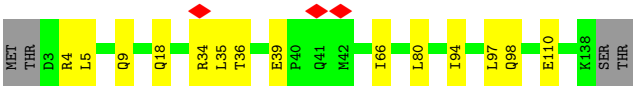
• Molecule 44: Mediator of RNA polymerase II transcription subunit 19

Chain m:

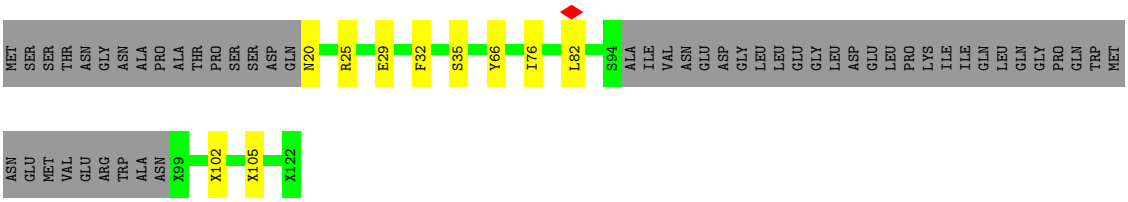


• Molecule 45: Mediator of RNA polymerase II transcription subunit 21





• Molecule 46: Mediator of RNA polymerase II transcription subunit 31,Mediator of RNA polymerase II transcription subunit 31



4 Experimental information (i)

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, C1	Depositor
Number of particles used	16000	Depositor
Resolution determination method	FSC 0.143 CUT-OFF	Depositor
CTF correction method	PHASE FLIPPING AND AMPLITUDE CORRECTION	Depositor
Microscope	FEI TITAN KRIOS	Depositor
Voltage (kV)	300	Depositor
Electron dose ($e^-/Å^2$)	42	Depositor
Minimum defocus (nm)	500	Depositor
Maximum defocus (nm)	5000	Depositor
Magnification	105000	Depositor
Image detector	GATAN K2 SUMMIT (4k x 4k)	Depositor
Maximum map value	0.700	Depositor
Minimum map value	-0.340	Depositor
Average map value	0.001	Depositor
Map value standard deviation	0.024	Depositor
Recommended contour level	0.08	Depositor
Map size (Å)	479.5, 479.5, 479.5	wwPDB
Map dimensions	350, 350, 350	wwPDB
Map angles (°)	90.0, 90.0, 90.0	wwPDB
Pixel spacing (Å)	1.37, 1.37, 1.37	Depositor

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ZN, 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	A	0.12	0/11192	0.30	2/15128 (0.0%)
2	B	0.11	0/9357	0.27	0/12618
3	C	0.09	0/2099	0.24	0/2845
4	D	0.08	0/1262	0.22	0/1693
5	E	0.11	0/1780	0.32	2/2395 (0.1%)
6	F	0.10	0/682	0.26	0/922
7	G	0.10	0/1368	0.24	0/1844
8	H	0.11	0/1107	0.28	0/1499
9	I	0.11	0/962	0.32	0/1295
10	J	0.14	0/541	0.33	0/727
11	K	0.08	0/922	0.21	0/1244
12	L	0.14	0/360	0.43	0/478
13	M	0.12	0/2204	0.30	0/2963
14	N	0.20	0/1724	0.45	0/2614
15	O	0.12	0/1443	0.28	0/1942
16	Q	0.16	0/1108	0.40	0/1495
17	R	0.13	0/1312	0.33	0/1777
18	T	0.19	0/1614	0.40	0/2442
19	U	0.08	0/766	0.25	0/1032
20	V	0.08	0/789	0.23	0/1066
21	W	0.11	0/1566	0.26	0/2117
22	X	0.11	0/1013	0.33	0/1385
23	0	0.14	0/4739	0.37	0/6431
24	1	0.22	0/2198	0.36	0/2983
25	2	0.11	0/1631	0.30	0/2243
26	3	0.11	0/870	0.32	0/1190
27	4	0.19	0/1282	0.49	2/1780 (0.1%)
28	5	0.13	0/502	0.43	0/677
29	6	0.16	0/1996	0.33	0/2713
30	7	0.10	0/2980	0.27	0/4019
32	a	0.15	0/737	0.38	0/1023
33	b	0.09	0/841	0.26	0/1166

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	#|Z| >5	RMSZ	#|Z| >5
34	c	0.09	0/817	0.21	0/1096
35	d	0.16	0/3089	0.36	1/4188 (0.0%)
36	e	0.08	0/1854	0.22	0/2509
37	f	0.08	0/1584	0.22	0/2145
38	g	0.08	0/665	0.20	0/894
39	h	0.24	0/570	0.22	0/791
40	i	0.30	0/1112	0.42	0/1494
41	j	0.41	0/325	0.53	0/449
42	k	0.16	0/627	0.38	0/870
43	l	0.13	0/2328	0.37	2/3227 (0.1%)
44	m	0.11	0/509	0.30	0/706
45	n	0.15	0/1005	0.24	0/1357
46	o	0.16	0/661	0.33	0/902
All	All	0.14	0/78093	0.32	9/106374 (0.0%)

There are no bond length outliers.

The worst 5 of 9 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
35	d	607	ASP	N-CA-C	-9.50	100.92	111.28
5	E	127	ILE	CA-C-N	6.62	124.43	119.66
5	E	127	ILE	C-N-CA	6.62	124.43	119.66
1	A	1146	VAL	CA-C-N	-6.31	114.37	122.77
1	A	1146	VAL	C-N-CA	-6.31	114.37	122.77

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts (i)

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the chain respectively. The H(added) column lists the number of hydrogen atoms added and optimized by MolProbity. The Clashes column lists the number of clashes within the asymmetric unit, whereas Symm-Clashes lists symmetry-related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	10997	0	11080	184	0
2	B	9178	0	9195	171	0
3	C	2061	0	2029	55	0
4	D	1253	0	1275	13	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
5	E	1744	0	1771	16	0
6	F	670	0	690	12	0
7	G	1340	0	1357	34	0
8	H	1089	0	1062	22	0
9	I	944	0	899	29	0
10	J	532	0	542	5	0
11	K	904	0	911	14	0
12	L	358	0	381	7	0
13	M	2175	0	2283	43	0
14	N	1533	0	860	32	0
15	O	1416	0	1493	22	0
16	Q	1144	0	1021	29	0
17	R	1303	0	1110	29	0
18	T	1440	0	820	30	0
19	U	757	0	747	13	0
20	V	782	0	790	11	0
21	W	1825	0	1546	28	0
22	X	1004	0	730	8	0
23	0	4844	0	4241	85	0
24	1	3060	0	2050	26	0
25	2	2160	0	1075	13	0
26	3	860	0	620	11	0
27	4	1475	0	624	11	0
28	5	498	0	506	12	0
29	6	2197	0	1738	15	0
30	7	3148	0	3002	69	0
31	Z	215	0	49	5	0
32	a	741	0	298	2	0
33	b	839	0	424	5	0
34	c	809	0	807	19	0
35	d	3065	0	2684	55	0
36	e	1822	0	1825	36	0
37	f	1560	0	1573	51	0
38	g	667	0	678	17	0
39	h	654	0	268	0	0
40	i	1096	0	1110	16	0
41	j	328	0	130	0	0
42	k	630	0	265	3	0
43	l	2344	0	979	11	0
44	m	512	0	212	1	0
45	n	999	0	925	7	0
46	o	760	0	656	6	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
47	3	2	0	0	0	0
47	4	1	0	0	0	0
47	6	3	0	0	0	0
47	A	2	0	0	0	0
47	B	1	0	0	0	0
47	C	1	0	0	0	0
47	I	2	0	0	0	0
47	J	1	0	0	0	0
47	L	1	0	0	0	0
47	M	1	0	0	0	0
47	W	1	0	0	0	0
48	A	1	0	0	0	0
49	0	8	0	0	3	0
All	All	79757	0	69331	1132	0

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 8.

The worst 5 of 1132 close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
43:l:495:ASN:O	43:l:499:LEU:HA	1.50	1.12
9:I:54:GLU:O	9:I:89:GLN:N	1.93	1.02
3:C:85:ASP:OD1	37:f:146:THR:HG21	1.60	0.99
19:U:242:ASN:HA	19:U:268:THR:O	1.62	0.99
31:Z:31:UNK:HA	31:Z:41:UNK:CB	1.93	0.97

There are no symmetry-related clashes.

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	1386/1733 (80%)	1298 (94%)	77 (6%)	11 (1%)	16 54
2	B	1136/1224 (93%)	1064 (94%)	62 (6%)	10 (1%)	14 50
3	C	260/318 (82%)	236 (91%)	20 (8%)	4 (2%)	8 39
4	D	153/221 (69%)	145 (95%)	7 (5%)	1 (1%)	18 56
5	E	211/215 (98%)	202 (96%)	8 (4%)	1 (0%)	24 63
6	F	81/155 (52%)	79 (98%)	2 (2%)	0	100 100
7	G	169/171 (99%)	155 (92%)	13 (8%)	1 (1%)	21 59
8	H	132/146 (90%)	117 (89%)	12 (9%)	3 (2%)	5 27
9	I	114/122 (93%)	99 (87%)	15 (13%)	0	100 100
10	J	63/70 (90%)	58 (92%)	3 (5%)	2 (3%)	3 21
11	K	110/120 (92%)	109 (99%)	1 (1%)	0	100 100
12	L	43/70 (61%)	37 (86%)	6 (14%)	0	100 100
13	M	273/345 (79%)	252 (92%)	16 (6%)	5 (2%)	6 34
15	O	178/240 (74%)	164 (92%)	13 (7%)	1 (1%)	21 59
16	Q	129/747 (17%)	111 (86%)	15 (12%)	3 (2%)	5 27
17	R	176/400 (44%)	160 (91%)	15 (8%)	1 (1%)	21 59
19	U	88/286 (31%)	82 (93%)	4 (4%)	2 (2%)	5 27
20	V	96/122 (79%)	92 (96%)	3 (3%)	1 (1%)	12 48
21	W	198/541 (37%)	189 (96%)	6 (3%)	3 (2%)	8 39
22	X	156/328 (48%)	129 (83%)	23 (15%)	4 (3%)	4 25
23	0	659/778 (85%)	590 (90%)	54 (8%)	15 (2%)	5 27
24	1	309/510 (61%)	297 (96%)	8 (3%)	4 (1%)	9 41
25	2	284/553 (51%)	266 (94%)	17 (6%)	1 (0%)	30 67
26	3	136/321 (42%)	114 (84%)	19 (14%)	3 (2%)	5 28
27	4	257/333 (77%)	231 (90%)	17 (7%)	9 (4%)	3 20
28	5	64/72 (89%)	59 (92%)	5 (8%)	0	100 100
29	6	289/461 (63%)	260 (90%)	26 (9%)	3 (1%)	12 48
30	7	361/843 (43%)	333 (92%)	23 (6%)	5 (1%)	9 40
32	a	141/295 (48%)	132 (94%)	6 (4%)	3 (2%)	5 29
33	b	154/223 (69%)	147 (96%)	6 (4%)	1 (1%)	21 59
34	c	95/115 (83%)	90 (95%)	5 (5%)	0	100 100
35	d	422/687 (61%)	387 (92%)	30 (7%)	5 (1%)	10 43

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles
36	e	226/307 (74%)	212 (94%)	14 (6%)	0	100 100
37	f	199/210 (95%)	182 (92%)	16 (8%)	1 (0%)	24 63
38	g	79/121 (65%)	79 (100%)	0	0	100 100
39	h	107/300 (36%)	106 (99%)	1 (1%)	0	100 100
40	i	128/223 (57%)	122 (95%)	6 (5%)	0	100 100
41	j	60/149 (40%)	56 (93%)	4 (7%)	0	100 100
42	k	121/157 (77%)	111 (92%)	8 (7%)	2 (2%)	7 36
43	l	439/745 (59%)	402 (92%)	27 (6%)	10 (2%)	5 27
44	m	97/220 (44%)	82 (84%)	10 (10%)	5 (5%)	1 14
45	n	134/140 (96%)	126 (94%)	6 (4%)	2 (2%)	8 39
46	o	73/151 (48%)	69 (94%)	4 (6%)	0	100 100
All	All	9986/15488 (64%)	9231 (92%)	633 (6%)	122 (1%)	13 43

5 of 122 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
16	Q	127	ILE
21	W	77	PRO
23	0	156	CYS
23	0	254	THR
27	4	88	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	1221/1520 (80%)	1221 (100%)	0	100 100
2	B	1000/1061 (94%)	998 (100%)	2 (0%)	87 86
3	C	230/274 (84%)	229 (100%)	1 (0%)	84 84
4	D	139/200 (70%)	139 (100%)	0	100 100
5	E	195/197 (99%)	195 (100%)	0	100 100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
6	F	73/137 (53%)	73 (100%)	0	100 100
7	G	152/152 (100%)	151 (99%)	1 (1%)	76 81
8	H	119/128 (93%)	119 (100%)	0	100 100
9	I	110/116 (95%)	106 (96%)	4 (4%)	31 52
10	J	60/65 (92%)	60 (100%)	0	100 100
11	K	97/102 (95%)	97 (100%)	0	100 100
12	L	40/57 (70%)	40 (100%)	0	100 100
13	M	245/299 (82%)	245 (100%)	0	100 100
15	O	152/205 (74%)	152 (100%)	0	100 100
16	Q	109/641 (17%)	108 (99%)	1 (1%)	70 78
17	R	107/363 (30%)	107 (100%)	0	100 100
19	U	84/260 (32%)	84 (100%)	0	100 100
20	V	90/108 (83%)	90 (100%)	0	100 100
21	W	161/429 (38%)	161 (100%)	0	100 100
22	X	62/295 (21%)	62 (100%)	0	100 100
23	0	413/677 (61%)	410 (99%)	3 (1%)	76 81
24	1	179/306 (58%)	179 (100%)	0	100 100
25	2	53/407 (13%)	53 (100%)	0	100 100
26	3	53/303 (18%)	52 (98%)	1 (2%)	50 66
27	4	4/260 (2%)	3 (75%)	1 (25%)	0 4
28	5	53/66 (80%)	52 (98%)	1 (2%)	50 66
29	6	173/378 (46%)	173 (100%)	0	100 100
30	7	315/695 (45%)	311 (99%)	4 (1%)	61 73
33	b	15/207 (7%)	15 (100%)	0	100 100
34	c	93/108 (86%)	93 (100%)	0	100 100
35	d	256/642 (40%)	253 (99%)	3 (1%)	63 75
36	e	210/280 (75%)	209 (100%)	1 (0%)	81 83
37	f	172/178 (97%)	171 (99%)	1 (1%)	78 82
38	g	75/113 (66%)	75 (100%)	0	100 100
40	i	118/209 (56%)	118 (100%)	0	100 100
45	n	96/132 (73%)	95 (99%)	1 (1%)	68 77

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
46	o	73/117 (62%)	73 (100%)	0	100 100
All	All	6797/11687 (58%)	6772 (100%)	25 (0%)	81 84

5 of 25 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
28	5	54	LEU
30	7	715	GLU
45	n	110	GLU
30	7	701	PHE
30	7	737	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 147 such sidechains are listed below:

Mol	Chain	Res	Type
30	7	644	GLN
45	n	98	GLN
30	7	682	GLN
36	e	4	GLN
2	B	1211	ASN

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	$\#\|Z\| > 2$
49	SF4	0	901	23	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
49	SF4	0	901	23	-	-	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.

1 monomer is involved in 3 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
49	0	901	SF4	3	0

5.7 Other polymers (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
24	1	3
21	W	2
25	2	1
27	4	1

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Mol	Chain	Number of breaks
39	h	1

The worst 5 of 8 chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	1	394:UNK	C	465:UNK	N	84.00
1	W	289:UNK	C	349:UNK	N	45.11
1	1	121:ARG	C	168:UNK	N	38.20
1	2	281:ASP	C	380:UNK	N	36.23
1	W	194:ILE	C	259:UNK	N	35.82

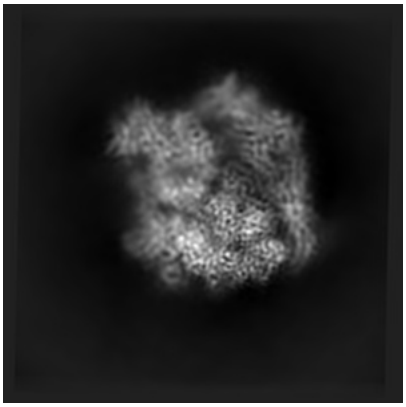
6 Map visualisation

This section contains visualisations of the EMDB entry EMD-3850. These allow visual inspection of the internal detail of the map and identification of artifacts.

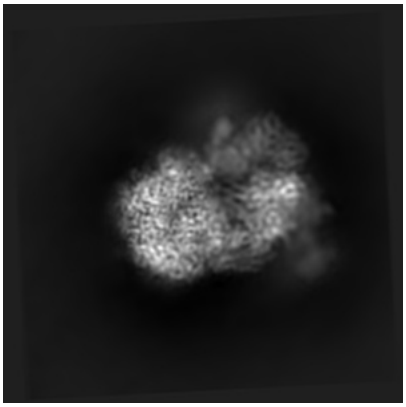
No raw map or half-maps were deposited for this entry and therefore no images, graphs, etc. pertaining to the raw map can be shown.

6.1 Orthogonal projections

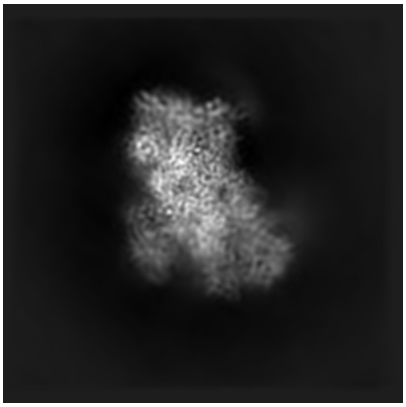
6.1.1 Primary map



X



Y

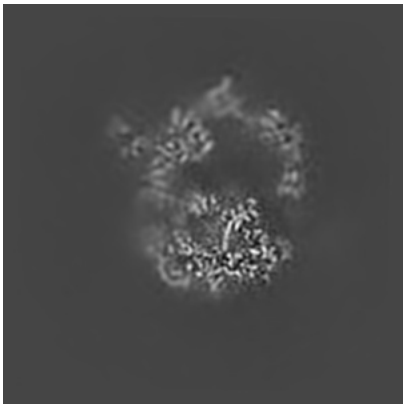


Z

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

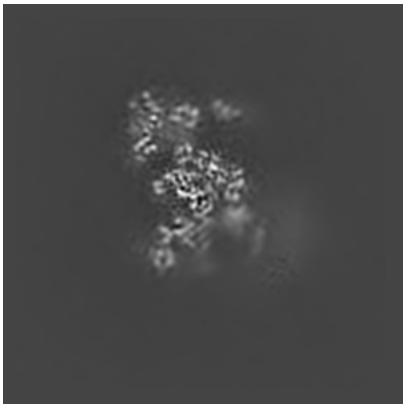
6.2 Central slices

6.2.1 Primary map



X Index: 175

Y Index: 175

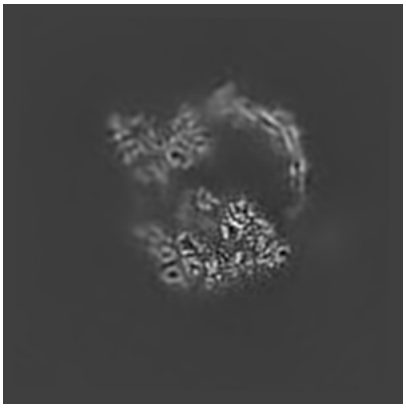


Z Index: 175

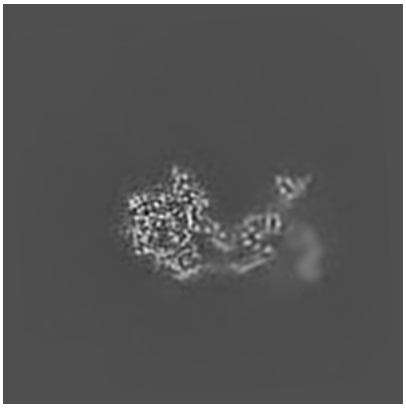
The images above show central slices of the map in three orthogonal directions.

6.3 Largest variance slices (i)

6.3.1 Primary map



X Index: 182



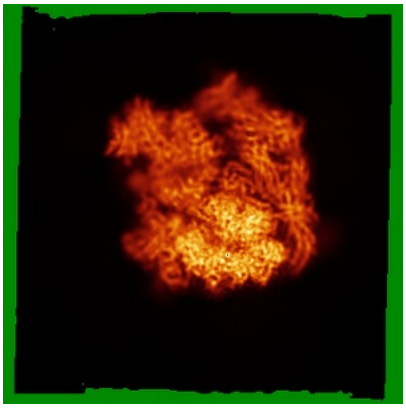
Y Index: 217

Z Index: 130

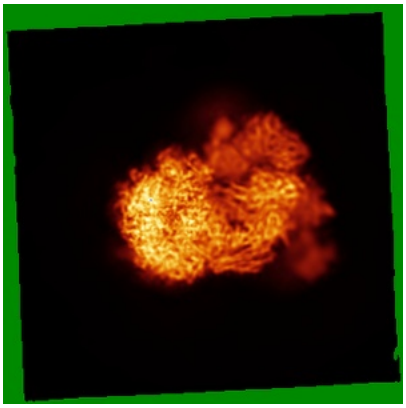
The images above show the largest variance slices of the map in three orthogonal directions.

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

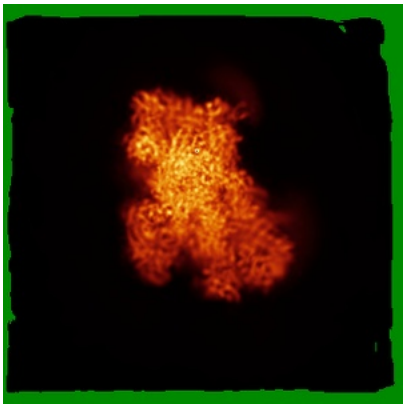
6.4.1 Primary map



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)

This section was not generated.

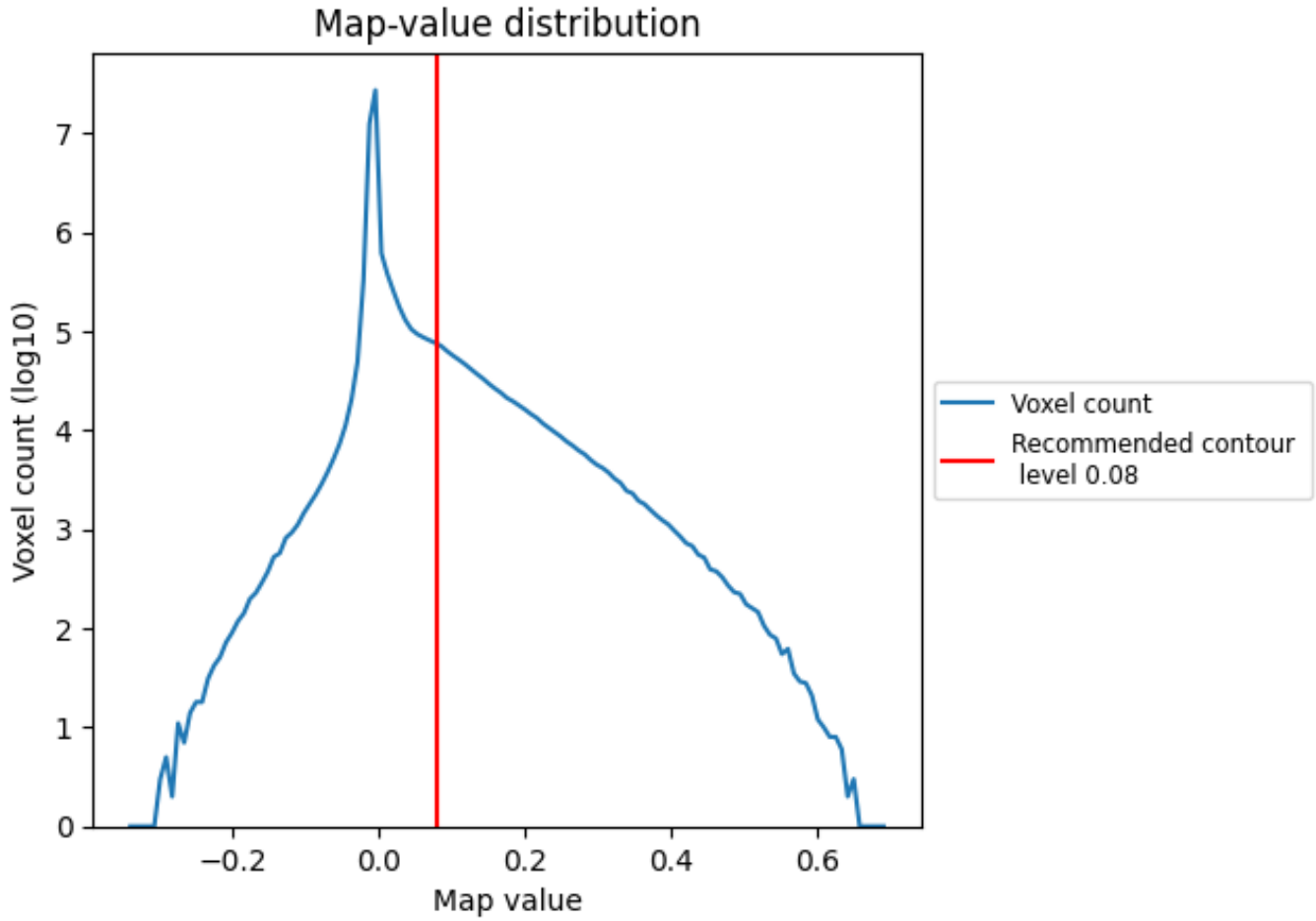
6.6 Mask visualisation (i)

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

7 Map analysis

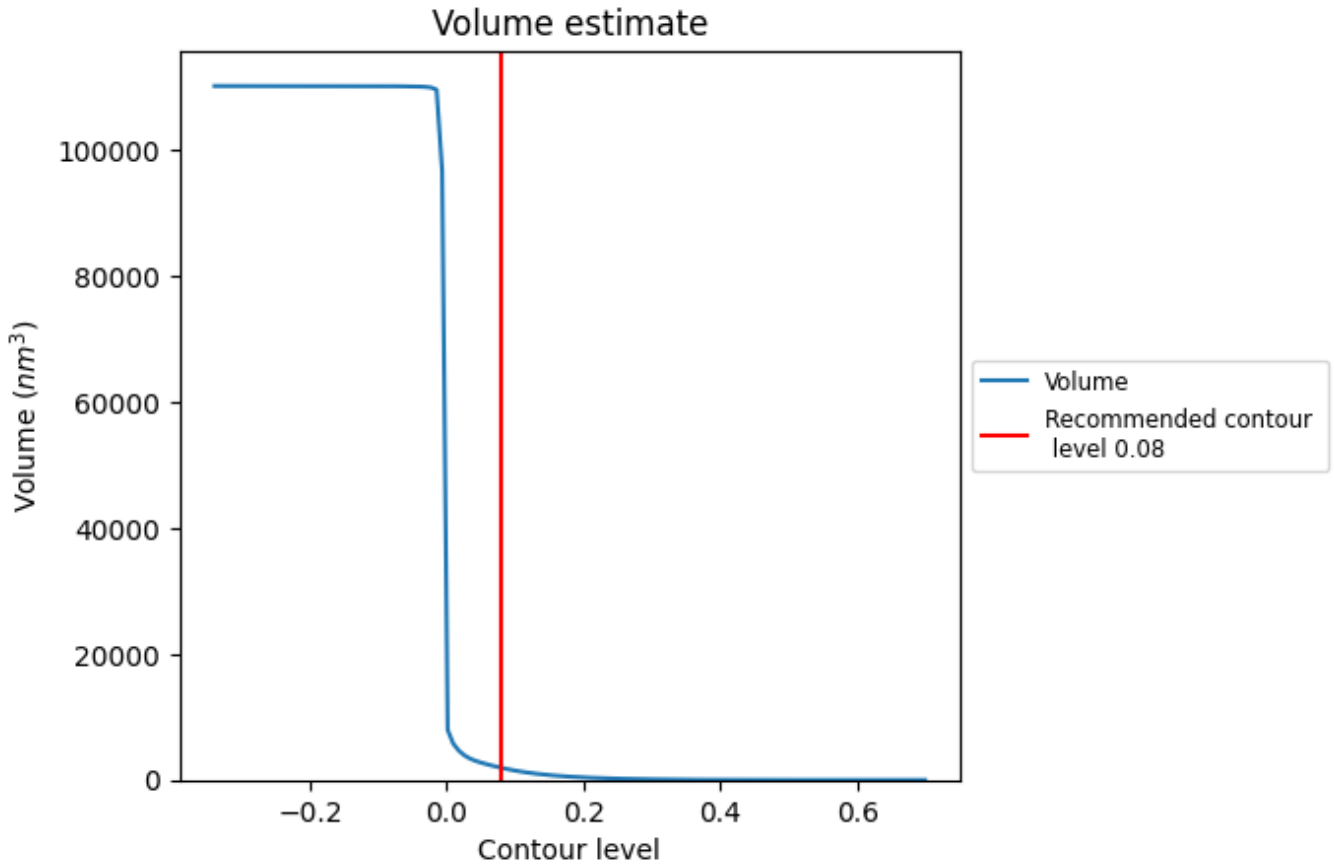
This section contains the results of statistical analysis of the map.

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.

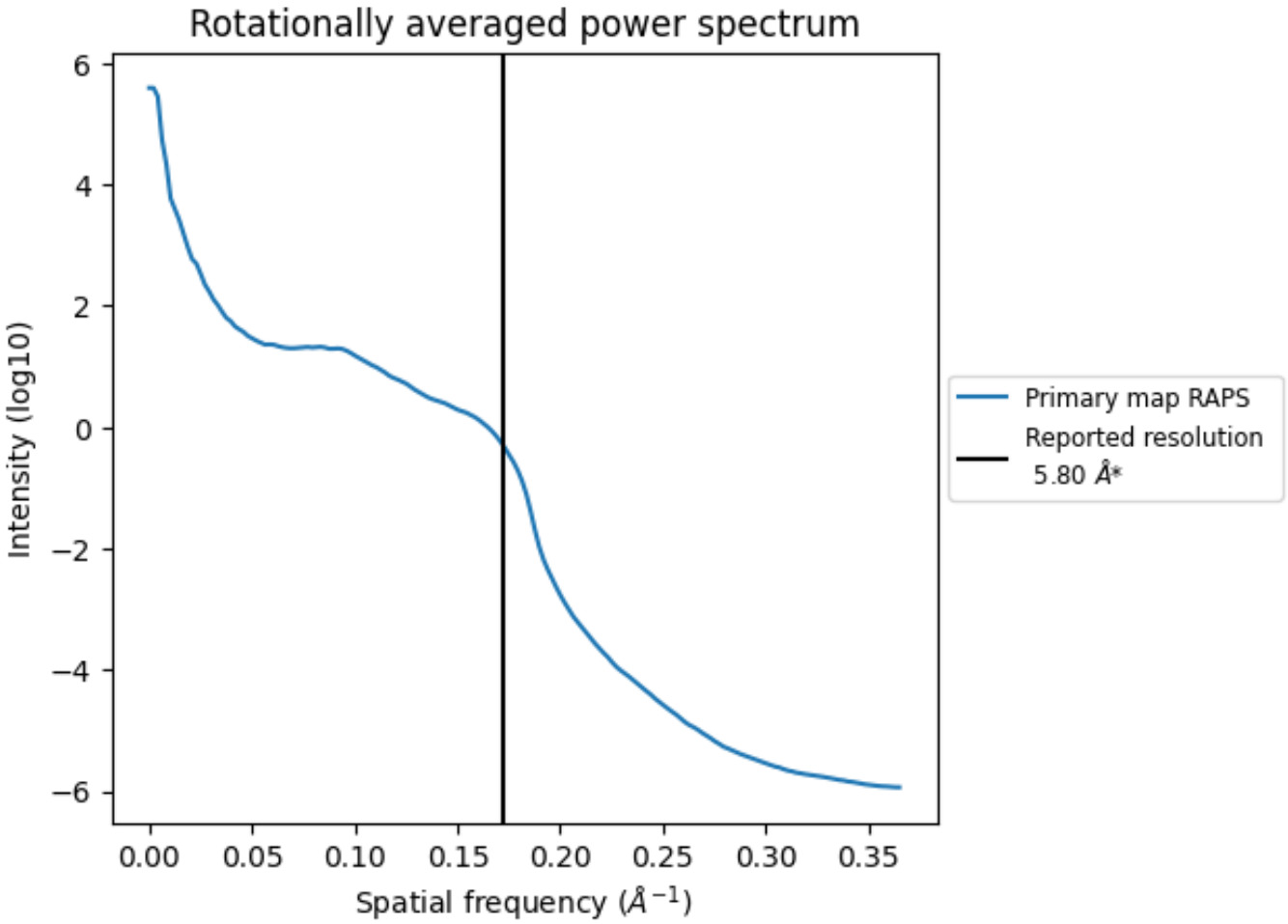
7.2 Volume estimate (i)



The volume at the recommended contour level is 1922 nm^3; this corresponds to an approximate mass of 1736 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 0.172 Å^{-1}

8 Fourier-Shell correlation (i)

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

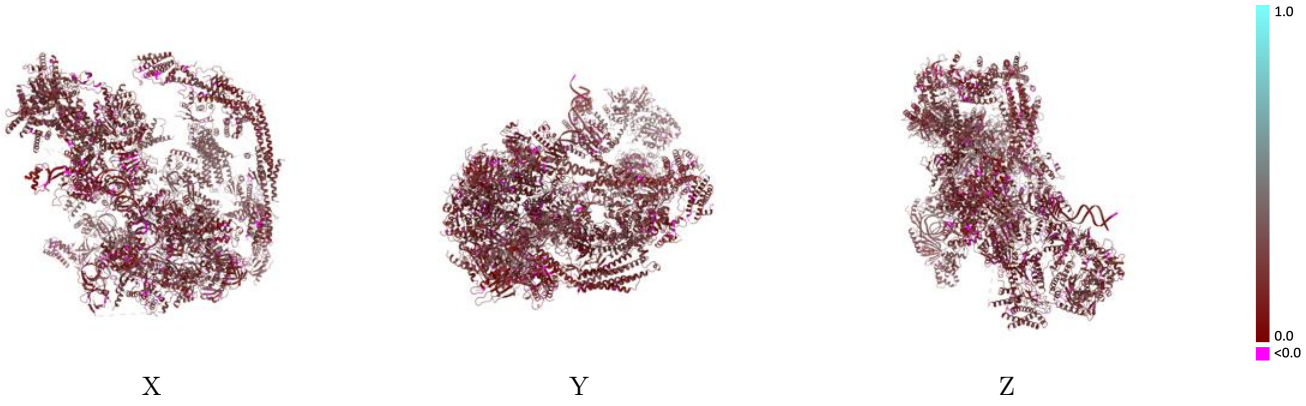
9 Map-model fit

This section contains information regarding the fit between EMDB map EMD-3850 and PDB model 5OQM. Per-residue inclusion information can be found in section 3 on page 14.

9.1 Map-model overlay

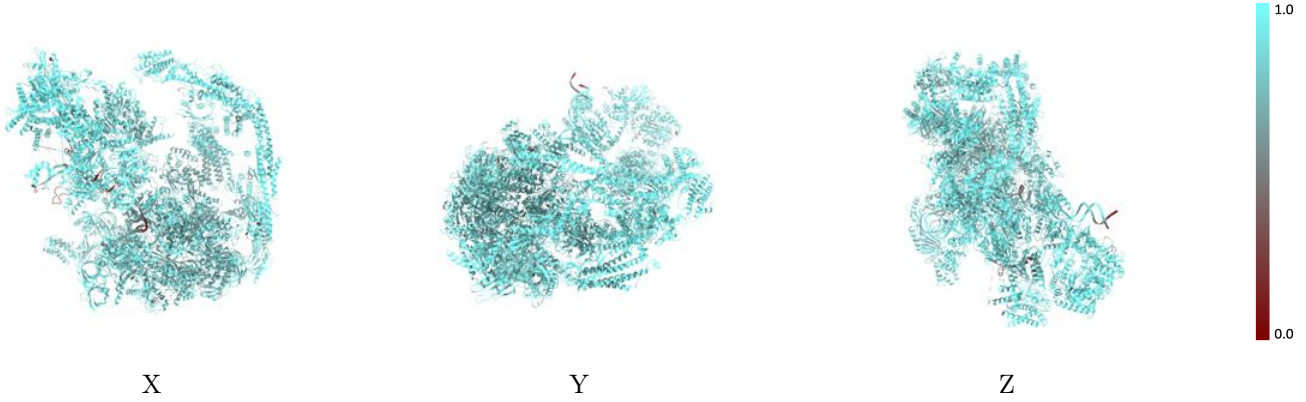
This section was not generated.

9.2 Q-score mapped to coordinate model



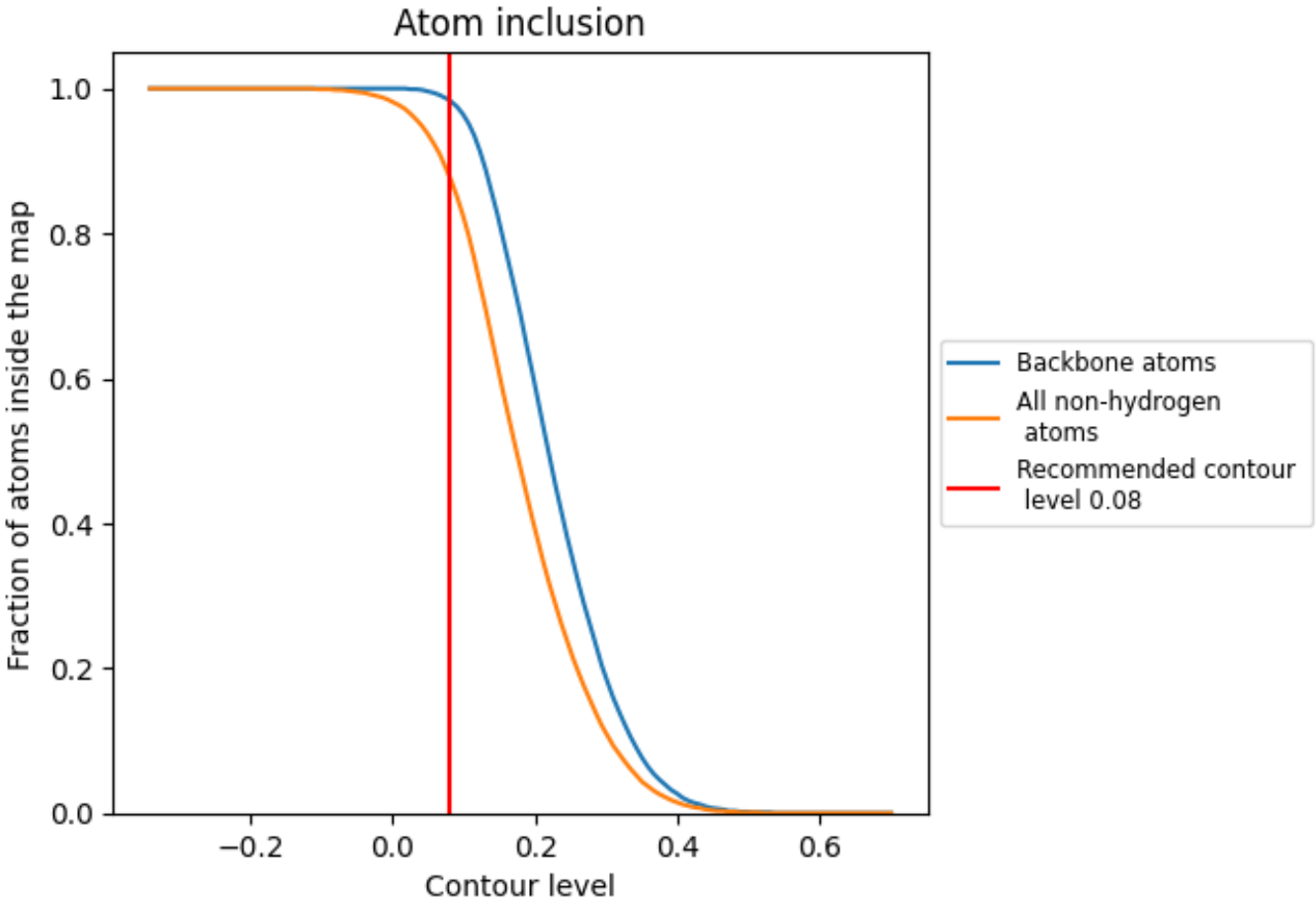
The images above show the model with each residue coloured according its Q-score. This shows their resolvability in the map with higher Q-score values reflecting better resolvability. Please note: Q-score is calculating the resolvability of atoms, and thus high values are only expected at resolutions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



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 (0.08).

9.4 Atom inclusion (i)



At the recommended contour level, 98% of all backbone atoms, 88% 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 (0.08) and Q-score for the entire model and for each chain.

Chain	Atom inclusion	Q-score
All	0.8790	0.1830
0	0.9060	0.1670
1	0.8850	0.1810
2	0.9460	0.1890
3	0.9330	0.1940
4	0.9610	0.2140
5	0.9020	0.1230
6	0.9050	0.1750
7	0.9540	0.1340
A	0.8400	0.1930
B	0.8370	0.1900
C	0.8560	0.2160
D	0.8310	0.1700
E	0.8840	0.1950
F	0.8670	0.2250
G	0.8630	0.1950
H	0.8450	0.1890
I	0.8920	0.1850
J	0.8470	0.2000
K	0.8330	0.1960
L	0.8610	0.2160
M	0.8050	0.1650
N	0.9030	0.1940
O	0.8980	0.1520
Q	0.8660	0.1600
R	0.9190	0.2040
T	0.8420	0.1780
U	0.8910	0.1450
V	0.8970	0.1560
W	0.8470	0.1630
X	0.9160	0.1890
Z	0.9810	0.2250
a	0.9870	0.2400
b	0.9570	0.2420
c	0.8420	0.1340

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Chain	Atom inclusion	Q-score
d	0.8820	0.1750
e	0.8390	0.1810
f	0.8400	0.1880
g	0.8190	0.1460
h	0.9800	0.2510
i	0.9090	0.1670
j	0.8900	0.2320
k	0.9970	0.2120
l	0.9580	0.2150
m	0.9730	0.1220
n	0.8820	0.1530
o	0.8750	0.1490