



wwPDB X-ray Structure Validation Summary Report ⓘ

Oct 11, 2023 – 04:10 pm BST

PDB ID : 8P24
Title : The crystal structure of the C-terminal domain of Mengla nucleoprotein
Authors : Ferrero, D.S.; Tomas Gilabert, O.; Verdaguer, N.
Deposited on : 2023-05-14
Resolution : 3.73 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

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>.

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 : 2.35.1
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) : 2.35.1

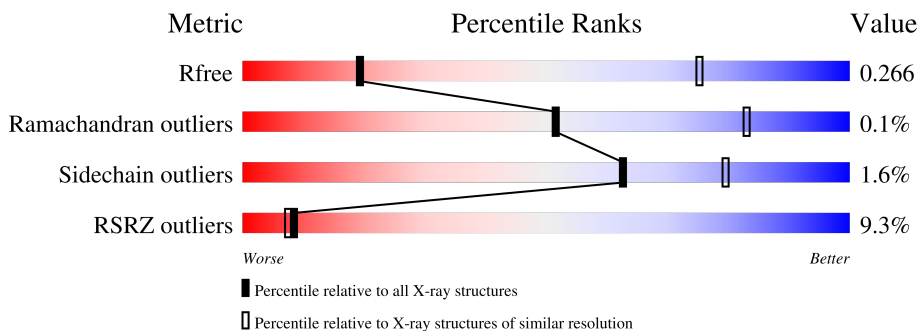
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 3.73 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.





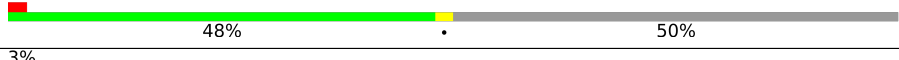











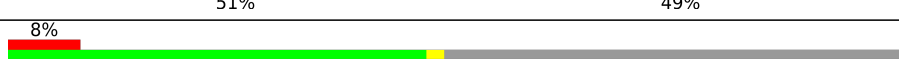
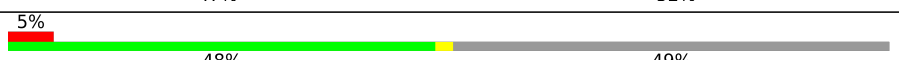
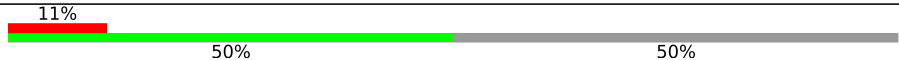
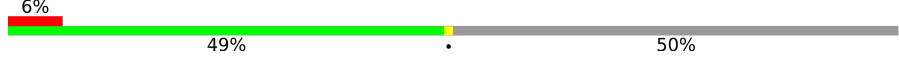
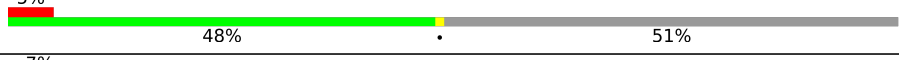



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	1001 (3.90-3.58)
Ramachandran outliers	138981	1027 (3.90-3.58)
Sidechain outliers	138945	1023 (3.90-3.58)
RSRZ outliers	127900	1006 (3.92-3.56)

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 ≥ 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	130	
1	B	130	
1	C	130	
1	D	130	
1	E	130	
1	F	130	

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Mol	Chain	Length	Quality of chain
1	G	130	 3% 48% 52%
1	H	130	 8% 48% 52%
1	I	130	 2% 48% 50%
1	J	130	 3% 50% 49%
1	K	130	 4% 49% 49%
1	L	130	 2% 47% 51%
1	M	130	 2% 50% 48%
1	N	130	 3% 48% 49%
1	O	130	 1% 48% 50%
1	P	130	 5% 47% 52%
1	Q	130	 3% 48% 50%
1	R	130	 3% 47% 52%
1	S	130	 3% 47% 52%
1	T	130	 2% 48% 51%
1	U	130	 6% 48% 51%
1	V	130	 7% 51% 49%
1	W	130	 8% 47% 52%
1	X	130	 5% 48% 49%
1	Y	130	 11% 50% 50%
1	Z	130	 6% 49% 50%
1	a	130	 5% 48% 51%
1	b	130	 7% 48% 51%

2 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 15048 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 Nucleoprotein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	V	66	Total 552	C 350	N 94	O 106	S 2	0	0	0
1	Z	65	Total 543	C 345	N 92	O 104	S 2	0	0	0
1	Y	65	Total 543	C 345	N 92	O 104	S 2	0	0	0
1	T	64	Total 535	C 341	N 91	O 101	S 2	0	0	0
1	P	62	Total 514	C 325	N 88	O 99	S 2	0	0	0
1	S	62	Total 514	C 325	N 88	O 99	S 2	0	0	0
1	X	66	Total 552	C 350	N 94	O 106	S 2	0	0	0
1	W	63	Total 521	C 330	N 89	O 100	S 2	0	0	0
1	Q	65	Total 543	C 345	N 92	O 104	S 2	0	0	0
1	R	63	Total 521	C 330	N 89	O 100	S 2	0	0	0
1	U	64	Total 535	C 341	N 91	O 101	S 2	0	0	0
1	a	64	Total 535	C 341	N 91	O 101	S 2	0	0	0
1	O	65	Total 543	C 345	N 92	O 104	S 2	0	0	0
1	A	66	Total 552	C 350	N 94	O 106	S 2	0	0	0
1	E	65	Total 543	C 345	N 92	O 104	S 2	0	0	0
1	L	64	Total 535	C 341	N 91	O 101	S 2	0	0	0

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	K	66	Total	C	N	O	S	0	0	0
			552	350	94	106	2			
1	H	63	Total	C	N	O	S	0	0	0
			521	330	89	100	2			
1	B	64	Total	C	N	O	S	0	0	0
			535	341	91	101	2			
1	G	62	Total	C	N	O	S	0	0	0
			514	325	88	99	2			
1	C	64	Total	C	N	O	S	0	0	0
			535	341	91	101	2			
1	M	67	Total	C	N	O	S	0	0	0
			558	353	95	108	2			
1	N	66	Total	C	N	O	S	0	0	0
			552	350	94	106	2			
1	I	65	Total	C	N	O	S	0	0	0
			543	345	92	104	2			
1	D	64	Total	C	N	O	S	0	0	0
			535	341	91	101	2			
1	J	66	Total	C	N	O	S	0	0	0
			552	350	94	106	2			
1	F	64	Total	C	N	O	S	0	0	0
			535	341	91	101	2			
1	b	64	Total	C	N	O	S	0	0	0
			535	341	91	101	2			

There are 140 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
V	568	GLY	-	expression tag	UNP A0A1Q1NMU1
V	569	PRO	-	expression tag	UNP A0A1Q1NMU1
V	570	LEU	-	expression tag	UNP A0A1Q1NMU1
V	571	GLY	-	expression tag	UNP A0A1Q1NMU1
V	572	SER	-	expression tag	UNP A0A1Q1NMU1
Z	568	GLY	-	expression tag	UNP A0A1Q1NMU1
Z	569	PRO	-	expression tag	UNP A0A1Q1NMU1
Z	570	LEU	-	expression tag	UNP A0A1Q1NMU1
Z	571	GLY	-	expression tag	UNP A0A1Q1NMU1
Z	572	SER	-	expression tag	UNP A0A1Q1NMU1
Y	568	GLY	-	expression tag	UNP A0A1Q1NMU1
Y	569	PRO	-	expression tag	UNP A0A1Q1NMU1
Y	570	LEU	-	expression tag	UNP A0A1Q1NMU1
Y	571	GLY	-	expression tag	UNP A0A1Q1NMU1
Y	572	SER	-	expression tag	UNP A0A1Q1NMU1

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Chain	Residue	Modelled	Actual	Comment	Reference
T	568	GLY	-	expression tag	UNP A0A1Q1NMU1
T	569	PRO	-	expression tag	UNP A0A1Q1NMU1
T	570	LEU	-	expression tag	UNP A0A1Q1NMU1
T	571	GLY	-	expression tag	UNP A0A1Q1NMU1
T	572	SER	-	expression tag	UNP A0A1Q1NMU1
P	568	GLY	-	expression tag	UNP A0A1Q1NMU1
P	569	PRO	-	expression tag	UNP A0A1Q1NMU1
P	570	LEU	-	expression tag	UNP A0A1Q1NMU1
P	571	GLY	-	expression tag	UNP A0A1Q1NMU1
P	572	SER	-	expression tag	UNP A0A1Q1NMU1
S	568	GLY	-	expression tag	UNP A0A1Q1NMU1
S	569	PRO	-	expression tag	UNP A0A1Q1NMU1
S	570	LEU	-	expression tag	UNP A0A1Q1NMU1
S	571	GLY	-	expression tag	UNP A0A1Q1NMU1
S	572	SER	-	expression tag	UNP A0A1Q1NMU1
X	568	GLY	-	expression tag	UNP A0A1Q1NMU1
X	569	PRO	-	expression tag	UNP A0A1Q1NMU1
X	570	LEU	-	expression tag	UNP A0A1Q1NMU1
X	571	GLY	-	expression tag	UNP A0A1Q1NMU1
X	572	SER	-	expression tag	UNP A0A1Q1NMU1
W	568	GLY	-	expression tag	UNP A0A1Q1NMU1
W	569	PRO	-	expression tag	UNP A0A1Q1NMU1
W	570	LEU	-	expression tag	UNP A0A1Q1NMU1
W	571	GLY	-	expression tag	UNP A0A1Q1NMU1
W	572	SER	-	expression tag	UNP A0A1Q1NMU1
Q	568	GLY	-	expression tag	UNP A0A1Q1NMU1
Q	569	PRO	-	expression tag	UNP A0A1Q1NMU1
Q	570	LEU	-	expression tag	UNP A0A1Q1NMU1
Q	571	GLY	-	expression tag	UNP A0A1Q1NMU1
Q	572	SER	-	expression tag	UNP A0A1Q1NMU1
R	568	GLY	-	expression tag	UNP A0A1Q1NMU1
R	569	PRO	-	expression tag	UNP A0A1Q1NMU1
R	570	LEU	-	expression tag	UNP A0A1Q1NMU1
R	571	GLY	-	expression tag	UNP A0A1Q1NMU1
R	572	SER	-	expression tag	UNP A0A1Q1NMU1
U	568	GLY	-	expression tag	UNP A0A1Q1NMU1
U	569	PRO	-	expression tag	UNP A0A1Q1NMU1
U	570	LEU	-	expression tag	UNP A0A1Q1NMU1
U	571	GLY	-	expression tag	UNP A0A1Q1NMU1
U	572	SER	-	expression tag	UNP A0A1Q1NMU1
a	568	GLY	-	expression tag	UNP A0A1Q1NMU1
a	569	PRO	-	expression tag	UNP A0A1Q1NMU1

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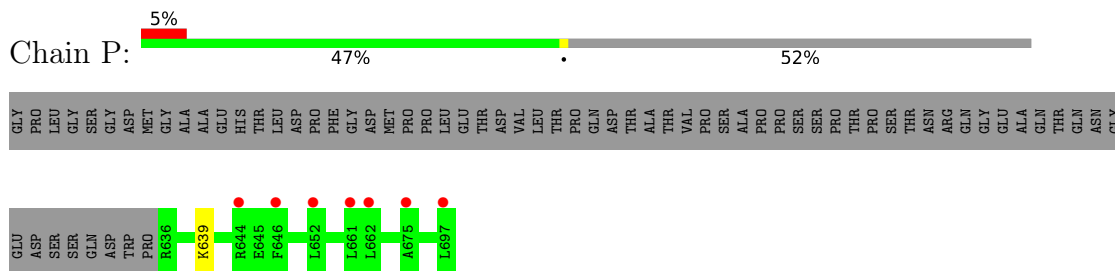
Chain	Residue	Modelled	Actual	Comment	Reference
a	570	LEU	-	expression tag	UNP A0A1Q1NMU1
a	571	GLY	-	expression tag	UNP A0A1Q1NMU1
a	572	SER	-	expression tag	UNP A0A1Q1NMU1
O	568	GLY	-	expression tag	UNP A0A1Q1NMU1
O	569	PRO	-	expression tag	UNP A0A1Q1NMU1
O	570	LEU	-	expression tag	UNP A0A1Q1NMU1
O	571	GLY	-	expression tag	UNP A0A1Q1NMU1
O	572	SER	-	expression tag	UNP A0A1Q1NMU1
A	568	GLY	-	expression tag	UNP A0A1Q1NMU1
A	569	PRO	-	expression tag	UNP A0A1Q1NMU1
A	570	LEU	-	expression tag	UNP A0A1Q1NMU1
A	571	GLY	-	expression tag	UNP A0A1Q1NMU1
A	572	SER	-	expression tag	UNP A0A1Q1NMU1
E	568	GLY	-	expression tag	UNP A0A1Q1NMU1
E	569	PRO	-	expression tag	UNP A0A1Q1NMU1
E	570	LEU	-	expression tag	UNP A0A1Q1NMU1
E	571	GLY	-	expression tag	UNP A0A1Q1NMU1
E	572	SER	-	expression tag	UNP A0A1Q1NMU1
L	568	GLY	-	expression tag	UNP A0A1Q1NMU1
L	569	PRO	-	expression tag	UNP A0A1Q1NMU1
L	570	LEU	-	expression tag	UNP A0A1Q1NMU1
L	571	GLY	-	expression tag	UNP A0A1Q1NMU1
L	572	SER	-	expression tag	UNP A0A1Q1NMU1
K	568	GLY	-	expression tag	UNP A0A1Q1NMU1
K	569	PRO	-	expression tag	UNP A0A1Q1NMU1
K	570	LEU	-	expression tag	UNP A0A1Q1NMU1
K	571	GLY	-	expression tag	UNP A0A1Q1NMU1
K	572	SER	-	expression tag	UNP A0A1Q1NMU1
H	568	GLY	-	expression tag	UNP A0A1Q1NMU1
H	569	PRO	-	expression tag	UNP A0A1Q1NMU1
H	570	LEU	-	expression tag	UNP A0A1Q1NMU1
H	571	GLY	-	expression tag	UNP A0A1Q1NMU1
H	572	SER	-	expression tag	UNP A0A1Q1NMU1
B	568	GLY	-	expression tag	UNP A0A1Q1NMU1
B	569	PRO	-	expression tag	UNP A0A1Q1NMU1
B	570	LEU	-	expression tag	UNP A0A1Q1NMU1
B	571	GLY	-	expression tag	UNP A0A1Q1NMU1
B	572	SER	-	expression tag	UNP A0A1Q1NMU1
G	568	GLY	-	expression tag	UNP A0A1Q1NMU1
G	569	PRO	-	expression tag	UNP A0A1Q1NMU1
G	570	LEU	-	expression tag	UNP A0A1Q1NMU1
G	571	GLY	-	expression tag	UNP A0A1Q1NMU1

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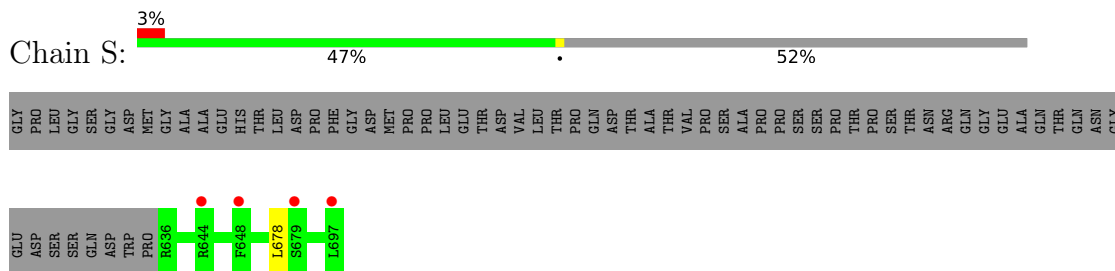
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Chain	Residue	Modelled	Actual	Comment	Reference
G	572	SER	-	expression tag	UNP A0A1Q1NMU1
C	568	GLY	-	expression tag	UNP A0A1Q1NMU1
C	569	PRO	-	expression tag	UNP A0A1Q1NMU1
C	570	LEU	-	expression tag	UNP A0A1Q1NMU1
C	571	GLY	-	expression tag	UNP A0A1Q1NMU1
C	572	SER	-	expression tag	UNP A0A1Q1NMU1
M	568	GLY	-	expression tag	UNP A0A1Q1NMU1
M	569	PRO	-	expression tag	UNP A0A1Q1NMU1
M	570	LEU	-	expression tag	UNP A0A1Q1NMU1
M	571	GLY	-	expression tag	UNP A0A1Q1NMU1
M	572	SER	-	expression tag	UNP A0A1Q1NMU1
N	568	GLY	-	expression tag	UNP A0A1Q1NMU1
N	569	PRO	-	expression tag	UNP A0A1Q1NMU1
N	570	LEU	-	expression tag	UNP A0A1Q1NMU1
N	571	GLY	-	expression tag	UNP A0A1Q1NMU1
N	572	SER	-	expression tag	UNP A0A1Q1NMU1
I	568	GLY	-	expression tag	UNP A0A1Q1NMU1
I	569	PRO	-	expression tag	UNP A0A1Q1NMU1
I	570	LEU	-	expression tag	UNP A0A1Q1NMU1
I	571	GLY	-	expression tag	UNP A0A1Q1NMU1
I	572	SER	-	expression tag	UNP A0A1Q1NMU1
D	568	GLY	-	expression tag	UNP A0A1Q1NMU1
D	569	PRO	-	expression tag	UNP A0A1Q1NMU1
D	570	LEU	-	expression tag	UNP A0A1Q1NMU1
D	571	GLY	-	expression tag	UNP A0A1Q1NMU1
D	572	SER	-	expression tag	UNP A0A1Q1NMU1
J	568	GLY	-	expression tag	UNP A0A1Q1NMU1
J	569	PRO	-	expression tag	UNP A0A1Q1NMU1
J	570	LEU	-	expression tag	UNP A0A1Q1NMU1
J	571	GLY	-	expression tag	UNP A0A1Q1NMU1
J	572	SER	-	expression tag	UNP A0A1Q1NMU1
F	568	GLY	-	expression tag	UNP A0A1Q1NMU1
F	569	PRO	-	expression tag	UNP A0A1Q1NMU1
F	570	LEU	-	expression tag	UNP A0A1Q1NMU1
F	571	GLY	-	expression tag	UNP A0A1Q1NMU1
F	572	SER	-	expression tag	UNP A0A1Q1NMU1
b	568	GLY	-	expression tag	UNP A0A1Q1NMU1
b	569	PRO	-	expression tag	UNP A0A1Q1NMU1
b	570	LEU	-	expression tag	UNP A0A1Q1NMU1
b	571	GLY	-	expression tag	UNP A0A1Q1NMU1
b	572	SER	-	expression tag	UNP A0A1Q1NMU1

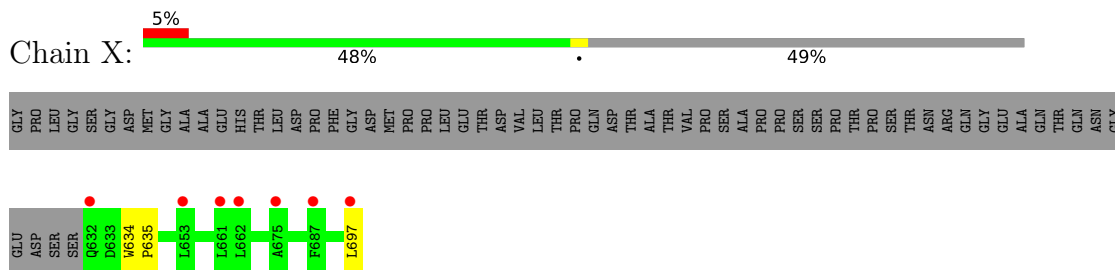
- Molecule 1: Nucleoprotein



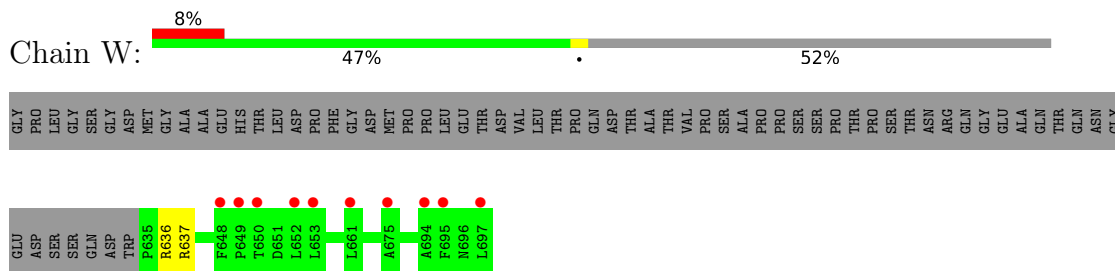
- Molecule 1: Nucleoprotein



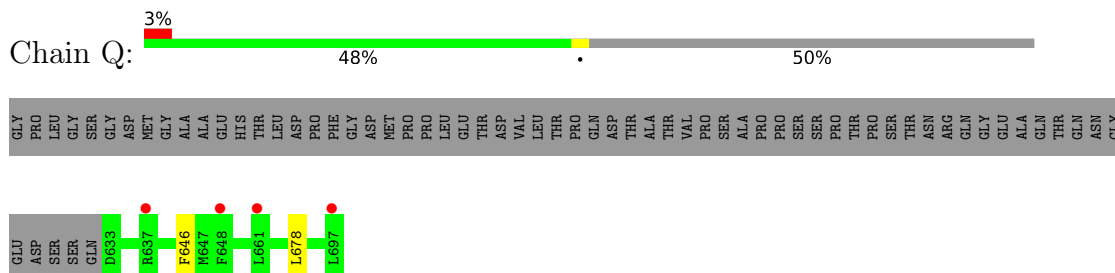
- Molecule 1: Nucleoprotein



- Molecule 1: Nucleoprotein



- Molecule 1: Nucleoprotein



- Molecule 1: Nucleoprotein



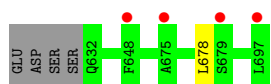
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- Molecule 1: Nucleoprotein



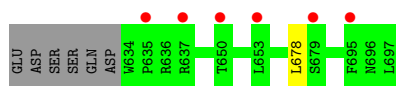
GLY PRO LEU LEU LEU SER SER GLN ASP ASP MET MET GLY ALA ALA ALA GLU HIS THR LEU LEU ASP ASP PRO PHE PHE GLY ASP MET MET PRO PRO PRO LEU LEU THR ASP VAL VAL LEU THR THR PRO GLN ASP ASP THR THR ALA ALA THR VAL VAL PRO SER ALA ALA PRO PRO SER SER SER PRO THR THR THR ASN ARG GLN GLY ALA ALA THR GLN THR GLN ASN GLY



- Molecule 1: Nucleoprotein



GLY PRO LEU LEU LEU SER SER GLN ASP ASP MET MET GLY ALA ALA ALA GLU HIS THR LEU LEU ASP ASP PRO PHE PHE GLY ASP MET MET PRO PRO PRO LEU LEU THR ASP VAL VAL LEU THR THR PRO GLN ASP ASP THR THR ALA ALA THR VAL VAL PRO SER ALA ALA PRO PRO SER SER SER PRO THR THR THR ASN ARG GLN GLY ALA ALA THR GLN THR GLN ASN GLY



- Molecule 1: Nucleoprotein



GLY PRO LEU LEU LEU SER SER GLN ASP ASP MET MET GLY ALA ALA ALA GLU HIS THR LEU LEU ASP ASP PRO PHE PHE GLY ASP MET MET PRO PRO PRO LEU LEU THR ASP VAL VAL LEU THR THR PRO GLN ASP ASP THR THR ALA ALA THR VAL VAL PRO SER ALA ALA PRO PRO SER SER SER PRO THR THR THR ASN ARG GLN GLY ALA ALA THR GLN THR GLN ASN GLY



4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	56.75Å 162.94Å 175.36Å 90.00° 99.15° 90.00°	Depositor
Resolution (Å)	173.13 – 3.73 173.13 – 3.73	Depositor EDS
% Data completeness (in resolution range)	25.1 (173.13-3.73) 25.0 (173.13-3.73)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.07 (at 3.78Å)	Xtrriage
Refinement program	REFMAC dev_4788, PHENIX dev_4788	Depositor
R, R_{free}	0.248 , 0.265 0.265 , 0.266	Depositor DCC
R_{free} test set	435 reflections (5.29%)	wwPDB-VP
Wilson B-factor (Å ²)	108.2	Xtrriage
Anisotropy	0.349	Xtrriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.37 , 78.4	EDS
L-test for twinning ²	$\langle L \rangle = 0.44$, $\langle L^2 \rangle = 0.27$	Xtrriage
Estimated twinning fraction	0.149 for h,-k,-h-l	Xtrriage
F_o, F_c correlation	0.89	EDS
Total number of atoms	15048	wwPDB-VP
Average B, all atoms (Å ²)	115.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 9.18% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical 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	0.24	0/567	0.47	0/770
1	B	0.25	0/550	0.49	0/747
1	C	0.24	0/550	0.48	0/747
1	D	0.24	0/550	0.46	0/747
1	E	0.25	0/558	0.51	0/758
1	F	0.24	0/550	0.50	0/747
1	G	0.24	0/526	0.48	0/712
1	H	0.26	0/534	0.50	0/723
1	I	0.26	0/558	0.46	0/758
1	J	0.25	0/567	0.49	0/770
1	K	0.31	0/567	0.54	0/770
1	L	0.28	0/550	0.60	1/747 (0.1%)
1	M	0.26	0/573	0.49	0/778
1	N	0.25	0/567	0.49	0/770
1	O	0.27	0/558	0.53	0/758
1	P	0.24	0/526	0.49	0/712
1	Q	0.25	0/558	0.50	0/758
1	R	0.26	0/534	0.51	0/723
1	S	0.27	0/526	0.48	0/712
1	T	0.24	0/550	0.48	0/747
1	U	0.24	0/550	0.50	0/747
1	V	0.24	0/567	0.48	0/770
1	W	0.29	0/534	0.48	0/723
1	X	0.26	0/567	0.53	1/770 (0.1%)
1	Y	0.24	0/558	0.49	0/758
1	Z	0.25	0/558	0.46	0/758
1	a	0.29	0/550	0.53	0/747
1	b	0.26	0/550	0.50	0/747
All	All	0.26	0/15453	0.50	2/20974 (0.0%)

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	K	0	2
1	L	0	2
1	W	0	2
All	All	0	6

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	L	637	ARG	N-CA-C	-9.51	85.32	111.00
1	X	697	LEU	CA-CB-CG	5.61	128.21	115.30

There are no chirality outliers.

5 of 6 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	K	636	ARG	Sidechain
1	L	636	ARG	Sidechain
1	L	637	ARG	Sidechain
1	W	636	ARG	Sidechain
1	W	637	ARG	Sidechain

5.2 Too-close contacts [i](#)

Due to software issues we are unable to calculate clashes - this section is therefore empty.

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	64/130 (49%)	60 (94%)	4 (6%)	0	100 100
1	B	62/130 (48%)	58 (94%)	4 (6%)	0	100 100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	C	62/130 (48%)	56 (90%)	6 (10%)	0	100	100
1	D	62/130 (48%)	59 (95%)	3 (5%)	0	100	100
1	E	63/130 (48%)	60 (95%)	3 (5%)	0	100	100
1	F	62/130 (48%)	59 (95%)	3 (5%)	0	100	100
1	G	60/130 (46%)	53 (88%)	7 (12%)	0	100	100
1	H	61/130 (47%)	59 (97%)	2 (3%)	0	100	100
1	I	63/130 (48%)	60 (95%)	3 (5%)	0	100	100
1	J	64/130 (49%)	61 (95%)	3 (5%)	0	100	100
1	K	64/130 (49%)	61 (95%)	3 (5%)	0	100	100
1	L	62/130 (48%)	59 (95%)	3 (5%)	0	100	100
1	M	65/130 (50%)	59 (91%)	6 (9%)	0	100	100
1	N	64/130 (49%)	62 (97%)	2 (3%)	0	100	100
1	O	63/130 (48%)	59 (94%)	4 (6%)	0	100	100
1	P	60/130 (46%)	56 (93%)	4 (7%)	0	100	100
1	Q	63/130 (48%)	58 (92%)	5 (8%)	0	100	100
1	R	61/130 (47%)	53 (87%)	8 (13%)	0	100	100
1	S	60/130 (46%)	57 (95%)	3 (5%)	0	100	100
1	T	62/130 (48%)	59 (95%)	3 (5%)	0	100	100
1	U	62/130 (48%)	58 (94%)	4 (6%)	0	100	100
1	V	64/130 (49%)	59 (92%)	5 (8%)	0	100	100
1	W	61/130 (47%)	56 (92%)	5 (8%)	0	100	100
1	X	64/130 (49%)	59 (92%)	4 (6%)	1 (2%)	9	44
1	Y	63/130 (48%)	57 (90%)	6 (10%)	0	100	100
1	Z	63/130 (48%)	60 (95%)	3 (5%)	0	100	100
1	a	62/130 (48%)	59 (95%)	3 (5%)	0	100	100
1	b	62/130 (48%)	59 (95%)	3 (5%)	0	100	100
All	All	1748/3640 (48%)	1635 (94%)	112 (6%)	1 (0%)	51	83

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	X	635	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	62/114 (54%)	61 (98%)	1 (2%)	62	79
1	B	60/114 (53%)	58 (97%)	2 (3%)	38	64
1	C	60/114 (53%)	60 (100%)	0	100	100
1	D	60/114 (53%)	59 (98%)	1 (2%)	60	79
1	E	61/114 (54%)	61 (100%)	0	100	100
1	F	60/114 (53%)	59 (98%)	1 (2%)	60	79
1	G	58/114 (51%)	58 (100%)	0	100	100
1	H	59/114 (52%)	59 (100%)	0	100	100
1	I	61/114 (54%)	59 (97%)	2 (3%)	38	64
1	J	62/114 (54%)	61 (98%)	1 (2%)	62	79
1	K	62/114 (54%)	62 (100%)	0	100	100
1	L	60/114 (53%)	59 (98%)	1 (2%)	60	79
1	M	63/114 (55%)	61 (97%)	2 (3%)	39	64
1	N	62/114 (54%)	60 (97%)	2 (3%)	39	64
1	O	61/114 (54%)	60 (98%)	1 (2%)	62	79
1	P	58/114 (51%)	57 (98%)	1 (2%)	60	79
1	Q	61/114 (54%)	59 (97%)	2 (3%)	38	64
1	R	59/114 (52%)	57 (97%)	2 (3%)	37	64
1	S	58/114 (51%)	57 (98%)	1 (2%)	60	79
1	T	60/114 (53%)	59 (98%)	1 (2%)	60	79
1	U	60/114 (53%)	59 (98%)	1 (2%)	60	79
1	V	62/114 (54%)	62 (100%)	0	100	100
1	W	59/114 (52%)	59 (100%)	0	100	100
1	X	62/114 (54%)	61 (98%)	1 (2%)	62	79
1	Y	61/114 (54%)	61 (100%)	0	100	100
1	Z	61/114 (54%)	60 (98%)	1 (2%)	62	79

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	a	60/114 (53%)	59 (98%)	1 (2%)	60	79
1	b	60/114 (53%)	58 (97%)	2 (3%)	38	64
All	All	1692/3192 (53%)	1665 (98%)	27 (2%)	62	79

5 of 27 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	B	655	ARG
1	M	678	LEU
1	F	678	LEU
1	M	637	ARG
1	N	673	LEU

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

Mol	Chain	Res	Type
1	E	696	ASN
1	G	659	GLN
1	b	659	GLN
1	J	659	GLN
1	W	659	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 monosaccharides in this entry.

5.6 Ligand geometry [i](#)

There are no ligands in this entry.

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, 95th 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 ²)	Q<0.9
1	A	66/130 (50%)	0.48	4 (6%) 21 17	80, 120, 151, 167	0
1	B	64/130 (49%)	0.77	8 (12%) 3 4	95, 137, 169, 181	0
1	C	64/130 (49%)	0.44	5 (7%) 13 11	82, 113, 135, 141	0
1	D	64/130 (49%)	0.54	5 (7%) 13 11	77, 108, 129, 137	0
1	E	65/130 (50%)	0.96	11 (16%) 1 1	122, 146, 169, 204	0
1	F	64/130 (49%)	0.69	6 (9%) 8 7	116, 136, 164, 175	0
1	G	62/130 (47%)	0.53	4 (6%) 18 14	102, 123, 139, 148	0
1	H	63/130 (48%)	0.72	10 (15%) 1 2	96, 127, 142, 152	0
1	I	65/130 (50%)	0.38	2 (3%) 49 40	74, 100, 137, 186	0
1	J	66/130 (50%)	0.63	4 (6%) 21 17	82, 111, 149, 174	0
1	K	66/130 (50%)	0.43	5 (7%) 13 11	30, 82, 122, 129	0
1	L	64/130 (49%)	0.33	3 (4%) 31 27	60, 83, 106, 132	0
1	M	67/130 (51%)	0.46	2 (2%) 50 41	71, 96, 127, 192	0
1	N	66/130 (50%)	0.59	4 (6%) 21 17	56, 73, 139, 186	0
1	O	65/130 (50%)	0.43	1 (1%) 73 68	63, 85, 125, 157	0
1	P	62/130 (47%)	0.58	7 (11%) 5 5	58, 92, 143, 157	0
1	Q	65/130 (50%)	0.48	4 (6%) 20 16	62, 103, 147, 165	0
1	R	63/130 (48%)	0.56	4 (6%) 20 15	70, 99, 123, 134	0
1	S	62/130 (47%)	0.58	4 (6%) 18 14	89, 121, 151, 173	0
1	T	64/130 (49%)	0.52	2 (3%) 49 40	90, 119, 136, 143	0
1	U	64/130 (49%)	0.71	8 (12%) 3 4	94, 130, 155, 178	0
1	V	66/130 (50%)	0.75	9 (13%) 3 3	98, 131, 151, 159	0
1	W	63/130 (48%)	0.67	10 (15%) 1 2	95, 130, 154, 166	0
1	X	66/130 (50%)	0.68	7 (10%) 6 5	86, 116, 135, 179	0

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Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å ²)	Q<0.9
1	Y	65/130 (50%)	1.05	14 (21%) 0 0	90, 137, 186, 196	0
1	Z	65/130 (50%)	0.63	8 (12%) 4 4	80, 119, 147, 158	0
1	a	64/130 (49%)	0.58	7 (10%) 5 5	62, 92, 132, 162	0
1	b	64/130 (49%)	0.67	9 (14%) 2 3	96, 134, 160, 177	0
All	All	1804/3640 (49%)	0.60	167 (9%) 8 7	30, 116, 157, 204	0

The worst 5 of 167 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	Y	633	ASP	12.4
1	X	632	GLN	11.0
1	H	694	ALA	5.8
1	E	633	ASP	5.6
1	B	697	LEU	4.1

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 monosaccharides in this entry.

6.4 Ligands [i](#)

There are no ligands in this entry.

6.5 Other polymers [i](#)

There are no such residues in this entry.