



# wwPDB X-ray Structure Validation Summary Report ⓘ

May 29, 2020 – 08:46 am BST

PDB ID : 5UAQ  
Title : Escherichia coli RNA polymerase RpoB H526Y mutant  
Authors : Molodtsov, V.; Scharf, N.T.; Stefan, M.A.; Garcia, G.A.; Murakami, K.S.  
Deposited on : 2016-12-19  
Resolution : 3.60 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.

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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 : 2.11  
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) : 2.11

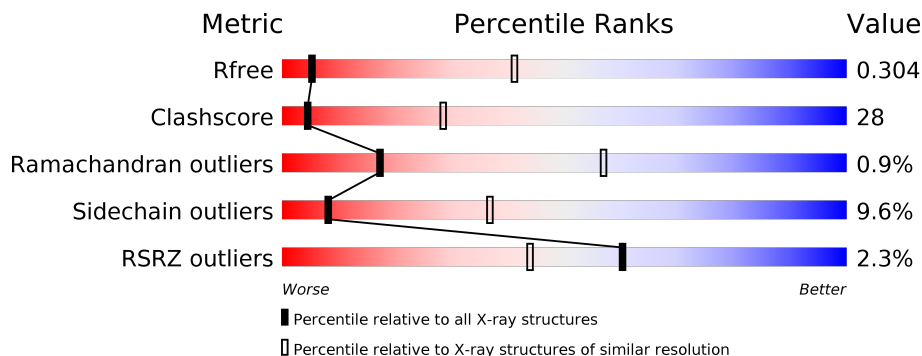
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 3.60 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	1257 (3.70-3.50)
Clashscore	141614	1353 (3.70-3.50)
Ramachandran outliers	138981	1307 (3.70-3.50)
Sidechain outliers	138945	1307 (3.70-3.50)
RSRZ outliers	127900	1161 (3.70-3.50)

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 on 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  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	329	
1	B	329	
1	G	329	
1	H	329	
2	C	1342	
2	I	1342	

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Mol	Chain	Length	Quality of chain
3	D	1407	<p>%</p> <p>35% 38% 9% 17%</p>
3	J	1407	<p>2%</p> <p>36% 38% 8% 18%</p>
4	E	91	<p>2%</p> <p>64% 31%</p>
4	K	91	<p>15%</p> <p>53% 33% 13%</p>
5	F	613	<p>2%</p> <p>40% 31% 5% 24%</p>
5	L	613	<p>%</p> <p>36% 34% 6% 23%</p>

## 2 Entry composition [i](#)

There are 7 unique types of molecules in this entry. The entry contains 55699 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 subunit alpha.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	309	Total 2403	C 1505	N 421	O 469	S 8	0	0	0
1	B	217	Total 1672	C 1044	N 295	O 327	S 6	0	0	0
1	G	224	Total 1730	C 1076	N 308	O 340	S 6	0	0	0
1	H	217	Total 1667	C 1041	N 293	O 327	S 6	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	C	1340	Total 10572	C 6634	N 1839	O 2056	S 43	0	0	0
2	I	1340	Total 10568	C 6632	N 1838	O 2055	S 43	0	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	526	TYR	HIS	engineered mutation	UNP P0A8V2
I	526	TYR	HIS	engineered mutation	UNP P0A8V2

- Molecule 3 is a protein called DNA-directed RNA polymerase subunit beta'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
3	D	1166	Total 9107	C 5723	N 1634	O 1704	S 46	0	0	0
3	J	1155	Total 9029	C 5676	N 1620	O 1687	S 46	0	0	0

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	E	89	Total	C	N	O	S	0	0	0
			691	421	129	140	1			
4	K	79	Total	C	N	O	S	0	0	0
			627	382	118	126	1			

- Molecule 5 is a protein called RNA polymerase sigma factor RpoD.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	F	467	Total	C	N	O	S	0	0	0
			3806	2385	677	721	23			
5	L	469	Total	C	N	O	S	0	0	0
			3821	2393	679	726	23			

- Molecule 6 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	J	1	Total	Mg	0	0
			1	1		
6	D	1	Total	Mg	0	0
			1	1		

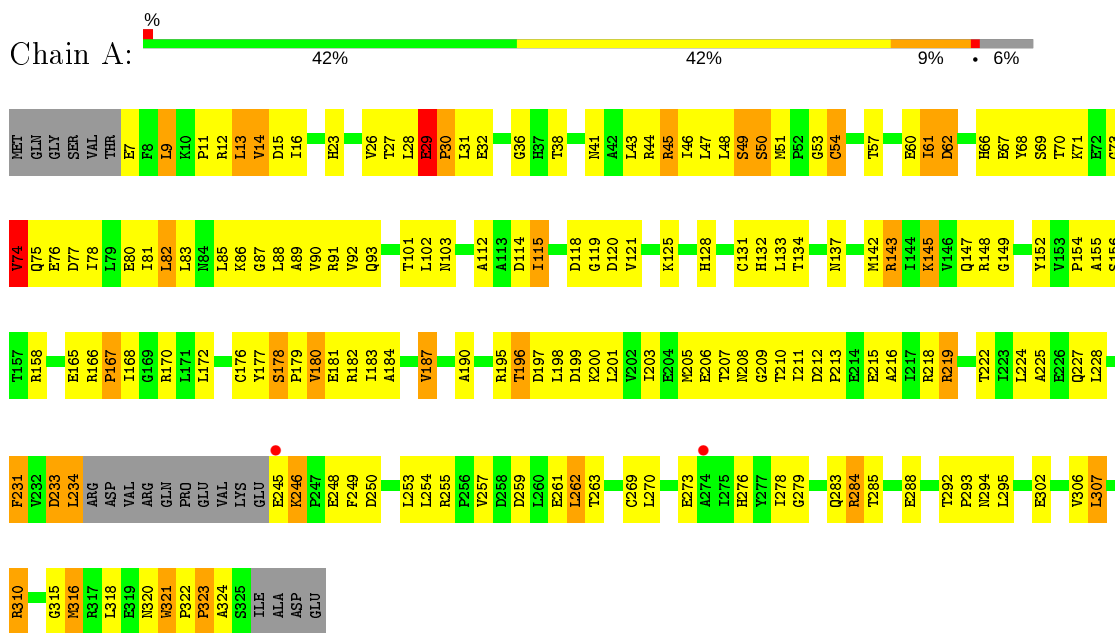
- Molecule 7 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
7	J	2	Total	Zn	0	0
			2	2		
7	D	2	Total	Zn	0	0
			2	2		

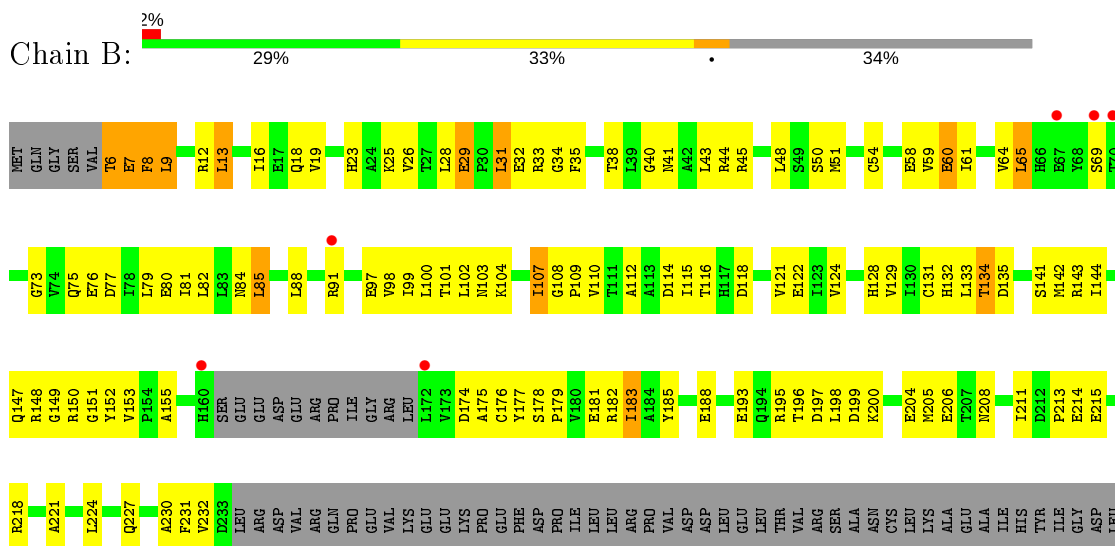
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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 electron 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 dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). 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 subunit alpha

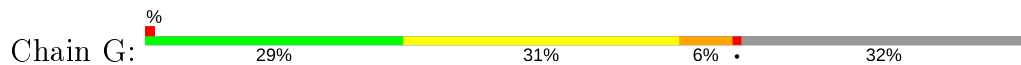


- Molecule 1: DNA-directed RNA polymerase subunit alpha



VAL  
GLN  
THR  
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GLY  
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VAL  
GLU  
LEU  
LEU  
LEU  
LYS  
K10  
P11  
THR  
PRO  
ASN  
LEU  
GLY  
LYS  
LYS  
SER  
SER  
LEU  
THR  
GLU  
ALA

● Molecule 1: DNA-directed RNA polymerase subunit alpha



MET  
GLN  
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SER  
THR  
VAL  
THR  
GLU  
F8  
L9  
K10  
P11  
R12  
L13  
V14  
D15  
V19  
S20  
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T22  
H23

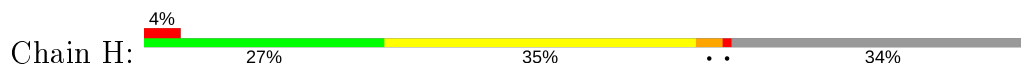
G73  
V74  
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E76  
D77  
I78  
L79  
E80  
I81  
K86  
G87  
L88  
L88  
A89  
V90  
R91  
V92  
K95  
D96  
E97  
V98  
I99  
I100  
T101  
L102  
N103  
K104  
S105  
G108  
P109  
V110  
G110  
M11  
A112  
R115  
D118

K145  
V146  
Q147  
R148  
G149  
R150  
G151  
Y152  
V153  
P154  
H160  
S161  
E162  
E163  
D164  
E165  
R166  
P167  
R170  
L171  
L172  
V173  
D174  
A175  
C176  
P179  
V180  
E181  
R182  
L183  
V187  
A190  
R191  
V192  
E193  
Q194  
R195  
L198  
D199  
L200  
K201  
M205  
E206  
T207  
N208  
R218  
R219  
E226  
Q227  
E229

A230  
F231  
VAL  
SER  
LEU  
ARG  
ASP  
VAL  
GLN  
PRO  
GLU  
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LYS  
GLU  
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ALA  
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● Molecule 1: DNA-directed RNA polymerase subunit alpha



MET  
GLN  
GLY  
SER  
VAL  
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E7  
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K10  
L13  
V14  
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E17  
Q18  
Q18  
V19  
S20  
S21  
T22  
H23  
A24  
K25  
V26  
T27

G63  
V64  
H66  
E67  
E72  
G73  
V74  
Q75  
I78  
E80  
R81  
L82  
L83  
N84  
R85  
K86  
G87  
L88  
A89  
V90  
R91  
V92  
Q93  
R95  
D96  
E97  
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L100  
T101  
L102  
M103  
K104  
S105  
G106  
L107  
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T111  
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A113  
T116  
H117  
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A55  
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V59  
E60  
T61  
D62

H128  
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T134  
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S139  
I140  
S141  
M142  
R143  
A144  
A145  
K146  
Q147  
R148  
R150  
L150  
V153  
P154  
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R158  
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HIS  
SER  
GLU  
GLU  
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V173  
D174  
A175  
C176  
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V180  
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A184  
Y185  
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V192  
E193  
Q194  
R195

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D199  
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L201  
E206  
T207  
N208  
E214  
R218  
R219  
A220  
A221  
T222  
I223  
L224  
Q227  
L228  
E229  
A230  
F231  
V232  
D233  
L234  
ASP  
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K37  
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E40  
Q41  
D42  
F43  
E44  
Y47  
G48  
L49  
A52  
F53  
R54  
S55  
V56  
G60  
S61  
I62  
S63  
G64  
N65

ILE  
ALA  
ASP  
GLU

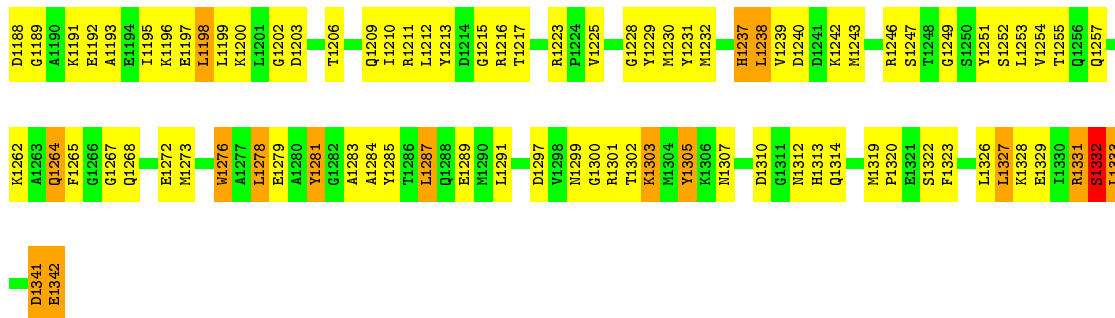
● Molecule 2: DNA-directed RNA polymerase subunit beta



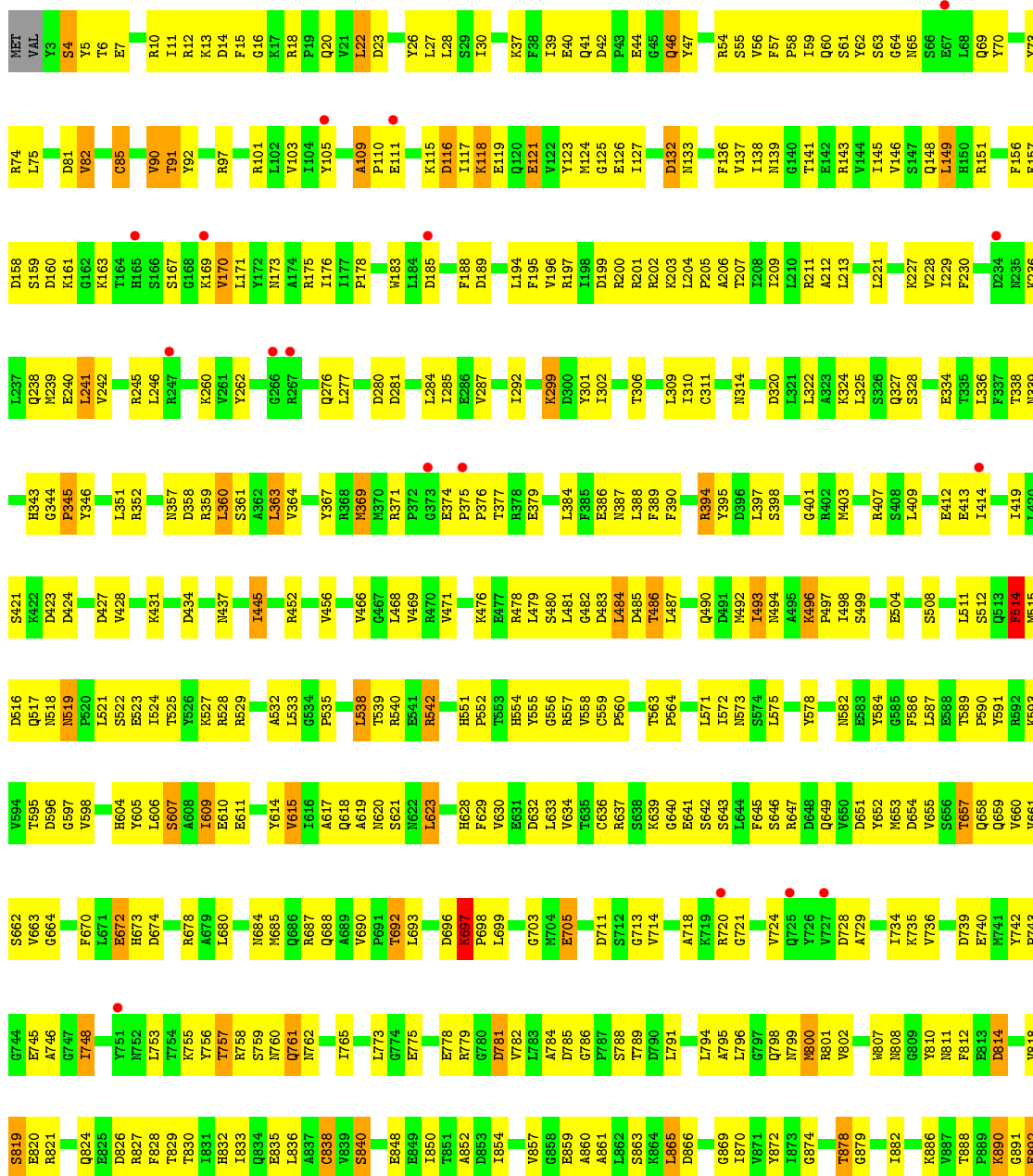
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VAL  
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T5  
Y6  
E7  
K8  
R9  
R10  
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R12  
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V21  
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D23  
V24  
P25  
V26  
L27  
L28  
S29  
I30  
O31  
L32  
D33  
S34  
K37  
F38  
I39  
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Q41  
D42  
F43  
E44  
Y47  
G48  
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A52  
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R54  
S55  
V56  
G60  
S61  
I62  
S63  
G64  
N65







• Molecule 2: DNA-directed RNA polymerase subunit beta













## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	185.36Å 206.28Å 308.69Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	29.90 – 3.60 29.90 – 3.60	Depositor EDS
% Data completeness (in resolution range)	93.7 (29.90-3.60) 93.7 (29.90-3.60)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.01 (at 3.56Å)	Xtrriage
Refinement program	PHENIX (1.10.1_2155: ???)	Depositor
R, $R_{free}$	0.246 , 0.305 0.246 , 0.304	Depositor DCC
$R_{free}$ test set	1932 reflections (1.51%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	142.2	Xtrriage
Anisotropy	0.225	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.27 , 91.1	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.53$ , $\langle L^2 \rangle = 0.37$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
$F_o, F_c$ correlation	0.94	EDS
Total number of atoms	55699	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	157.0	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	0.84	4/2435 (0.2%)	1.07	12/3300 (0.4%)
1	B	0.75	1/1692 (0.1%)	1.01	5/2293 (0.2%)
1	G	0.58	0/1751	1.05	9/2373 (0.4%)
1	H	0.59	0/1686	0.91	4/2285 (0.2%)
2	C	1.17	37/10741 (0.3%)	1.21	65/14492 (0.4%)
2	I	0.80	7/10737 (0.1%)	0.97	15/14487 (0.1%)
3	D	1.21	60/9246 (0.6%)	1.24	74/12478 (0.6%)
3	J	1.02	27/9168 (0.3%)	1.13	52/12374 (0.4%)
4	E	0.65	0/693	0.83	0/935
4	K	0.38	0/629	0.61	0/847
5	F	0.82	2/3857 (0.1%)	1.05	10/5184 (0.2%)
5	L	0.77	3/3872 (0.1%)	0.99	12/5205 (0.2%)
All	All	0.98	141/56507 (0.2%)	1.10	258/76253 (0.3%)

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	A	0	2
1	G	0	1
2	C	0	11
2	I	0	2
3	D	0	12
3	J	0	9
5	F	0	1
5	L	0	1
All	All	0	39

The worst 5 of 141 bond length outliers are listed below:



Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	C	811	ASN	CB-CG	-9.14	1.30	1.51
1	A	131	CYS	CB-SG	-8.93	1.67	1.82
3	J	145	VAL	CB-CG2	-8.81	1.34	1.52
2	C	636	CYS	CB-SG	-8.52	1.67	1.82
3	J	72	CYS	CB-SG	-7.87	1.68	1.82

The worst 5 of 258 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	C	1287	LEU	CB-CG-CD2	-14.16	86.92	111.00
3	D	376	LEU	CB-CG-CD2	-10.83	92.59	111.00
3	D	114	ILE	CG1-CB-CG2	-10.71	87.84	111.40
2	C	796	LEU	CB-CG-CD2	-9.94	94.10	111.00
3	D	188	LEU	CB-CG-CD2	-9.88	94.20	111.00

There are no chirality outliers.

5 of 39 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	321	TRP	Peptide
1	A	49	SER	Mainchain
2	C	109	ALA	Peptide
2	C	236	LYS	Peptide
2	C	473	ARG	Mainchain

## 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	2403	0	2453	197	0
1	B	1672	0	1693	112	0
1	G	1730	0	1756	145	0
1	H	1667	0	1689	123	1
2	C	10572	0	10584	657	3
2	I	10568	0	10578	602	0
3	D	9107	0	9308	612	0
3	J	9029	0	9225	587	0
4	E	691	0	695	22	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	K	627	0	634	26	0
5	F	3806	0	3873	199	2
5	L	3821	0	3884	190	0
6	D	1	0	0	0	0
6	J	1	0	0	0	0
7	D	2	0	0	0	0
7	J	2	0	0	0	0
All	All	55699	0	56372	3190	3

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 28.

The worst 5 of 3190 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)
1:A:27:THR:O	1:A:28:LEU:HD12	1.10	1.23
2:I:27:LEU:O	2:I:528:ARG:NH1	1.78	1.17
1:A:27:THR:O	1:A:28:LEU:CD1	1.93	1.17
3:D:1280:VAL:HG11	3:D:1304:ARG:HH21	1.16	1.08
3:D:660:GLU:HB3	3:D:685:ILE:HD12	1.36	1.08

All (3) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:C:33:ASP:OD1	5:F:554:ARG:NH2[4_455]	1.99	0.21
2:C:44:GLU:OE1	5:F:596:ARG:NH1[4_455]	2.05	0.15
2:C:940:GLU:OE1	1:H:139:SER:OG[4_455]	2.05	0.15

## 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	305/329 (93%)	271 (89%)	25 (8%)	9 (3%)	4	33
1	B	213/329 (65%)	191 (90%)	20 (9%)	2 (1%)	17	57
1	G	222/329 (68%)	182 (82%)	28 (13%)	12 (5%)	2	19
1	H	213/329 (65%)	193 (91%)	20 (9%)	0	100	100
2	C	1338/1342 (100%)	1225 (92%)	103 (8%)	10 (1%)	22	61
2	I	1338/1342 (100%)	1226 (92%)	100 (8%)	12 (1%)	17	57
3	D	1162/1407 (83%)	1074 (92%)	79 (7%)	9 (1%)	19	59
3	J	1151/1407 (82%)	1064 (92%)	82 (7%)	5 (0%)	34	71
4	E	87/91 (96%)	79 (91%)	8 (9%)	0	100	100
4	K	77/91 (85%)	74 (96%)	3 (4%)	0	100	100
5	F	461/613 (75%)	422 (92%)	37 (8%)	2 (0%)	34	71
5	L	463/613 (76%)	423 (91%)	39 (8%)	1 (0%)	47	79
All	All	7030/8222 (86%)	6424 (91%)	544 (8%)	62 (1%)	17	57

5 of 62 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	29	GLU
1	A	30	PRO
1	A	324	ALA
1	B	232	VAL
2	C	345	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 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	268/286 (94%)	249 (93%)	19 (7%)	14	48
1	B	184/286 (64%)	166 (90%)	18 (10%)	8	36
1	G	191/286 (67%)	179 (94%)	12 (6%)	18	53
1	H	183/286 (64%)	165 (90%)	18 (10%)	8	36

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
2	C	1155/1157 (100%)	1046 (91%)	109 (9%)	8	38
2	I	1154/1157 (100%)	1046 (91%)	108 (9%)	8	38
3	D	975/1168 (84%)	875 (90%)	100 (10%)	7	34
3	J	967/1168 (83%)	869 (90%)	98 (10%)	7	34
4	E	72/75 (96%)	64 (89%)	8 (11%)	6	31
4	K	67/75 (89%)	63 (94%)	4 (6%)	19	54
5	F	416/540 (77%)	373 (90%)	43 (10%)	7	34
5	L	418/540 (77%)	372 (89%)	46 (11%)	6	31
All	All	6050/7024 (86%)	5467 (90%)	583 (10%)	8	37

5 of 583 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
5	F	335	GLU
1	H	193	GLU
5	L	100	MET
5	F	445	ASP
5	F	606	VAL

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 78 such sidechains are listed below:

Mol	Chain	Res	Type
5	F	396	ASN
2	I	343	HIS
5	L	129	GLN
5	F	406	GLN
5	F	518	HIS

### 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 carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

Of 6 ligands modelled in this entry, 6 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](#)

There are no chain breaks in this entry.

## 6 Fit of model and data [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

In the following table, the column labelled '#RSRZ > 2' contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q < 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ > 2	OWAB(Å <sup>2</sup> )	Q < 0.9
1	A	309/329 (93%)	-0.31	2 (0%) 89 81	99, 147, 225, 245	0
1	B	217/329 (65%)	-0.01	6 (2%) 53 37	112, 194, 254, 272	0
1	G	224/329 (68%)	-0.07	3 (1%) 77 63	163, 206, 241, 270	0
1	H	217/329 (65%)	0.07	13 (5%) 21 12	146, 213, 252, 285	0
2	C	1340/1342 (99%)	-0.35	21 (1%) 72 57	74, 121, 234, 285	0
2	I	1340/1342 (99%)	-0.16	48 (3%) 42 28	86, 159, 261, 388	0
3	D	1166/1407 (82%)	-0.30	14 (1%) 79 66	72, 112, 215, 264	0
3	J	1155/1407 (82%)	-0.22	24 (2%) 63 48	86, 138, 229, 274	0
4	E	89/91 (97%)	-0.02	2 (2%) 62 45	147, 183, 216, 241	0
4	K	79/91 (86%)	0.79	14 (17%) 1 1	202, 277, 319, 350	0
5	F	467/613 (76%)	-0.23	12 (2%) 56 40	93, 165, 290, 340	0
5	L	469/613 (76%)	-0.29	7 (1%) 73 60	116, 178, 288, 353	0
All	All	7072/8222 (86%)	-0.22	166 (2%) 60 44	72, 147, 251, 388	0

The worst 5 of 166 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	I	982	GLY	9.1
3	D	335	GLN	6.4
2	I	1001	GLY	5.5
1	B	160	HIS	5.0
2	I	1000	LEU	5.0

### 6.2 Non-standard residues in protein, DNA, RNA chains [i](#)

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

### 6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

### 6.4 Ligands [i](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors( $\text{\AA}^2$ )	Q<0.9
7	ZN	D	1502	1/1	0.81	0.13	134,134,134,134	0
6	MG	J	1501	1/1	0.92	0.35	94,94,94,94	0
6	MG	D	1501	1/1	0.94	0.54	87,87,87,87	0
7	ZN	J	1503	1/1	0.95	0.09	97,97,97,97	0
7	ZN	J	1502	1/1	0.97	0.02	131,131,131,131	0
7	ZN	D	1503	1/1	0.99	0.06	51,51,51,51	0

### 6.5 Other polymers [i](#)

There are no such residues in this entry.