Full wwPDB X-ray Structure Validation Report ⓘ

Dec 3, 2023 – 02:03 pm GMT

PDB ID	:	1UVI
Title	:	The structural basis for RNA specificity and Ca2 inhibition of an RNA-dependent RNA polymerase phi6p2 with 6nt RNA
Authors	:	Salgado, P.S.; Makeyev, E.V.; Butcher, S.; Bamford, D.; Stuart, D.I.; Grimes, J.M.
Deposited on	:	2004-01-21
Resolution	:	2.15 Å(reported)

This is a Full wwPDB X-ray Structure Validation 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:

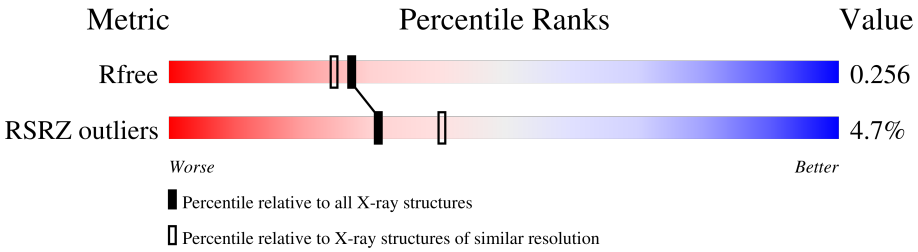
MolProbity	:	FAILED
Xtriage (Phenix)	:	1.13
EDS	:	2.36
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
X-RAY DIFFRACTION

The reported resolution of this entry is 2.15 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	1479 (2.16-2.16)
RSRZ outliers	127900	1456 (2.16-2.16)

MolProbity failed to run properly - the sequence quality summary graphics cannot be shown.

2 Entry composition (i)

There are 4 unique types of molecules in this entry. The entry contains 16447 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-directed RNA polymerase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	664	Total	C	N	O	S	0	0	0
			5265	3342	914	977	32			
1	B	664	Total	C	N	O	S	0	0	0
			5265	3342	914	977	32			
1	C	664	Total	C	N	O	S	0	0	0
			5265	3342	914	977	32			

There are 3 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	456	MET	ILE	conflict	UNP P11124
B	456	MET	ILE	conflict	UNP P11124
C	456	MET	ILE	conflict	UNP P11124

- Molecule 2 is a RNA chain called 5'-R(*UP*UP*UP*UP*CP*CP)-3'.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	D	4	Total	C	N	O	P	0	0	0
			77	36	10	28	3			
2	E	4	Total	C	N	O	P	0	0	0
			77	36	10	28	3			
2	F	4	Total	C	N	O	P	0	0	0
			77	36	10	28	3			

- Molecule 3 is MANGANESE (II) ION (three-letter code: MN) (formula: Mn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Mn	0	0
			1	1		
3	B	1	Total	Mn	0	0
			1	1		

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	C	1	Total Mn 1 1	0	0

- Molecule 4 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	116	Total O 116 116	0	0
4	B	192	Total O 192 192	0	0
4	C	109	Total O 109 109	0	0
4	D	1	Total O 1 1	0	0

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3 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	105.13Å 93.71Å 140.74Å 90.00° 101.22° 90.00°	Depositor
Resolution (Å)	19.93 – 2.15 19.93 – 2.15	Depositor EDS
% Data completeness (in resolution range)	97.8 (19.93-2.15) 97.9 (19.93-2.15)	Depositor EDS
R_{merge}	0.13	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.92 (at 2.15Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, R_{free}	0.230 , 0.256 0.230 , 0.256	Depositor DCC
R_{free} test set	7208 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å^2)	27.7	Xtriage
Anisotropy	0.631	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.39 , 43.2	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	16447	wwPDB-VP
Average B, all atoms (Å^2)	33.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.28% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

4 Model quality

4.1 Standard geometry

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4.2 Too-close contacts

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4.3 Torsion angles

4.3.1 Protein backbone

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4.3.2 Protein sidechains

MolProbity failed to run properly - this section is therefore empty.

4.3.3 RNA

MolProbity failed to run properly - this section is therefore empty.

4.4 Non-standard residues in protein, DNA, RNA chains

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

4.5 Carbohydrates

There are no monosaccharides in this entry.

4.6 Ligand geometry

Of 3 ligands modelled in this entry, 3 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.

4.7 Other polymers (i)

There are no such residues in this entry.

4.8 Polymer linkage issues (i)

There are no chain breaks in this entry.

5 Fit of model and data

5.1 Protein, DNA and RNA chains

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^{th} 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	664/664 (100%)	0.15	28 (4%)	36	45	17, 30, 52, 102	0
1	B	664/664 (100%)	0.16	19 (2%)	51	61	17, 28, 51, 102	0
1	C	664/664 (100%)	0.40	41 (6%)	20	27	18, 31, 53, 103	0
2	D	4/6 (66%)	1.91	1 (25%)	0	0	115, 116, 122, 128	0
2	E	4/6 (66%)	2.84	3 (75%)	0	0	115, 116, 123, 129	0
2	F	4/6 (66%)	2.39	2 (50%)	0	0	115, 116, 123, 129	0
All	All	2004/2010 (99%)	0.25	94 (4%)	31	41	17, 30, 53, 129	0

All (94) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	607	ARG	11.1
1	C	603	ALA	10.8
1	B	606	ALA	9.5
1	C	606	ALA	9.1
1	B	609	ALA	8.6
1	C	604	SER	8.4
1	C	608	GLN	8.4
1	A	606	ALA	8.0
1	C	609	ALA	8.0
1	C	664	ARG	7.7
1	C	610	GLY	6.7
1	C	612	ALA	6.6
1	B	608	GLN	6.6
1	A	664	ARG	6.0
1	A	605	MET	6.0
1	C	216	LYS	5.9
1	A	1	PRO	5.9
1	B	610	GLY	5.6
1	B	664	ARG	5.4

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Mol	Chain	Res	Type	RSRZ
1	B	607	ARG	5.4
1	A	607	ARG	5.1
1	B	603	ALA	5.0
1	C	215	PRO	4.8
1	B	604	SER	4.7
1	C	537	ARG	4.6
1	B	1	PRO	4.5
1	C	1	PRO	4.3
1	C	2	ARG	4.2
1	C	611	LEU	4.2
1	B	576	TRP	4.1
1	A	609	ALA	4.1
1	B	537	ARG	4.0
1	C	254	GLU	4.0
1	A	217	THR	3.9
1	B	216	LYS	3.9
1	C	605	MET	3.8
2	F	8	C	3.7
1	A	216	LYS	3.7
1	B	612	ALA	3.6
1	C	506	ARG	3.6
1	C	470	ARG	3.5
1	A	610	GLY	3.5
1	A	254	GLU	3.5
1	A	659	ARG	3.4
1	C	505	SER	3.4
1	C	217	THR	3.4
1	C	63	ASP	3.3
2	E	7	C	3.3
1	A	576	TRP	3.3
1	C	596	LEU	3.2
2	E	5	U	3.2
1	C	556	ASP	3.2
1	C	535	GLY	3.1
2	D	5	U	3.1
2	E	8	C	3.1
1	C	592	LYS	3.1
1	C	259	ASP	3.1
1	B	613	GLU	3.0
1	A	506	ARG	3.0
1	A	652	GLU	3.0
1	B	2	ARG	2.9

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Mol	Chain	Res	Type	RSRZ
1	A	270	ARG	2.9
1	A	215	PRO	2.9
1	A	505	SER	2.7
1	A	373	GLU	2.7
1	A	603	ALA	2.6
1	A	611	LEU	2.6
1	C	461	LYS	2.5
1	C	373	GLU	2.5
1	A	219	LYS	2.5
2	F	5	U	2.5
1	C	214	ASP	2.4
1	C	219	LYS	2.4
1	C	308	LEU	2.4
1	C	602	VAL	2.4
1	A	2	ARG	2.3
1	A	239	GLN	2.3
1	C	593	ARG	2.3
1	C	279	LEU	2.2
1	B	535	GLY	2.2
1	A	259	ASP	2.2
1	C	408	ILE	2.2
1	A	214	ASP	2.2
1	C	534	SER	2.1
1	C	536	VAL	2.1
1	B	479	LYS	2.1
1	A	656	ARG	2.1
1	A	645	LEU	2.1
1	A	613	GLU	2.1
1	B	321	VAL	2.1
1	C	309	ASN	2.1
1	C	262	ASP	2.1
1	C	218	GLY	2.0
1	B	457	LEU	2.0

5.2 Non-standard residues in protein, DNA, RNA chains (i)

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

5.3 Carbohydrates (i)

There are no monosaccharides in this entry.

5.4 Ligands

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^{th} 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(Å^2)	Q<0.9
3	MN	B	1665	1/1	0.98	0.06	26,26,26,26	0
3	MN	A	1665	1/1	0.99	0.08	29,29,29,29	0
3	MN	C	1665	1/1	0.99	0.05	30,30,30,30	0

5.5 Other polymers

There are no such residues in this entry.