



# Full wwPDB X-ray Structure Validation Report ⓘ

Nov 21, 2023 – 07:52 PM JST

PDB ID : 7Y3A  
Title : Crystal structure of TRIM7 bound to 2C  
Authors : Dong, C.; Yan, X.  
Deposited on : 2022-06-10  
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](mailto: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>.

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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 : 2.36  
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

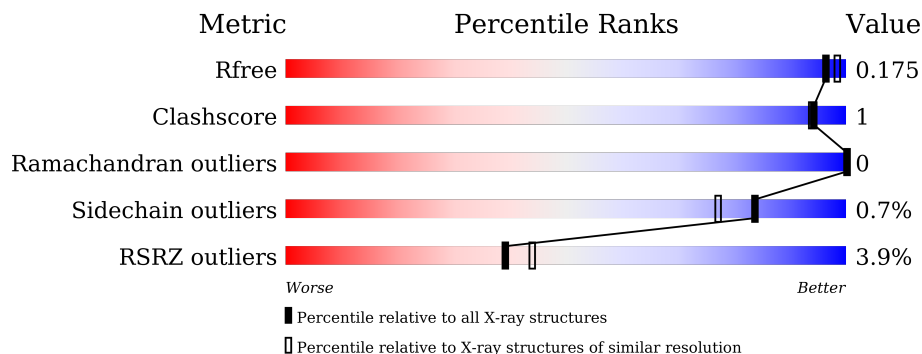
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

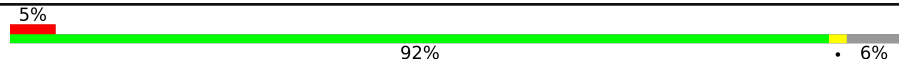
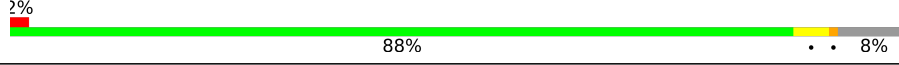
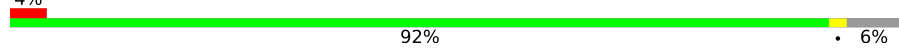
The reported resolution of this entry is 1.70 Å.

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	4298 (1.70-1.70)
Clashscore	141614	4695 (1.70-1.70)
Ramachandran outliers	138981	4610 (1.70-1.70)
Sidechain outliers	138945	4610 (1.70-1.70)
RSRZ outliers	127900	4222 (1.70-1.70)

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  $\geq 3$ , 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	193	 5% 92% 6%
1	B	193	 2% 88% 8%
1	C	193	 4% 92% 6%

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 5053 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 E3 ubiquitin-protein ligase TRIM7,E3 ubiquitin-protein ligase TRIM7,E3 ubiquitin-protein ligase TRIM7,TRIM7-2C.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	181	Total	C	N	O	S	0	4	0
			1441	915	258	263	5			
1	C	181	Total	C	N	O	S	0	5	0
			1448	919	260	264	5			
1	B	178	Total	C	N	O	S	1	10	0
			1449	926	258	259	6			

There are 30 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	343	THR	GLU	conflict	UNP Q9C029
A	512	GLY	-	linker	UNP Q9C029
A	513	GLY	-	linker	UNP Q9C029
A	514	SER	-	linker	UNP Q9C029
A	515	GLY	-	linker	UNP Q9C029
A	516	GLY	-	linker	UNP Q9C029
A	517	SER	-	linker	UNP Q9C029
A	518	GLY	-	linker	UNP Q9C029
A	519	GLY	-	linker	UNP Q9C029
A	520	SER	-	linker	UNP Q9C029
C	343	THR	GLU	conflict	UNP Q9C029
C	512	GLY	-	linker	UNP Q9C029
C	513	GLY	-	linker	UNP Q9C029
C	514	SER	-	linker	UNP Q9C029
C	515	GLY	-	linker	UNP Q9C029
C	516	GLY	-	linker	UNP Q9C029
C	517	SER	-	linker	UNP Q9C029
C	518	GLY	-	linker	UNP Q9C029
C	519	GLY	-	linker	UNP Q9C029
C	520	SER	-	linker	UNP Q9C029
B	343	THR	GLU	conflict	UNP Q9C029
B	512	GLY	-	linker	UNP Q9C029

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Chain	Residue	Modelled	Actual	Comment	Reference
B	513	GLY	-	linker	UNP Q9C029
B	514	SER	-	linker	UNP Q9C029
B	515	GLY	-	linker	UNP Q9C029
B	516	GLY	-	linker	UNP Q9C029
B	517	SER	-	linker	UNP Q9C029
B	518	GLY	-	linker	UNP Q9C029
B	519	GLY	-	linker	UNP Q9C029
B	520	SER	-	linker	UNP Q9C029

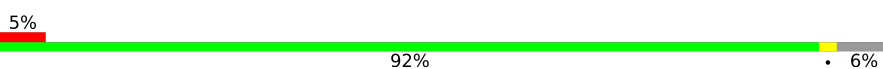
- Molecule 2 is water.

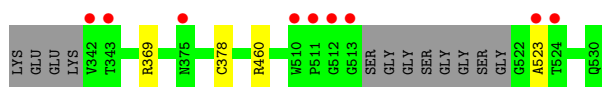
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	228	Total O 228 228	0	0
2	C	245	Total O 245 245	0	0
2	B	242	Total O 242 242	0	0

### 3 Residue-property plots [i](#)

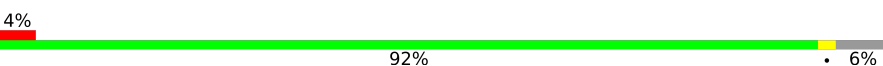
These plots are drawn for all protein, RNA, DNA and oligosaccharide chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. 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. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). 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.

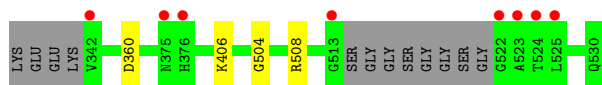
- Molecule 1: E3 ubiquitin-protein ligase TRIM7,E3 ubiquitin-protein ligase TRIM7,E3 ubiquitin-protein ligase TRIM7,TRIM7-2C

Chain A: 




- Molecule 1: E3 ubiquitin-protein ligase TRIM7,E3 ubiquitin-protein ligase TRIM7,E3 ubiquitin-protein ligase TRIM7,TRIM7-2C

Chain C: 



- Molecule 1: E3 ubiquitin-protein ligase TRIM7,E3 ubiquitin-protein ligase TRIM7,E3 ubiquitin-protein ligase TRIM7,TRIM7-2C

Chain B: 



## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	79.23Å 53.64Å 81.00Å 90.00° 119.21° 90.00°	Depositor
Resolution (Å)	29.04 – 1.70 29.04 – 1.70	Depositor EDS
% Data completeness (in resolution range)	94.5 (29.04-1.70) 94.5 (29.04-1.70)	Depositor EDS
$R_{merge}$	0.05	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	9.87 (at 1.70Å)	Xtrriage
Refinement program	PHENIX 1.17.1_3660	Depositor
R, $R_{free}$	0.148 , 0.175 0.149 , 0.175	Depositor DCC
$R_{free}$ test set	2927 reflections (4.72%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	10.7	Xtrriage
Anisotropy	0.156	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 49.4	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.51$ , $\langle L^2 \rangle = 0.34$	Xtrriage
Estimated twinning fraction	0.006 for -h-l,k,h 0.006 for l,k,-h-l 0.011 for h,-k,-h-l 0.006 for -h-l,-k,l 0.011 for l,-k,h	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	5053	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	14.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.42% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical 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	0.36	0/1487	0.57	0/2021
1	B	0.36	0/1517	0.61	1/2056 (0.0%)
1	C	0.36	0/1500	0.59	0/2036
All	All	0.36	0/4504	0.59	1/6113 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	354	ARG	NE-CZ-NH2	-5.31	117.64	120.30

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	1441	0	1412	3	0
1	B	1449	0	1448	6	0
1	C	1448	0	1423	2	0
2	A	228	0	0	3	1
2	B	242	0	0	3	3
2	C	245	0	0	0	1
All	All	5053	0	4283	11	3

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 1.

All (11) 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:B:406:LYS:NZ	2:B:601:HOH:O	2.18	0.77
1:B:390[A]:CYS:SG	2:B:719:HOH:O	2.54	0.65
1:B:491:GLN:NE2	2:B:603:HOH:O	2.39	0.56
1:C:406:LYS:HE3	1:C:504:GLY:O	2.11	0.50
1:A:378:CYS:HB3	2:A:790:HOH:O	2.16	0.46
1:A:460:ARG:NH1	2:A:607:HOH:O	2.49	0.45
1:B:466:ASP:CG	1:B:469[B]:VAL:HG12	2.37	0.44
1:A:523:ALA:O	2:A:601:HOH:O	2.21	0.43
1:C:360:ASP:OD2	1:C:508:ARG:NH2	2.42	0.43
1:B:369:ARG:HD2	1:B:369:ARG:O	2.20	0.41
1:B:396[B]:ARG:CZ	1:B:466:ASP:OD2	2.69	0.41

All (3) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:B:768:HOH:O	2:B:781:HOH:O[2_555]	2.14	0.06
2:C:791:HOH:O	2:B:620:HOH:O[1_565]	2.18	0.02
2:A:824:HOH:O	2:B:648:HOH:O[2_655]	2.19	0.01

## 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	181/193 (94%)	176 (97%)	5 (3%)	0	100	100
1	B	183/193 (95%)	176 (96%)	7 (4%)	0	100	100
1	C	182/193 (94%)	178 (98%)	4 (2%)	0	100	100
All	All	546/579 (94%)	530 (97%)	16 (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	156/159 (98%)	155 (99%)	1 (1%)	86	80
1	B	160/159 (101%)	158 (99%)	2 (1%)	69	56
1	C	157/159 (99%)	157 (100%)	0	100	100
All	All	473/477 (99%)	470 (99%)	3 (1%)	84	80

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	369	ARG
1	B	369	ARG
1	B	525	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

### 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

### 6.1 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<sup>th</sup> 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 <sup>2</sup> )	Q<0.9
1	A	181/193 (93%)	-0.16	9 (4%) 28 32	6, 10, 39, 85	0
1	B	178/193 (92%)	-0.36	4 (2%) 62 66	5, 10, 23, 50	0
1	C	181/193 (93%)	-0.30	8 (4%) 34 38	5, 10, 27, 53	0
All	All	540/579 (93%)	-0.27	21 (3%) 39 44	5, 10, 28, 85	0

All (21) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	524	THR	8.4
1	A	342	VAL	7.6
1	A	513	GLY	5.3
1	B	342	VAL	5.2
1	C	342	VAL	5.1
1	A	523	ALA	4.9
1	A	510	TRP	4.7
1	B	343	THR	4.6
1	A	512	GLY	4.6
1	A	375	ASN	3.8
1	A	511	PRO	3.8
1	C	375	ASN	3.6
1	C	525	LEU	3.4
1	A	343	THR	3.0
1	C	376	HIS	2.9
1	C	523	ALA	2.6
1	B	525	LEU	2.4
1	C	524	THR	2.4
1	C	522	GLY	2.4
1	B	369	ARG	2.3
1	C	513	GLY	2.1

## 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.