Full wwPDB X-ray Structure Validation Report (i)

Sep 4, 2023 – 08:13 PM EDT

PDB ID	:	3TSB
Title	:	Crystal Structure of Inosine-5'-monophosphate Dehydrogenase from Bacillus anthracis str. Ames
Authors	:	Kim, Y.; Makowska-Grzyska, M.; Hasseman, J.; Anderson, W.F.; Joachimiak, A.; Center for Structural Genomics of Infectious Diseases (CSGID)
Deposited on	:	2011-09-12
Resolution	:	2.60 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 (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 (i)) were used in the production of this report:

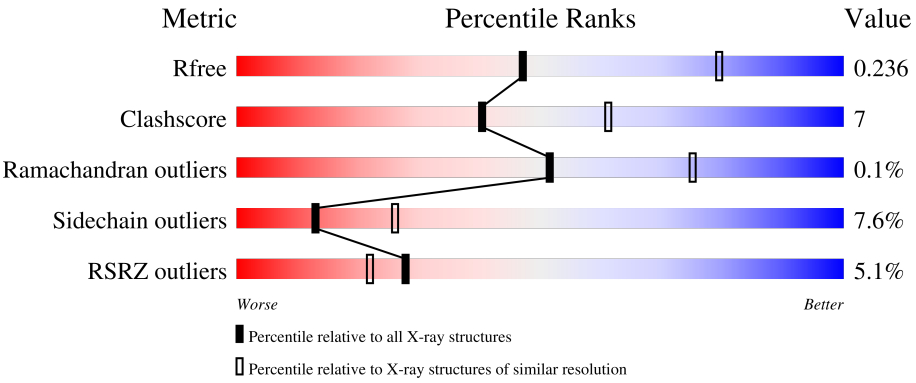
MolProbity	:	4.02b-467
Mogul	:	1.8.5 (274361), CSD as541be (2020)
Xtriage (Phenix)	:	1.13
EDS	:	2.35
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.35

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 2.60 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))
R_{free}	130704	3163 (2.60-2.60)
Clashscore	141614	3518 (2.60-2.60)
Ramachandran outliers	138981	3455 (2.60-2.60)
Sidechain outliers	138945	3455 (2.60-2.60)
RSRZ outliers	127900	3104 (2.60-2.60)

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 <=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	511	4% 81% 14%
1	B	511	5% 66% 16% 15%

2 Entry composition (i)

There are 3 unique types of molecules in this entry. The entry contains 7091 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 Inosine-5'-monophosphate dehydrogenase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	490	Total	C	N	O	S	0	1	0
			3702	2332	642	709	19			
1	B	434	Total	C	N	O	S	0	0	0
			3250	2052	564	617	17			

There are 48 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-23	MET	-	expression tag	UNP Q81W29
A	-22	HIS	-	expression tag	UNP Q81W29
A	-21	HIS	-	expression tag	UNP Q81W29
A	-20	HIS	-	expression tag	UNP Q81W29
A	-19	HIS	-	expression tag	UNP Q81W29
A	-18	HIS	-	expression tag	UNP Q81W29
A	-17	HIS	-	expression tag	UNP Q81W29
A	-16	SER	-	expression tag	UNP Q81W29
A	-15	SER	-	expression tag	UNP Q81W29
A	-14	GLY	-	expression tag	UNP Q81W29
A	-13	VAL	-	expression tag	UNP Q81W29
A	-12	ASP	-	expression tag	UNP Q81W29
A	-11	LEU	-	expression tag	UNP Q81W29
A	-10	GLY	-	expression tag	UNP Q81W29
A	-9	THR	-	expression tag	UNP Q81W29
A	-8	GLU	-	expression tag	UNP Q81W29
A	-7	ASN	-	expression tag	UNP Q81W29
A	-6	LEU	-	expression tag	UNP Q81W29
A	-5	TYR	-	expression tag	UNP Q81W29
A	-4	PHE	-	expression tag	UNP Q81W29
A	-3	GLN	-	expression tag	UNP Q81W29
A	-2	SER	-	expression tag	UNP Q81W29
A	-1	ASN	-	expression tag	UNP Q81W29
A	0	ALA	-	expression tag	UNP Q81W29
B	-23	MET	-	expression tag	UNP Q81W29

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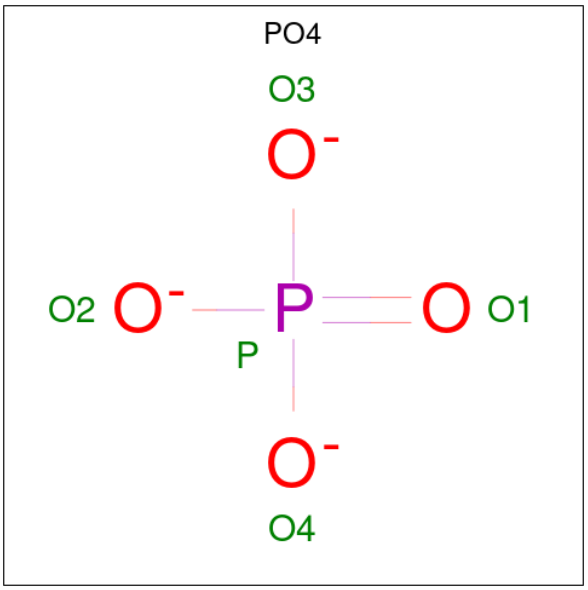
Chain	Residue	Modelled	Actual	Comment	Reference
B	-22	HIS	-	expression tag	UNP Q81W29
B	-21	HIS	-	expression tag	UNP Q81W29
B	-20	HIS	-	expression tag	UNP Q81W29
B	-19	HIS	-	expression tag	UNP Q81W29
B	-18	HIS	-	expression tag	UNP Q81W29
B	-17	HIS	-	expression tag	UNP Q81W29
B	-16	SER	-	expression tag	UNP Q81W29
B	-15	SER	-	expression tag	UNP Q81W29
B	-14	GLY	-	expression tag	UNP Q81W29
B	-13	VAL	-	expression tag	UNP Q81W29
B	-12	ASP	-	expression tag	UNP Q81W29
B	-11	LEU	-	expression tag	UNP Q81W29
B	-10	GLY	-	expression tag	UNP Q81W29
B	-9	THR	-	expression tag	UNP Q81W29
B	-8	GLU	-	expression tag	UNP Q81W29
B	-7	ASN	-	expression tag	UNP Q81W29
B	-6	LEU	-	expression tag	UNP Q81W29
B	-5	TYR	-	expression tag	UNP Q81W29
B	-4	PHE	-	expression tag	UNP Q81W29
B	-3	GLN	-	expression tag	UNP Q81W29
B	-2	SER	-	expression tag	UNP Q81W29
B	-1	ASN	-	expression tag	UNP Q81W29
B	0	ALA	-	expression tag	UNP Q81W29

- Molecule 2 is PHOSPHATE ION (three-letter code: PO4) (formula: O_4P).



Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	1	Total O P 5 4 1	0	0
2	A	1	Total O P 5 4 1	0	0
2	B	1	Total O P 5 4 1	0	0

- Molecule 3 is water.

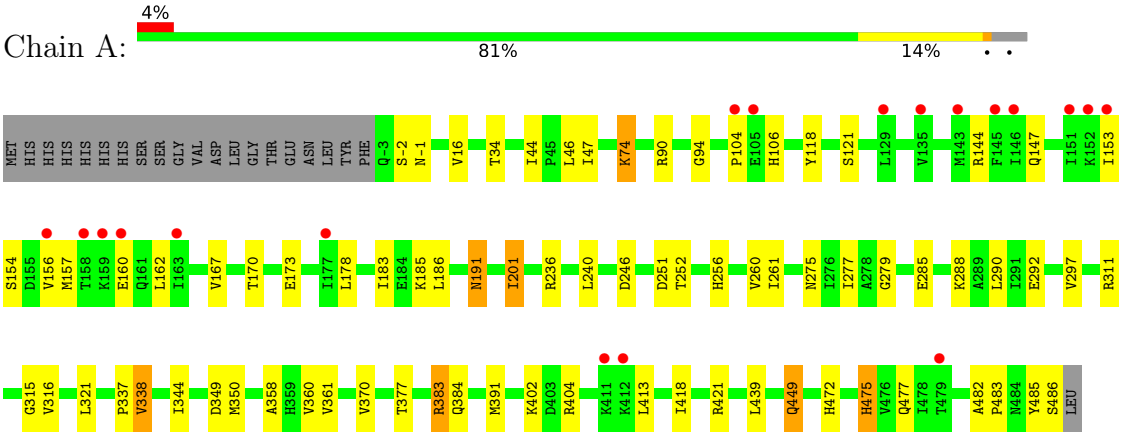
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	72	Total O 72 72	0	0
3	B	52	Total O 52 52	0	0

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.

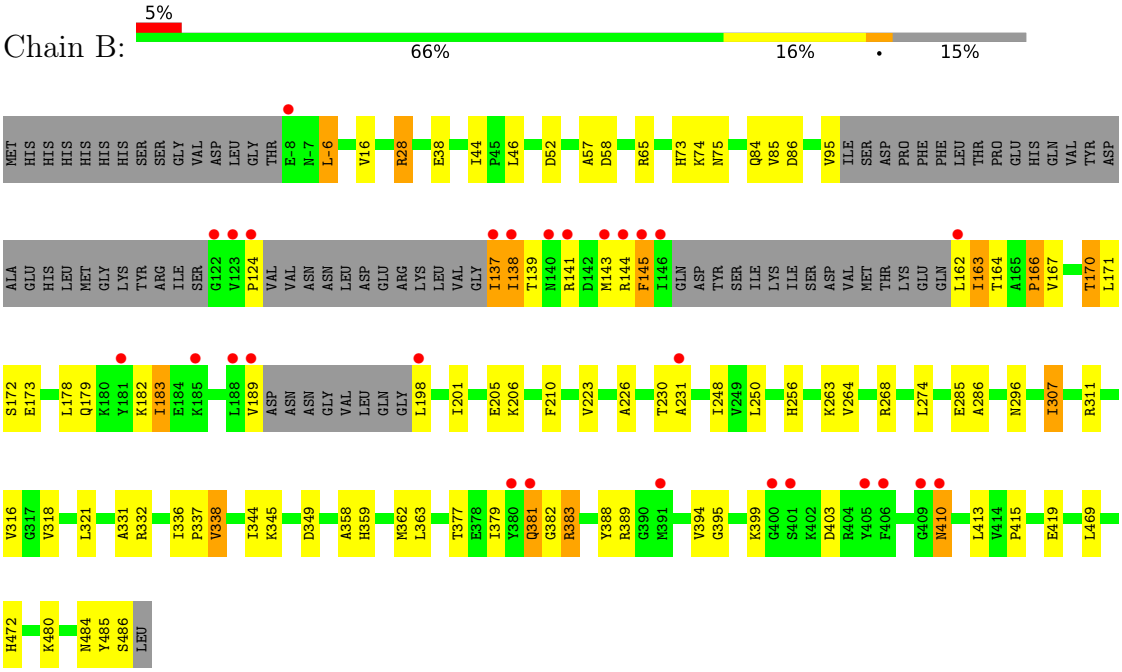
• Molecule 1: Inosine-5'-monophosphate dehydrogenase

Chain A:



• Molecule 1: Inosine-5'-monophosphate dehydrogenase

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	I 4	Depositor
Cell constants a, b, c, α, β, γ	123.03Å 123.03Å 140.72Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	37.00 – 2.60 43.83 – 2.59	Depositor EDS
% Data completeness (in resolution range)	96.0 (37.00-2.60) 96.0 (43.83-2.59)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	0.10	Depositor
$< I/\sigma(I) >$ [1]	1.38 (at 2.58Å)	Xtriage
Refinement program	PHENIX (phenix.refine: dev_851)	Depositor
R, R_{free}	0.181 , 0.242 0.177 , 0.236	Depositor DCC
R_{free} test set	1580 reflections (5.08%)	wwPDB-VP
Wilson B-factor (Å^2)	49.5	Xtriage
Anisotropy	0.002	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.32 , 50.2	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.026 for -h,k,-l	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	7091	wwPDB-VP
Average B, all atoms (Å^2)	61.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.31% 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: PO4

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	0.51	0/3757	0.65	0/5075
1	B	0.49	0/3294	0.62	0/4443
All	All	0.50	0/7051	0.64	0/9518

There are no bond length outliers.

There are no bond angle outliers.

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	3702	0	3784	47	0
1	B	3250	0	3339	63	0
2	A	10	0	0	0	0
2	B	5	0	0	0	0
3	A	72	0	0	0	0
3	B	52	0	0	4	0
All	All	7091	0	7123	102	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 7.

All (102) 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:383:ARG:HE	1:B:383:ARG:HE	1.01	0.94
1:B:307:ILE:HD11	1:B:388:TYR:CE2	2.08	0.89
1:A:475:HIS:CD2	1:A:475:HIS:O	2.35	0.79
1:A:383:ARG:HE	1:B:383:ARG:NE	1.81	0.77
1:B:57:ALA:HB2	1:B:84:GLN:HG3	1.68	0.76
1:B:307:ILE:CD1	1:B:388:TYR:CE2	2.69	0.76
1:B:178:LEU:HD23	1:B:183:ILE:HD12	1.69	0.74
1:B:179:GLN:O	1:B:182:LYS:HD2	1.89	0.72
1:A:252:THR:HG21	1:A:260:VAL:HG21	1.72	0.71
1:A:160:GLU:OE1	1:B:141:ARG:NH1	2.23	0.71
1:B:307:ILE:CD1	1:B:388:TYR:CD2	2.79	0.65
1:A:383:ARG:NE	1:B:383:ARG:HE	1.85	0.64
1:A:277:ILE:HG12	1:A:297:VAL:HB	1.82	0.62
1:A:178:LEU:HD13	1:A:201:ILE:HG23	1.82	0.61
1:B:307:ILE:HD11	1:B:388:TYR:CD2	2.37	0.59
1:A:261:ILE:HD13	1:A:290:LEU:HD23	1.84	0.59
1:B:389:ARG:HH11	1:B:399:LYS:HG3	1.68	0.59
1:B:124:PRO:HA	1:B:137:ILE:HA	1.86	0.57
1:B:344:ILE:HG23	1:B:349:ASP:HB2	1.85	0.57
1:A:178:LEU:HD23	1:A:183:ILE:HG13	1.87	0.55
1:B:472:HIS:HD2	1:B:485:TYR:OH	1.90	0.55
1:B:52:ASP:HA	1:B:73:HIS:CD2	2.43	0.54
1:B:345:LYS:HE2	3:B:538:HOH:O	2.08	0.53
1:A:311:ARG:HG2	1:A:316:VAL:O	2.09	0.53
1:B:28:ARG:NH1	3:B:532:HOH:O	2.40	0.53
1:B:166:PRO:HA	1:B:189:VAL:O	2.08	0.52
1:B:230:THR:HG22	1:B:231:ALA:H	1.74	0.52
1:B:141:ARG:O	1:B:144:ARG:HG2	2.09	0.52
1:B:311:ARG:HG2	1:B:316:VAL:O	2.10	0.52
1:B:44:ILE:HD12	1:B:46:LEU:HD12	1.92	0.51
1:A:482:ALA:C	1:B:379:ILE:HD11	2.31	0.51
1:B:-6:LEU:H	1:B:-6:LEU:HD12	1.76	0.51
1:A:483:PRO:N	1:B:379:ILE:HD11	2.25	0.51
1:B:65:ARG:HD3	1:B:210:PHE:CZ	2.46	0.50
1:B:285:GLU:OE1	1:B:285:GLU:N	2.33	0.50
1:B:394:VAL:HG23	1:B:415:PRO:HG3	1.92	0.50
1:A:350:MET:HE1	1:A:439:LEU:HB2	1.94	0.49
1:B:395:GLY:O	1:B:399:LYS:HG2	2.12	0.49
1:B:268:ARG:NH2	1:B:296:ASN:OD1	2.43	0.49
1:A:350:MET:HG3	1:A:361:VAL:HG21	1.93	0.49
1:A:256:HIS:HE1	1:A:285[B]:GLU:HG3	1.78	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:201:ILE:H	1:A:201:ILE:HG13	1.31	0.48
1:B:410:ASN:HD21	1:B:413:LEU:HD23	1.77	0.48
1:B:486:SER:N	3:B:521:HOH:O	2.47	0.48
1:A:251:ASP:OD1	1:A:404:ARG:NH2	2.47	0.48
1:B:311:ARG:NH2	1:B:318:VAL:O	2.47	0.47
1:A:106:HIS:O	1:A:153:ILE:HG12	2.15	0.47
1:B:170:THR:HG22	1:B:173:GLU:H	1.80	0.47
1:A:475:HIS:O	1:A:475:HIS:CG	2.67	0.47
1:A:449:GLN:H	1:A:449:GLN:HG3	1.36	0.47
1:A:402:LYS:HD3	1:A:413:LEU:HD21	1.97	0.46
1:A:74:LYS:HB2	1:A:74:LYS:HE2	1.60	0.46
1:B:170:THR:HG23	1:B:172:SER:H	1.80	0.46
1:A:383:ARG:HH21	1:B:383:ARG:HH21	1.63	0.46
1:B:331:ALA:HB1	1:B:336:ILE:O	2.15	0.45
1:A:338:VAL:HG22	1:A:358:ALA:HA	1.98	0.45
1:A:475:HIS:O	1:A:475:HIS:HD2	1.95	0.45
1:B:307:ILE:HD13	1:B:388:TYR:CE2	2.48	0.45
1:B:73:HIS:ND1	1:B:75:ASN:HB2	2.31	0.45
1:B:389:ARG:NH1	1:B:399:LYS:HG3	2.32	0.45
1:A:90:ARG:HA	1:A:94:GLY:HA3	2.00	0.44
1:A:297:VAL:HG22	1:A:337:PRO:HG2	1.99	0.44
1:A:486:SER:O	1:B:382:GLY:HA2	2.17	0.44
1:A:236:ARG:O	1:A:240:LEU:HG	2.18	0.44
1:A:104:PRO:HB3	1:A:154:SER:HB3	1.98	0.44
1:B:338:VAL:HG22	1:B:358:ALA:HA	1.99	0.44
1:B:484:ASN:HB2	3:B:536:HOH:O	2.18	0.44
1:A:321:LEU:HA	1:A:321:LEU:HD12	1.85	0.44
1:B:74:LYS:NZ	1:B:403:ASP:OD2	2.33	0.44
1:B:85:VAL:HG13	1:B:223:VAL:HG11	2.00	0.44
1:A:121:SER:HB2	1:A:185:LYS:NZ	2.33	0.43
1:B:307:ILE:HD13	1:B:388:TYR:CD2	2.52	0.43
1:A:170:THR:OG1	1:A:173:GLU:HG2	2.18	0.43
1:B:248:ILE:HD13	1:B:274:LEU:HD21	1.99	0.43
1:A:104:PRO:HA	1:A:153:ILE:HB	2.00	0.43
1:A:44:ILE:HD12	1:A:46:LEU:HD12	2.02	0.42
1:A:90:ARG:HD2	1:A:118:TYR:CE1	2.54	0.42
1:B:256:HIS:ND1	1:B:286:ALA:HB2	2.35	0.42
1:B:362:MET:O	1:B:363:LEU:HD23	2.19	0.42
1:B:389:ARG:HB3	1:B:419:GLU:HG3	2.01	0.42
1:B:307:ILE:H	1:B:307:ILE:HG12	1.75	0.42
1:A:472:HIS:HD2	1:A:485:TYR:OH	2.03	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:74:LYS:HB3	1:B:226:ALA:O	2.20	0.41
1:B:381:GLN:HE21	1:B:381:GLN:HB2	1.66	0.41
1:A:344:ILE:HG23	1:A:349:ASP:HB2	2.03	0.41
1:A:288:LYS:O	1:A:292:GLU:HG3	2.21	0.41
1:B:263:LYS:HE2	1:B:263:LYS:HB2	1.91	0.41
1:A:47:ILE:HG13	1:A:360:VAL:HG11	2.03	0.41
1:B:250:LEU:HD12	1:B:264:VAL:HG22	2.03	0.41
1:B:163:ILE:HD12	1:B:163:ILE:H	1.86	0.41
1:A:256:HIS:CE1	1:A:285[B]:GLU:HG3	2.56	0.41
1:B:307:ILE:HD11	1:B:388:TYR:CZ	2.54	0.41
1:A:147:GLN:N	1:A:147:GLN:OE1	2.54	0.40
1:A:191:ASN:OD1	1:A:191:ASN:N	2.54	0.40
1:A:246:ASP:O	1:A:275:ASN:HB2	2.21	0.40
1:A:252:THR:HG22	1:A:279:GLY:O	2.21	0.40
1:A:311:ARG:O	1:A:315:GLY:HA2	2.21	0.40
1:B:144:ARG:HB3	1:B:145:PHE:H	1.59	0.40
1:B:138:ILE:HD11	1:B:143:MET:HE3	2.03	0.40
1:B:337:PRO:HB3	1:B:359:HIS:CD2	2.56	0.40
1:B:394:VAL:CG2	1:B:415:PRO:HG3	2.51	0.40
1:B:170:THR:HG23	1:B:172:SER:N	2.36	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	489/511 (96%)	485 (99%)	4 (1%)	0	100	100
1	B	424/511 (83%)	416 (98%)	7 (2%)	1 (0%)	47	71
All	All	913/1022 (89%)	901 (99%)	11 (1%)	1 (0%)	51	75

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	166	PRO

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	397/415 (96%)	373 (94%)	24 (6%)	19 39
1	B	345/415 (83%)	313 (91%)	32 (9%)	9 17
All	All	742/830 (89%)	686 (92%)	56 (8%)	13 27

All (56) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	-2	SER
1	A	-1	ASN
1	A	16	VAL
1	A	34	THR
1	A	74	LYS
1	A	144	ARG
1	A	156	VAL
1	A	157	MET
1	A	162	LEU
1	A	167	VAL
1	A	186	LEU
1	A	191	ASN
1	A	201	ILE
1	A	338	VAL
1	A	370	VAL
1	A	377	THR
1	A	383	ARG
1	A	384	GLN
1	A	391	MET
1	A	418	ILE
1	A	421	ARG
1	A	449	GLN
1	A	475	HIS

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Mol	Chain	Res	Type
1	A	477	GLN
1	B	-6	LEU
1	B	16	VAL
1	B	28	ARG
1	B	38	GLU
1	B	58	ASP
1	B	86	ASP
1	B	95	VAL
1	B	137	ILE
1	B	138	ILE
1	B	139	THR
1	B	145	PHE
1	B	162	LEU
1	B	163	ILE
1	B	164	THR
1	B	167	VAL
1	B	170	THR
1	B	171	LEU
1	B	183	ILE
1	B	198	LEU
1	B	201	ILE
1	B	205	GLU
1	B	206	LYS
1	B	307	ILE
1	B	321	LEU
1	B	332	ARG
1	B	338	VAL
1	B	377	THR
1	B	381	GLN
1	B	383	ARG
1	B	410	ASN
1	B	469	LEU
1	B	480	LYS

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (9) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	256	HIS
1	A	472	HIS
1	A	474	HIS
1	A	475	HIS
1	B	359	HIS

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Mol	Chain	Res	Type
1	B	381	GLN
1	B	410	ASN
1	B	449	GLN
1	B	472	HIS

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)

3 ligands are modelled in this entry.

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	PO4	A	501	-	4,4,4	0.93	0	6,6,6	0.48	0
2	PO4	A	500	-	4,4,4	0.86	0	6,6,6	0.52	0
2	PO4	B	500	-	4,4,4	0.97	0	6,6,6	0.44	0

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

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	490/511 (95%)	0.09	19 (3%)	39	32	32, 52, 96, 128	0
1	B	434/511 (84%)	0.21	28 (6%)	18	14	33, 57, 114, 144	0
All	All	924/1022 (90%)	0.15	47 (5%)	28	22	32, 54, 106, 144	0

All (47) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	400	GLY	7.7
1	B	145	PHE	7.3
1	B	137	ILE	5.2
1	B	138	ILE	4.9
1	B	140	ASN	4.8
1	A	159	LYS	4.8
1	A	105	GLU	4.6
1	B	123	VAL	3.9
1	A	158	THR	3.9
1	B	188	LEU	3.7
1	B	406	PHE	3.6
1	B	-8	GLU	3.4
1	B	198	LEU	3.4
1	B	409	GLY	3.4
1	A	151	ILE	3.3
1	B	401	SER	3.3
1	A	135	VAL	3.2
1	A	156	VAL	3.2
1	B	189	VAL	3.1
1	B	124	PRO	3.0
1	B	143	MET	3.0
1	B	410	ASN	3.0
1	B	405	TYR	3.0
1	A	145	PHE	3.0

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Mol	Chain	Res	Type	RSRZ
1	B	185	LYS	3.0
1	A	411	LYS	2.9
1	B	162	LEU	2.9
1	B	231	ALA	2.9
1	B	122	GLY	2.8
1	B	146	ILE	2.8
1	A	146	ILE	2.8
1	B	391	MET	2.8
1	A	152	LYS	2.7
1	A	163	ILE	2.7
1	A	177	ILE	2.6
1	B	380	TYR	2.6
1	B	144	ARG	2.5
1	B	141	ARG	2.5
1	A	129	LEU	2.5
1	A	160	GLU	2.4
1	A	104	PRO	2.2
1	B	181	TYR	2.2
1	A	479	THR	2.1
1	B	381	GLN	2.1
1	A	143	MET	2.1
1	A	412	LYS	2.1
1	A	153	ILE	2.0

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)

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.

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Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9

Mol	Type	Chain	Res	Atoms	RSCC	RSR	B-factors(Å^2)	Q<0.9
2	PO4	A	501	5/5	0.81	0.17	116,117,118,120	0
2	PO4	A	500	5/5	0.99	0.13	43,43,45,46	0
2	PO4	B	500	5/5	0.99	0.10	44,49,50,52	0

6.5 Other polymers (i)

There are no such residues in this entry.