



# wwPDB X-ray Structure Validation Summary Report ⓘ

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PDB ID : 8JZT / pdb\_00008jzt  
Title : The sigF and anti-sigma factor complex  
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Deposited on : 2023-07-06  
Resolution : 1.94 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

<https://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 : 4-5-2 with Phenix2.0  
Mogul : **NOT EXECUTED**  
Xtrriage (Phenix) : 2.0  
EDS : **NOT EXECUTED**  
Buster-report : **NOT EXECUTED**  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.49

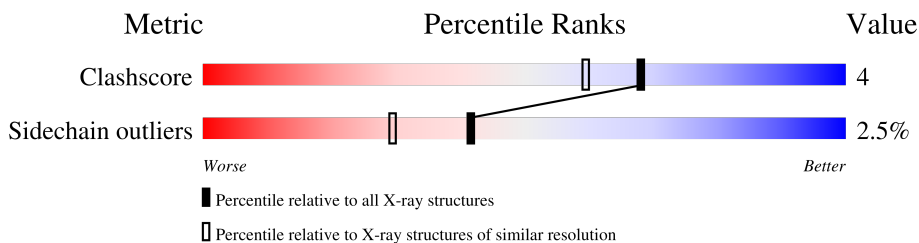
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.94 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))
Clashscore	190562	1494 (1.94-1.94)
Sidechain outliers	187428	1479 (1.94-1.94)

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  $\leq 5\%$

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	69	 77% 6% 17%
1	C	69	 71% 20% 7%
1	E	69	 93% 7%
2	B	141	 81% 10% 7%
2	D	141	 87% 5% 8%
2	F	141	 85% 8% 6%

## 2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 5033 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 RNA polymerase sigma factor SigF.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	57	Total	C	N	O	S	0	0	0
			458	289	85	82	2			
1	C	64	Total	C	N	O	S	0	1	0
			521	327	95	96	3			
1	E	69	Total	C	N	O	S	0	0	0
			552	345	104	101	2			

- Molecule 2 is a protein called Anti-sigma-F factor RsbW.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	131	Total	C	N	O	S	0	1	0
			1011	632	185	191	3			
2	D	130	Total	C	N	O	S	0	1	0
			980	612	176	190	2			
2	F	133	Total	C	N	O	S	0	5	0
			1053	660	189	201	3			

There are 21 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	5	MET	-	initiating methionine	UNP P9WGX7
B	6	ALA	-	expression tag	UNP P9WGX7
B	7	ASP	-	expression tag	UNP P9WGX7
B	8	LEU	-	expression tag	UNP P9WGX7
B	9	ASN	-	expression tag	UNP P9WGX7
B	10	TRP	-	expression tag	UNP P9WGX7
B	11	MET	-	expression tag	UNP P9WGX7
D	5	MET	-	initiating methionine	UNP P9WGX7
D	6	ALA	-	expression tag	UNP P9WGX7
D	7	ASP	-	expression tag	UNP P9WGX7
D	8	LEU	-	expression tag	UNP P9WGX7
D	9	ASN	-	expression tag	UNP P9WGX7

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Chain	Residue	Modelled	Actual	Comment	Reference
D	10	TRP	-	expression tag	UNP P9WGX7
D	11	MET	-	expression tag	UNP P9WGX7
F	5	MET	-	initiating methionine	UNP P9WGX7
F	6	ALA	-	expression tag	UNP P9WGX7
F	7	ASP	-	expression tag	UNP P9WGX7
F	8	LEU	-	expression tag	UNP P9WGX7
F	9	ASN	-	expression tag	UNP P9WGX7
F	10	TRP	-	expression tag	UNP P9WGX7
F	11	MET	-	expression tag	UNP P9WGX7

- Molecule 3 is water.


Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	40	Total O 40 40	0	0
3	B	112	Total O 112 112	0	0
3	C	23	Total O 23 23	0	0
3	D	105	Total O 105 105	0	0
3	E	65	Total O 65 65	0	0
3	F	113	Total O 113 113	0	0

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

These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry. 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. 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.

Note EDS was not executed.

- Molecule 1: RNA polymerase sigma factor SigF

Chain A: 



- Molecule 1: RNA polymerase sigma factor SigF

Chain C: 




- Molecule 1: RNA polymerase sigma factor SigF

Chain E: 




- Molecule 2: Anti-sigma-F factor RsbW

Chain B: 




- Molecule 2: Anti-sigma-F factor RsbW

Chain D: 



- Molecule 2: Anti-sigma-F factor RsbW

Chain F:  85% 8% \*\* 6%



## 4 Data and refinement statistics i

EDS was not executed - this section is therefore incomplete.

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	134.53Å 79.55Å 77.60Å 90.00° 91.93° 90.00°	Depositor
Resolution (Å)	38.78 – 1.94	Depositor
% Data completeness (in resolution range)	100.0 (38.78-1.94)	Depositor
$R_{merge}$	0.07	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.46 (at 1.95Å)	Xtrriage
Refinement program	PHENIX (1.20.1_4487: ???)	Depositor
R, $R_{free}$	0.169 , 0.209	Depositor
Wilson B-factor (Å <sup>2</sup> )	32.4	Xtrriage
Anisotropy	0.018	Xtrriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.008 for -1/2*h+3/2*k,1/2*h+1/2*k,-l 0.007 for -1/2*h-3/2*k,-1/2*h+1/2*k,-l 0.035 for 1/2*h+3/2*k,1/2*h-1/2*k,-l 0.048 for 1/2*h-3/2*k,-1/2*h-1/2*k,-l 0.017 for -h,-k,l	Xtrriage
Total number of atoms	5033	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	43.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.35% 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](#)

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	0.32	0/462	0.49	0/622
1	C	0.47	0/525	0.71	0/707
1	E	0.35	0/556	0.53	0/748
2	B	0.42	0/1026	0.59	0/1399
2	D	0.38	0/993	0.54	0/1358
2	F	0.46	0/1069	0.68	0/1460
All	All	0.41	0/4631	0.60	0/6294

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	2
2	F	0	4
All	All	0	6

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

5 of 6 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
2	B	13	ARG	Sidechain
2	B	54	ARG	Sidechain
2	F	81	ARG	Sidechain
2	F	82	LYS	Mainchain
2	F	83[A]	ASP	Mainchain

## 5.2 Too-close contacts

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	458	0	484	2	0
1	C	521	0	540	8	0
1	E	552	0	575	4	0
2	B	1011	0	1011	10	0
2	D	980	0	968	8	0
2	F	1053	0	1043	7	0
3	A	40	0	0	0	0
3	B	112	0	0	0	0
3	C	23	0	0	0	0
3	D	105	0	0	1	0
3	E	65	0	0	0	0
3	F	113	0	0	1	1
All	All	5033	0	4621	33	1

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 4.

The worst 5 of 33 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:C:242:GLN:HB3	2:D:47:PHE:CE1	2.31	0.65
2:D:10:TRP:CB	3:D:255:HOH:O	2.44	0.65
1:E:261:GLU:HG2	3:F:295:HOH:O	1.96	0.64
2:F:81:ARG:O	2:F:140:ARG:NH1	2.32	0.61
1:E:242:GLN:HB3	2:F:47[B]:PHE:CZ	2.39	0.58

All (1) 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)
3:F:298:HOH:O	3:F:302:HOH:O[2_656]	2.12	0.08

## 5.3 Torsion angles [i](#)

### 5.3.1 Protein backbone [i](#)

There are no protein backbone outliers to report in this entry.

### 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	51/62 (82%)	50 (98%)	1 (2%)	48	39
1	C	58/62 (94%)	52 (90%)	6 (10%)	7	1
1	E	60/62 (97%)	60 (100%)	0	100	100
2	B	107/113 (95%)	104 (97%)	3 (3%)	38	25
2	D	103/113 (91%)	103 (100%)	0	100	100
2	F	112/113 (99%)	110 (98%)	2 (2%)	51	43
All	All	491/525 (94%)	479 (98%)	12 (2%)	42	31

5 of 12 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	205	VAL
1	C	251	LYS
2	F	82	LYS
1	C	252	SER
2	B	54	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 7 such sidechains are listed below:

Mol	Chain	Res	Type
2	D	124	GLN
1	E	199	GLN
2	F	12	GLN
2	F	9	ASN
1	C	242	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

Mogul was not executed - this section is therefore empty.

## 5.5 Carbohydrates [i](#)

Mogul was not executed - this section is therefore empty.

## 5.6 Ligand geometry [i](#)

Mogul was not executed - this section is therefore empty.

## 5.7 Other polymers [i](#)

Mogul was not executed - this section is therefore empty.

## 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](#)

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

### 6.3 Carbohydrates [i](#)

EDS was not executed - this section is therefore empty.

### 6.4 Ligands [i](#)

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.