



wwPDB EM Validation Summary Report ⓘ

Jul 8, 2025 – 03:09 PM JST

PDB ID : 8XXT / pdb_00008xxt
EMDB ID : EMD-38760
Title : ASFV RNAP M1249L C-tail occupied complex2 (MCOC2)
Authors : Zhu, G.L.; Zhu, Y.; Zhu, Z.X.; Sun, F.; Zheng, H.X.
Deposited on : 2024-01-19
Resolution : 2.85 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 ⓘ 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 ⓘ](#)) were used in the production of this report:

EMDB validation analysis : **FAILED**
MolProbity : 4-5-2 with Phenix2.0rc1
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)
MapQ : **FAILED**
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : 2.44

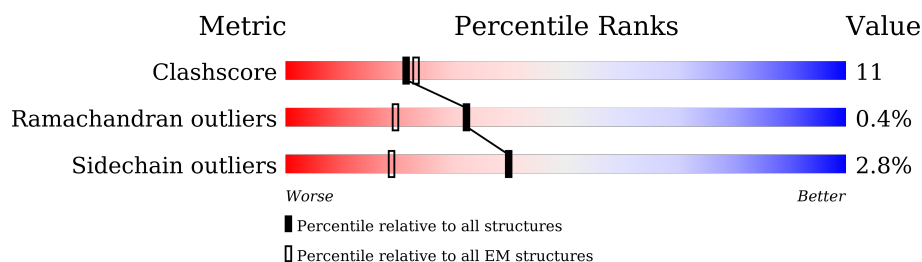
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 2.85 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)
Clashscore	210492	15764
Ramachandran outliers	207382	16835
Sidechain outliers	206894	16415

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

Mol	Chain	Length	Quality of chain
1	A	1441	75% 23% .
2	B	1235	67% 30% ..
3	C	358	77% 23%
4	D	205	72% 26% .
5	E	139	68% 23% . 7%
6	F	334	63% 35% .
7	G	105	68% 31% .
8	H	80	64% 22% 14%
9	I	1170	39% 15% . 45%

2 Entry composition

There are 11 unique types of molecules in this entry. The entry contains 35783 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 subunit.

Mol	Chain	Residues	Atoms					AltConf	Trace
1	A	1415	Total	C	N	O	S	0	0
			11244	7135	1955	2092	62		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	1226	Total	C	N	O	S	0	0
			9701	6124	1706	1819	52		

- Molecule 3 is a protein called DNA-directed RNA polymerase RPB3-11 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
3	C	358	Total	C	N	O	S	0	0
			2907	1885	481	529	12		

- Molecule 4 is a protein called DNA-directed RNA polymerase RPB5 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
4	D	205	Total	C	N	O	S	0	0
			1669	1088	278	295	8		

- Molecule 5 is a protein called C147L.

Mol	Chain	Residues	Atoms					AltConf	Trace
5	E	129	Total	C	N	O	S	0	0
			1021	648	167	200	6		

- Molecule 6 is a protein called D339L.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	334	Total	C	N	O	S	0	0
			2687	1726	444	503	14		

- Molecule 7 is a protein called C122R.

Mol	Chain	Residues	Atoms					AltConf	Trace
7	G	105	Total	C	N	O	S	0	0
			816	507	141	153	15		

- Molecule 8 is a protein called DNA-directed RNA polymerase RPB10 homolog.

Mol	Chain	Residues	Atoms					AltConf	Trace
8	H	69	Total	C	N	O	S	0	0
			553	362	89	95	7		

- Molecule 9 is a protein called M1249L.

Mol	Chain	Residues	Atoms					AltConf	Trace
9	I	638	Total	C	N	O	S	0	0
			5177	3329	858	968	22		

- Molecule 10 is ZINC ION (CCD ID: ZN) (formula: Zn) (labeled as "Ligand of Interest" by depositor).

Mol	Chain	Residues	Atoms		AltConf
10	A	3	Total	Zn	0
			3	3	
10	B	1	Total	Zn	0
			1	1	
10	G	2	Total	Zn	0
			2	2	
10	H	1	Total	Zn	0
			1	1	

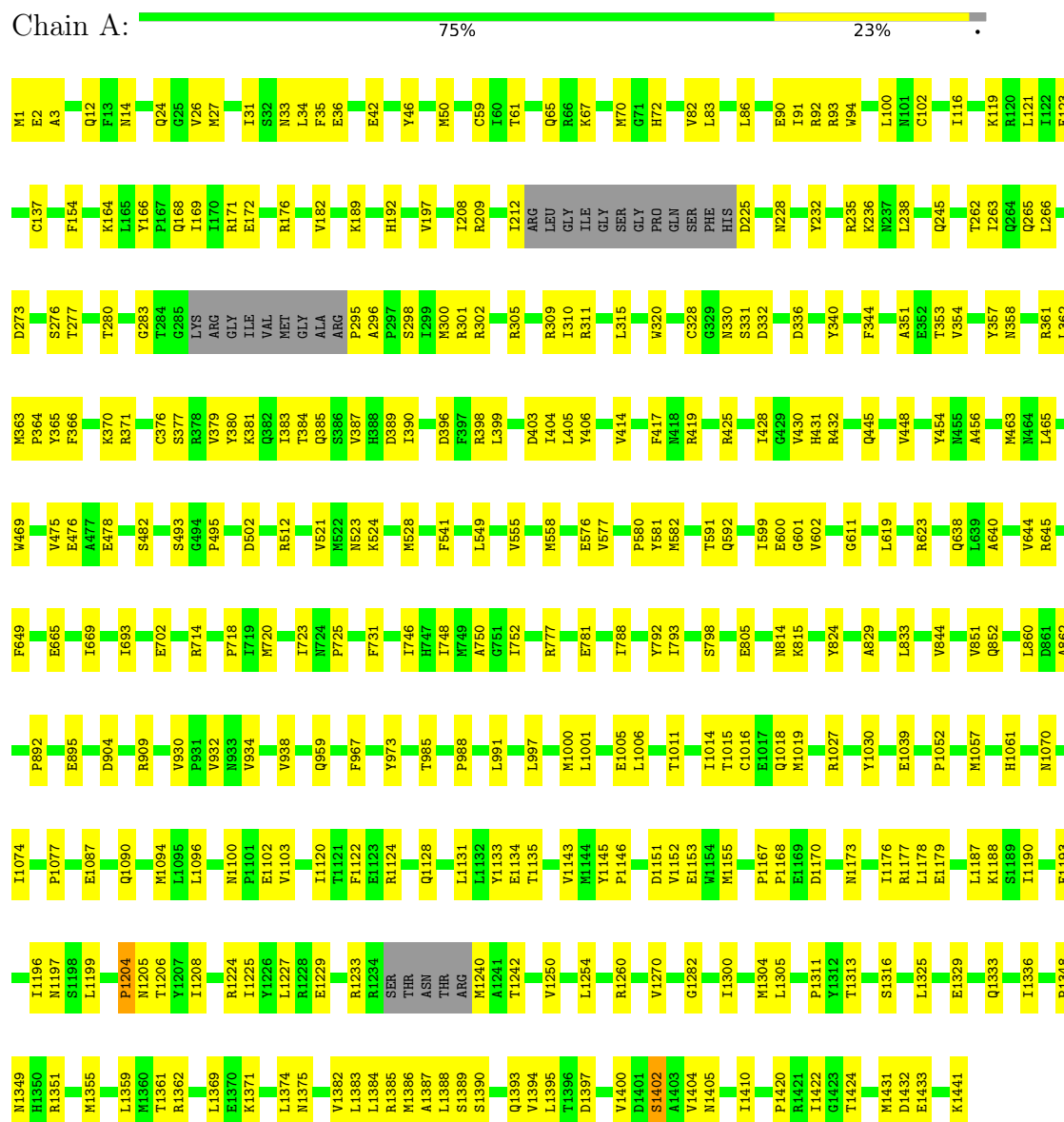
- Molecule 11 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

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

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.

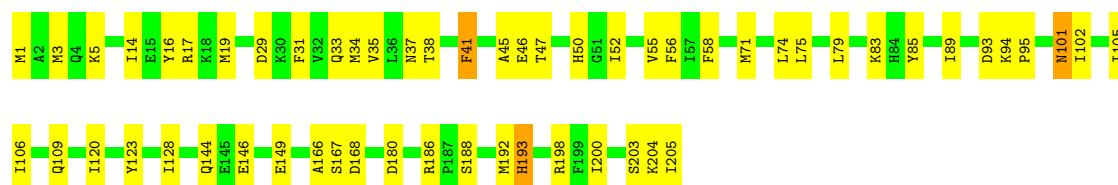
- Molecule 1: DNA-directed RNA polymerase subunit



- Molecule 2: DNA-directed RNA polymerase subunit beta

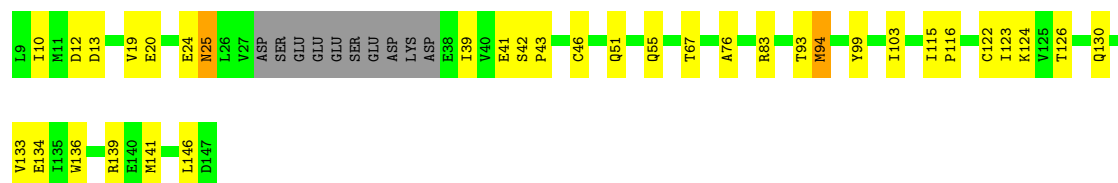


Chain D:  72% 26% .



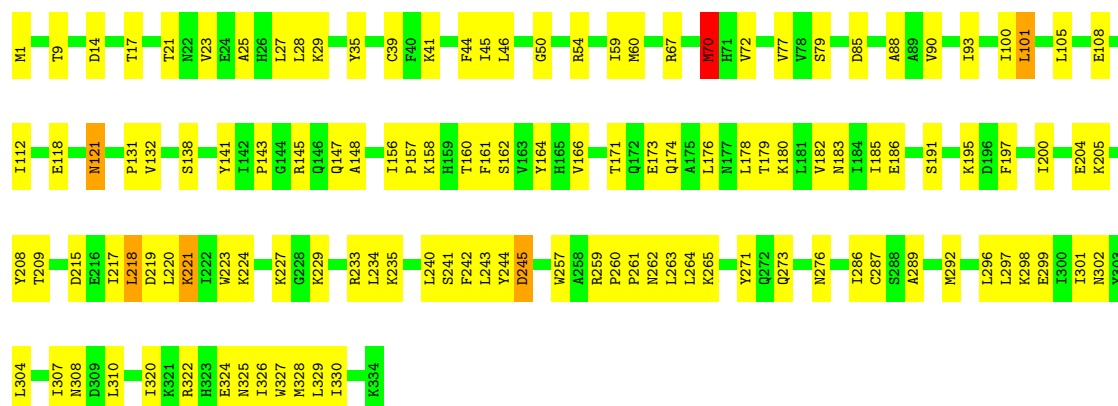
• Molecule 5: C147L

Chain E:  68% 23% 7% .



• Molecule 6: D339L

Chain F:  63% 35% .



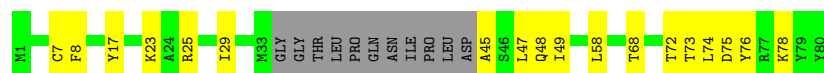
• Molecule 7: C122R

Chain G:  68% 31% .



• Molecule 8: DNA-directed RNA polymerase RPB10 homolog

Chain H:  64% 22% 14% .



• Molecule 9: M1249L

Frequency	Percentage
Daily	39%
Weekly	15%
Monthly	0%
Never	45%



4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	83920	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 ($e^-/\text{\AA}^2$)	60	Depositor
Minimum defocus (nm)	1000	Depositor
Maximum defocus (nm)	2000	Depositor
Magnification	Not provided	
Image detector	GATAN K3 BIOQUANTUM (6k x 4k)	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, 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	0.19	0/11462	0.32	1/15525 (0.0%)
2	B	0.20	0/9896	0.36	1/13394 (0.0%)
3	C	0.20	0/2969	0.33	0/4012
4	D	0.17	0/1708	0.37	0/2311
5	E	0.20	0/1033	0.36	0/1398
6	F	0.17	0/2740	0.42	0/3709
7	G	0.19	0/828	0.42	0/1109
8	H	0.24	0/563	0.41	0/758
9	I	0.17	0/5298	0.39	1/7172 (0.0%)
All	All	0.19	0/36497	0.36	3/49388 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
9	I	124	PRO	CA-N-CD	-9.28	99.01	112.00
1	A	1204	PRO	CA-N-CD	-8.63	99.92	112.00
2	B	440	PRO	CA-N-CD	-5.94	103.68	112.00

There are no chirality outliers.

There are no planarity outliers.

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	11244	0	11362	231	0
2	B	9701	0	9657	304	0
3	C	2907	0	2982	56	0
4	D	1669	0	1713	44	0
5	E	1021	0	1054	25	0
6	F	2687	0	2721	88	0
7	G	816	0	814	23	0
8	H	553	0	580	28	0
9	I	5177	0	5136	140	0
10	A	3	0	0	0	0
10	B	1	0	0	0	0
10	G	2	0	0	0	0
10	H	1	0	0	0	0
11	A	1	0	0	0	0
All	All	35783	0	36019	824	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 11.

The worst 5 of 824 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)
8:H:48:GLN:HB2	9:I:821:PHE:H	1.24	1.03
3:C:29:LEU:HD22	8:H:23:LYS:HD3	1.54	0.88
4:D:192:MET:O	4:D:193:HIS:ND1	2.08	0.86
2:B:491:LYS:HE2	2:B:527:HIS:HB3	1.60	0.84
2:B:1161:MET:O	2:B:1163:THR:N	2.13	0.81

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	1407/1441 (98%)	1351 (96%)	51 (4%)	5 (0%)	30	49
2	B	1222/1235 (99%)	1130 (92%)	86 (7%)	6 (0%)	25	43
3	C	356/358 (99%)	338 (95%)	18 (5%)	0	100	100
4	D	203/205 (99%)	196 (97%)	7 (3%)	0	100	100
5	E	125/139 (90%)	108 (86%)	17 (14%)	0	100	100
6	F	332/334 (99%)	298 (90%)	30 (9%)	4 (1%)	11	23
7	G	103/105 (98%)	95 (92%)	7 (7%)	1 (1%)	13	26
8	H	65/80 (81%)	59 (91%)	6 (9%)	0	100	100
9	I	630/1170 (54%)	588 (93%)	40 (6%)	2 (0%)	37	55
All	All	4443/5067 (88%)	4163 (94%)	262 (6%)	18 (0%)	32	49

5 of 18 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	582	MET
2	B	421	SER
2	B	1162	GLN
2	B	1202	ASP
9	I	94	GLU

5.3.2 Protein sidechains ⓘ

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

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	1250/1270 (98%)	1229 (98%)	21 (2%)	56	78
2	B	1066/1074 (99%)	1034 (97%)	32 (3%)	36	62
3	C	327/327 (100%)	325 (99%)	2 (1%)	84	92
4	D	185/185 (100%)	178 (96%)	7 (4%)	28	54
5	E	119/129 (92%)	114 (96%)	5 (4%)	25	48
6	F	308/308 (100%)	292 (95%)	16 (5%)	19	38
7	G	96/96 (100%)	93 (97%)	3 (3%)	35	61

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles
8	H	61/70 (87%)	60 (98%)	1 (2%)	58 79
9	I	572/1057 (54%)	549 (96%)	23 (4%)	27 51
All	All	3984/4516 (88%)	3874 (97%)	110 (3%)	40 64

5 of 110 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
4	D	101	ASN
6	F	93	ILE
9	I	1218	LEU
9	I	775	THR
4	D	167	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 59 such sidechains are listed below:

Mol	Chain	Res	Type
2	B	598	GLN
9	I	1123	HIS
2	B	1227	ASN
9	I	1085	HIS
9	I	812	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](#)

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 8 ligands modelled in this entry, 8 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.