



# wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 4, 2024 – 11:04 PM EST

PDB ID : 1Y1V  
Title : Refined RNA Polymerase II-TFIIS complex  
Authors : Kettenberger, H.; Armache, K.-J.; Cramer, P.  
Deposited on : 2004-11-19  
Resolution : 3.80 Å(reported)

This is a wwPDB X-ray Structure Validation Summary Report for a publicly released PDB entry.

We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)

A user guide is available at

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

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

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

MolProbity : 4.02b-467  
Xtriage (Phenix) : 1.13  
EDS : 2.36  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
Refmac : 5.8.0158  
CCP4 : 7.0.044 (Gargrove)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36

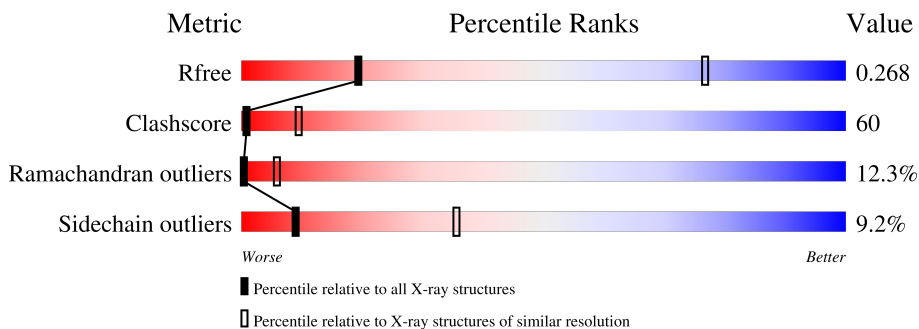
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.80 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.



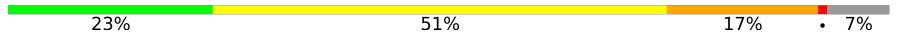

Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	130704	1212 (4.00-3.60)
Clashscore	141614	1288 (4.00-3.60)
Ramachandran outliers	138981	1243 (4.00-3.60)
Sidechain outliers	138945	1237 (4.00-3.60)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria respectively. A grey segment represents the fraction of residues that are not modelled. The numeric value for each fraction is indicated below the corresponding segment, with a dot representing fractions  $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	A	1733	21% (green), 47% (yellow), 13% (orange), 18% (grey), 1% (red)
2	B	1224	24% (green), 52% (yellow), 13% (orange), 9% (grey), 1% (red)
3	C	318	22% (green), 48% (yellow), 12% (orange), 16% (grey), 1% (red)
4	D	221	33% (green), 40% (yellow), 6% (orange), 20% (grey)
5	E	215	34% (green), 55% (yellow), 11% (orange)
6	F	155	15% (green), 30% (yellow), 8% (orange), 46% (grey)
7	G	171	33% (green), 59% (yellow), 8% (orange)

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Mol	Chain	Length	Quality of chain
8	H	146	
9	I	122	
10	J	70	
11	K	120	
12	L	70	
13	S	179	

## 2 Entry composition [i](#)

There are 15 unique types of molecules in this entry. The entry contains 31803 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, 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 largest subunit.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	1426	11214	7069	1959	2124	62	0	0	0

- Molecule 2 is a protein called DNA-directed RNA polymerase II 140 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	1112	8837	5594	1548	1640	55	58	0	0

- Molecule 3 is a protein called DNA-directed RNA polymerase II 45 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	C	266	2095	1317	348	417	13	0	0	0

- Molecule 4 is a protein called DNA-directed RNA polymerase II 32 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
4	D	177	1356	840	241	273	2	0	0	0

- Molecule 5 is a protein called DNA-directed RNA polymerases I, II, and III 27 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
5	E	214	1752	1111	309	321	11	0	0	0

- Molecule 6 is a protein called DNA-directed RNA polymerases I, II, and III 23 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
6	F	84	679	434	115	127	3	0	0	0

- Molecule 7 is a protein called DNA-directed RNA polymerase II 19 kDa polypeptide.

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

- Molecule 8 is a protein called DNA-directed RNA polymerases I, II, and III 14.5 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
8	H	133	1068	673	180	211	4	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
9	I	119	971	596	179	186	10	0	0	0

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

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

- Molecule 11 is a protein called DNA-directed RNA polymerase II 13.6 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
11	K	114	919	590	156	171	2	0	0	0

- Molecule 12 is a protein called DNA-directed RNA polymerases I, II, and III 7.7 kDa polypeptide.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
12	L	46	364	224	72	64	4	0	0	0

- Molecule 13 is a protein called Transcription elongation factor S-II.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
13	S	174	666	454	99	108	5	0	0	104

- Molecule 14 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
14	A	2	Total	Zn	0	0
			2	2		
14	B	1	Total	Zn	0	0
			1	1		
14	C	1	Total	Zn	0	0
			1	1		
14	I	2	Total	Zn	0	0
			2	2		
14	J	1	Total	Zn	0	0
			1	1		
14	L	1	Total	Zn	0	0
			1	1		
14	S	1	Total	Zn	0	0
			1	1		

- Molecule 15 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
15	S	1	Total	Mg	0	0
			1	1		

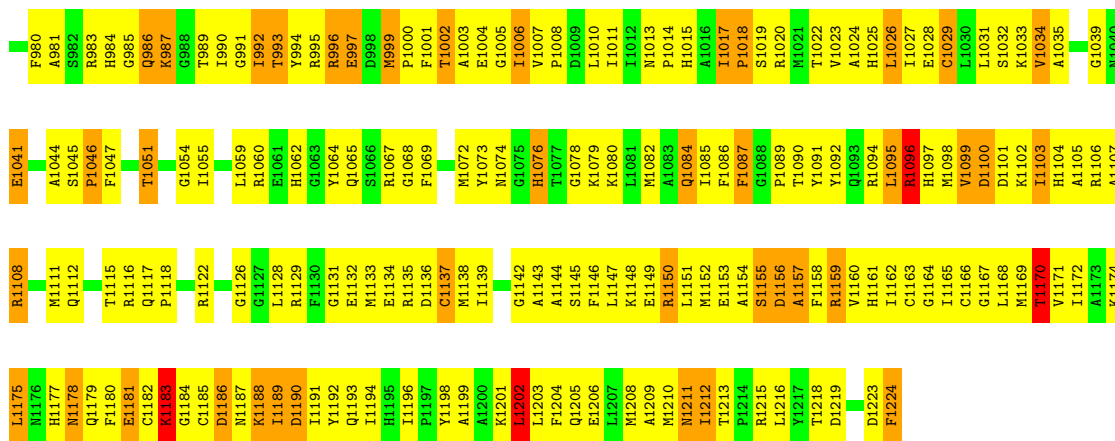




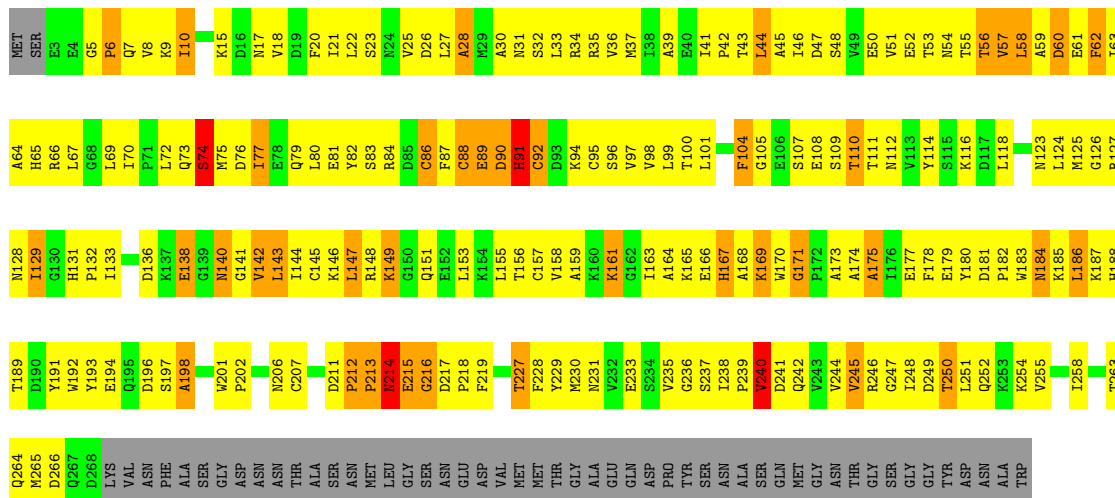


Chain B: 24% 52% 13% 9%

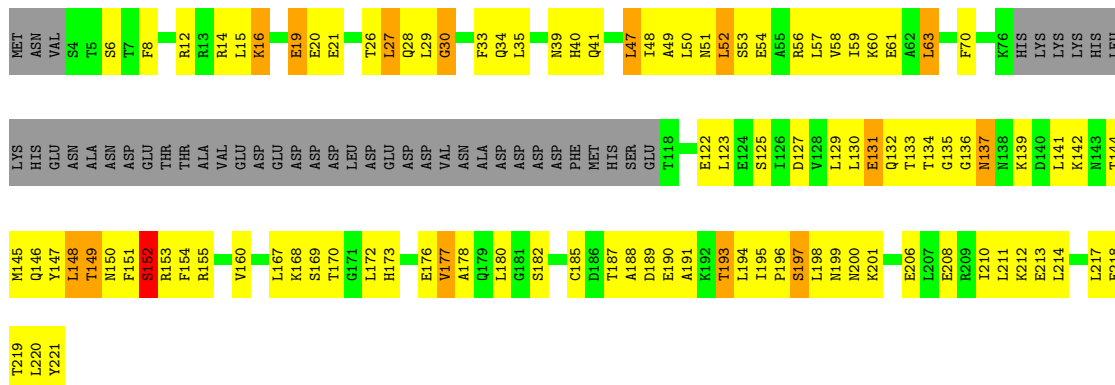
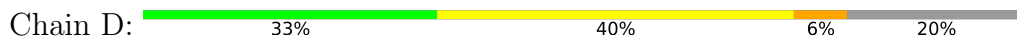
NET	162	L128	L192	V266	R327	D391	T463	G530	R691	R654	ASN	N784	I846	P917
SER	163	F129	L192	K257	E328	R392	G464	Q531	N692	R654	ASP	Y785	D847	P918
ASP	164	V130	K193	K257	E328	R392	G464	Q532	N692	R654	LEU	Y786	R848	S919
LEU	E65	D131	E194	Y259	A330	D394	N465	C533	A594	H657	D722	V787	R849	S920
ALA	D66	V132	C195	D261	L331	D395	G467	G534	A594	A659	V723	L850	L850	P921
ASN	S67	K133	G196	R261	D332	D396	E468	L535	M597	L660	W724	F851	F851	P922
SER	T68	K134	F197	S265	F333	D396	Q469	V536	E598	L661	P725	R852	R852	P923
GLU	L69	ARG	G200	S266	G334	F401	S474	K537	T699	M662	A726	S853	S853	P924
LYS	L70	THR	G201	A266	L335	G402	S475	N538	L600	A663	R727	A793	L854	P925
TYR	LEU	TYR	G202	K267	K403	K403	S476	L539	R601	T664	R730	F855	F855	P926
TYR	GLU	GLU	G203	T268	ARG	R404	R476	S540	D608	E665	H740	F856	F856	P927
ASP	GLN	ALA	F203	I269	GLY	R405	L406	S541	I609	G666	W731	R857	R857	P928
ASP	LEU	ILE	L204	K270	THR	R406	LA06	N542	R604	D668	V731	S858	S858	P929
ASP	ALA	ASP	L205	A271	ALA	S407	Q481	S543	R605	I668	T737	Y859	Y859	P930
PRO	VAL	VAL	R206	T272	LEU	A408	Y482	S544	K606	GLY	F738	M860	M860	P931
TYR	GLN	PRO	G207	L273	GLY	A409	L483	S545	G607	GLY	F739	Q800	Q800	P932
GLY	HIS	TYR	G207	L273	ILE	A410	N484	S546	L608	GLY	H740	F859	F859	P933
THR	THR	THR	G208	P274	LYS	P411	N485	S547	D608	PHE	C741	R860	R860	P934
PHE	THR	THR	E209	Y275	LYS	P411	R485	S548	I609	GLY	C741	M861	M861	P935
GLU	GLU	GLU	K210	I276	LYS	P411	Y486	Q548	N610	GLY	E742	E810	E810	P936
GLU	LEU	LEU	K211	K277	LYS	P411	T487	S549	P611	ASP	I743	Y811	Y811	P937
ASP	ASP	ASP	L212	Q277	LYS	P411	Y488	S550	E612	VAL	H744	L812	L812	P938
ASP	ASP	ASP	L213	K279	GLY	P411	S489	S551	E613	VAL	H744	R813	R813	P939
ASN	ASN	ASN	L213	D279	GLY	P411	S490	S552	V613	GLY	F745	L814	L814	P940
ILE	ILE	ILE	A214	I280	ILE	P411	S490	S553	V614	GLY	F745	R815	R815	P941
SER	SER	SER	Q215	P281	ILE	P411	T491	S554	D608	PHE	C741	M862	M862	P942
ARG	ARG	ARG	E216	I282	ILE	P411	L492	S555	I616	GLY	E742	Y812	Y812	P943
LYS	LYS	LYS	R217	V283	ILE	P411	S493	S556	R617	ASP	I744	L813	L813	P944
TYR	TYR	TYR	S218	I284	ILE	P411	R494	S557	E618	VAL	H744	R814	R814	P945
GLU	GLU	GLU	A219	L285	ILE	P411	L495	S558	G620	GLY	F745	L815	L815	P946
SER	SER	SER	G220	R286	ILE	P411	R496	S559	R620	GLY	F745	R816	R816	P947
GLY	GLY	GLY	R221	R287	ILE	P411	R497	S560	E621	GLY	F745	L817	L817	P948
ASP	ASP	ASP	L222	A288	ILE	P411	T498	S561	K622	GLY	F745	L818	L818	P949
ASP	ASP	ASP	V223	A288	ILE	P411	R499	S562	E623	GLY	F745	L819	L819	P950
SER	SER	SER	Q224	I291	ILE	P411	L502	S563	K624	GLY	F745	L820	L820	P951
GLU	GLU	GLU	V225	L292	ILE	P411	S503	S564	K625	GLY	F745	L821	L821	P952
SER	SER	SER	F226	P293	ILE	P411	G503	S565	I626	GLY	F745	L822	L822	P953
GLY	GLY	GLY	K227	D294	ILE	P411	R504	S566	E627	GLY	F745	L823	L823	P954
ASP	ASP	ASP	K228	G295	ILE	P411	R507	S567	T628	GLY	F745	L824	L824	P955
ASP	ASP	ASP	A229	E296	ILE	P411	L507	S568	D628	GLY	F745	L825	L825	P956
F166	F166	F166	A230	I297	ILE	P411	L508	S569	A630	GLY	F745	L826	L826	P957
I167	I167	I167	P231	L298	ILE	P411	A509	S570	G631	GLY	F745	L827	L827	P958
G168	G168	G168	S232	E299	ILE	P411	R510	S571	R632	GLY	F745	L828	L828	P959
R169	R169	R169	P233	H300	ILE	P411	P511	S572	V633	GLY	F745	L829	L829	P960
L170	L170	L170	L234	S372	ILE	P411	O513	S573	Y634	GLY	F745	L830	L830	P961
T109	T109	T109	S235	Y303	ILE	P411	L514	S574	Y634	GLY	F745	L831	L831	P962
L112	L112	L112	H236	Y303	ILE	P411	L515	S575	P636	GLY	F745	L832	L832	P963
M173	M173	M173	V237	W308	ILE	P411	H516	S576	L637	GLY	F745	L833	L833	P964
P114	P114	P114	A238	Q309	ILE	P411	N516	S577	F638	GLY	F745	L834	L834	P965
Q115	Q115	Q115	E239	X310	ILE	P411	T517	S578	I639	GLY	F745	L835	L835	P966
S176	S176	S176	I240	X310	ILE	P411	H518	S579	V640	GLY	F745	L836	L836	P967
A117	A117	A117	R241	X313	ILE	P411	N519	S580	E641	GLY	F745	L837	L837	P968
R118	R118	R118	S242	L314	ILE	P411	G520	S581	D642	GLY	F745	L838	L838	P969
L119	L119	L119	S242	L315	ILE	P411	L521	S582	D643	GLY	F745	L839	L839	P970
R120	R120	R120	G247	K315	ILE	P411	L522	S583	E644	GLY	F745	L840	L840	P971
M121	M121	M121	S248	P316	ILE	P411	V522	S584	E644	GLY	F745	L841	L841	P972
L122	L122	L122	R249	C317	ILE	P411	C523	S585	S645	GLY	F745	L842	L842	P973
T123	T123	T123	R249	C317	ILE	P411	P524	S586	L646	GLY	F745	L843	L843	P974
Y124	Y124	Y124	F322	V323	ILE	P411	A525	S587	G647	GLY	F745	L844	L844	P975
S126	S126	S126	V323	I324	ILE	P411	A526	S588	H648	GLY	F745	L845	L845	P976
D187	D187	D187	I324	Q325	ILE	P411	T527	S589	K649	GLY	F745	L846	L846	P977
L189	L189	L189	L390	D326	ILE	P411	E529	S590	V653	GLY	F745	L847	L847	P978



- Molecule 3: DNA-directed RNA polymerase II 45 kDa polypeptide

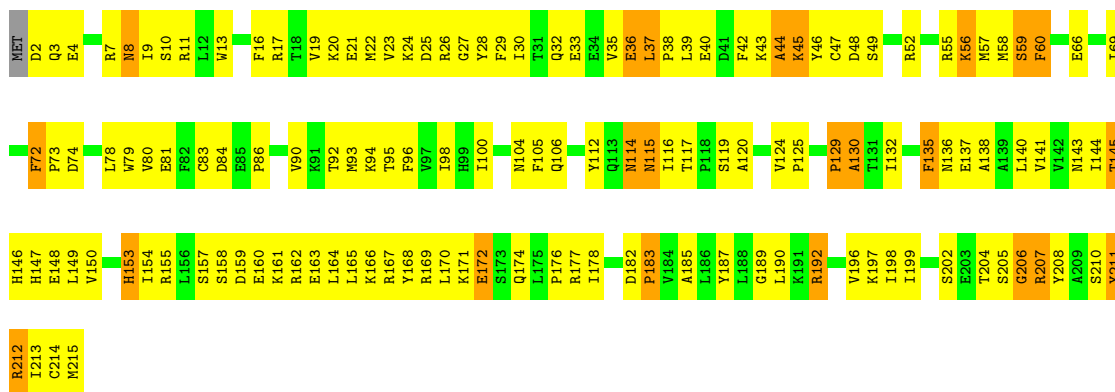


- Molecule 4: DNA-directed RNA polymerase II 32 kDa polypeptide



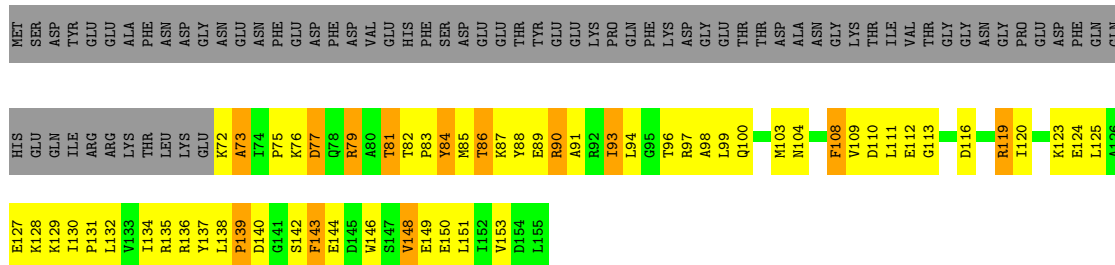
- Molecule 5: DNA-directed RNA polymerases I, II, and III 27 kDa polypeptide

Chain E: 34% 55% 11%



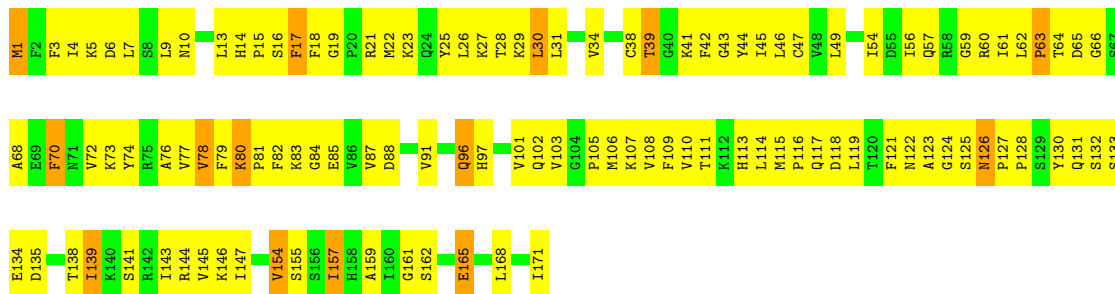
- Molecule 6: DNA-directed RNA polymerases I, II, and III 23 kDa polypeptide

Chain F: 15% 30% 8% 46%



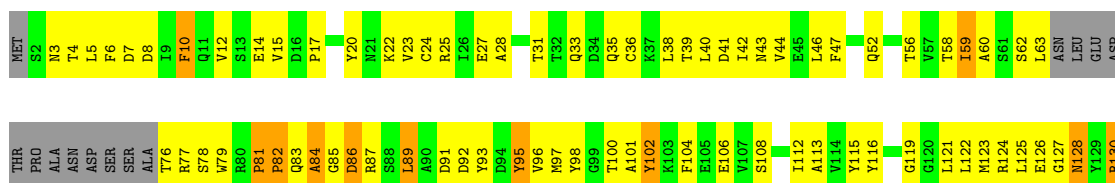
- Molecule 7: DNA-directed RNA polymerase II 19 kDa polypeptide

Chain G: 33% 59% 8%



- Molecule 8: DNA-directed RNA polymerases I, II, and III 14.5 kDa polypeptide

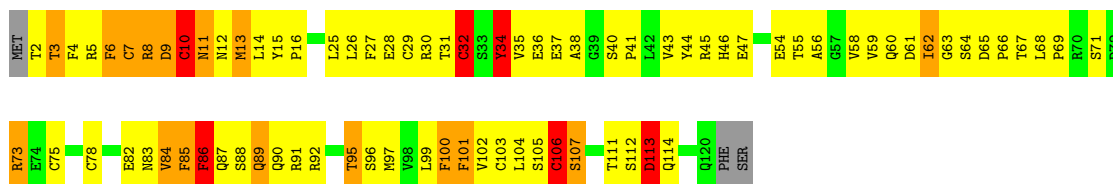
Chain H: 30% 53% 8% 9%





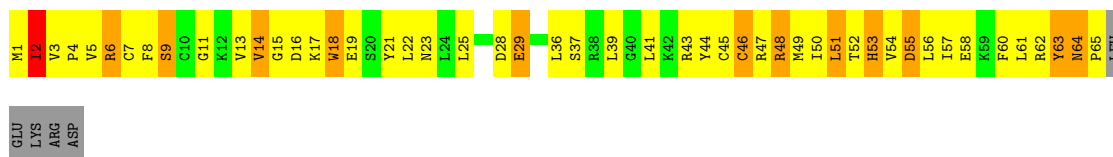
- Molecule 9: DNA-directed RNA polymerase II subunit 9

Chain I: 31% 48% 13% 5%



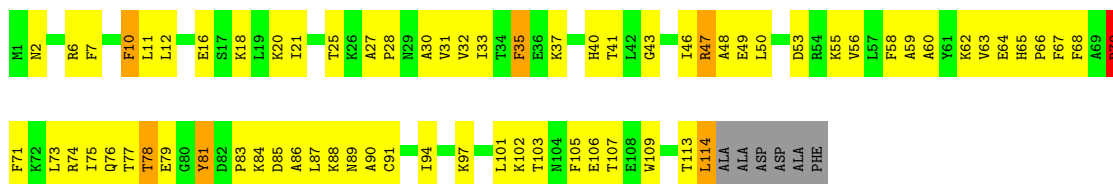
- Molecule 10: DNA-directed RNA polymerases I/II/III subunit 10

Chain J: 23% 51% 17% 7%



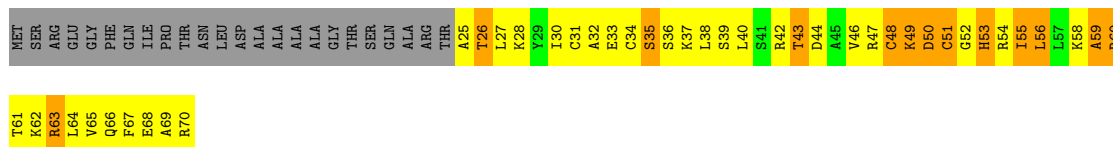
- Molecule 11: DNA-directed RNA polymerase II 13.6 kDa polypeptide

Chain K: 37% 52% 5% 5%



- Molecule 12: DNA-directed RNA polymerases I, II, and III 7.7 kDa polypeptide

Chain L: 6% 41% 19% 34%



- Molecule 13: Transcription elongation factor S-II

Chain S: 62% 28% 5% 5%



Y282	Q283	L284	Q285	T286	R287	S288	A289	D290	E291	P292	L293	T294	T295	F296	C297	T298	C299	E300	A301	C302	G303	N304	R305	W306	K307	F308	S309
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

## 4 Data and refinement statistics i

Property	Value	Source
Space group	C 2 2 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	218.90Å 395.30Å 281.00Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 3.80 49.41 – 3.74	Depositor EDS
% Data completeness (in resolution range)	(Not available) (50.00-3.80) 86.6 (49.41-3.74)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	4.52 (at 3.77Å)	Xtrriage
Refinement program	CNS	Depositor
R, $R_{free}$	0.282 , 0.294 0.257 , 0.268	Depositor DCC
$R_{free}$ test set	2439 reflections (1.99%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	68.0	Xtrriage
Anisotropy	0.336	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.28 , 42.2	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.30$ , $\langle L^2 \rangle = 0.13$	Xtrriage
Estimated twinning fraction	0.199 for 1/2*h-1/2*k,-3/2*h-1/2*k,-l 0.206 for 1/2*h+1/2*k,3/2*h-1/2*k,-l	Xtrriage
$F_o, F_c$ correlation	0.81	EDS
Total number of atoms	31803	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	72.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.74% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 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, 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	0.50	2/11417 (0.0%)	0.78	4/15442 (0.0%)
2	B	0.51	4/9009 (0.0%)	0.76	8/12146 (0.1%)
3	C	0.48	0/2133	0.77	1/2891 (0.0%)
4	D	0.41	0/1365	0.64	0/1837
5	E	0.43	0/1788	0.66	0/2406
6	F	0.52	0/691	0.77	0/933
7	G	0.49	0/1368	0.72	0/1844
8	H	0.38	0/1086	0.65	1/1470 (0.1%)
9	I	0.46	0/989	0.77	1/1331 (0.1%)
10	J	0.48	0/541	0.75	0/727
11	K	0.45	0/937	0.67	0/1265
12	L	0.54	0/366	0.79	0/485
13	S	1.31	4/571 (0.7%)	1.64	7/765 (0.9%)
All	All	0.51	10/32261 (0.0%)	0.77	22/43542 (0.1%)

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
2	B	0	3
13	S	0	2
All	All	0	5

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

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
13	S	269	PHE	C-N	-16.91	0.95	1.34
2	B	467	GLY	C-O	-11.91	1.04	1.23
13	S	260	THR	CA-CB	10.48	1.80	1.53

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	468	GLU	CB-CG	8.39	1.68	1.52
13	S	268	ARG	CG-CD	6.05	1.67	1.51

The worst 5 of 22 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
13	S	269	PHE	O-C-N	-19.02	92.27	122.70
13	S	269	PHE	C-N-CA	16.73	163.51	121.70
13	S	269	PHE	CA-C-N	16.08	152.57	117.20
1	A	195	ASP	N-CA-C	9.35	136.25	111.00
2	B	510	LYS	CB-CA-C	-7.63	95.14	110.40

There are no chirality outliers.

All (5) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	510	LYS	Mainchain
2	B	785	TYR	Sidechain
2	B	833	TYR	Sidechain
13	S	269	PHE	Sidechain,Peptide

## 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	11214	0	11281	1514	0
2	B	8837	0	8871	1206	0
3	C	2095	0	2052	260	0
4	D	1356	0	1319	101	0
5	E	1752	0	1776	200	0
6	F	679	0	701	82	0
7	G	1340	0	1357	159	0
8	H	1068	0	1040	115	0
9	I	971	0	929	110	0
10	J	532	0	542	103	0
11	K	919	0	929	96	0
12	L	364	0	387	68	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
13	S	666	0	553	105	0
14	A	2	0	0	0	0
14	B	1	0	0	0	0
14	C	1	0	0	0	0
14	I	2	0	0	0	0
14	J	1	0	0	0	0
14	L	1	0	0	0	0
14	S	1	0	0	0	0
15	S	1	0	0	0	0
All	All	31803	0	31737	3774	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 60.

The worst 5 of 3774 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)
13:S:260:THR:CA	13:S:260:THR:CB	1.80	1.53
13:S:269:PHE:CZ	13:S:297:CYS:SG	2.04	1.50
13:S:269:PHE:CE2	13:S:297:CYS:SG	2.14	1.39
1:A:1230:GLU:OE2	13:S:201:ILE:CA	1.75	1.32
1:A:1283:VAL:CG1	13:S:256:ALA:O	1.78	1.31

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 X-ray entries followed by that with respect to entries of similar resolution.

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	1418/1733 (82%)	914 (64%)	316 (22%)	188 (13%)	<b>0</b> <b>4</b>
2	B	1096/1224 (90%)	726 (66%)	223 (20%)	147 (13%)	<b>0</b> <b>4</b>

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
3	C	264/318 (83%)	169 (64%)	62 (24%)	33 (12%)	0	6
4	D	173/221 (78%)	129 (75%)	27 (16%)	17 (10%)	0	10
5	E	212/215 (99%)	141 (66%)	50 (24%)	21 (10%)	0	10
6	F	82/155 (53%)	60 (73%)	15 (18%)	7 (8%)	1	12
7	G	169/171 (99%)	123 (73%)	34 (20%)	12 (7%)	1	17
8	H	129/146 (88%)	93 (72%)	26 (20%)	10 (8%)	1	15
9	I	117/122 (96%)	80 (68%)	22 (19%)	15 (13%)	0	5
10	J	63/70 (90%)	36 (57%)	14 (22%)	13 (21%)	0	2
11	K	112/120 (93%)	82 (73%)	25 (22%)	5 (4%)	2	25
12	L	44/70 (63%)	18 (41%)	14 (32%)	12 (27%)	0	0
13	S	68/179 (38%)	51 (75%)	10 (15%)	7 (10%)	0	9
All	All	3947/4744 (83%)	2622 (66%)	838 (21%)	487 (12%)	0	6

5 of 487 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	4	GLN
1	A	48	ALA
1	A	55	ASP
1	A	58	LEU
1	A	62	ASP

### 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 X-ray entries followed by that with respect to entries of similar resolution.

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	1246/1520 (82%)	1133 (91%)	113 (9%)	9	36
2	B	964/1061 (91%)	880 (91%)	84 (9%)	10	38
3	C	234/274 (85%)	205 (88%)	29 (12%)	4	24
4	D	140/200 (70%)	126 (90%)	14 (10%)	7	32
5	E	196/197 (100%)	184 (94%)	12 (6%)	18	50

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
6	F	74/137 (54%)	63 (85%)	11 (15%)	3 18
7	G	152/152 (100%)	143 (94%)	9 (6%)	19 51
8	H	117/128 (91%)	110 (94%)	7 (6%)	19 50
9	I	113/116 (97%)	97 (86%)	16 (14%)	3 21
10	J	60/65 (92%)	55 (92%)	5 (8%)	11 40
11	K	99/102 (97%)	91 (92%)	8 (8%)	11 41
12	L	40/57 (70%)	33 (82%)	7 (18%)	2 13
13	S	62/156 (40%)	55 (89%)	7 (11%)	6 28
All	All	3497/4165 (84%)	3175 (91%)	322 (9%)	9 35

5 of 322 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	D	148	LEU
9	I	46	HIS
4	D	197	SER
6	F	143	PHE
11	K	10	PHE

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 91 such sidechains are listed below:

Mol	Chain	Res	Type
2	B	1179	GLN
4	D	137	ASN
3	C	65	HIS
3	C	167	HIS
5	E	143	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 monosaccharides in this entry.

## 5.6 Ligand geometry [i](#)

Of 10 ligands modelled in this entry, 10 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
13	S	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	S	269:PHE	C	270:THR	N	0.95

## 6 Fit of model and data

### 6.1 Protein, DNA and RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.2 Non-standard residues in protein, DNA, RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

### 6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.