WORLDWIDE PDB PROTEIN DATA BANK

wwPDB X-ray Structure Validation Summary Report ⓘ

Oct 5, 2023 – 12:43 AM EDT

PDB ID	:	6VDO
Title	:	HCV NS3/4A protease A156T, D168E double mutant
Authors	:	Timm, J.; Schiffer, C.A.
Deposited on	:	2019-12-27
Resolution	:	2.11 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	:	FAILED
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	FAILED
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 (i)

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

The reported resolution of this entry is 2.11 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 ⓘ

There are 5 unique types of molecules in this entry. The entry contains 3078 atoms, of which 1419 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 NS3 protease.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
			Total	C	H	N	O	S			
1	A	201	2917	923	1419	275	289	11	0	6	0

There are 35 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	980	GLY	-	expression tag	UNP A0A0B4WYC6
A	981	SER	-	expression tag	UNP A0A0B4WYC6
A	982	HIS	-	expression tag	UNP A0A0B4WYC6
A	983	MET	-	expression tag	UNP A0A0B4WYC6
A	984	ALA	-	expression tag	UNP A0A0B4WYC6
A	985	SER	-	expression tag	UNP A0A0B4WYC6
A	986	MET	-	expression tag	UNP A0A0B4WYC6
A	987	LYS	-	expression tag	UNP A0A0B4WYC6
A	988	LYS	-	expression tag	UNP A0A0B4WYC6
A	989	LYS	-	expression tag	UNP A0A0B4WYC6
A	990	GLY	-	expression tag	UNP A0A0B4WYC6
A	991	SER	-	expression tag	UNP A0A0B4WYC6
A	992	VAL	-	expression tag	UNP A0A0B4WYC6
A	993	VAL	-	expression tag	UNP A0A0B4WYC6
A	994	ILE	-	expression tag	UNP A0A0B4WYC6
A	995	VAL	-	expression tag	UNP A0A0B4WYC6
A	996	GLY	-	expression tag	UNP A0A0B4WYC6
A	997	ARG	-	expression tag	UNP A0A0B4WYC6
A	998	ILE	-	expression tag	UNP A0A0B4WYC6
A	999	ASN	-	expression tag	UNP A0A0B4WYC6
A	1000	LEU	-	expression tag	UNP A0A0B4WYC6
A	1001	SER	-	expression tag	UNP A0A0B4WYC6
A	1002	GLY	-	expression tag	UNP A0A0B4WYC6
A	1003	ASP	-	expression tag	UNP A0A0B4WYC6
A	1013	GLU	LEU	conflict	UNP A0A0B4WYC6
A	1014	GLU	LEU	conflict	UNP A0A0B4WYC6
A	1017	GLN	ILE	conflict	UNP A0A0B4WYC6

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Chain	Residue	Modelled	Actual	Comment	Reference
A	1018	GLU	ILE	conflict	UNP A0A0B4WYC6
A	1021	GLN	LEU	conflict	UNP A0A0B4WYC6
A	1047	SER	CYS	conflict	UNP A0A0B4WYC6
A	1052	LEU	CYS	conflict	UNP A0A0B4WYC6
A	1072	THR	ILE	conflict	UNP A0A0B4WYC6
A	1086	GLN	PRO	conflict	UNP A0A0B4WYC6
A	1156	THR	ALA	engineered mutation	UNP A0A0B4WYC6
A	1168	GLU	ASP	engineered mutation	UNP A0A0B4WYC6

- Molecule 2 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	1	Total	Zn	0	0
			1	1		

- Molecule 3 is BETA-MERCAPTOETHANOL (three-letter code: BME) (formula: C_2H_6OS).

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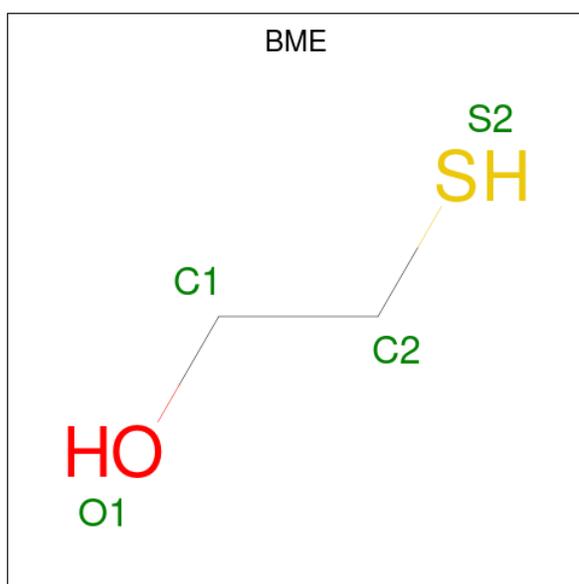
Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
3	A	1	Total	C	O	S	0	0
			4	2	1	1		

- Molecule 4 is SULFATE ION (three-letter code: SO4) (formula: O_4S).

SO4

O1

O3   O⁻ — S — O⁻ O4

S

O2

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

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	141	Total 141	O 141	0	0

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

3 Data and refinement statistics (i)

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

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	55.02Å 58.59Å 61.64Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	20.05 – 2.11	Depositor
% Data completeness (in resolution range)	99.4 (20.05-2.11)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.74 (at 2.11Å)	Xtriage
Refinement program	PHENIX 1.15.2_3472	Depositor
R, R_{free}	0.194 , 0.235	Depositor
Wilson B-factor (Å^2)	27.2	Xtriage
Anisotropy	0.573	Xtriage
L-test for twinning[2]	$< |L| > = 0.50, < L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.023 for -h,l,k	Xtriage
Total number of atoms	3078	wwPDB-VP
Average B, all atoms (Å^2)	36.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 7.37% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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 ⓘ

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

4.2 Too-close contacts ⓘ

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

4.3 Torsion angles ⓘ

4.3.1 Protein backbone ⓘ

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

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 5 ligands modelled in this entry, 1 is monoatomic - leaving 4 for Mogul analysis.

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	SO4	A	1203	-	4,4,4	0.13	0	6,6,6	0.06	0
4	SO4	A	1205	-	4,4,4	0.10	0	6,6,6	0.16	0
3	BME	A	1202	1	3,3,3	0.34	0	1,2,2	0.33	0
4	SO4	A	1204	-	4,4,4	0.14	0	6,6,6	0.07	0

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
3	BME	A	1202	1	-	0/1/1/1	-

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 ⓘ

There are no such residues in this entry.

4.8 Polymer linkage issues ⓘ

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.