wwPDB X-ray Structure Validation Summary Report (i)

Jun 7, 2023 – 06:16 PM JST

PDB ID	:	8IAT
Title	:	Crystal structure of Streptococcus pneumoniae pyruvate kinase in complex with oxalate
Authors	:	Nakashima, R.; Taguchi, A.
Deposited on	:	2023-02-09
Resolution	:	1.80 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 (i) 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 (1)) were used in the production of this report:

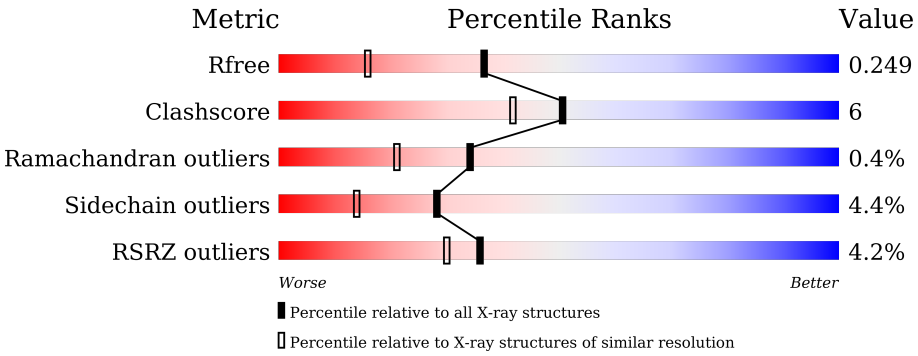
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.33
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.33

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 1.80 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	5950 (1.80-1.80)
Clashscore	141614	6793 (1.80-1.80)
Ramachandran outliers	138981	6697 (1.80-1.80)
Sidechain outliers	138945	6696 (1.80-1.80)
RSRZ outliers	127900	5850 (1.80-1.80)

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 <=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	521	86% 9%
1	B	521	3% 81% 14%
1	C	521	5% 78% 18%
1	D	521	7% 83% 11%

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 crite-

ria:

Mol	Type	Chain	Res	Chirality	Geometry	Clashes	Electron density
2	OXL	B	602	-	X	-	-
2	OXL	D	602	-	X	-	-
7	GOL	A	607	-	-	X	-

2 Entry composition (i)

There are 8 unique types of molecules in this entry. The entry contains 16483 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 Pyruvate kinase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	501	Total	C	N	O	S	0	1	0
			3851	2408	665	761	17			
1	B	501	Total	C	N	O	S	0	1	0
			3851	2408	665	761	17			
1	C	501	Total	C	N	O	S	0	0	0
			3839	2399	664	759	17			
1	D	500	Total	C	N	O	S	0	0	0
			3828	2393	660	758	17			

There are 80 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-19	MET	-	initiating methionine	UNP Q8DQ84
A	-18	GLY	-	expression tag	UNP Q8DQ84
A	-17	SER	-	expression tag	UNP Q8DQ84
A	-16	SER	-	expression tag	UNP Q8DQ84
A	-15	HIS	-	expression tag	UNP Q8DQ84
A	-14	HIS	-	expression tag	UNP Q8DQ84
A	-13	HIS	-	expression tag	UNP Q8DQ84
A	-12	HIS	-	expression tag	UNP Q8DQ84
A	-11	HIS	-	expression tag	UNP Q8DQ84
A	-10	HIS	-	expression tag	UNP Q8DQ84
A	-9	SER	-	expression tag	UNP Q8DQ84
A	-8	SER	-	expression tag	UNP Q8DQ84
A	-7	GLY	-	expression tag	UNP Q8DQ84
A	-6	LEU	-	expression tag	UNP Q8DQ84
A	-5	VAL	-	expression tag	UNP Q8DQ84
A	-4	PRO	-	expression tag	UNP Q8DQ84
A	-3	ARG	-	expression tag	UNP Q8DQ84
A	-2	GLY	-	expression tag	UNP Q8DQ84
A	-1	SER	-	expression tag	UNP Q8DQ84
A	0	HIS	-	expression tag	UNP Q8DQ84
B	-19	MET	-	initiating methionine	UNP Q8DQ84

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-18	GLY	-	expression tag	UNP Q8DQ84
B	-17	SER	-	expression tag	UNP Q8DQ84
B	-16	SER	-	expression tag	UNP Q8DQ84
B	-15	HIS	-	expression tag	UNP Q8DQ84
B	-14	HIS	-	expression tag	UNP Q8DQ84
B	-13	HIS	-	expression tag	UNP Q8DQ84
B	-12	HIS	-	expression tag	UNP Q8DQ84
B	-11	HIS	-	expression tag	UNP Q8DQ84
B	-10	HIS	-	expression tag	UNP Q8DQ84
B	-9	SER	-	expression tag	UNP Q8DQ84
B	-8	SER	-	expression tag	UNP Q8DQ84
B	-7	GLY	-	expression tag	UNP Q8DQ84
B	-6	LEU	-	expression tag	UNP Q8DQ84
B	-5	VAL	-	expression tag	UNP Q8DQ84
B	-4	PRO	-	expression tag	UNP Q8DQ84
B	-3	ARG	-	expression tag	UNP Q8DQ84
B	-2	GLY	-	expression tag	UNP Q8DQ84
B	-1	SER	-	expression tag	UNP Q8DQ84
B	0	HIS	-	expression tag	UNP Q8DQ84
C	-19	MET	-	initiating methionine	UNP Q8DQ84
C	-18	GLY	-	expression tag	UNP Q8DQ84
C	-17	SER	-	expression tag	UNP Q8DQ84
C	-16	SER	-	expression tag	UNP Q8DQ84
C	-15	HIS	-	expression tag	UNP Q8DQ84
C	-14	HIS	-	expression tag	UNP Q8DQ84
C	-13	HIS	-	expression tag	UNP Q8DQ84
C	-12	HIS	-	expression tag	UNP Q8DQ84
C	-11	HIS	-	expression tag	UNP Q8DQ84
C	-10	HIS	-	expression tag	UNP Q8DQ84
C	-9	SER	-	expression tag	UNP Q8DQ84
C	-8	SER	-	expression tag	UNP Q8DQ84
C	-7	GLY	-	expression tag	UNP Q8DQ84
C	-6	LEU	-	expression tag	UNP Q8DQ84
C	-5	VAL	-	expression tag	UNP Q8DQ84
C	-4	PRO	-	expression tag	UNP Q8DQ84
C	-3	ARG	-	expression tag	UNP Q8DQ84
C	-2	GLY	-	expression tag	UNP Q8DQ84
C	-1	SER	-	expression tag	UNP Q8DQ84
C	0	HIS	-	expression tag	UNP Q8DQ84
D	-19	MET	-	initiating methionine	UNP Q8DQ84
D	-18	GLY	-	expression tag	UNP Q8DQ84
D	-17	SER	-	expression tag	UNP Q8DQ84

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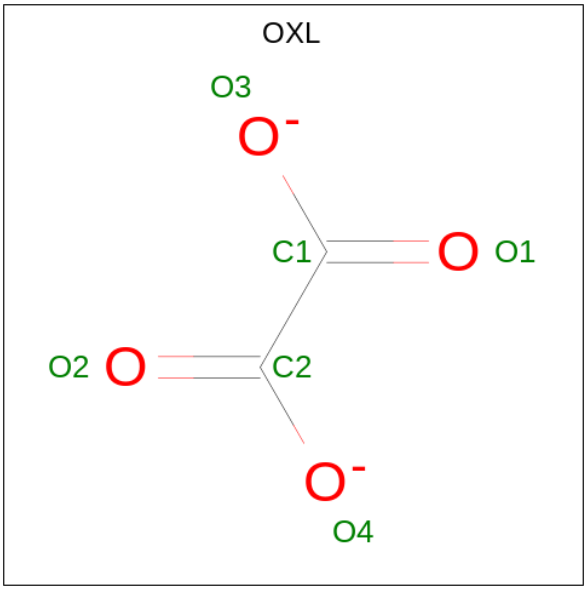
Chain	Residue	Modelled	Actual	Comment	Reference
D	-16	SER	-	expression tag	UNP Q8DQ84
D	-15	HIS	-	expression tag	UNP Q8DQ84
D	-14	HIS	-	expression tag	UNP Q8DQ84
D	-13	HIS	-	expression tag	UNP Q8DQ84
D	-12	HIS	-	expression tag	UNP Q8DQ84
D	-11	HIS	-	expression tag	UNP Q8DQ84
D	-10	HIS	-	expression tag	UNP Q8DQ84
D	-9	SER	-	expression tag	UNP Q8DQ84
D	-8	SER	-	expression tag	UNP Q8DQ84
D	-7	GLY	-	expression tag	UNP Q8DQ84
D	-6	LEU	-	expression tag	UNP Q8DQ84
D	-5	VAL	-	expression tag	UNP Q8DQ84
D	-4	PRO	-	expression tag	UNP Q8DQ84
D	-3	ARG	-	expression tag	UNP Q8DQ84
D	-2	GLY	-	expression tag	UNP Q8DQ84
D	-1	SER	-	expression tag	UNP Q8DQ84
D	0	HIS	-	expression tag	UNP Q8DQ84

- Molecule 2 is OXALATE ION (three-letter code: OXL) (formula: C_2O_4).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total C O 6 2 4	0	0
2	A	1	Total C O 6 2 4	0	0
2	B	1	Total C O 6 2 4	0	0

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Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	B	1	Total C O 6 2 4	0	0
2	C	1	Total C O 6 2 4	0	0
2	C	1	Total C O 6 2 4	0	0
2	D	1	Total C O 6 2 4	0	0
2	D	1	Total C O 6 2 4	0	0

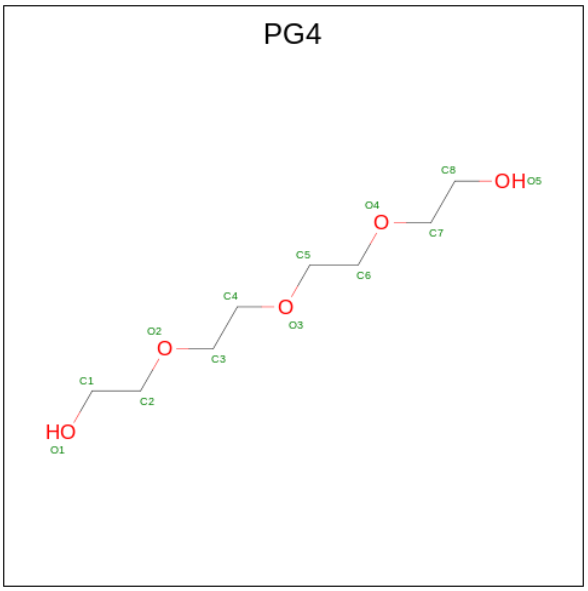
- Molecule 3 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

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

- Molecule 4 is POTASSIUM ION (three-letter code: K) (formula: K).

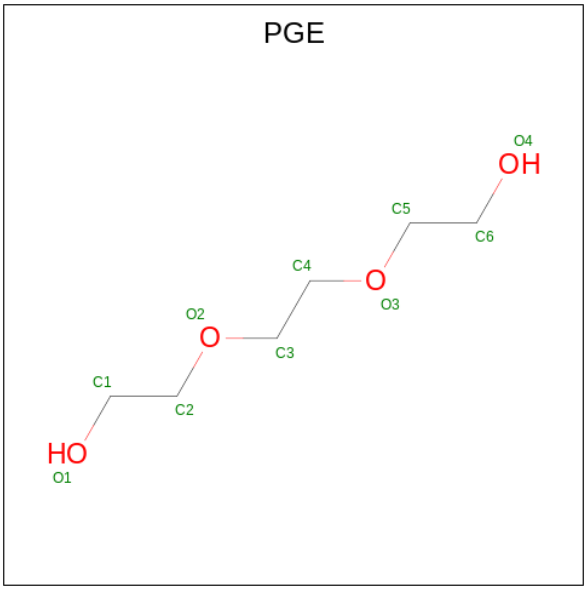
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
4	A	1	Total K 1 1	0	0
4	B	1	Total K 1 1	0	0
4	C	1	Total K 1 1	0	0
4	D	1	Total K 1 1	0	0

- Molecule 5 is TETRAETHYLENE GLYCOL (three-letter code: PG4) (formula: $C_8H_{18}O_5$).



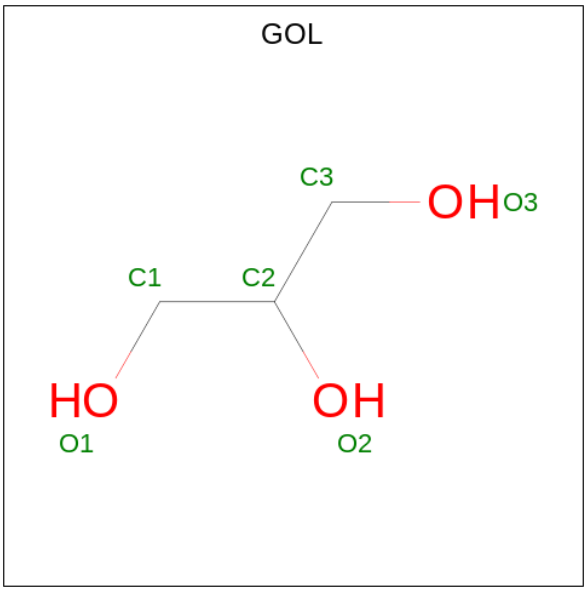
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
5	A	1	Total C O 13 8 5	0	0

- Molecule 6 is TRIETHYLENE GLYCOL (three-letter code: PGE) (formula: $C_6H_{14}O_4$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
6	A	1	Total C O 10 6 4	0	0
6	C	1	Total C O 10 6 4	0	0

- Molecule 7 is GLYCEROL (three-letter code: GOL) (formula: $C_3H_8O_3$).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
7	A	1	Total C O 6 3 3	0	0

- Molecule 8 is water.

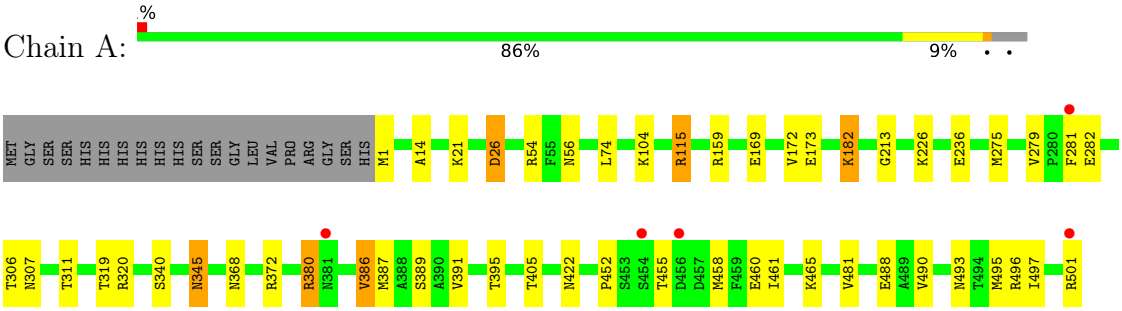
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
8	A	325	Total O 325 325	0	0
8	B	322	Total O 322 322	0	0
8	C	195	Total O 195 195	0	0
8	D	177	Total O 177 177	0	0

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.

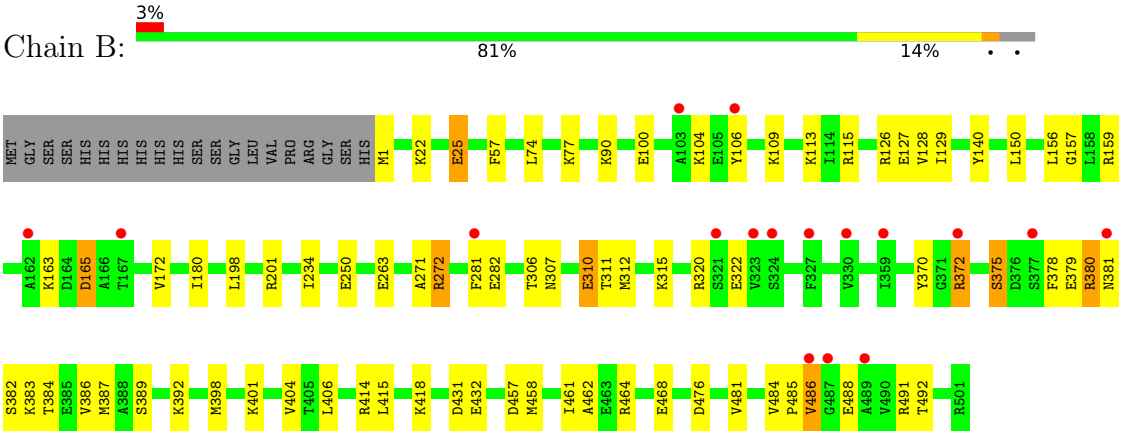
• Molecule 1: Pyruvate kinase

Chain A:



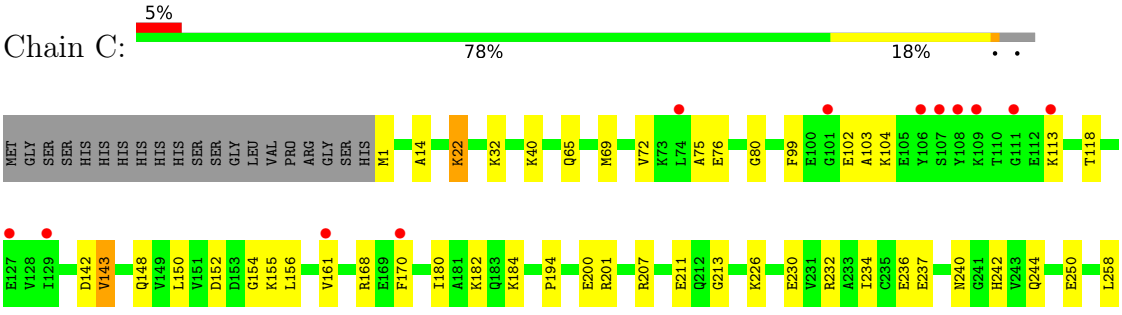
• Molecule 1: Pyruvate kinase

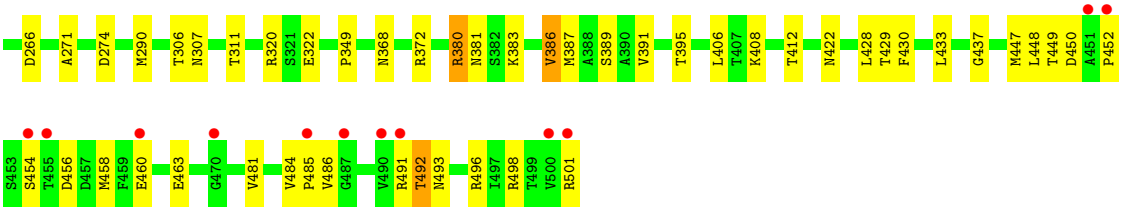
Chain B:



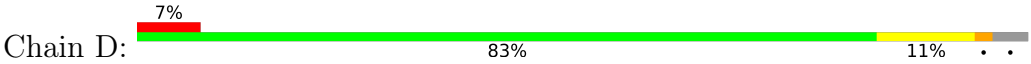
• Molecule 1: Pyruvate kinase

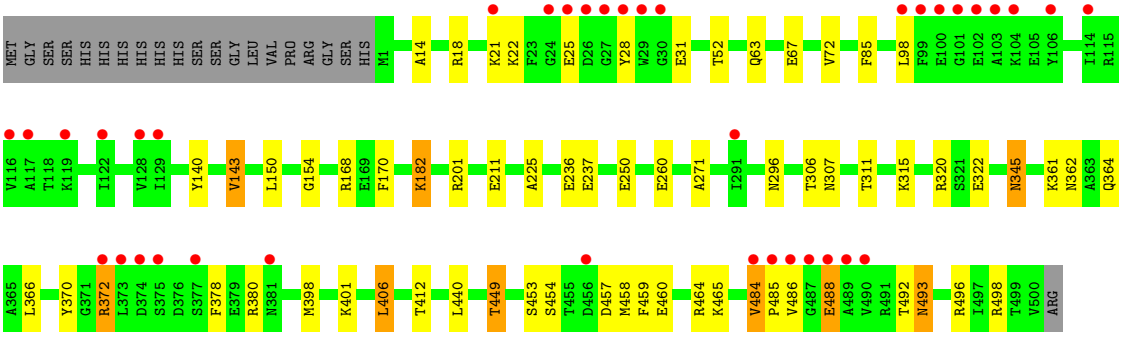
Chain C:





• Molecule 1: Pyruvate kinase





4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	212.05Å 118.35Å 99.82Å 90.00° 108.93° 90.00°	Depositor
Resolution (Å)	48.30 – 1.80 48.30 – 1.80	Depositor EDS
% Data completeness (in resolution range)	99.7 (48.30-1.80) 99.7 (48.30-1.80)	Depositor EDS
R_{merge}	0.09	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.57 (at 1.79Å)	Xtriage
Refinement program	REFMAC 5	Depositor
R, R_{free}	0.199 , 0.246 0.205 , 0.249	Depositor DCC
R_{free} test set	10764 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	36.2	Xtriage
Anisotropy	0.356	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 41.2	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.96	EDS
Total number of atoms	16483	wwPDB-VP
Average B, all atoms (Å^2)	48.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.00% of the height of the origin peak. No significant pseudotranslation is detected.*

[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.

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: K, PG4, PGE, MG, OXL, GOL

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	0.74	0/3897	0.86	1/5254 (0.0%)
1	B	0.75	0/3897	0.86	3/5254 (0.1%)
1	C	0.75	0/3884	0.87	0/5238
1	D	0.71	0/3873	0.80	0/5224
All	All	0.74	0/15551	0.85	4/20970 (0.0%)

There are no bond length outliers.

All (4) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	272	ARG	NE-CZ-NH2	-5.94	117.33	120.30
1	A	115	ARG	NE-CZ-NH2	-5.68	117.46	120.30
1	B	414	ARG	CG-CD-NE	-5.48	100.30	111.80
1	B	414	ARG	NE-CZ-NH1	-5.42	117.59	120.30

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	3851	0	3895	41	0
1	B	3851	0	3895	48	0
1	C	3839	0	3887	61	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	D	3828	0	3874	44	0
2	A	12	0	0	0	0
2	B	12	0	0	1	0
2	C	12	0	0	2	0
2	D	12	0	0	1	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
4	A	1	0	0	0	0
4	B	1	0	0	0	0
4	C	1	0	0	0	0
4	D	1	0	0	0	0
5	A	13	0	18	0	0
6	A	10	0	14	1	0
6	C	10	0	14	1	0
7	A	6	0	8	6	0
8	A	325	0	0	2	0
8	B	322	0	0	3	0
8	C	195	0	0	8	0
8	D	177	0	0	3	0
All	All	16483	0	15605	177	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.

The worst 5 of 177 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:D:296:ASN:HB2	8:D:840:HOH:O	1.47	1.14
1:A:54:ARG:HH12	7:A:607:GOL:H11	1.27	0.95
1:C:237:GLU:HG3	8:C:707:HOH:O	1.77	0.82
1:A:54:ARG:HH12	7:A:607:GOL:C1	1.92	0.82
1:A:320:ARG:HD2	1:D:307:ASN:HD22	1.46	0.78

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	500/521 (96%)	491 (98%)	8 (2%)	1 (0%)	47	33
1	B	500/521 (96%)	480 (96%)	18 (4%)	2 (0%)	34	21
1	C	499/521 (96%)	481 (96%)	15 (3%)	3 (1%)	25	12
1	D	498/521 (96%)	480 (96%)	16 (3%)	2 (0%)	34	21
All	All	1997/2084 (96%)	1932 (97%)	57 (3%)	8 (0%)	34	21

5 of 8 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	488	GLU
1	C	306	THR
1	D	306	THR
1	A	306	THR
1	B	306	THR

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	412/428 (96%)	398 (97%)	14 (3%)	37	22
1	B	412/428 (96%)	392 (95%)	20 (5%)	25	11
1	C	411/428 (96%)	392 (95%)	19 (5%)	27	13
1	D	410/428 (96%)	390 (95%)	20 (5%)	25	11
All	All	1645/1712 (96%)	1572 (96%)	73 (4%)	28	14

5 of 73 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	D	211	GLU
1	D	488	GLU
1	D	237	GLU
1	D	406	LEU
1	B	272	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 21 such sidechains are listed below:

Mol	Chain	Res	Type
1	C	368	ASN
1	D	307	ASN
1	D	493	ASN
1	D	345	ASN
1	D	296	ASN

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)

Of 20 ligands modelled in this entry, 8 are monoatomic - 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	$\#\|Z\|>2$
2	OXL	C	602	-	5,5,5	1.26	1 (20%)	6,6,6	1.39	0
6	PGE	A	606	-	9,9,9	0.20	0	8,8,8	0.26	0
2	OXL	B	602	-	5,5,5	1.54	2 (40%)	6,6,6	1.12	0
6	PGE	C	605	-	9,9,9	0.29	0	8,8,8	0.19	0
2	OXL	C	601	3	5,5,5	0.97	0	6,6,6	1.19	0
2	OXL	B	601	3	5,5,5	1.68	2 (40%)	6,6,6	1.38	0
2	OXL	D	602	-	5,5,5	1.43	2 (40%)	6,6,6	1.17	0
2	OXL	A	602	-	5,5,5	1.44	1 (20%)	6,6,6	1.39	0
2	OXL	D	601	3	5,5,5	1.22	1 (20%)	6,6,6	1.70	2 (33%)
7	GOL	A	607	-	5,5,5	0.21	0	5,5,5	0.51	0
2	OXL	A	601	3	5,5,5	1.79	2 (40%)	6,6,6	1.03	0
5	PG4	A	605	-	12,12,12	0.32	0	11,11,11	0.14	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
2	OXL	C	602	-	-	4/4/4/4	-
6	PGE	A	606	-	-	6/7/7/7	-
2	OXL	B	602	-	-	4/4/4/4	-
6	PGE	C	605	-	-	2/7/7/7	-
2	OXL	C	601	3	-	1/4/4/4	-
2	OXL	B	601	3	-	0/4/4/4	-
2	OXL	D	602	-	-	4/4/4/4	-
2	OXL	A	602	-	-	4/4/4/4	-
2	OXL	D	601	3	-	1/4/4/4	-
7	GOL	A	607	-	-	4/4/4/4	-
2	OXL	A	601	3	-	0/4/4/4	-
5	PG4	A	605	-	-	5/10/10/10	-

The worst 5 of 11 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	601	OXL	O4-C2	-2.93	1.22	1.30
2	B	602	OXL	O3-C1	-2.51	1.23	1.30
2	B	601	OXL	O2-C2	2.41	1.29	1.22
2	D	602	OXL	O4-C2	-2.40	1.23	1.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	601	OXL	O3-C1	-2.38	1.23	1.30

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
2	D	601	OXL	O4-C2-C1	2.20	119.69	113.16
2	D	601	OXL	O3-C1-C2	2.06	119.29	113.16

There are no chirality outliers.

5 of 35 torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	B	602	OXL	O1-C1-C2-O2
2	B	602	OXL	O1-C1-C2-O4
2	B	602	OXL	O3-C1-C2-O2
2	B	602	OXL	O3-C1-C2-O4
7	A	607	GOL	O1-C1-C2-O2

There are no ring outliers.

7 monomers are involved in 12 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	C	602	OXL	1	0
6	A	606	PGE	1	0
6	C	605	PGE	1	0
2	C	601	OXL	1	0
2	B	601	OXL	1	0
2	D	601	OXL	1	0
7	A	607	GOL	6	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, 95^{th} 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	501/521 (96%)	-0.27	5 (0%)	82	80	26, 38, 63, 98	0
1	B	501/521 (96%)	0.13	17 (3%)	45	39	24, 39, 70, 123	0
1	C	501/521 (96%)	0.34	24 (4%)	30	25	29, 51, 75, 111	0
1	D	500/521 (95%)	0.34	38 (7%)	13	10	32, 52, 85, 120	0
All	All	2003/2084 (96%)	0.14	84 (4%)	36	30	24, 45, 74, 123	0

The worst 5 of 84 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	486	VAL	9.8
1	D	30	GLY	7.7
1	B	487	GLY	7.4
1	D	489	ALA	6.5
1	C	491	ARG	6.2

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 monosaccharides 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, 95^{th} 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
5	PG4	A	605	13/13	0.73	0.21	56,69,79,79	0
6	PGE	C	605	10/10	0.77	0.16	65,75,83,83	0
2	OXL	C	602	6/6	0.84	0.19	60,67,69,74	0
7	GOL	A	607	6/6	0.87	0.19	42,54,58,61	0
4	K	C	604	1/1	0.90	0.08	50,50,50,50	0
6	PGE	A	606	10/10	0.92	0.09	52,55,60,66	0
2	OXL	D	601	6/6	0.92	0.08	37,45,48,52	0
3	MG	C	603	1/1	0.92	0.04	37,37,37,37	0
2	OXL	C	601	6/6	0.93	0.07	34,41,44,46	0
2	OXL	A	602	6/6	0.94	0.16	42,49,52,55	0
2	OXL	D	602	6/6	0.94	0.14	58,72,83,85	0
2	OXL	B	601	6/6	0.95	0.10	28,35,39,39	0
2	OXL	B	602	6/6	0.95	0.17	44,56,79,82	0
2	OXL	A	601	6/6	0.95	0.07	32,36,43,44	0
3	MG	A	603	1/1	0.96	0.04	32,32,32,32	0
4	K	D	604	1/1	0.98	0.04	48,48,48,48	0
4	K	A	604	1/1	0.99	0.07	37,37,37,37	0
4	K	B	604	1/1	0.99	0.05	48,48,48,48	0
3	MG	B	603	1/1	0.99	0.05	30,30,30,30	0
3	MG	D	603	1/1	0.99	0.08	41,41,41,41	0

6.5 Other polymers (i)

There are no such residues in this entry.