



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 08:10 PM GMT

PDB ID : 4R3J  
Title : Structure of a putative peptidoglycan glycosyltransferase from *Atopobium parvulum* in complex with cefapirin  
Authors : Filippova, E.V.; Minasov, G.; Kiryukhina, O.; Clancy, S.; Joachimiak, A.; Anderson, W.F.; Midwest Center for Structural Genomics (MCSG)  
Deposited on : 2014-08-15  
Resolution : 2.44 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  
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>  
with specific help available everywhere you see the ⓘ symbol.

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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  
Mogul : 1.7 (RC4), CSD as536be (2015)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026688  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : trunk26865

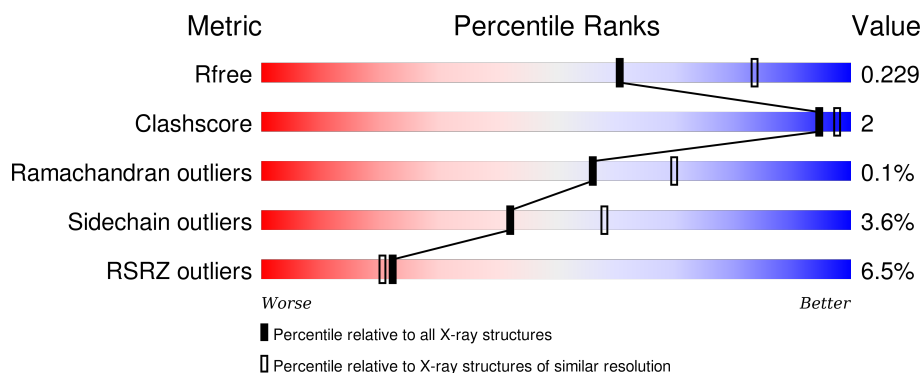
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.44 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))
$R_{free}$	91344	1003 (2.46-2.42)
Clashscore	102246	1071 (2.46-2.42)
Ramachandran outliers	100387	1065 (2.46-2.42)
Sidechain outliers	100360	1065 (2.46-2.42)
RSRZ outliers	91569	1005 (2.46-2.42)

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 on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. 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	482	<div> <div>5%</div> <div>78%</div> <div>5% •</div> <div>16%</div> </div>
1	B	482	<div> <div>6%</div> <div>78%</div> <div>6%</div> <div>16%</div> </div>

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	A	1004	-	-	-	X

## 2 Entry composition

There are 5 unique types of molecules in this entry. The entry contains 6073 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 Peptidoglycan glycosyltransferase.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	407	Total	C	N	O	S	Se	0	0	0
			2910	1805	494	597	2	12			
1	B	407	Total	C	N	O	S	Se	0	0	0
			2916	1810	494	598	2	12			

There are 64 discrepancies between the modelled and reference sequences:

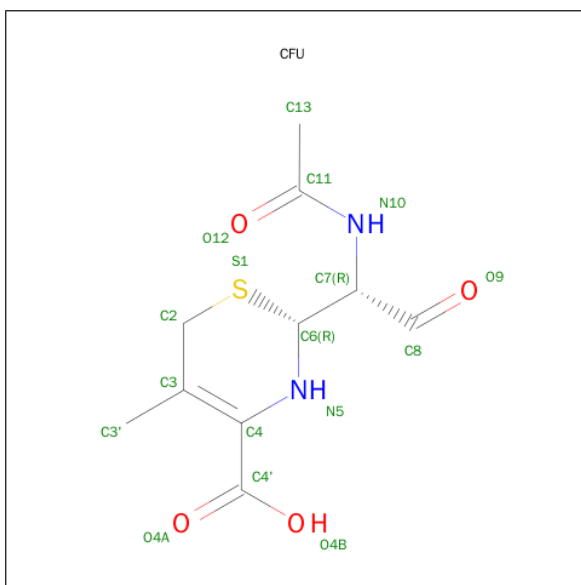
Chain	Residue	Modelled	Actual	Comment	Reference
A	473	MSE	-	EXPRESSION TAG	UNP C8W8H7
A	474	HIS	-	EXPRESSION TAG	UNP C8W8H7
A	475	HIS	-	EXPRESSION TAG	UNP C8W8H7
A	476	HIS	-	EXPRESSION TAG	UNP C8W8H7
A	477	HIS	-	EXPRESSION TAG	UNP C8W8H7
A	478	HIS	-	EXPRESSION TAG	UNP C8W8H7
A	479	HIS	-	EXPRESSION TAG	UNP C8W8H7
A	480	SER	-	EXPRESSION TAG	UNP C8W8H7
A	481	SER	-	EXPRESSION TAG	UNP C8W8H7
A	482	GLY	-	EXPRESSION TAG	UNP C8W8H7
A	483	VAL	-	EXPRESSION TAG	UNP C8W8H7
A	484	ASP	-	EXPRESSION TAG	UNP C8W8H7
A	485	LEU	-	EXPRESSION TAG	UNP C8W8H7
A	486	TRP	-	EXPRESSION TAG	UNP C8W8H7
A	487	SER	-	EXPRESSION TAG	UNP C8W8H7
A	488	HIS	-	EXPRESSION TAG	UNP C8W8H7
A	489	PRO	-	EXPRESSION TAG	UNP C8W8H7
A	490	GLN	-	EXPRESSION TAG	UNP C8W8H7
A	491	PHE	-	EXPRESSION TAG	UNP C8W8H7
A	492	GLU	-	EXPRESSION TAG	UNP C8W8H7
A	493	LYS	-	EXPRESSION TAG	UNP C8W8H7
A	494	GLY	-	EXPRESSION TAG	UNP C8W8H7
A	495	THR	-	EXPRESSION TAG	UNP C8W8H7
A	496	GLU	-	EXPRESSION TAG	UNP C8W8H7
A	497	ASN	-	EXPRESSION TAG	UNP C8W8H7

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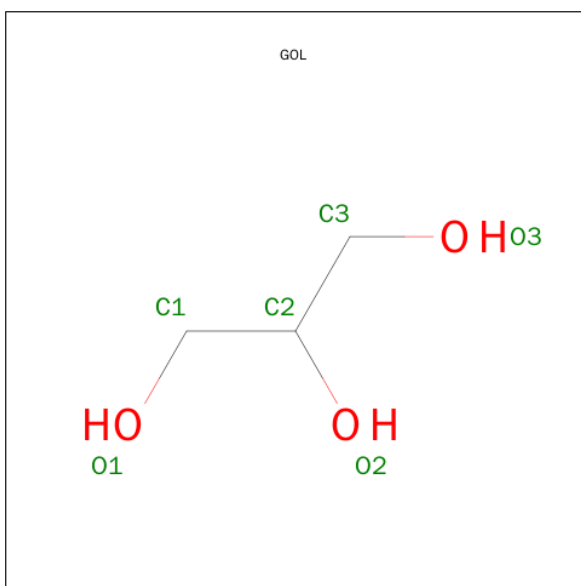
Chain	Residue	Modelled	Actual	Comment	Reference
A	498	LEU	-	EXPRESSION TAG	UNP C8W8H7
A	499	TYR	-	EXPRESSION TAG	UNP C8W8H7
A	500	PHE	-	EXPRESSION TAG	UNP C8W8H7
A	501	GLN	-	EXPRESSION TAG	UNP C8W8H7
A	502	SER	-	EXPRESSION TAG	UNP C8W8H7
A	503	ASN	-	EXPRESSION TAG	UNP C8W8H7
A	504	ALA	-	EXPRESSION TAG	UNP C8W8H7
B	473	MSE	-	EXPRESSION TAG	UNP C8W8H7
B	474	HIS	-	EXPRESSION TAG	UNP C8W8H7
B	475	HIS	-	EXPRESSION TAG	UNP C8W8H7
B	476	HIS	-	EXPRESSION TAG	UNP C8W8H7
B	477	HIS	-	EXPRESSION TAG	UNP C8W8H7
B	478	HIS	-	EXPRESSION TAG	UNP C8W8H7
B	479	HIS	-	EXPRESSION TAG	UNP C8W8H7
B	480	SER	-	EXPRESSION TAG	UNP C8W8H7
B	481	SER	-	EXPRESSION TAG	UNP C8W8H7
B	482	GLY	-	EXPRESSION TAG	UNP C8W8H7
B	483	VAL	-	EXPRESSION TAG	UNP C8W8H7
B	484	ASP	-	EXPRESSION TAG	UNP C8W8H7
B	485	LEU	-	EXPRESSION TAG	UNP C8W8H7
B	486	TRP	-	EXPRESSION TAG	UNP C8W8H7
B	487	SER	-	EXPRESSION TAG	UNP C8W8H7
B	488	HIS	-	EXPRESSION TAG	UNP C8W8H7
B	489	PRO	-	EXPRESSION TAG	UNP C8W8H7
B	490	GLN	-	EXPRESSION TAG	UNP C8W8H7
B	491	PHE	-	EXPRESSION TAG	UNP C8W8H7
B	492	GLU	-	EXPRESSION TAG	UNP C8W8H7
B	493	LYS	-	EXPRESSION TAG	UNP C8W8H7
B	494	GLY	-	EXPRESSION TAG	UNP C8W8H7
B	495	THR	-	EXPRESSION TAG	UNP C8W8H7
B	496	GLU	-	EXPRESSION TAG	UNP C8W8H7
B	497	ASN	-	EXPRESSION TAG	UNP C8W8H7
B	498	LEU	-	EXPRESSION TAG	UNP C8W8H7
B	499	TYR	-	EXPRESSION TAG	UNP C8W8H7
B	500	PHE	-	EXPRESSION TAG	UNP C8W8H7
B	501	GLN	-	EXPRESSION TAG	UNP C8W8H7
B	502	SER	-	EXPRESSION TAG	UNP C8W8H7
B	503	ASN	-	EXPRESSION TAG	UNP C8W8H7
B	504	ALA	-	EXPRESSION TAG	UNP C8W8H7

- Molecule 2 is (2R)-2-[(1R)-1-(ACETYLAMINO)-2-OXOETHYL]-5-METHYL-3,6-DIHYDRO-2H-1,3-THIAZINE-4-CARBOXYLIC ACID (three-letter code: CFU) (formula: C<sub>10</sub>H<sub>14</sub>N<sub>2</sub>O<sub>4</sub>S).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	N	O	S	0	0
			17	10	2	4	1		
2	B	1	Total	C	N	O	S	0	0
			17	10	2	4	1		

- Molecule 3 is GLYCEROL (three-letter code: GOL) (formula:  $C_3H_8O_3$ ).



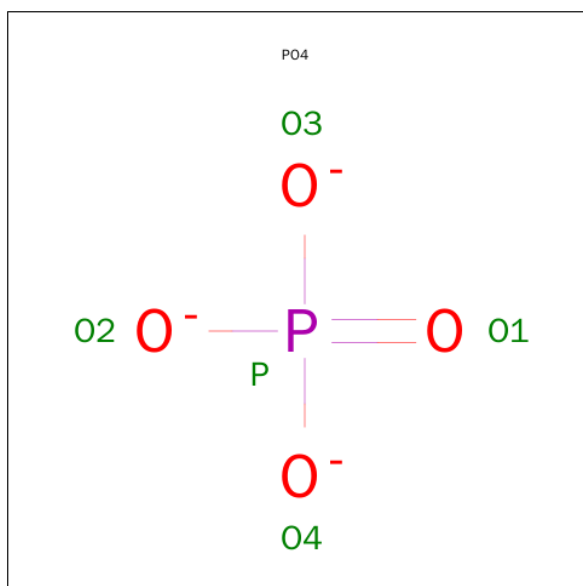
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	1	Total	C	O	0	0
			6	3	3		
3	B	1	Total	C	O	0	0
			6	3	3		

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

- Molecule 4 is PHOSPHATE ION (three-letter code: PO4) (formula: O<sub>4</sub>P).



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

- Molecule 5 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
5	A	95	Total	O	0	2
			97	97		
5	B	83	Total	O	0	0
			83	83		





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 21 21 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	99.63Å 119.84Å 82.54Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	30.00 – 2.44 29.84 – 2.44	Depositor EDS
% Data completeness (in resolution range)	99.7 (30.00-2.44) 99.8 (29.84-2.44)	Depositor EDS
$R_{merge}$	0.09	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.56 (at 2.45Å)	Xtriage
Refinement program	REFMAC 5.8.0069	Depositor
R, $R_{free}$	0.171 , 0.231 0.177 , 0.229	Depositor DCC
$R_{free}$ test set	1858 reflections (5.26%)	DCC
Wilson B-factor (Å <sup>2</sup> )	44.1	Xtriage
Anisotropy	0.070	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 41.9	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtriage
Outliers	0 of 37158 reflections	Xtriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	6073	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	49.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 11.61% 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, 0.375 respectively for untwinned datasets, and 0.333, 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: GOL, PO4, CFU

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	0.70	0/2945	0.82	1/3996 (0.0%)
1	B	0.68	0/2952	0.78	2/4008 (0.0%)
All	All	0.69	0/5897	0.80	3/8004 (0.0%)

There are no bond length outliers.

All (3) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	878	MSE	CA-CB-CG	-5.76	103.50	113.30
1	B	559	MSE	CA-CB-CG	-5.76	103.51	113.30
1	A	859	ASP	CB-CG-OD1	-5.19	113.63	118.30

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	2910	0	2840	10	0
1	B	2916	0	2848	10	0
2	A	17	0	11	1	0
2	B	17	0	11	1	0
3	A	6	0	8	0	0
3	B	12	0	16	0	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
4	A	10	0	0	0	0
4	B	5	0	0	0	0
5	A	97	0	0	0	0
5	B	83	0	0	0	0
All	All	6073	0	5734	20	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 2.

All (20) 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:868:MSE:HE2	1:A:889:GLY:HA2	1.76	0.68
1:A:571:TYR:CE1	1:A:658:GLY:HA2	2.38	0.59
1:B:708:GLY:HA2	1:B:723:GLU:O	2.05	0.56
1:A:720:TYR:HB2	2:A:1001:CFU:S1	2.50	0.51
1:A:573:THR:HG23	1:A:578:SER:HB2	1.93	0.50
1:A:581:ASN:O	1:A:585:THR:HB	2.12	0.49
1:A:697:LYS:HE3	1:A:748:ALA:O	2.13	0.49
1:A:653:THR:OG1	1:A:656:GLU:HG3	2.12	0.49
1:B:720:TYR:HB2	2:B:1001:CFU:S1	2.53	0.48
1:B:632:SER:OG	1:B:811:VAL:HG21	2.13	0.48
1:B:868:MSE:HE2	1:B:889:GLY:HA2	1.97	0.47
1:B:875:GLY:O	1:B:878:MSE:HG3	2.14	0.47
1:B:706:ALA:HB3	1:B:725:MSE:HB2	1.98	0.46
1:A:752:ASP:O	1:A:756:SER:HB3	2.16	0.46
1:B:897:GLU:O	1:B:898:ASN:CB	2.65	0.45
1:B:681:GLY:O	1:B:795:GLY:HA3	2.18	0.42
1:B:734:PHE:CD2	1:B:867:ALA:HB1	2.55	0.42
1:A:625:ALA:HB1	1:A:936:VAL:HG13	2.01	0.41
1:A:901:PHE:HZ	1:A:928:ASN:OD1	2.02	0.40
1:B:557:ASP:OD1	1:B:654:HIS:N	2.49	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	399/482 (83%)	387 (97%)	12 (3%)	0	100	100
1	B	401/482 (83%)	386 (96%)	14 (4%)	1 (0%)	52	64
All	All	800/964 (83%)	773 (97%)	26 (3%)	1 (0%)	56	70

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	546	ASP

### 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	307/356 (86%)	294 (96%)	13 (4%)	36	51
1	B	308/356 (86%)	299 (97%)	9 (3%)	50	66
All	All	615/712 (86%)	593 (96%)	22 (4%)	42	58

All (22) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	547	ASP
1	A	573	THR
1	A	585	THR
1	A	722	ASN
1	A	737	SER

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Mol	Chain	Res	Type
1	A	756	SER
1	A	835	ARG
1	A	840	GLU
1	A	844	VAL
1	A	846	THR
1	A	859	ASP
1	A	900	ASN
1	A	917	VAL
1	B	737	SER
1	B	752	ASP
1	B	796	LEU
1	B	832	ILE
1	B	840	GLU
1	B	859	ASP
1	B	863	GLN
1	B	895	ASP
1	B	898	ASN

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	722	ASN
1	B	556	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 carbohydrates in this entry.

### 5.6 Ligand geometry [i](#)

8 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	CFU	A	1001	1	11,17,17	5.60	5 (45%)	10,23,23	2.86	5 (50%)
3	GOL	A	1002	-	5,5,5	0.38	0	5,5,5	0.70	0
4	PO4	A	1003	-	4,4,4	0.18	0	6,6,6	0.31	0
4	PO4	A	1004	-	4,4,4	0.54	0	6,6,6	0.31	0
2	CFU	B	1001	1	11,17,17	5.52	3 (27%)	10,23,23	3.04	4 (40%)
3	GOL	B	1002	-	5,5,5	0.48	0	5,5,5	1.00	0
3	GOL	B	1003	-	5,5,5	0.34	0	5,5,5	0.80	0
4	PO4	B	1004	-	4,4,4	0.78	0	6,6,6	0.32	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	CFU	A	1001	1	-	0/4/27/27	0/0/1/1
3	GOL	A	1002	-	-	0/4/4/4	0/0/0/0
4	PO4	A	1003	-	-	0/0/0/0	0/0/0/0
4	PO4	A	1004	-	-	0/0/0/0	0/0/0/0
2	CFU	B	1001	1	-	0/4/27/27	0/0/1/1
3	GOL	B	1002	-	-	0/4/4/4	0/0/0/0
3	GOL	B	1003	-	-	0/4/4/4	0/0/0/0
4	PO4	B	1004	-	-	0/0/0/0	0/0/0/0

All (8) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	A	1001	CFU	C3'-C3	-10.88	1.32	1.51
2	B	1001	CFU	C3'-C3	-10.46	1.33	1.51
2	A	1001	CFU	C4'-C4	-10.41	1.34	1.52
2	B	1001	CFU	C4'-C4	-10.21	1.34	1.52
2	A	1001	CFU	C4-N5	-2.29	1.26	1.34
2	A	1001	CFU	C2-S1	-2.06	1.77	1.82
2	A	1001	CFU	C3-C4	10.14	1.47	1.34

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	B	1001	CFU	C3-C4	10.51	1.47	1.34

All (9) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
2	A	1001	CFU	C3-C2-S1	-5.38	110.55	117.17
2	B	1001	CFU	C2-C3-C4	-4.60	115.76	123.50
2	B	1001	CFU	C3-C2-S1	-4.52	111.61	117.17
2	A	1001	CFU	C2-C3-C4	-2.54	119.23	123.50
2	A	1001	CFU	C6-C7-N10	-2.44	103.88	109.57
2	A	1001	CFU	C2-S1-C6	3.72	101.54	94.36
2	A	1001	CFU	C3'-C3-C2	4.04	119.41	113.22
2	B	1001	CFU	C3'-C3-C2	4.62	120.29	113.22
2	B	1001	CFU	C2-S1-C6	4.95	103.90	94.36

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

2 monomers are involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	1001	CFU	1	0
2	B	1001	CFU	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, 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	395/482 (81%)	-0.00	23 (5%) 26 24	27, 43, 82, 119	0
1	B	395/482 (81%)	-0.03	28 (7%) 19 17	29, 45, 77, 122	0
All	All	790/964 (81%)	-0.02	51 (6%) 22 20	27, 44, 80, 122	0

All (51) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	546	ASP	5.4
1	B	546	ASP	4.8
1	A	927	GLU	4.1
1	A	926	GLY	4.1
1	B	898	ASN	4.1
1	B	906	ILE	3.7
1	B	547	ASP	3.7
1	A	906	ILE	3.5
1	A	545	GLN	3.5
1	A	954	SER	3.3
1	B	526	VAL	3.3
1	B	800	GLU	3.2
1	B	814	ASN	3.1
1	A	918	VAL	3.1
1	A	802	ALA	3.0
1	B	897	GLU	3.0
1	A	665	THR	3.0
1	B	683	SER	3.0
1	A	664	GLY	2.9
1	B	629	TYR	2.9
1	B	721	ALA	2.9
1	B	544	LYS	2.9
1	B	724	ASP	2.9
1	B	545	GLN	2.8

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Mol	Chain	Res	Type	RSRZ
1	A	901	PHE	2.8
1	B	817	ILE	2.7
1	A	898	ASN	2.6
1	B	816	VAL	2.5
1	B	550	TYR	2.5
1	A	547	ASP	2.5
1	B	663	SER	2.5
1	A	634	VAL	2.5
1	A	919	SER	2.5
1	A	526	VAL	2.4
1	A	549	THR	2.4
1	B	926	GLY	2.4
1	B	927	GLU	2.4
1	B	919	SER	2.4
1	A	800	GLU	2.3
1	A	811	VAL	2.3
1	B	815	ALA	2.3
1	B	628	GLY	2.3
1	B	727	THR	2.3
1	B	687	VAL	2.2
1	B	664	GLY	2.2
1	A	720	TYR	2.2
1	A	920	VAL	2.1
1	B	549	THR	2.1
1	B	811	VAL	2.1
1	A	817	ILE	2.1
1	A	727	THR	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 carbohydrates 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. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains.

The B-factors column lists the minimum, median, 95<sup>th</sup> 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	LLDF	B-factors(Å <sup>2</sup> )	Q<0.9
4	PO4	A	1004	5/5	0.96	0.37	7.58	62,74,77,80	0
3	GOL	B	1003	6/6	0.93	0.24	1.32	49,68,74,82	0
3	GOL	B	1002	6/6	0.95	0.13	1.24	42,42,46,50	0
4	PO4	B	1004	5/5	0.96	0.14	1.20	52,52,62,66	0
3	GOL	A	1002	6/6	0.91	0.16	0.95	48,49,53,59	0
2	CFU	B	1001	17/17	0.84	0.22	0.25	74,85,92,92	0
2	CFU	A	1001	17/17	0.90	0.12	-1.07	60,70,75,76	0
4	PO4	A	1003	5/5	0.91	0.22	-	67,70,82,83	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.