



Full wwPDB X-ray Structure Validation Report ⓘ

Oct 2, 2023 – 04:32 PM EDT

PDB ID : 6NRG
Title : Crystal Structure of human PARP-1 ART domain bound to inhibitor UTT57
Authors : Langelier, M.F.; Pascal, J.M.
Deposited on : 2019-01-23
Resolution : 1.70 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**
Mogul : 1.8.5 (274361), CSD as541be (2020)
Xtrriage (Phenix) : 1.13
EDS : **FAILED**
buster-report : 1.1.7 (2018)
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)
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 1.70 Å.

There are no overall percentile quality scores available for this entry.

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

2 Entry composition [i](#)

There are 5 unique types of molecules in this entry. The entry contains 2147 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 Poly [ADP-ribose] polymerase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	240	1937	1250	326	353	8	0	8	0

There are 46 discrepancies between the modelled and reference sequences:

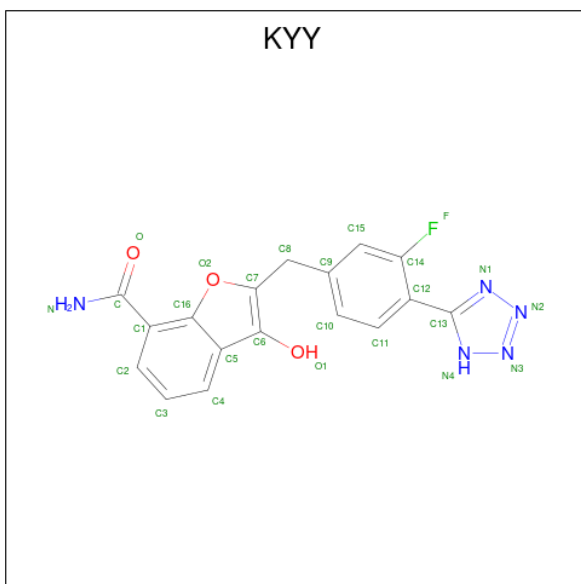
Chain	Residue	Modelled	Actual	Comment	Reference
A	742	MET	-	initiating methionine	UNP P09874
A	743	GLY	-	expression tag	UNP P09874
A	744	SER	-	expression tag	UNP P09874
A	745	SER	-	expression tag	UNP P09874
A	746	HIS	-	expression tag	UNP P09874
A	747	HIS	-	expression tag	UNP P09874
A	748	HIS	-	expression tag	UNP P09874
A	749	HIS	-	expression tag	UNP P09874
A	750	HIS	-	expression tag	UNP P09874
A	751	HIS	-	expression tag	UNP P09874
A	752	SER	-	expression tag	UNP P09874
A	753	SER	-	expression tag	UNP P09874
A	754	GLY	-	expression tag	UNP P09874
A	755	LEU	-	expression tag	UNP P09874
A	756	VAL	-	expression tag	UNP P09874
A	757	PRO	-	expression tag	UNP P09874
A	758	ARG	-	expression tag	UNP P09874
A	759	GLY	-	expression tag	UNP P09874
A	760	SER	-	expression tag	UNP P09874
A	761	HIS	-	expression tag	UNP P09874
A	762	MET	-	expression tag	UNP P09874
A	763	THR	-	expression tag	UNP P09874
A	764	LYS	-	expression tag	UNP P09874
A	765	SER	-	expression tag	UNP P09874
A	766	LYS	-	expression tag	UNP P09874
A	767	LEU	-	expression tag	UNP P09874
A	768	PRO	-	expression tag	UNP P09874

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Chain	Residue	Modelled	Actual	Comment	Reference
A	769	LYS	-	expression tag	UNP P09874
A	770	PRO	-	expression tag	UNP P09874
A	771	VAL	-	expression tag	UNP P09874
A	772	GLN	-	expression tag	UNP P09874
A	773	ASP	-	expression tag	UNP P09874
A	774	LEU	-	expression tag	UNP P09874
A	775	ILE	-	expression tag	UNP P09874
A	776	LYS	-	expression tag	UNP P09874
A	777	MET	-	expression tag	UNP P09874
A	778	ILE	-	expression tag	UNP P09874
A	779	PHE	-	expression tag	UNP P09874
A	780	GLY	-	expression tag	UNP P09874
A	781	SER	-	expression tag	UNP P09874
A	782	GLY	-	expression tag	UNP P09874
A	783	SER	-	expression tag	UNP P09874
A	784	GLY	-	expression tag	UNP P09874
A	785	SER	-	expression tag	UNP P09874
A	786	GLY	-	expression tag	UNP P09874
A	787	GLY	-	expression tag	UNP P09874

- Molecule 2 is 2-{[3-fluoro-4-(1H-tetrazol-5-yl)phenyl]methyl}-3-hydroxy-1-benzofuran-7-carboxamide (three-letter code: KYK) (formula: C₁₇H₁₂FN₅O₃).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	
			Total	C	F	N			O
2	A	1	26	17	1	5	3	0	0

- Molecule 3 is SULFATE ION (three-letter code: SO4) (formula: O₄S).



Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		
3	A	1	Total	O	S	0	0
			5	4	1		

- Molecule 4 is DIMETHYL SULFOXIDE (three-letter code: DMS) (formula: C₂H₆OS).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
4	A	1	Total	C	O	S	0	0
			4	2	1	1		
4	A	1	Total	C	O	S	0	0
			4	2	1	1		
4	A	1	Total	C	O	S	0	0
			4	2	1	1		

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	147	Total	O	0	0
			147	147		

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

3 Data and refinement statistics

EDS failed to run properly - this section is therefore incomplete.

Property	Value	Source
Space group	I 41 2 2	Depositor
Cell constants a, b, c, α , β , γ	92.88Å 92.88Å 138.94Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	47.72 – 1.70	Depositor
% Data completeness (in resolution range)	100.0 (47.72-1.70)	Depositor
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.43 (at 1.70Å)	Xtrriage
Refinement program	REFMAC	Depositor
R, R_{free}	0.159 , 0.182	Depositor
Wilson B-factor (Å ²)	31.9	Xtrriage
Anisotropy	0.401	Xtrriage
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	No twinning to report.	Xtrriage
Total number of atoms	2147	wwPDB-VP
Average B, all atoms (Å ²)	40.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.56% 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.

4 Model quality [i](#)

4.1 Standard geometry [i](#)

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

4.2 Too-close contacts [i](#)

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

4.3 Torsion angles [i](#)

4.3.1 Protein backbone [i](#)

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

4.3.2 Protein sidechains [i](#)

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

4.3.3 RNA [i](#)

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

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

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

4.5 Carbohydrates [i](#)

There are no monosaccharides in this entry.

4.6 Ligand geometry [i](#)

9 ligands are modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	# Z > 2	Counts	RMSZ	# Z > 2
4	DMS	A	1108	-	3,3,3	0.78	0	3,3,3	0.86	0
3	SO4	A	1102	-	4,4,4	0.48	0	6,6,6	0.35	0
3	SO4	A	1104	-	4,4,4	0.36	0	6,6,6	0.17	0
4	DMS	A	1109	-	3,3,3	0.43	0	3,3,3	0.61	0
3	SO4	A	1103	-	4,4,4	0.33	0	6,6,6	0.08	0
4	DMS	A	1107	-	3,3,3	0.87	0	3,3,3	1.33	0
3	SO4	A	1105	-	4,4,4	0.41	0	6,6,6	0.44	0
3	SO4	A	1106	-	4,4,4	0.37	0	6,6,6	0.27	0
2	KYY	A	1101	-	25,29,29	4.95	4 (16%)	29,42,42	2.17	6 (20%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	KYY	A	1101	-	-	4/11/12/12	0/4/4/4

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1101	KYY	C8-C7	-23.73	1.33	1.51
2	A	1101	KYY	C6-C5	5.02	1.47	1.40
2	A	1101	KYY	O1-C6	-2.66	1.26	1.35
2	A	1101	KYY	C8-C9	-2.05	1.45	1.52

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1101	KYY	C9-C8-C7	7.27	131.05	112.40
2	A	1101	KYY	N4-N3-N2	-5.06	106.23	109.53
2	A	1101	KYY	C13-N4-N3	4.56	108.92	104.87
2	A	1101	KYY	C8-C9-C15	-3.07	114.72	120.69
2	A	1101	KYY	N1-C13-N4	-3.04	108.00	111.39
2	A	1101	KYY	C8-C9-C10	2.05	126.52	120.92

There are no chirality outliers.

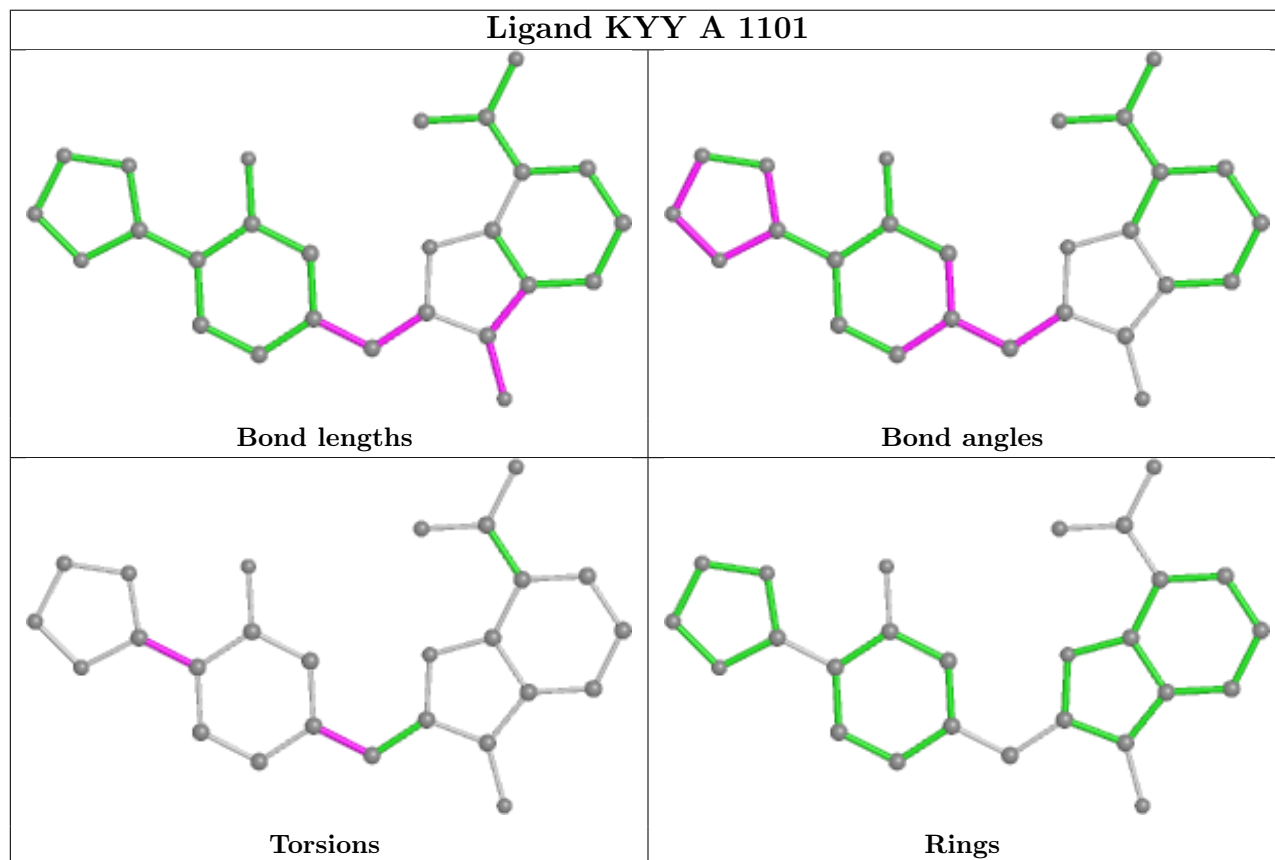
All (4) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	1101	KYY	C7-C8-C9-C10
2	A	1101	KYY	C11-C12-C13-N4
2	A	1101	KYY	C7-C8-C9-C15
2	A	1101	KYY	C11-C12-C13-N1

There are no ring outliers.

No monomer is involved in short contacts.

The following is a two-dimensional graphical depiction of Mogul quality analysis of bond lengths, bond angles, torsion angles, and ring geometry for all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the validation Tables will also be included. For torsion angles, if less than 5% of the Mogul distribution of torsion angles is within 10 degrees of the torsion angle in question, then that torsion angle is considered an outlier. Any bond that is central to one or more torsion angles identified as an outlier by Mogul will be highlighted in the graph. For rings, the root-mean-square deviation (RMSD) between the ring in question and similar rings identified by Mogul is calculated over all ring torsion angles. If the average RMSD is greater than 60 degrees and the minimal RMSD between the ring in question and any Mogul-identified rings is also greater than 60 degrees, then that ring is considered an outlier. The outliers are highlighted in purple. The color gray indicates Mogul did not find sufficient equivalents in the CSD to analyse the geometry.



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

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

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

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

5.3 Carbohydrates

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

5.4 Ligands

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

5.5 Other polymers

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