



wwPDB X-ray Structure Validation Summary Report ⓘ

Mar 20, 2026 – 08:14 AM UTC

PDB ID : 3NRJ / pdb_00003nrj
Title : Crystal structure of probable yrbi family phosphatase from pseudomonas syringae pv.phaseolica 1448a complexed with magnesium
Authors : Patskovsky, Y.; Ramagopal, U.; Toro, R.; Freeman, J.; Sauder, J.M.; Burley, S.K.; Almo, S.C.; New York SGX Research Center for Structural Genomics (NYSGXRC)
Deposited on : 2010-06-30
Resolution : 1.90 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	:	4-5-2 with Phenix2.0
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

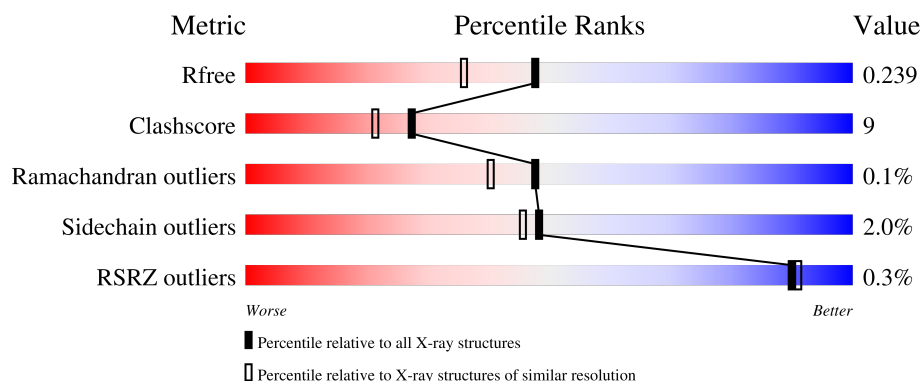
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 1.90 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}	180053	7789 (1.90-1.90)
Clashscore	190562	8410 (1.90-1.90)
Ramachandran outliers	187476	8333 (1.90-1.90)
Sidechain outliers	187428	8333 (1.90-1.90)
RSRZ outliers	180081	7790 (1.90-1.90)

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 $\leq 5\%$. 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	189	
1	B	189	
1	C	189	
1	D	189	

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Mol	Chain	Length	Quality of chain
1	E	189	 78%13% • 7%
1	F	189	 78%14% • 8%
1	G	189	 78%12% • 8%
1	H	189	 78%13% • 9%
1	I	189	 81%12% • 6%
1	J	189	 65%25% • 9%
1	K	189	 72%17% • 9%
1	L	189	 75%16% • 9%

The following table lists non-polymeric compounds, carbohydrate monomers and non-standard residues in protein, DNA, RNA chains that are outliers for geometric or electron-density-fit criteria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
4	PO4	D	190	-	-	X	-
4	PO4	H	189	-	-	X	-
4	PO4	I	189	-	-	X	-

2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 17050 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 PROBABLE YRBI FAMILY PHOSPHATASE.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	176	Total	C	N	O	S	0	10	0
			1404	884	255	259	6			
1	B	173	Total	C	N	O	S	0	5	0
			1348	849	242	251	6			
1	C	173	Total	C	N	O	S	0	6	0
			1353	852	242	254	5			
1	D	172	Total	C	N	O	S	0	7	0
			1344	849	238	251	6			
1	E	175	Total	C	N	O	S	0	3	0
			1350	849	241	254	6			
1	F	174	Total	C	N	O	S	0	4	0
			1341	845	238	252	6			
1	G	173	Total	C	N	O	S	0	4	0
			1336	842	236	252	6			
1	H	172	Total	C	N	O	S	0	4	0
			1336	843	237	250	6			
1	I	177	Total	C	N	O	S	0	7	0
			1386	872	245	262	7			
1	J	172	Total	C	N	O	S	0	2	0
			1321	831	238	247	5			
1	K	172	Total	C	N	O	S	0	1	0
			1316	829	235	247	5			
1	L	172	Total	C	N	O	S	0	4	0
			1329	838	235	250	6			

There are 144 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-1	MET	-	expression tag	UNP Q48EB9
A	0	SER	-	expression tag	UNP Q48EB9
A	1	LEU	-	expression tag	UNP Q48EB9
A	151	GLN	ARG	engineered mutation	UNP Q48EB9
A	180	GLU	-	expression tag	UNP Q48EB9

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Chain	Residue	Modelled	Actual	Comment	Reference
A	181	GLY	-	expression tag	UNP Q48EB9
A	182	HIS	-	expression tag	UNP Q48EB9
A	183	HIS	-	expression tag	UNP Q48EB9
A	184	HIS	-	expression tag	UNP Q48EB9
A	185	HIS	-	expression tag	UNP Q48EB9
A	186	HIS	-	expression tag	UNP Q48EB9
A	187	HIS	-	expression tag	UNP Q48EB9
B	-1	MET	-	expression tag	UNP Q48EB9
B	0	SER	-	expression tag	UNP Q48EB9
B	1	LEU	-	expression tag	UNP Q48EB9
B	151	GLN	ARG	engineered mutation	UNP Q48EB9
B	180	GLU	-	expression tag	UNP Q48EB9
B	181	GLY	-	expression tag	UNP Q48EB9
B	182	HIS	-	expression tag	UNP Q48EB9
B	183	HIS	-	expression tag	UNP Q48EB9
B	184	HIS	-	expression tag	UNP Q48EB9
B	185	HIS	-	expression tag	UNP Q48EB9
B	186	HIS	-	expression tag	UNP Q48EB9
B	187	HIS	-	expression tag	UNP Q48EB9
C	-1	MET	-	expression tag	UNP Q48EB9
C	0	SER	-	expression tag	UNP Q48EB9
C	1	LEU	-	expression tag	UNP Q48EB9
C	151	GLN	ARG	engineered mutation	UNP Q48EB9
C	180	GLU	-	expression tag	UNP Q48EB9
C	181	GLY	-	expression tag	UNP Q48EB9
C	182	HIS	-	expression tag	UNP Q48EB9
C	183	HIS	-	expression tag	UNP Q48EB9
C	184	HIS	-	expression tag	UNP Q48EB9
C	185	HIS	-	expression tag	UNP Q48EB9
C	186	HIS	-	expression tag	UNP Q48EB9
C	187	HIS	-	expression tag	UNP Q48EB9
D	-1	MET	-	expression tag	UNP Q48EB9
D	0	SER	-	expression tag	UNP Q48EB9
D	1	LEU	-	expression tag	UNP Q48EB9
D	151	GLN	ARG	engineered mutation	UNP Q48EB9
D	180	GLU	-	expression tag	UNP Q48EB9
D	181	GLY	-	expression tag	UNP Q48EB9
D	182	HIS	-	expression tag	UNP Q48EB9
D	183	HIS	-	expression tag	UNP Q48EB9
D	184	HIS	-	expression tag	UNP Q48EB9
D	185	HIS	-	expression tag	UNP Q48EB9
D	186	HIS	-	expression tag	UNP Q48EB9

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Chain	Residue	Modelled	Actual	Comment	Reference
D	187	HIS	-	expression tag	UNP Q48EB9
E	-1	MET	-	expression tag	UNP Q48EB9
E	0	SER	-	expression tag	UNP Q48EB9
E	1	LEU	-	expression tag	UNP Q48EB9
E	151	GLN	ARG	engineered mutation	UNP Q48EB9
E	180	GLU	-	expression tag	UNP Q48EB9
E	181	GLY	-	expression tag	UNP Q48EB9
E	182	HIS	-	expression tag	UNP Q48EB9
E	183	HIS	-	expression tag	UNP Q48EB9
E	184	HIS	-	expression tag	UNP Q48EB9
E	185	HIS	-	expression tag	UNP Q48EB9
E	186	HIS	-	expression tag	UNP Q48EB9
E	187	HIS	-	expression tag	UNP Q48EB9
F	-1	MET	-	expression tag	UNP Q48EB9
F	0	SER	-	expression tag	UNP Q48EB9
F	1	LEU	-	expression tag	UNP Q48EB9
F	151	GLN	ARG	engineered mutation	UNP Q48EB9
F	180	GLU	-	expression tag	UNP Q48EB9
F	181	GLY	-	expression tag	UNP Q48EB9
F	182	HIS	-	expression tag	UNP Q48EB9
F	183	HIS	-	expression tag	UNP Q48EB9
F	184	HIS	-	expression tag	UNP Q48EB9
F	185	HIS	-	expression tag	UNP Q48EB9
F	186	HIS	-	expression tag	UNP Q48EB9
F	187	HIS	-	expression tag	UNP Q48EB9
G	-1	MET	-	expression tag	UNP Q48EB9
G	0	SER	-	expression tag	UNP Q48EB9
G	1	LEU	-	expression tag	UNP Q48EB9
G	151	GLN	ARG	engineered mutation	UNP Q48EB9
G	180	GLU	-	expression tag	UNP Q48EB9
G	181	GLY	-	expression tag	UNP Q48EB9
G	182	HIS	-	expression tag	UNP Q48EB9
G	183	HIS	-	expression tag	UNP Q48EB9
G	184	HIS	-	expression tag	UNP Q48EB9
G	185	HIS	-	expression tag	UNP Q48EB9
G	186	HIS	-	expression tag	UNP Q48EB9
G	187	HIS	-	expression tag	UNP Q48EB9
H	-1	MET	-	expression tag	UNP Q48EB9
H	0	SER	-	expression tag	UNP Q48EB9
H	1	LEU	-	expression tag	UNP Q48EB9
H	151	GLN	ARG	engineered mutation	UNP Q48EB9
H	180	GLU	-	expression tag	UNP Q48EB9

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Chain	Residue	Modelled	Actual	Comment	Reference
H	181	GLY	-	expression tag	UNP Q48EB9
H	182	HIS	-	expression tag	UNP Q48EB9
H	183	HIS	-	expression tag	UNP Q48EB9
H	184	HIS	-	expression tag	UNP Q48EB9
H	185	HIS	-	expression tag	UNP Q48EB9
H	186	HIS	-	expression tag	UNP Q48EB9
H	187	HIS	-	expression tag	UNP Q48EB9
I	-1	MET	-	expression tag	UNP Q48EB9
I	0	SER	-	expression tag	UNP Q48EB9
I	1	LEU	-	expression tag	UNP Q48EB9
I	151	GLN	ARG	engineered mutation	UNP Q48EB9
I	180	GLU	-	expression tag	UNP Q48EB9
I	181	GLY	-	expression tag	UNP Q48EB9
I	182	HIS	-	expression tag	UNP Q48EB9
I	183	HIS	-	expression tag	UNP Q48EB9
I	184	HIS	-	expression tag	UNP Q48EB9
I	185	HIS	-	expression tag	UNP Q48EB9
I	186	HIS	-	expression tag	UNP Q48EB9
I	187	HIS	-	expression tag	UNP Q48EB9
J	-1	MET	-	expression tag	UNP Q48EB9
J	0	SER	-	expression tag	UNP Q48EB9
J	1	LEU	-	expression tag	UNP Q48EB9
J	151	GLN	ARG	engineered mutation	UNP Q48EB9
J	180	GLU	-	expression tag	UNP Q48EB9
J	181	GLY	-	expression tag	UNP Q48EB9
J	182	HIS	-	expression tag	UNP Q48EB9
J	183	HIS	-	expression tag	UNP Q48EB9
J	184	HIS	-	expression tag	UNP Q48EB9
J	185	HIS	-	expression tag	UNP Q48EB9
J	186	HIS	-	expression tag	UNP Q48EB9
J	187	HIS	-	expression tag	UNP Q48EB9
K	-1	MET	-	expression tag	UNP Q48EB9
K	0	SER	-	expression tag	UNP Q48EB9
K	1	LEU	-	expression tag	UNP Q48EB9
K	151	GLN	ARG	engineered mutation	UNP Q48EB9
K	180	GLU	-	expression tag	UNP Q48EB9
K	181	GLY	-	expression tag	UNP Q48EB9
K	182	HIS	-	expression tag	UNP Q48EB9
K	183	HIS	-	expression tag	UNP Q48EB9
K	184	HIS	-	expression tag	UNP Q48EB9
K	185	HIS	-	expression tag	UNP Q48EB9
K	186	HIS	-	expression tag	UNP Q48EB9

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Chain	Residue	Modelled	Actual	Comment	Reference
K	187	HIS	-	expression tag	UNP Q48EB9
L	-1	MET	-	expression tag	UNP Q48EB9
L	0	SER	-	expression tag	UNP Q48EB9
L	1	LEU	-	expression tag	UNP Q48EB9
L	151	GLN	ARG	engineered mutation	UNP Q48EB9
L	180	GLU	-	expression tag	UNP Q48EB9
L	181	GLY	-	expression tag	UNP Q48EB9
L	182	HIS	-	expression tag	UNP Q48EB9
L	183	HIS	-	expression tag	UNP Q48EB9
L	184	HIS	-	expression tag	UNP Q48EB9
L	185	HIS	-	expression tag	UNP Q48EB9
L	186	HIS	-	expression tag	UNP Q48EB9
L	187	HIS	-	expression tag	UNP Q48EB9

- Molecule 2 is CHLORIDE ION (CCD ID: CL) (formula: Cl).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	2	Total Cl 2 2	0	0
2	B	2	Total Cl 2 2	0	0
2	C	1	Total Cl 1 1	0	0
2	D	1	Total Cl 1 1	0	0
2	E	1	Total Cl 1 1	0	0
2	F	2	Total Cl 2 2	0	0
2	G	2	Total Cl 2 2	0	0
2	K	1	Total Cl 1 1	0	0
2	L	1	Total Cl 1 1	0	0

- Molecule 3 is MAGNESIUM ION (CCD ID: MG) (formula: Mg).

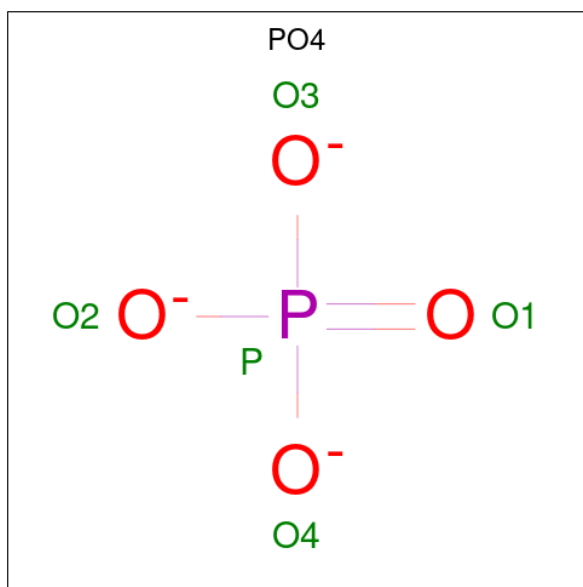
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	1	Total Mg 1 1	0	0

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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	B	1	Total 1	Mg 1	0	0
3	C	1	Total 1	Mg 1	0	0
3	D	1	Total 1	Mg 1	0	0
3	E	1	Total 1	Mg 1	0	0
3	F	1	Total 1	Mg 1	0	0
3	G	1	Total 1	Mg 1	0	0
3	H	1	Total 1	Mg 1	0	0
3	I	1	Total 1	Mg 1	0	0
3	J	1	Total 1	Mg 1	0	0
3	K	1	Total 1	Mg 1	0	0
3	L	1	Total 1	Mg 1	0	0

- Molecule 4 is PHOSPHATE ION (CCD ID: PO4) (formula: O₄P).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total O P 5 4 1	0	0
4	B	1	Total O P 5 4 1	0	0
4	C	1	Total O P 5 4 1	0	0
4	D	1	Total O P 5 4 1	0	0
4	E	1	Total O P 5 4 1	0	0
4	F	1	Total O P 5 4 1	0	0
4	G	1	Total O P 5 4 1	0	0
4	H	1	Total O P 5 4 1	0	0
4	I	1	Total O P 5 4 1	0	0
4	J	1	Total O P 5 4 1	0	0
4	K	1	Total O P 5 4 1	0	0
4	L	1	Total O P 5 4 1	0	0

- Molecule 5 is UNKNOWN LIGAND (CCD ID: UNL) (formula:).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	I	1	Total C O 4 1 3	0	0

- Molecule 6 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	92	Total O 92 92	0	0
6	B	52	Total O 52 52	0	0
6	C	82	Total O 82 82	0	0
6	D	85	Total O 86 86	0	1
6	E	65	Total O 65 65	0	0

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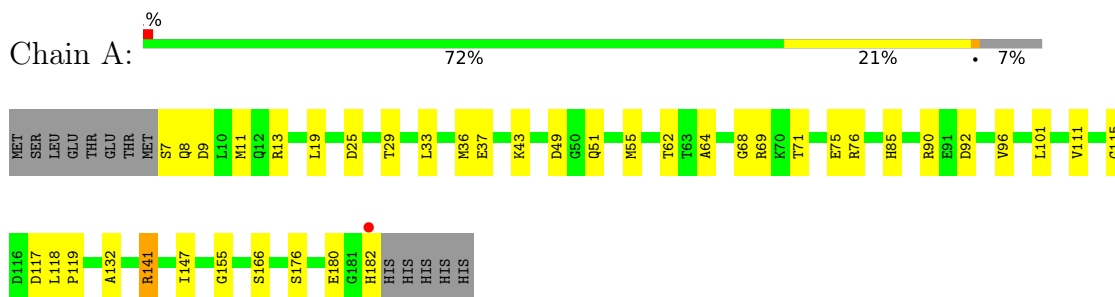
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	F	80	Total 80	O 80	0	0
6	G	68	Total 68	O 68	0	0
6	H	75	Total 76	O 76	0	1
6	I	59	Total 59	O 59	0	1
6	J	43	Total 43	O 43	0	0
6	K	37	Total 37	O 37	0	0
6	L	57	Total 57	O 57	0	0

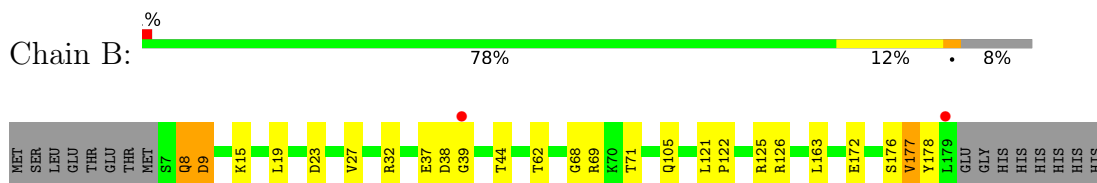
3 Residue-property plots [i](#)

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.

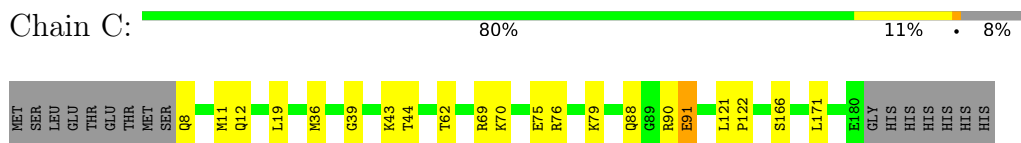
• Molecule 1: PROBABLE YRBI FAMILY PHOSPHATASE



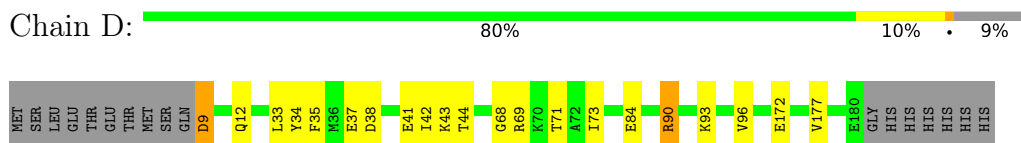
• Molecule 1: PROBABLE YRBI FAMILY PHOSPHATASE



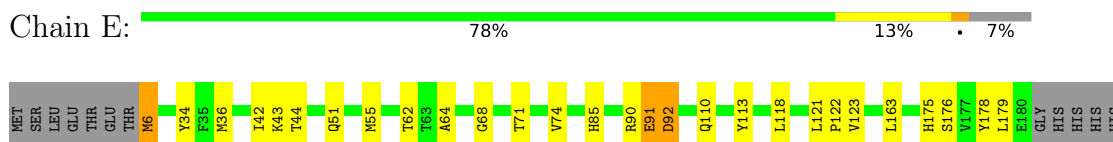
• Molecule 1: PROBABLE YRBI FAMILY PHOSPHATASE



• Molecule 1: PROBABLE YRBI FAMILY PHOSPHATASE



• Molecule 1: PROBABLE YRBI FAMILY PHOSPHATASE



HIS
HIS

- Molecule 1: PROBABLE YRBI FAMILY PHOSPHATASE

Chain F:  78% 14% 8%

- Molecule 1: PROBABLE YRBI FAMILY PHOSPHATASE

Chain G:  % 78% 12% 8%

HIS

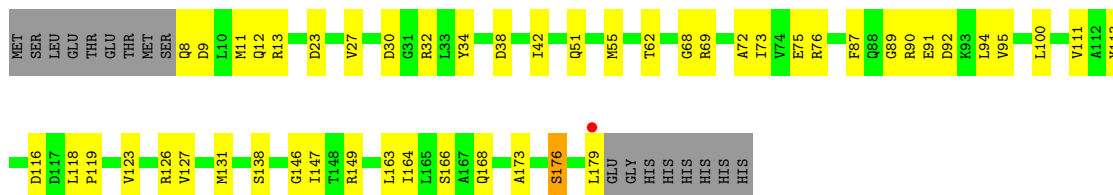
- Molecule 1: PROBABLE YRBI FAMILY PHOSPHATASE

Chain H:  78% 13% 9%HIS
HIS
HIS

- Molecule 1: PROBABLE YRBI FAMILY PHOSPHATASE

Chain I:  81% 12% 6%

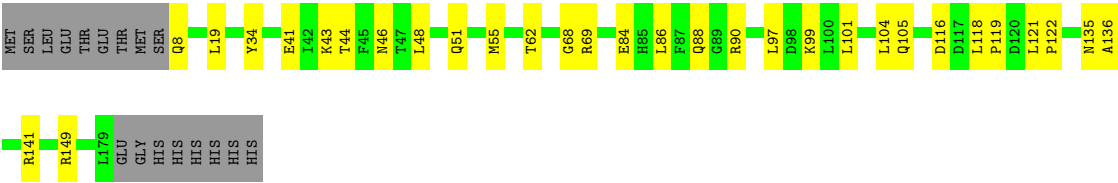
- Molecule 1: PROBABLE YRBI FAMILY PHOSPHATASE

Chain J:  % 65% 25% 9%

- Molecule 1: PROBABLE YRBI FAMILY PHOSPHATASE



● Molecule 1: PROBABLE YRBI FAMILY PHOSPHATASE



4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α , β , γ	76.30Å 126.73Å 106.53Å 90.00° 95.57° 90.00°	Depositor
Resolution (Å)	40.00 – 1.90 40.00 – 1.90	Depositor EDS
% Data completeness (in resolution range)	97.8 (40.00-1.90) 97.8 (40.00-1.90)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.06	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.46 (at 1.88Å)	Xtriage
Refinement program	REFMAC 5.5.0109	Depositor
R, R_{free}	0.179 , 0.240 0.180 , 0.239	Depositor DCC
R_{free} test set	4808 reflections (2.93%)	wwPDB-VP
Wilson B-factor (Å ²)	37.6	Xtriage
Anisotropy	0.755	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.33 , 41.8	EDS
L-test for twinning ²	$\langle L \rangle = 0.49$, $\langle L^2 \rangle = 0.32$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o, F_c correlation	0.97	EDS
Total number of atoms	17050	wwPDB-VP
Average B, all atoms (Å ²)	52.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.55% 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: PO4, UNL, MG, CL

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	0.66	0/1450	0.85	2/1945 (0.1%)
1	B	0.60	0/1378	0.83	0/1851
1	C	0.68	0/1386	0.89	0/1862
1	D	0.69	0/1380	0.86	0/1853
1	E	0.57	0/1374	0.84	0/1846
1	F	0.63	0/1369	0.83	0/1840
1	G	0.56	0/1363	0.84	1/1832 (0.1%)
1	H	0.70	0/1366	0.88	1/1836 (0.1%)
1	I	0.55	0/1419	0.81	1/1905 (0.1%)
1	J	0.61	0/1342	0.86	1/1804 (0.1%)
1	K	0.53	0/1334	0.81	1/1794 (0.1%)
1	L	0.54	0/1356	0.81	0/1823
All	All	0.61	0/16517	0.84	7/22191 (0.0%)

There are no bond length outliers.

The worst 5 of 7 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	J	126	ARG	N-CA-C	8.06	123.65	112.45
1	I	84	GLU	N-CA-C	5.84	117.72	111.36
1	H	127	VAL	N-CA-C	5.75	116.32	110.05
1	K	101	LEU	N-CA-C	-5.46	105.32	111.28
1	A	115	GLY	N-CA-C	5.45	119.15	111.42

There are no chirality outliers.

There are no planarity outliers.

5.2 Too-close contacts

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	1404	0	1462	33	0
1	B	1348	0	1390	27	0
1	C	1353	0	1394	21	0
1	D	1344	0	1394	23	0
1	E	1350	0	1384	23	0
1	F	1341	0	1373	23	0
1	G	1336	0	1371	24	0
1	H	1336	0	1378	25	0
1	I	1386	0	1428	33	0
1	J	1321	0	1350	41	0
1	K	1316	0	1346	36	0
1	L	1329	0	1364	24	0
2	A	2	0	0	0	0
2	B	2	0	0	1	0
2	C	1	0	0	0	0
2	D	1	0	0	0	0
2	E	1	0	0	0	0
2	F	2	0	0	1	0
2	G	2	0	0	1	0
2	K	1	0	0	0	0
2	L	1	0	0	0	0
3	A	1	0	0	0	0
3	B	1	0	0	0	0
3	C	1	0	0	0	0
3	D	1	0	0	0	0
3	E	1	0	0	0	0
3	F	1	0	0	0	0
3	G	1	0	0	0	0
3	H	1	0	0	0	0
3	I	1	0	0	0	0
3	J	1	0	0	0	0
3	K	1	0	0	0	0
3	L	1	0	0	0	0
4	A	5	0	0	1	0
4	B	5	0	0	1	0
4	C	5	0	0	1	0
4	D	5	0	0	4	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	E	5	0	0	1	0
4	F	5	0	0	0	0
4	G	5	0	0	0	0
4	H	5	0	0	2	0
4	I	5	0	0	2	0
4	J	5	0	0	0	0
4	K	5	0	0	0	0
4	L	5	0	0	1	0
5	I	4	0	0	0	0
6	A	92	0	0	6	0
6	B	52	0	0	4	0
6	C	82	0	0	0	0
6	D	86	0	0	3	0
6	E	65	0	0	5	0
6	F	80	0	0	3	0
6	G	68	0	0	6	0
6	H	76	0	0	2	0
6	I	59	0	0	8	0
6	J	43	0	0	2	0
6	K	37	0	0	0	0
6	L	57	0	0	3	0
All	All	17050	0	16634	298	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 9.

The worst 5 of 298 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)
2:B:188:CL:CL	1:K:69[B]:ARG:NH1	2.23	1.07
1:E:6:MET:CA	1:E:6:MET:HE2	1.85	1.05
1:E:36:MET:HE2	6:F:575:HOH:O	1.54	1.04
1:E:6:MET:HE2	1:E:6:MET:HA	1.09	1.04
1:E:6:MET:HA	1:E:6:MET:CE	1.85	1.02

There are no symmetry-related clashes.

5.3 Torsion angles

5.3.1 Protein backbone

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	185/189 (98%)	183 (99%)	2 (1%)	0	100	100
1	B	176/189 (93%)	171 (97%)	4 (2%)	1 (1%)	21	13
1	C	177/189 (94%)	172 (97%)	5 (3%)	0	100	100
1	D	177/189 (94%)	174 (98%)	2 (1%)	1 (1%)	21	13
1	E	176/189 (93%)	171 (97%)	5 (3%)	0	100	100
1	F	176/189 (93%)	173 (98%)	3 (2%)	0	100	100
1	G	175/189 (93%)	171 (98%)	4 (2%)	0	100	100
1	H	175/189 (93%)	174 (99%)	1 (1%)	0	100	100
1	I	182/189 (96%)	179 (98%)	3 (2%)	0	100	100
1	J	172/189 (91%)	163 (95%)	9 (5%)	0	100	100
1	K	171/189 (90%)	166 (97%)	5 (3%)	0	100	100
1	L	174/189 (92%)	169 (97%)	5 (3%)	0	100	100
All	All	2116/2268 (93%)	2066 (98%)	48 (2%)	2 (0%)	48	40

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	177	VAL
1	B	177	VAL

5.3.2 Protein sidechains

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	148/150 (99%)	145 (98%)	3 (2%)	48	46
1	B	140/150 (93%)	136 (97%)	4 (3%)	37	31
1	C	141/150 (94%)	140 (99%)	1 (1%)	76	78
1	D	141/150 (94%)	137 (97%)	4 (3%)	38	32
1	E	140/150 (93%)	134 (96%)	6 (4%)	26	18
1	F	139/150 (93%)	139 (100%)	0	100	100
1	G	139/150 (93%)	136 (98%)	3 (2%)	45	42
1	H	139/150 (93%)	139 (100%)	0	100	100
1	I	146/150 (97%)	144 (99%)	2 (1%)	59	59
1	J	135/150 (90%)	129 (96%)	6 (4%)	25	17
1	K	135/150 (90%)	130 (96%)	5 (4%)	30	22
1	L	138/150 (92%)	137 (99%)	1 (1%)	76	78
All	All	1681/1800 (93%)	1646 (98%)	35 (2%)	48	44

5 of 35 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	J	176	SER
1	K	32	ARG
1	K	83	ILE
1	E	6	MET
1	D	172	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 16 such sidechains are listed below:

Mol	Chain	Res	Type
1	K	151	GLN
1	K	143	HIS
1	G	175	HIS
1	J	51	GLN
1	G	151	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

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

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

5.5 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

5.6 Ligand geometry ⓘ

Of 38 ligands modelled in this entry, 25 are monoatomic and 1 is unknown - leaving 12 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	PO4	E	190	-	4,4,4	1.04	0	6,6,6	0.90	0
4	PO4	K	190	-	4,4,4	0.96	0	6,6,6	0.57	0
4	PO4	A	191	-	4,4,4	1.31	1 (25%)	6,6,6	0.88	0
4	PO4	F	190	-	4,4,4	0.96	0	6,6,6	0.57	0
4	PO4	H	189	-	4,4,4	1.11	0	6,6,6	0.83	0
4	PO4	I	189	-	4,4,4	0.93	0	6,6,6	0.59	0
4	PO4	J	189	-	4,4,4	1.01	0	6,6,6	0.53	0
4	PO4	G	191	-	4,4,4	1.23	0	6,6,6	0.60	0
4	PO4	B	191	-	4,4,4	1.03	0	6,6,6	0.70	0
4	PO4	D	190	-	4,4,4	1.10	0	6,6,6	0.49	0
4	PO4	L	190	-	4,4,4	1.10	0	6,6,6	0.71	0
4	PO4	C	190	-	4,4,4	1.15	0	6,6,6	0.75	0

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	A	191	PO4	P-O3	-2.04	1.48	1.54

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

8 monomers are involved in 13 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
4	E	190	PO4	1	0
4	A	191	PO4	1	0
4	H	189	PO4	2	0
4	I	189	PO4	2	0
4	B	191	PO4	1	0
4	D	190	PO4	4	0
4	L	190	PO4	1	0
4	C	190	PO4	1	0

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, 95th 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 ²)	Q<0.9
1	A	176/189 (93%)	-0.29	1 (0%) 85 87	16, 41, 68, 128	10 (5%)
1	B	173/189 (91%)	-0.04	2 (1%) 76 79	26, 50, 77, 104	5 (2%)
1	C	173/189 (91%)	-0.26	0 100 100	25, 42, 68, 99	6 (3%)
1	D	172/189 (91%)	-0.29	0 100 100	25, 41, 65, 95	7 (4%)
1	E	175/189 (92%)	-0.16	0 100 100	28, 48, 81, 123	3 (1%)
1	F	174/189 (92%)	-0.22	0 100 100	27, 45, 72, 104	4 (2%)
1	G	173/189 (91%)	-0.12	1 (0%) 85 87	27, 50, 75, 108	4 (2%)
1	H	172/189 (91%)	-0.26	0 100 100	17, 41, 65, 96	4 (2%)
1	I	177/189 (93%)	-0.13	0 100 100	25, 49, 81, 120	7 (3%)
1	J	172/189 (91%)	0.09	1 (0%) 85 87	31, 56, 86, 105	2 (1%)
1	K	172/189 (91%)	0.09	1 (0%) 85 87	31, 61, 91, 112	1 (0%)
1	L	172/189 (91%)	-0.04	0 100 100	34, 50, 78, 103	4 (2%)
All	All	2081/2268 (91%)	-0.14	6 (0%) 90 91	16, 48, 80, 128	57 (2%)

The worst 5 of 6 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	J	179	LEU	4.2
1	B	39	GLY	2.4
1	A	182	HIS	2.3
1	G	11[A]	MET	2.3
1	K	10	LEU	2.3

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

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

6.3 Carbohydrates ⓘ

There are no oligosaccharides in this entry.

6.4 Ligands ⓘ

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. The B-factors column lists the minimum, median, 95th percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å ²)	Q<0.9
2	CL	F	191	1/1	0.88	0.10	89,89,89,89	0
5	UNL	I	190	4/-	0.89	0.08	72,78,80,82	0
4	PO4	G	191	5/5	0.91	0.10	38,45,59,64	5
4	PO4	C	190	5/5	0.92	0.09	40,47,64,69	5
4	PO4	D	190	5/5	0.93	0.08	46,54,63,66	5
4	PO4	J	189	5/5	0.94	0.08	55,56,60,61	5
4	PO4	E	190	5/5	0.95	0.06	33,46,57,61	5
4	PO4	I	189	5/5	0.95	0.07	43,44,60,66	5
4	PO4	B	191	5/5	0.96	0.06	39,42,55,67	5
4	PO4	K	190	5/5	0.96	0.06	52,54,65,65	5
4	PO4	F	190	5/5	0.96	0.08	43,49,59,60	5
2	CL	L	188	1/1	0.97	0.05	57,57,57,57	0
3	MG	I	188	1/1	0.97	0.04	55,55,55,55	0
4	PO4	L	190	5/5	0.97	0.06	36,43,52,60	5
2	CL	K	188	1/1	0.97	0.07	52,52,52,52	0
2	CL	B	189	1/1	0.98	0.05	51,51,51,51	0
2	CL	D	188	1/1	0.98	0.07	43,43,43,43	0
3	MG	C	189	1/1	0.98	0.04	38,38,38,38	0
4	PO4	H	189	5/5	0.98	0.06	38,41,49,53	5
2	CL	E	188	1/1	0.98	0.04	55,55,55,55	0
4	PO4	A	191	5/5	0.98	0.06	32,33,51,53	5
2	CL	F	188	1/1	0.98	0.06	44,44,44,44	0
2	CL	B	188	1/1	0.98	0.03	52,52,52,52	0
2	CL	G	189	1/1	0.98	0.05	48,48,48,48	0
2	CL	C	188	1/1	0.99	0.03	45,45,45,45	0
2	CL	A	188	1/1	0.99	0.03	46,46,46,46	0
3	MG	A	190	1/1	0.99	0.03	36,36,36,36	0
3	MG	B	190	1/1	0.99	0.03	49,49,49,49	0
2	CL	G	188	1/1	0.99	0.05	48,48,48,48	0
3	MG	D	189	1/1	0.99	0.03	42,42,42,42	0
3	MG	E	189	1/1	0.99	0.03	43,43,43,43	0
3	MG	F	189	1/1	0.99	0.04	42,42,42,42	0

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors($\text{\AA}^2$)	Q<0.9
3	MG	G	190	1/1	0.99	0.04	43,43,43,43	0
3	MG	H	188	1/1	0.99	0.03	35,35,35,35	0
2	CL	A	189	1/1	0.99	0.06	41,41,41,41	0
3	MG	K	189	1/1	0.99	0.03	49,49,49,49	0
3	MG	L	189	1/1	0.99	0.03	43,43,43,43	0
3	MG	J	188	1/1	1.00	0.03	53,53,53,53	0

6.5 Other polymers [i](#)

There are no such residues in this entry.