



# wwPDB X-ray Structure Validation Summary Report

Oct 4, 2023 – 08:06 PM EDT

PDB ID : 6OOI  
Title : Crystal structure of triosephosphate isomerase from *Schistosoma mansoni* in complex with 2PG  
Authors : Jimenez-Sandoval, P.; Brieba, L.  
Deposited on : 2019-04-23  
Resolution : 2.14 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](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 : **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

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.14 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 6 unique types of molecules in this entry. The entry contains 16312 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 Triosephosphate isomerase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
1	A	250	Total 1890	C 1195	N 330	O 357	S 8	0	1	0
1	B	249	Total 1897	C 1205	N 328	O 356	S 8	0	0	0
1	C	255	Total 1935	C 1223	N 337	O 366	S 9	0	1	0
1	D	251	Total 1881	C 1192	N 327	O 354	S 8	0	0	0
1	E	249	Total 1865	C 1181	N 324	O 352	S 8	0	1	0
1	F	250	Total 1897	C 1202	N 332	O 355	S 8	0	0	0
1	G	249	Total 1892	C 1202	N 327	O 355	S 8	0	0	0
1	H	250	Total 1882	C 1196	N 325	O 353	S 8	0	0	0

There are 24 discrepancies between the modelled and reference sequences:

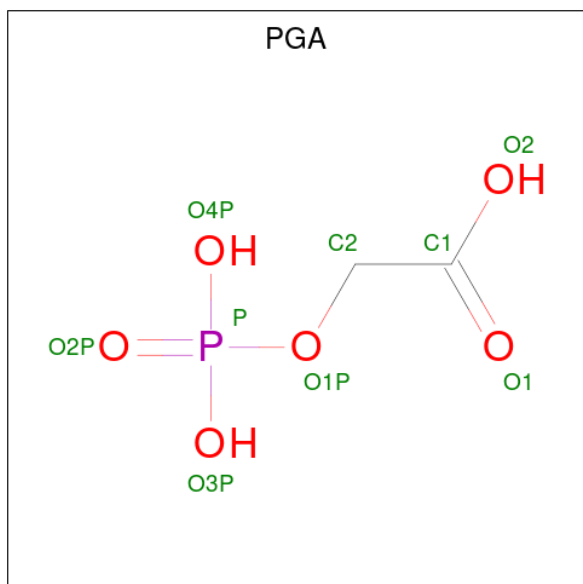
Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	expression tag	UNP P48501
A	-1	PRO	-	expression tag	UNP P48501
A	0	HIS	-	expression tag	UNP P48501
B	-2	GLY	-	expression tag	UNP P48501
B	-1	PRO	-	expression tag	UNP P48501
B	0	HIS	-	expression tag	UNP P48501
C	-2	GLY	-	expression tag	UNP P48501
C	-1	PRO	-	expression tag	UNP P48501
C	0	HIS	-	expression tag	UNP P48501
D	-2	GLY	-	expression tag	UNP P48501
D	-1	PRO	-	expression tag	UNP P48501
D	0	HIS	-	expression tag	UNP P48501
E	-2	GLY	-	expression tag	UNP P48501

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Chain	Residue	Modelled	Actual	Comment	Reference
E	-1	PRO	-	expression tag	UNP P48501
E	0	HIS	-	expression tag	UNP P48501
F	-2	GLY	-	expression tag	UNP P48501
F	-1	PRO	-	expression tag	UNP P48501
F	0	HIS	-	expression tag	UNP P48501
G	-2	GLY	-	expression tag	UNP P48501
G	-1	PRO	-	expression tag	UNP P48501
G	0	HIS	-	expression tag	UNP P48501
H	-2	GLY	-	expression tag	UNP P48501
H	-1	PRO	-	expression tag	UNP P48501
H	0	HIS	-	expression tag	UNP P48501

- Molecule 2 is 2-PHOSPHOGLYCOLIC ACID (three-letter code: PGA) (formula: C<sub>2</sub>H<sub>5</sub>O<sub>6</sub>P).



Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
			Total	C	O	P		
2	A	1	9	2	6	1	0	0
2	B	1	9	2	6	1	0	0
2	C	1	9	2	6	1	0	0
2	D	1	9	2	6	1	0	0
2	E	1	9	2	6	1	0	0
2	F	1	9	2	6	1	0	0

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Mol	Chain	Residues	Atoms				ZeroOcc	AltConf
2	G	1	Total	C	O	P	0	0
			9	2	6	1		
2	H	1	Total	C	O	P	0	0
			9	2	6	1		

- Molecule 3 is CHLORIDE ION (three-letter code: CL) (formula: Cl).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	1	Total	Cl	0	0
			1	1		
3	B	1	Total	Cl	0	0
			1	1		
3	C	1	Total	Cl	0	0
			1	1		
3	D	1	Total	Cl	0	0
			1	1		
3	F	1	Total	Cl	0	0
			1	1		
3	G	1	Total	Cl	0	0
			1	1		

- Molecule 4 is SODIUM ION (three-letter code: NA) (formula: Na).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
4	A	2	Total	Na	0	0
			2	2		
4	B	1	Total	Na	0	0
			1	1		
4	C	2	Total	Na	0	0
			2	2		
4	E	2	Total	Na	0	0
			2	2		
4	H	1	Total	Na	0	0
			1	1		

- Molecule 5 is GLYCEROL (three-letter code: GOL) (formula: C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	C	1	Total C O 6 3 3	0	0
5	H	1	Total C O 6 3 3	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	141	Total O 141 141	0	0
6	B	154	Total O 154 154	0	0
6	C	150	Total O 150 150	0	0
6	D	136	Total O 136 136	0	0
6	E	101	Total O 101 101	0	0
6	F	137	Total O 137 137	0	0
6	G	118	Total O 118 118	0	0
6	H	138	Total O 138 138	0	0

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	P 43	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	108.05Å 108.05Å 182.72Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	58.61 – 2.14	Depositor
% Data completeness (in resolution range)	100.0 (58.61-2.14)	Depositor
$R_{merge}$	0.15	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.61 (at 2.14Å)	Xtrriage
Refinement program	PHENIX	Depositor
R, $R_{free}$	0.180 , 0.229	Depositor
Wilson B-factor (Å <sup>2</sup> )	18.9	Xtrriage
Anisotropy	0.245	Xtrriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.035 for h,-k,-l	Xtrriage
Total number of atoms	16312	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	24.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.92% 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.

## 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](#)

Of 24 ligands modelled in this entry, 14 are monoatomic - leaving 10 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
2	PGA	G	301	-	8,8,8	0.83	0	10,11,11	1.00	0
2	PGA	F	301	-	8,8,8	1.05	0	10,11,11	1.30	2 (20%)
2	PGA	E	301	-	8,8,8	1.20	1 (12%)	10,11,11	1.08	2 (20%)
2	PGA	C	302	-	8,8,8	0.99	0	10,11,11	1.34	2 (20%)
2	PGA	H	302	-	8,8,8	0.86	0	10,11,11	1.26	2 (20%)
5	GOL	C	301	-	5,5,5	2.08	1 (20%)	5,5,5	1.05	0
5	GOL	H	301	-	5,5,5	1.43	1 (20%)	5,5,5	0.60	0
2	PGA	D	301	-	8,8,8	1.18	1 (12%)	10,11,11	1.22	1 (10%)
2	PGA	B	301	-	8,8,8	1.07	1 (12%)	10,11,11	1.18	1 (10%)
2	PGA	A	301	-	8,8,8	0.97	0	10,11,11	1.34	2 (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	PGA	G	301	-	-	2/6/6/6	-
2	PGA	F	301	-	-	2/6/6/6	-
2	PGA	E	301	-	-	2/6/6/6	-
2	PGA	C	302	-	-	0/6/6/6	-
2	PGA	H	302	-	-	2/6/6/6	-
5	GOL	C	301	-	-	2/4/4/4	-
5	GOL	H	301	-	-	0/4/4/4	-
2	PGA	D	301	-	-	0/6/6/6	-
2	PGA	B	301	-	-	0/6/6/6	-
2	PGA	A	301	-	-	2/6/6/6	-

All (5) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	C	301	GOL	O2-C2	-4.39	1.30	1.43
5	H	301	GOL	O2-C2	-2.66	1.35	1.43
2	E	301	PGA	O1P-C2	-2.52	1.41	1.43
2	B	301	PGA	O1P-C2	-2.29	1.41	1.43

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	D	301	PGA	O2-C1	-2.29	1.23	1.30

The worst 5 of 12 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	D	301	PGA	O2-C1-O1	-2.92	116.03	123.30
2	C	302	PGA	O2-C1-O1	-2.71	116.54	123.30
2	A	301	PGA	O2-C1-O1	-2.37	117.40	123.30
2	B	301	PGA	O2-C1-O1	-2.35	117.44	123.30
2	F	301	PGA	O1P-C2-C1	-2.26	107.12	110.54

There are no chirality outliers.

5 of 12 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	301	PGA	C2-O1P-P-O3P
2	A	301	PGA	C2-O1P-P-O4P
2	E	301	PGA	O1-C1-C2-O1P
2	E	301	PGA	O2-C1-C2-O1P
2	F	301	PGA	C2-O1P-P-O2P

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

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.