



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 01:53 PM UTC

PDB ID : 5RYD / pdb_00005ryd
Title : INPP5D PanDDA analysis group deposition – Crystal Structure of the phosphatase and C2 domains of SHIP1 in complex with Z955369596
Authors : Bradshaw, W.J.; Newman, J.A.; von Delft, F.; Arrowsmith, C.H.; Edwards, A.M.; Bountra, C.; Gileadi, O.
Deposited on : 2020-10-30
Resolution : 1.60 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	:	4-5-2 with Phenix2.0
Mogul	:	NOT EXECUTED
Xtriage (Phenix)	:	2.0
EDS	:	NOT EXECUTED
Buster-report	:	NOT EXECUTED
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

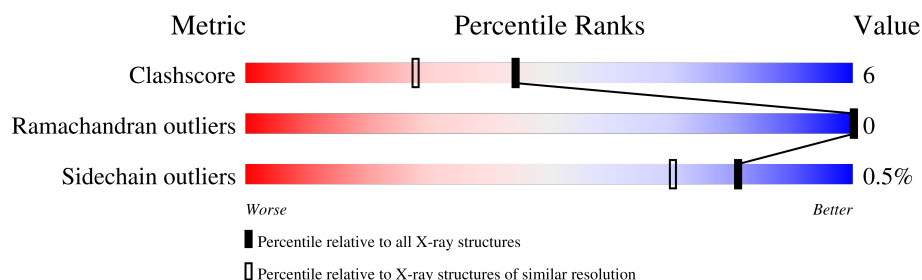
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.60 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))
Clashscore	190562	4931 (1.60-1.60)
Ramachandran outliers	187476	4831 (1.60-1.60)
Sidechain outliers	187428	4830 (1.60-1.60)

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 $\leq 5\%$.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	463	 92% 7%

2 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 4776 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.

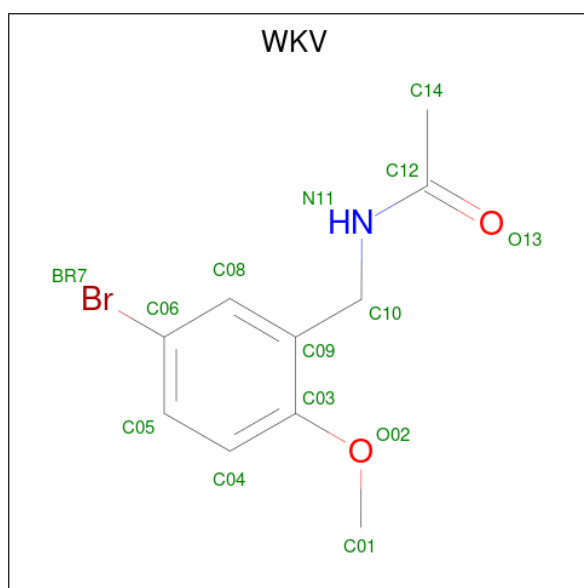
- Molecule 1 is a protein called Phosphatidylinositol 3,4,5-trisphosphate 5-phosphatase 1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	460	4310	2723	743	826	18	0	35	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	394	SER	-	expression tag	UNP Q92835
A	395	MET	-	expression tag	UNP Q92835

- Molecule 2 is N-[(5-bromo-2-methoxyphenyl)methyl]acetamide (CCD ID: WKV) (formula: $C_{10}H_{12}BrNO_2$).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
			Total	Br	C	N	O		
2	A	1	14	1	10	1	2	0	0

- Molecule 3 is DIMETHYL SULFOXIDE (CCD ID: DMS) (formula: C_2H_6OS).



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

- Molecule 4 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	436	Total	O	0	9
			440	440		

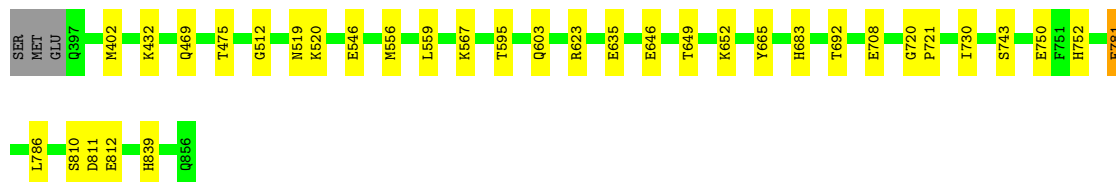
3 Residue-property plots [i](#)

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.

Note EDS was not executed.

- Molecule 1: Phosphatidylinositol 3,4,5-trisphosphate 5-phosphatase 1

Chain A:  92% 7%



4 Data and refinement statistics

EDS was not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α , β , γ	62.38Å 79.24Å 89.22Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	49.06 – 1.60	Depositor
% Data completeness (in resolution range)	99.9 (49.06-1.60)	Depositor
R_{merge}	0.14	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.36 (at 1.60Å)	Xtriage
Refinement program	REFMAC 5.8.0238	Depositor
R, R_{free}	0.175 , 0.203	Depositor
Wilson B-factor (Å ²)	18.5	Xtriage
Anisotropy	0.063	Xtriage
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.34$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	4776	wwPDB-VP
Average B, all atoms (Å ²)	22.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.40% 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](#)

Bond lengths and bond angles in the following residue types are not validated in this section: DMS, WKV

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	1.00	2/4408 (0.0%)	1.11	0/5949

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	811	ASP	C-N	-6.85	1.23	1.33
1	A	692	THR	C-O	5.14	1.30	1.23

There are no bond angle outliers.

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts [i](#)

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	4310	0	4210	52	0
2	A	14	0	0	0	0
3	A	12	0	18	0	0
4	A	440	0	0	13	0
All	All	4776	0	4228	52	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 6.

All (52) 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)
1:A:402[A]:MET:HE1	1:A:708[A]:GLU:CD	1.49	1.36
1:A:402[C]:MET:HE1	1:A:708[C]:GLU:CD	1.49	1.36
1:A:402[A]:MET:HE3	1:A:708[A]:GLU:CG	1.74	1.17
1:A:402[C]:MET:HE3	1:A:708[C]:GLU:CG	1.74	1.17
1:A:402[A]:MET:CE	1:A:708[A]:GLU:CD	2.20	1.13
1:A:402[C]:MET:CE	1:A:708[C]:GLU:CD	2.20	1.13
1:A:402[A]:MET:HE3	1:A:708[A]:GLU:HG2	1.26	1.11
1:A:402[C]:MET:HE3	1:A:708[C]:GLU:HG2	1.26	1.11
1:A:402[A]:MET:CE	1:A:708[A]:GLU:CG	2.31	1.08
1:A:402[C]:MET:CE	1:A:708[C]:GLU:CG	2.31	1.08
1:A:567:LYS:HD2	4:A:1185:HOH:O	1.55	1.04
1:A:402[A]:MET:HE1	1:A:708[A]:GLU:OE2	1.61	0.98
1:A:402[C]:MET:HE1	1:A:708[C]:GLU:OE2	1.61	0.98
1:A:567:LYS:CD	4:A:1185:HOH:O	2.15	0.90
1:A:810:SER:OG	1:A:812:GLU:HG2	1.71	0.90
1:A:781:GLU:OE1	4:A:1001:HOH:O	1.97	0.82
1:A:567:LYS:HG2	4:A:1191:HOH:O	1.83	0.78
1:A:556[C]:MET:SD	1:A:839:HIS:HB3	2.34	0.68
1:A:546[A]:GLU:H	1:A:546[A]:GLU:CD	2.03	0.66
1:A:546[C]:GLU:H	1:A:546[C]:GLU:CD	2.03	0.66
1:A:469:GLN:NE2	1:A:475:THR:OG1	2.28	0.66
1:A:402[A]:MET:CE	1:A:708[A]:GLU:OE2	2.36	0.64
1:A:402[C]:MET:CE	1:A:708[C]:GLU:OE2	2.36	0.64
1:A:402[A]:MET:CE	1:A:708[A]:GLU:HG3	2.29	0.58
1:A:402[C]:MET:CE	1:A:708[C]:GLU:HG3	2.29	0.58
1:A:432[B]:LYS:HG2	4:A:1074:HOH:O	2.05	0.57
1:A:623[B]:ARG:NE	4:A:1051[B]:HOH:O	2.39	0.56
1:A:432[A]:LYS:HE3	1:A:635[A]:GLU:OE2	2.08	0.54
1:A:432[C]:LYS:HE3	1:A:635[C]:GLU:OE2	2.08	0.54
1:A:567:LYS:HE3	4:A:1185:HOH:O	2.07	0.54
1:A:402[A]:MET:HE3	1:A:708[A]:GLU:HG3	1.82	0.54
1:A:402[C]:MET:HE3	1:A:708[C]:GLU:HG3	1.82	0.54
1:A:519:ASN:HD21	1:A:520[C]:LYS:NZ	2.05	0.54
1:A:402[A]:MET:CE	1:A:708[A]:GLU:HG2	2.10	0.53
1:A:402[C]:MET:CE	1:A:708[C]:GLU:HG2	2.10	0.53
1:A:519:ASN:HD21	1:A:520[A]:LYS:NZ	2.05	0.52
1:A:519:ASN:HD21	1:A:520[B]:LYS:HE3	1.74	0.52
1:A:752:HIS:HD2	4:A:1386:HOH:O	1.95	0.50
1:A:603[B]:GLN:NE2	4:A:1013:HOH:O	2.41	0.48
1:A:512:GLY:O	4:A:1002:HOH:O	2.19	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:559[B]:LEU:C	1:A:559[B]:LEU:HD12	2.39	0.47
1:A:432[B]:LYS:HG3	4:A:1024:HOH:O	2.14	0.47
1:A:646:GLU:OE2	1:A:652:LYS:HD2	2.14	0.47
1:A:750:GLU:OE1	1:A:752:HIS:HE1	2.01	0.44
1:A:730:ILE:HB	1:A:786:LEU:HB2	1.99	0.43
1:A:810:SER:OG	1:A:812:GLU:CG	2.54	0.43
1:A:402[B]:MET:SD	1:A:683:HIS:CD2	3.11	0.43
1:A:556[C]:MET:HG3	4:A:1061:HOH:O	2.18	0.43
1:A:720:GLY:HA2	1:A:721:PRO:C	2.45	0.42
1:A:649:THR:HG23	4:A:1158:HOH:O	2.20	0.41
1:A:595[B]:THR:HG21	1:A:665:TYR:CE2	2.56	0.40
1:A:519:ASN:HD21	1:A:520[C]:LYS:HZ3	1.69	0.40

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 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	528/463 (114%)	513 (97%)	15 (3%)	0	100	100

There are no Ramachandran outliers to report.

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	483/417 (116%)	481 (100%)	2 (0%)	84	75

All (2) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	743	SER
1	A	781	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	469	GLN
1	A	486	ASN
1	A	519	ASN
1	A	752	HIS

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

Mogul was not executed - this section is therefore empty.

5.5 Carbohydrates ⓘ

Mogul was not executed - this section is therefore empty.

5.6 Ligand geometry ⓘ

Mogul was not executed - this section is therefore empty.

5.7 Other polymers ⓘ

Mogul was not executed - this section is therefore empty.

5.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

6 Fit of model and data

6.1 Protein, DNA and RNA chains

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

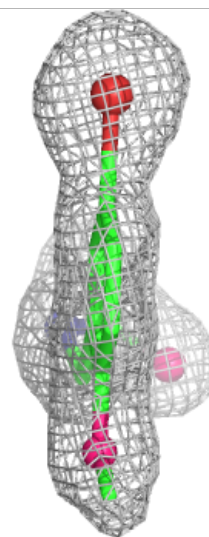
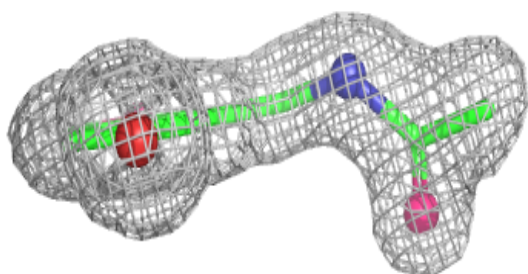
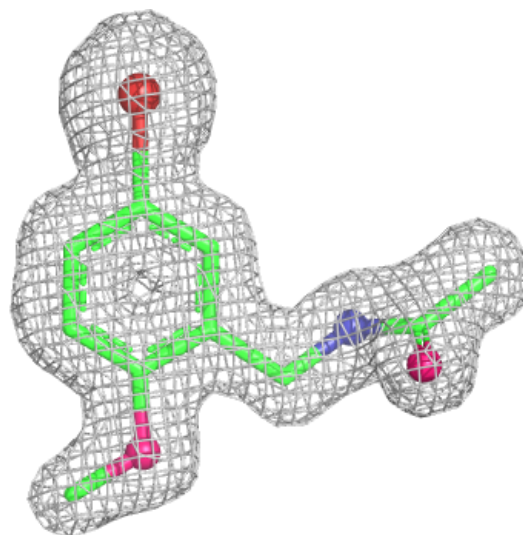
6.4 Ligands

EDS was not executed - this section is therefore empty.

The following is a graphical depiction of the model fit to experimental electron density of all instances of the Ligand of Interest. In addition, ligands with molecular weight > 250 and outliers as shown on the geometry validation Tables will also be included. Each fit is shown from different orientation to approximate a three-dimensional view.

Electron density around WKV A 901:

$2mF_o-DF_c$ (at 0.7 rmsd) in gray
 mF_o-DF_c (at 3 rmsd) in purple (negative)
and green (positive)



6.5 Other polymers [i](#)

EDS was not executed - this section is therefore empty.