



wwPDB EM Validation Summary Report ⓘ

Jul 16, 2025 – 01:43 AM JST

PDB ID : 8Y0E / pdb_00008y0e
EMDB ID : EMD-38802
Title : ASFV RNAP M1249L C-tail occupied complex4 (MCOC4)
Authors : Zhu, G.L.; Zhu, Y.; Zhu, Z.X.; Sun, F.; Zheng, H.X.
Deposited on : 2024-01-22
Resolution : 3.00 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

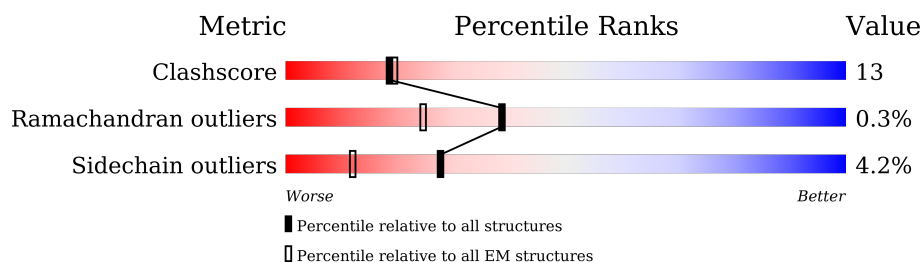
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

ELECTRON MICROSCOPY

The reported resolution of this entry is 3.00 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	1450	68% 27% . .
2	B	1242	62% 33% . .
3	C	359	74% 25% .
4	D	205	74% 25% .
5	E	147	49% 22% . 27%
6	F	339	44% 24% . 30%
7	G	105	59% 39% .
8	H	80	46% 40% 14%
9	I	1249	12% 6% 81%

2 Entry composition

There are 11 unique types of molecules in this entry. The entry contains 31248 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	1400	Total	C	N	O	S	0	0
			11157	7085	1939	2071	62		

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

Mol	Chain	Residues	Atoms					AltConf	Trace
2	B	1200	Total	C	N	O	S	0	0
			9493	5994	1666	1782	51		

- 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	107	Total	C	N	O	S	0	0
			839	533	144	157	5		

- Molecule 6 is a protein called D339L.

Mol	Chain	Residues	Atoms					AltConf	Trace
6	F	237	Total	C	N	O	S	0	0
			1906	1226	315	354	11		

- 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	239	Total	C	N	O	S	0	0
			1901	1221	301	371	8		

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

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

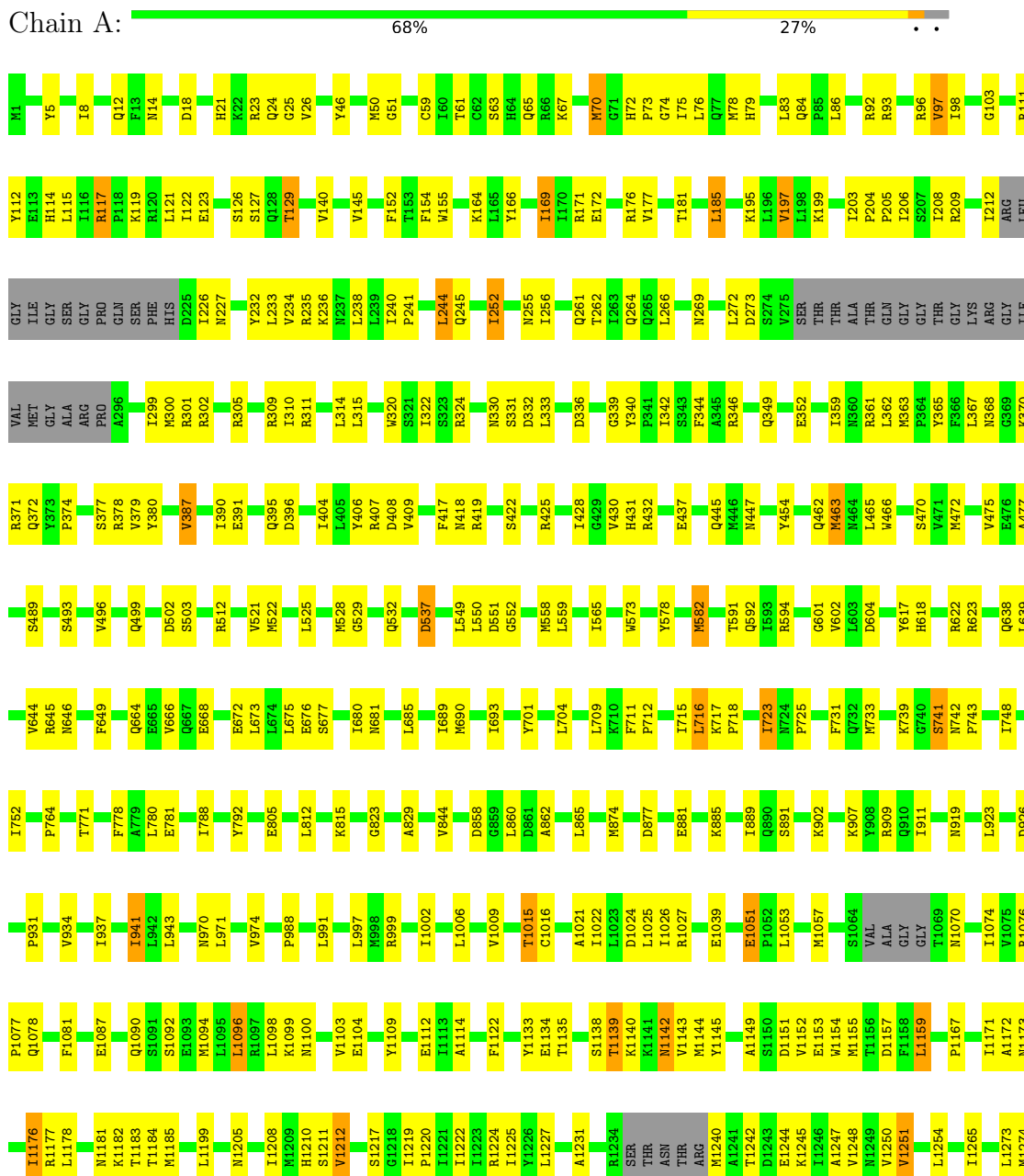
- Molecule 11 is MAGNESIUM ION (CCD ID: MG) (formula: Mg) (labeled as "Ligand of Interest" by depositor).

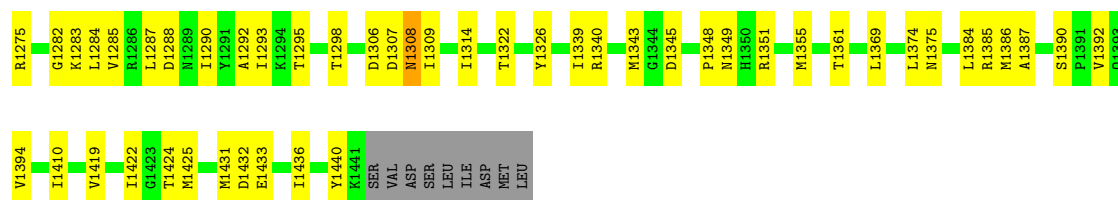
Mol	Chain	Residues	Atoms		AltConf
11	A	1	Total	Mg	0
			1	1	

3 Residue-property plots

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.

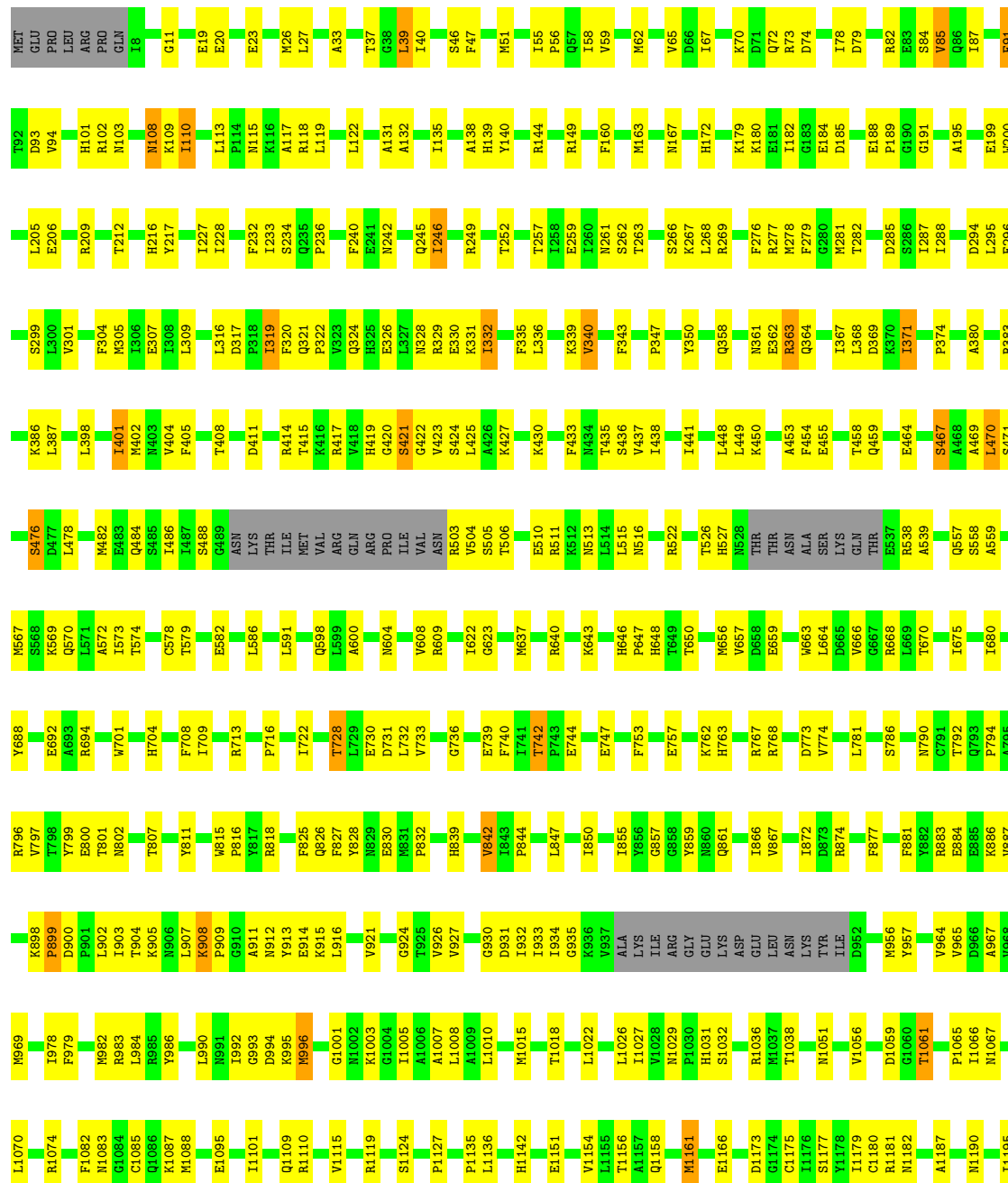
- Molecule 1: DNA-directed RNA polymerase subunit

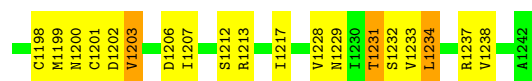




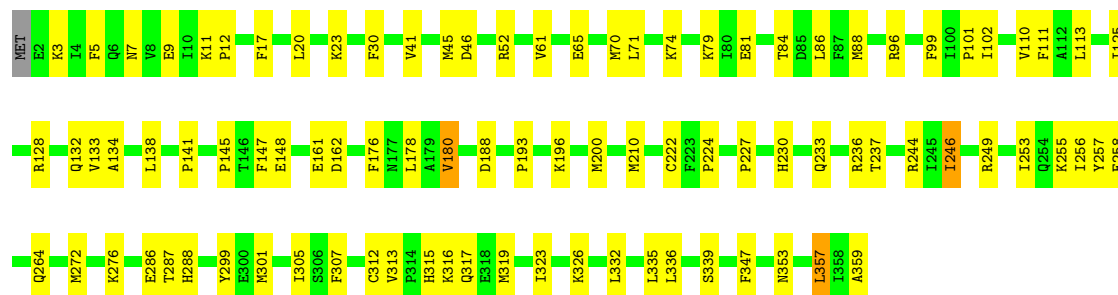
• Molecule 2: DNA-directed RNA polymerase subunit beta

Chain B: 62% 33%

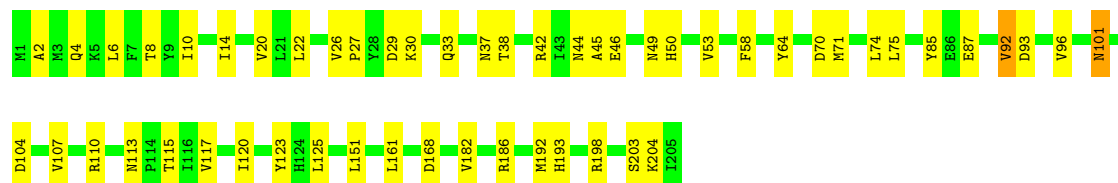




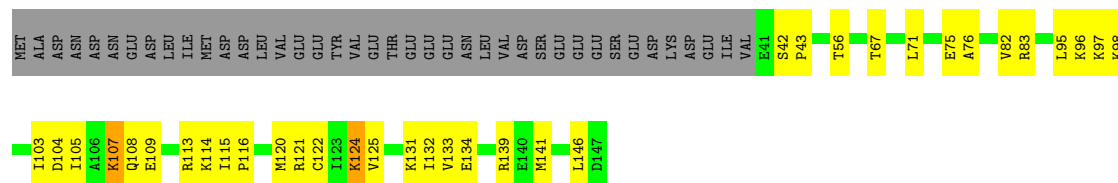
- Molecule 3: DNA-directed RNA polymerase RPB3-11 homolog



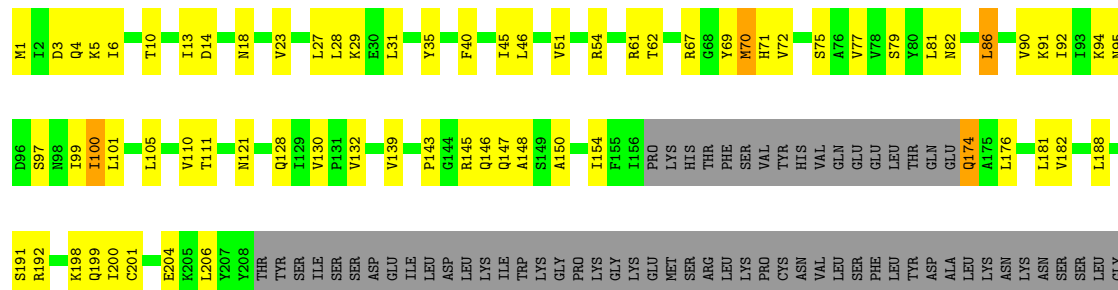
- Molecule 4: DNA-directed RNA polymerase RPB5 homolog



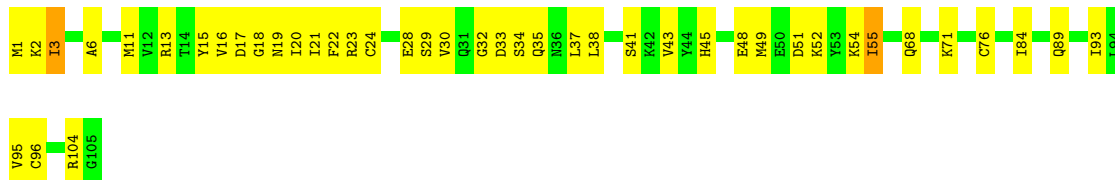
- Molecule 5: C147L



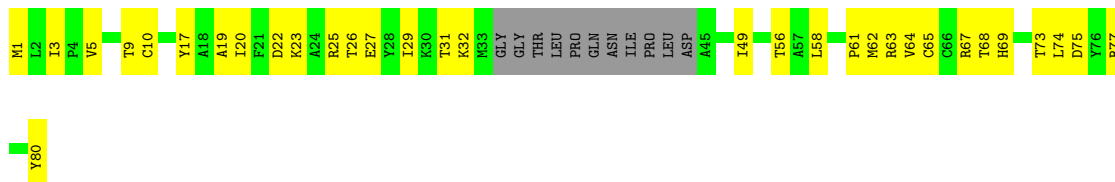
- Molecule 6: D339L



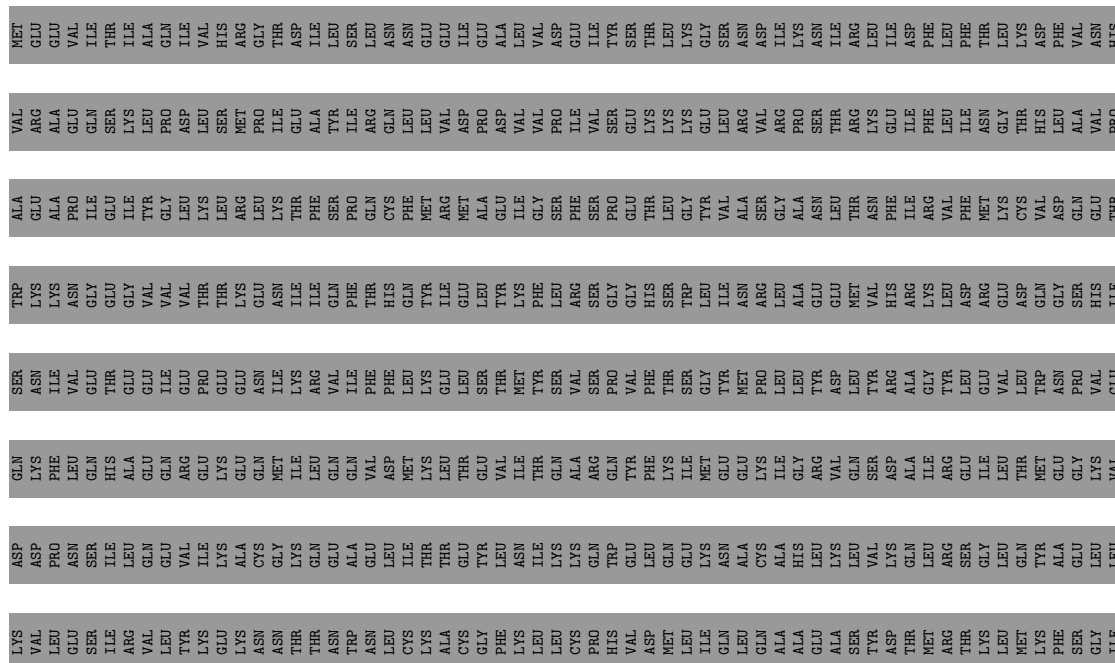
- Molecule 7: C122R



- Molecule 8: DNA-directed RNA polymerase RPB10 homolog



- Molecule 9: M1249L





4 Experimental information

Property	Value	Source
EM reconstruction method	SINGLE PARTICLE	Depositor
Imposed symmetry	POINT, Not provided	
Number of particles used	65385	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	0.24	0/11373	0.33	0/15402
2	B	0.24	0/9684	0.39	2/13104 (0.0%)
3	C	0.25	0/2969	0.37	0/4012
4	D	0.21	0/1708	0.36	0/2311
5	E	0.24	0/851	0.37	0/1151
6	F	0.16	0/1936	0.38	1/2616 (0.0%)
7	G	0.22	0/828	0.46	0/1109
8	H	0.25	0/563	0.38	0/758
9	I	0.16	0/1947	0.34	0/2648
All	All	0.23	0/31859	0.36	3/43111 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed($^{\circ}$)	Ideal($^{\circ}$)
2	B	899	PRO	CA-N-CD	-12.44	94.58	112.00
2	B	899	PRO	N-CD-CG	-6.37	93.64	103.20
6	F	143	PRO	CA-N-CD	-5.50	104.30	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	11157	0	11278	275	0
2	B	9493	0	9426	313	0
3	C	2907	0	2982	67	0
4	D	1669	0	1713	26	0
5	E	839	0	883	25	0
6	F	1906	0	1943	57	0
7	G	816	0	813	33	0
8	H	553	0	580	27	0
9	I	1901	0	1860	67	0
10	A	2	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	31248	0	31478	800	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 13.

The worst 5 of 800 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)
3:C:353:ASN:O	3:C:357:LEU:HB2	1.79	0.82
8:H:17:TYR:HB3	8:H:58:LEU:HD22	1.61	0.81
1:A:1074:ILE:HG22	1:A:1078:GLN:HG3	1.63	0.81
2:B:205:LEU:HG	2:B:505:SER:HB2	1.65	0.79
4:D:49:ASN:O	4:D:49:ASN:ND2	2.17	0.77

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	1390/1450 (96%)	1326 (95%)	60 (4%)	4 (0%)	37	70
2	B	1192/1242 (96%)	1107 (93%)	81 (7%)	4 (0%)	37	70
3	C	356/359 (99%)	341 (96%)	15 (4%)	0	100	100
4	D	203/205 (99%)	197 (97%)	6 (3%)	0	100	100
5	E	105/147 (71%)	91 (87%)	13 (12%)	1 (1%)	13	46
6	F	231/339 (68%)	211 (91%)	17 (7%)	3 (1%)	10	39
7	G	103/105 (98%)	94 (91%)	8 (8%)	1 (1%)	13	46
8	H	65/80 (81%)	64 (98%)	1 (2%)	0	100	100
9	I	237/1249 (19%)	222 (94%)	15 (6%)	0	100	100
All	All	3882/5176 (75%)	3653 (94%)	216 (6%)	13 (0%)	38	70

5 of 13 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	1139	THR
1	A	1142	ASN
2	B	1202	ASP
7	G	34	SER
6	F	70	MET

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	1242/1279 (97%)	1192 (96%)	50 (4%)	27	61
2	B	1042/1081 (96%)	1001 (96%)	41 (4%)	27	61
3	C	327/328 (100%)	319 (98%)	8 (2%)	44	74
4	D	185/185 (100%)	172 (93%)	13 (7%)	12	41
5	E	97/136 (71%)	93 (96%)	4 (4%)	26	60
6	F	218/312 (70%)	208 (95%)	10 (5%)	23	56
7	G	96/96 (100%)	90 (94%)	6 (6%)	15	45

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
8	H	61/70 (87%)	61 (100%)	0	100	100
9	I	215/1130 (19%)	202 (94%)	13 (6%)	16	47
All	All	3483/4617 (75%)	3338 (96%)	145 (4%)	27	59

5 of 145 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
5	E	125	VAL
9	I	1222	ASP
6	F	86	LEU
7	G	48	GLU
1	A	1392	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 32 such sidechains are listed below:

Mol	Chain	Res	Type
3	C	233	GLN
3	C	353	ASN
1	A	1036	ASN
1	A	984	GLN
5	E	69	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 7 ligands modelled in this entry, 7 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.