



# Full wwPDB X-ray Structure Validation Report ⓘ

Oct 19, 2024 – 10:14 PM EDT

PDB ID : 3DSG  
Title : XC1028 from Xanthomonas campestris Adopts a PilZ Domain-like Structure  
Yet with Trivial c-di-GMP Binding Activity  
Authors : Li, T.N.; Chin, K.H.; Liu, J.H.; Wang, A.H.J.; Chou, S.H.  
Deposited on : 2008-07-12  
Resolution : 2.09 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

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity : 4.02b-467  
Mogul : 2022.3.0, CSD as543be (2022)  
Xtriage (Phenix) : 1.20.1  
EDS : 3.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.003 (Gargrove)  
Density-Fitness : 1.0.11  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.39

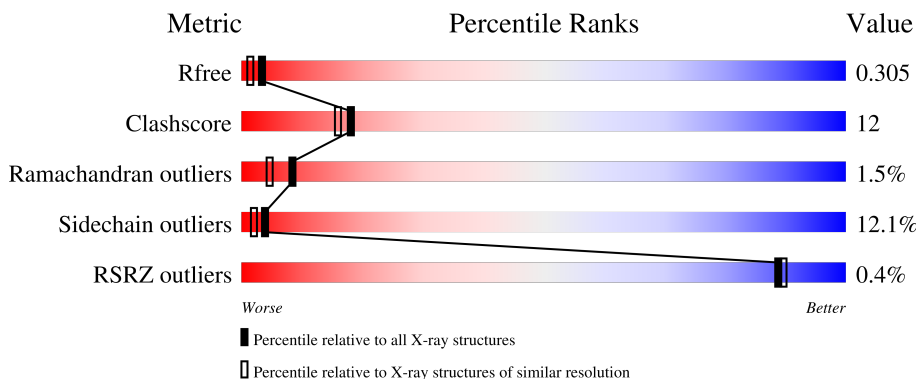
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.09 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))
$R_{free}$	164625	6234 (2.10-2.10)
Clashscore	180529	6893 (2.10-2.10)
Ramachandran outliers	177936	6839 (2.10-2.10)
Sidechain outliers	177891	6840 (2.10-2.10)
RSRZ outliers	164620	6234 (2.10-2.10)

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  $\geq 3$ , 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	99	
1	B	99	
1	C	99	

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 2263 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 Type IV fimbriae assembly protein.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	Se			
1	A	94	Total 710	C 461	N 117	O 130	Se 2	0	0	0
1	B	97	Total 724	C 469	N 120	O 133	Se 2	0	0	0
1	C	94	Total 703	C 458	N 116	O 127	Se 2	0	0	0

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	45	Total 45	O 45	0	0
2	B	44	Total 44	O 44	0	0
2	C	37	Total 37	O 37	0	0



## 4 Data and refinement statistics i

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	87.90Å 50.96Å 92.75Å 90.00° 90.21° 90.00°	Depositor
Resolution (Å)	25.48 – 2.09 25.48 – 2.10	Depositor EDS
% Data completeness (in resolution range)	88.6 (25.48-2.09) 95.4 (25.48-2.10)	Depositor EDS
$R_{merge}$	0.04	Depositor
$R_{sym}$	0.22	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	7.18 (at 2.10Å)	Xtrriage
Refinement program	CNS 1.2	Depositor
R, $R_{free}$	0.277 , 0.278 0.276 , 0.305	Depositor DCC
$R_{free}$ test set	1212 reflections (5.29%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	52.9	Xtrriage
Anisotropy	0.155	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.36 , 64.7	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.49$ , $\langle L^2 \rangle = 0.32$	Xtrriage
Estimated twinning fraction	0.028 for -1/2*h+3/2*k,1/2*h+1/2*k,-l 0.026 for -1/2*h-3/2*k,-1/2*h+1/2*k,-l 0.447 for 1/2*h+3/2*k,1/2*h-1/2*k,-l 0.438 for 1/2*h-3/2*k,-1/2*h-1/2*k,-l 0.021 for -h,-k,l	Xtrriage
$F_o, F_c$ correlation	0.96	EDS
Total number of atoms	2263	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	58.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 5.76% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 5 Model quality i

### 5.1 Standard geometry i

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	1.94	10/723 (1.4%)	2.56	48/976 (4.9%)
1	B	1.86	6/737 (0.8%)	2.38	47/995 (4.7%)
1	C	2.15	16/716 (2.2%)	2.40	47/967 (4.9%)
All	All	1.99	32/2176 (1.5%)	2.45	142/2938 (4.8%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	6
1	B	0	6
1	C	0	5
All	All	0	17

All (32) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	106	GLY	C-OXT	23.74	1.68	1.23
1	C	82	GLY	C-O	-8.77	1.09	1.23
1	C	72	PRO	N-CD	7.74	1.58	1.47
1	B	50	LEU	CA-C	-6.97	1.34	1.52
1	C	37	PRO	N-CD	-6.29	1.39	1.47
1	A	94	GLU	CD-OE2	-6.26	1.18	1.25
1	A	88	PRO	N-CD	-6.22	1.39	1.47
1	C	73	ALA	CA-CB	6.20	1.65	1.52
1	B	31	SER	CB-OG	-6.08	1.34	1.42
1	A	84	GLY	C-O	-5.96	1.14	1.23
1	C	93	GLY	C-O	-5.96	1.14	1.23
1	C	17	ASP	C-O	-5.89	1.12	1.23
1	A	37	PRO	N-CD	-5.69	1.39	1.47
1	B	37	PRO	N-CD	-5.51	1.40	1.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	C	27	PRO	N-CD	-5.46	1.40	1.47
1	B	39	PRO	N-CD	-5.42	1.40	1.47
1	C	25	TYR	C-O	-5.38	1.13	1.23
1	A	27	PRO	N-CD	-5.33	1.40	1.47
1	A	91	PRO	N-CD	5.32	1.55	1.47
1	B	91	PRO	N-CD	-5.25	1.40	1.47
1	A	54	LEU	C-N	5.24	1.44	1.34
1	C	42	TYR	C-O	-5.22	1.13	1.23
1	A	106	GLY	C-OXT	5.22	1.33	1.23
1	C	71	THR	C-N	5.21	1.44	1.34
1	C	58	SER	C-O	-5.16	1.13	1.23
1	B	23	SER	CB-OG	-5.09	1.35	1.42
1	A	58	SER	C-O	-5.08	1.13	1.23
1	C	54	LEU	C-N	5.08	1.43	1.34
1	C	62	PRO	N-CD	-5.06	1.40	1.47
1	C	88	PRO	N-CD	-5.05	1.40	1.47
1	A	39	PRO	N-CD	-5.04	1.40	1.47
1	C	91	PRO	N-CD	-5.02	1.40	1.47

All (142) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	79	ARG	NE-CZ-NH1	17.68	129.14	120.30
1	B	16	LYS	O-C-N	-15.41	98.04	122.70
1	A	58	SER	O-C-N	-13.91	100.44	122.70
1	C	58	SER	O-C-N	-13.83	100.58	122.70
1	A	79	ARG	CD-NE-CZ	12.87	141.61	123.60
1	C	64	ALA	O-C-N	-11.98	102.83	123.20
1	C	41	ARG	NE-CZ-NH2	11.97	126.28	120.30
1	B	22	TYR	CB-CG-CD1	11.95	128.17	121.00
1	B	93	GLY	O-C-N	-11.62	104.11	122.70
1	A	41	ARG	NE-CZ-NH1	-11.24	114.68	120.30
1	B	87	PHE	CB-CG-CD1	11.22	128.65	120.80
1	C	60	ARG	NE-CZ-NH1	10.82	125.71	120.30
1	A	61	LEU	C-N-CD	10.26	149.95	128.40
1	A	54	LEU	C-N-CD	10.01	149.43	128.40
1	B	16	LYS	CA-C-O	9.85	140.79	120.10
1	C	89	ASP	CB-CG-OD2	9.85	127.16	118.30
1	C	54	LEU	C-N-CD	9.76	148.89	128.40
1	A	31	SER	O-C-N	-9.35	107.31	123.20
1	C	56	ASP	CB-CG-OD1	9.23	126.61	118.30
1	B	41	ARG	NE-CZ-NH2	9.16	124.88	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	55	PRO	O-C-N	-9.14	108.08	122.70
1	C	97	ARG	NE-CZ-NH1	-9.09	115.76	120.30
1	B	54	LEU	C-N-CD	9.04	147.39	128.40
1	A	60	ARG	NE-CZ-NH2	-8.80	115.90	120.30
1	A	41	ARG	NE-CZ-NH2	8.73	124.67	120.30
1	B	22	TYR	CB-CG-CD2	-8.72	115.77	121.00
1	A	79	ARG	NE-CZ-NH2	-8.66	115.97	120.30
1	B	61	LEU	C-N-CD	8.34	145.92	128.40
1	C	93	GLY	O-C-N	-8.32	109.39	122.70
1	B	83	ILE	C-N-CA	7.88	138.85	122.30
1	A	90	GLY	C-N-CD	7.85	144.89	128.40
1	C	58	SER	CA-C-O	7.84	136.57	120.10
1	B	20	ALA	N-CA-CB	7.75	120.95	110.10
1	B	87	PHE	CA-C-O	7.73	136.33	120.10
1	B	59	GLU	OE1-CD-OE2	-7.64	114.13	123.30
1	C	60	ARG	NE-CZ-NH2	-7.59	116.50	120.30
1	A	62	PRO	CA-N-CD	-7.51	100.98	111.50
1	C	63	VAL	CA-CB-CG2	7.51	122.16	110.90
1	B	60	ARG	NE-CZ-NH1	-7.43	116.58	120.30
1	A	81	ALA	C-N-CA	7.37	137.77	122.30
1	B	102	THR	CA-CB-CG2	7.36	122.71	112.40
1	C	72	PRO	CA-N-CD	-7.33	101.24	111.50
1	C	102	THR	CA-CB-CG2	7.32	122.65	112.40
1	B	87	PHE	C-N-CD	7.25	143.63	128.40
1	C	63	VAL	CA-CB-CG1	7.25	121.77	110.90
1	A	19	ALA	O-C-N	-7.17	111.23	122.70
1	A	106	GLY	CA-C-O	7.17	133.50	120.60
1	A	97	ARG	NE-CZ-NH2	6.83	123.71	120.30
1	B	89	ASP	CB-CG-OD2	6.72	124.35	118.30
1	B	93	GLY	CA-C-O	6.69	132.65	120.60
1	C	20	ALA	N-CA-CB	6.61	119.35	110.10
1	C	69	TRP	O-C-N	-6.60	112.14	122.70
1	B	92	GLU	OE1-CD-OE2	-6.58	115.40	123.30
1	A	60	ARG	C-N-CA	6.52	137.99	121.70
1	B	46	ASP	C-N-CA	6.47	137.88	121.70
1	A	24	ALA	N-CA-CB	6.46	119.15	110.10
1	B	62	PRO	CA-N-CD	-6.39	102.55	111.50
1	A	38	THR	C-N-CD	6.38	141.81	128.40
1	A	87	PHE	O-C-N	-6.35	109.04	121.10
1	C	87	PHE	C-N-CD	6.35	141.73	128.40
1	A	103	LEU	CA-CB-CG	6.34	129.88	115.30
1	C	37	PRO	C-N-CA	6.30	137.45	121.70

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	31	SER	CA-C-O	6.30	133.33	120.10
1	C	24	ALA	N-CA-CB	6.25	118.85	110.10
1	C	102	THR	O-C-N	-6.21	112.76	122.70
1	C	25	TYR	CA-C-O	6.20	133.12	120.10
1	B	42	TYR	CB-CG-CD2	6.20	124.72	121.00
1	A	63	VAL	CA-CB-CG2	6.18	120.17	110.90
1	B	23	SER	CB-CA-C	6.16	121.80	110.10
1	B	53	THR	C-N-CA	6.14	137.06	121.70
1	C	55	PRO	CA-N-CD	-6.11	102.95	111.50
1	C	97	ARG	NH1-CZ-NH2	6.11	126.12	119.40
1	C	102	THR	CA-CB-OG1	6.05	121.72	109.00
1	A	68	VAL	CG1-CB-CG2	5.88	120.31	110.90
1	A	52	LEU	CA-CB-CG	5.88	128.81	115.30
1	C	27	PRO	C-N-CA	5.87	136.38	121.70
1	B	47	GLU	CA-CB-CG	5.87	126.32	113.40
1	C	104	LEU	CB-CG-CD1	5.81	120.88	111.00
1	B	24	ALA	N-CA-CB	5.79	118.21	110.10
1	A	54	LEU	CB-CG-CD2	5.78	120.83	111.00
1	B	87	PHE	CB-CG-CD2	-5.78	116.75	120.80
1	C	38	THR	C-N-CD	5.77	140.51	128.40
1	C	36	VAL	C-N-CD	5.74	140.46	128.40
1	C	36	VAL	CA-CB-CG2	5.74	119.51	110.90
1	C	64	ALA	CA-C-O	5.73	132.14	120.10
1	A	91	PRO	CA-N-CD	-5.73	103.48	111.50
1	A	54	LEU	CB-CG-CD1	5.72	120.73	111.00
1	B	105	ALA	C-N-CA	5.71	134.29	122.30
1	A	67	VAL	CA-CB-CG2	5.71	119.46	110.90
1	A	97	ARG	NE-CZ-NH1	-5.65	117.48	120.30
1	A	50	LEU	CA-CB-CG	5.64	128.28	115.30
1	B	102	THR	CA-CB-OG1	5.64	120.84	109.00
1	A	55	PRO	CA-N-CD	-5.64	103.61	111.50
1	B	88	PRO	C-N-CA	5.64	135.79	121.70
1	C	68	VAL	CG1-CB-CG2	5.64	119.92	110.90
1	A	17	ASP	CB-CG-OD2	5.63	123.36	118.30
1	C	61	LEU	C-N-CD	5.62	140.21	128.40
1	B	63	VAL	CA-CB-CG2	5.62	119.33	110.90
1	A	97	ARG	CA-CB-CG	5.61	125.74	113.40
1	B	85	VAL	CA-CB-CG2	5.57	119.25	110.90
1	A	98	ASN	N-CA-CB	5.57	120.62	110.60
1	C	106	GLY	CA-C-O	5.50	130.51	120.60
1	B	41	ARG	NH1-CZ-NH2	-5.46	113.39	119.40
1	C	41	ARG	NH1-CZ-NH2	-5.46	113.40	119.40

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	79	ARG	NE-CZ-NH2	-5.45	117.57	120.30
1	A	70	THR	O-C-N	-5.44	114.00	122.70
1	B	59	GLU	C-N-CA	5.44	135.29	121.70
1	A	19	ALA	CA-C-O	5.43	131.50	120.10
1	C	50	LEU	CB-CG-CD2	5.43	120.23	111.00
1	A	59	GLU	OE1-CD-OE2	-5.41	116.81	123.30
1	B	55	PRO	CA-N-CD	-5.41	103.93	111.50
1	C	59	GLU	CA-CB-CG	5.40	125.29	113.40
1	B	21	LEU	N-CA-CB	5.39	121.19	110.40
1	B	87	PHE	N-CA-CB	5.39	120.30	110.60
1	B	61	LEU	CA-C-N	-5.38	102.03	117.10
1	A	44	LEU	CA-CB-CG	5.36	127.64	115.30
1	B	29	VAL	CA-CB-CG2	5.36	118.94	110.90
1	C	85	VAL	CA-CB-CG1	5.34	118.91	110.90
1	A	87	PHE	CB-CG-CD2	5.33	124.53	120.80
1	A	59	GLU	C-N-CA	5.32	135.01	121.70
1	A	29	VAL	CA-CB-CG1	5.32	118.88	110.90
1	A	52	LEU	CB-CG-CD1	5.31	120.03	111.00
1	B	41	ARG	C-N-CA	5.31	134.97	121.70
1	B	36	VAL	CA-CB-CG2	5.30	118.85	110.90
1	A	92	GLU	CA-CB-CG	5.27	124.99	113.40
1	C	88	PRO	C-N-CA	5.27	134.87	121.70
1	C	89	ASP	N-CA-CB	5.25	120.05	110.60
1	C	38	THR	N-CA-CB	5.23	120.24	110.30
1	B	105	ALA	N-CA-CB	5.23	117.42	110.10
1	A	90	GLY	CA-C-N	-5.22	102.47	117.10
1	C	71	THR	C-N-CD	5.22	139.35	128.40
1	C	68	VAL	CA-CB-CG1	5.21	118.72	110.90
1	A	53	THR	C-N-CA	5.19	134.67	121.70
1	C	44	LEU	CA-CB-CG	5.18	127.22	115.30
1	A	64	ALA	N-CA-CB	5.18	117.35	110.10
1	B	35	PHE	CB-CG-CD2	5.14	124.40	120.80
1	B	55	PRO	CA-C-O	5.14	132.53	120.20
1	C	92	GLU	C-N-CA	5.14	133.09	122.30
1	B	42	TYR	CA-CB-CG	5.08	123.06	113.40
1	C	67	VAL	CA-CB-CG2	5.03	118.44	110.90
1	A	15	LEU	CA-CB-CG	5.01	126.83	115.30
1	C	89	ASP	CA-CB-CG	5.01	124.43	113.40

There are no chirality outliers.

All (17) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	105	ALA	Mainchain
1	A	38	THR	Mainchain
1	A	49	PHE	Sidechain
1	A	58	SER	Mainchain
1	A	84	GLY	Mainchain
1	A	92	GLU	Mainchain
1	B	101	GLU	Mainchain
1	B	105	ALA	Mainchain
1	B	46	ASP	Mainchain
1	B	64	ALA	Mainchain
1	B	79	ARG	Sidechain
1	B	93	GLY	Mainchain
1	C	10	ILE	Mainchain
1	C	39	PRO	Mainchain
1	C	48	VAL	Mainchain
1	C	64	ALA	Mainchain
1	C	93	GLY	Mainchain

## 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	710	0	729	13	3
1	B	724	0	742	17	1
1	C	703	0	727	25	3
2	A	45	0	0	9	0
2	B	44	0	0	5	0
2	C	37	0	0	6	0
All	All	2263	0	2198	52	4

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 12.

All (52) 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:C:106:GLY:C	1:C:106:GLY:OXT	1.68	1.28

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:26:MSE:HG2	2:B:350:HOH:O	1.08	1.22
1:A:26:MSE:HG2	2:A:203:HOH:O	1.05	1.18
1:C:26:MSE:HG2	2:C:425:HOH:O	1.00	1.16
1:A:40:LYS:HD3	2:A:654:HOH:O	1.44	1.14
1:B:42:TYR:OH	2:B:638:HOH:O	1.78	1.00
1:C:79:ARG:NH2	2:C:628:HOH:O	1.97	0.95
1:A:16:LYS:HB3	2:A:492:HOH:O	1.74	0.86
1:C:47:GLU:HG3	2:C:646:HOH:O	1.79	0.81
1:B:98:ASN:O	1:B:102:THR:HG23	1.80	0.81
1:B:58:SER:O	1:C:43:MSE:HG2	1.86	0.75
1:C:94:GLU:CD	1:C:97:ARG:HH11	1.92	0.73
1:C:79:ARG:HG2	1:C:80:ALA:H	1.55	0.71
1:B:97:ARG:NH2	2:B:446:HOH:O	2.27	0.67
1:C:16:LYS:HE2	2:C:500:HOH:O	1.94	0.67
1:C:21:LEU:HD21	1:C:100:ILE:HG23	1.75	0.67
1:C:98:ASN:O	1:C:102:THR:HG23	1.96	0.65
1:C:94:GLU:OE2	1:C:97:ARG:NH1	2.31	0.63
1:A:15:LEU:HD13	1:A:21:LEU:HA	1.82	0.61
1:B:58:SER:O	1:C:43:MSE:HE3	2.01	0.61
1:C:25:TYR:O	1:C:27:PRO:HD3	2.01	0.61
1:B:18:LYS:HE2	1:B:103:LEU:O	2.01	0.60
1:A:47:GLU:HG2	2:A:653:HOH:O	2.00	0.59
1:A:57:SER:HB3	2:A:635:HOH:O	2.02	0.59
1:A:49:PHE:HE1	1:B:19:ALA:HA	1.69	0.57
1:B:20:ALA:O	2:B:403:HOH:O	2.18	0.56
1:A:40:LYS:CD	2:A:654:HOH:O	2.23	0.55
1:B:21:LEU:HD21	1:B:100:ILE:HG23	1.87	0.54
1:C:79:ARG:CG	1:C:80:ALA:H	2.21	0.54
1:A:53:THR:OG1	2:A:204:HOH:O	2.18	0.54
1:B:94:GLU:HG3	1:B:97:ARG:HH11	1.76	0.51
1:B:64:ALA:O	1:B:88:PRO:HD3	2.11	0.50
1:C:79:ARG:HG2	1:C:80:ALA:N	2.24	0.49
1:C:72:PRO:O	1:C:73:ALA:CB	2.62	0.48
1:B:55:PRO:O	1:B:56:ASP:C	2.49	0.47
1:B:93:GLY:O	1:B:94:GLU:C	2.53	0.47
1:C:62:PRO:HD2	2:C:631:HOH:O	2.13	0.47
1:A:54:LEU:O	1:A:55:PRO:C	2.51	0.47
1:A:79:ARG:NH2	2:A:449:HOH:O	2.47	0.47
1:C:42:TYR:CE2	1:C:48:VAL:HG22	2.51	0.46
1:C:48:VAL:HG23	1:C:67:VAL:HG23	1.98	0.46
1:C:93:GLY:O	1:C:94:GLU:C	2.53	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:62:PRO:HD2	2:B:420:HOH:O	2.15	0.45
1:B:94:GLU:HG3	1:B:97:ARG:NH1	2.30	0.45
1:B:72:PRO:O	1:B:73:ALA:HB3	2.17	0.45
1:A:62:PRO:HD2	2:A:618:HOH:O	2.18	0.44
1:C:34:ILE:HG22	1:C:87:PHE:HE1	1.81	0.44
1:A:41:ARG:HH11	1:A:41:ARG:HD2	1.48	0.43
1:C:10:ILE:HG12	1:C:49:PHE:CD2	2.53	0.43
1:C:15:LEU:HD13	1:C:21:LEU:HA	2.01	0.43
1:C:51:LEU:HD12	1:C:51:LEU:HA	1.96	0.41
1:C:16:LYS:CE	2:C:500:HOH:O	2.63	0.41

All (4) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:69:TRP:CZ2	1:C:69:TRP:NE1[3_555]	1.84	0.36
1:B:69:TRP:CZ2	1:B:69:TRP:CZ2[2_656]	2.08	0.12
1:A:69:TRP:CZ2	1:C:69:TRP:CE2[3_555]	2.11	0.09
1:A:69:TRP:CH2	1:C:69:TRP:NE1[3_555]	2.16	0.04

## 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	90/99 (91%)	87 (97%)	2 (2%)	1 (1%)	12	8
1	B	93/99 (94%)	88 (95%)	5 (5%)	0	100	100
1	C	90/99 (91%)	82 (91%)	5 (6%)	3 (3%)	3	1
All	All	273/297 (92%)	257 (94%)	12 (4%)	4 (2%)	8	5

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	79	ARG
1	C	105	ALA
1	C	34	ILE
1	C	72	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	75/74 (101%)	64 (85%)	11 (15%)	<b>2</b>   <b>1</b>
1	B	75/74 (101%)	64 (85%)	11 (15%)	<b>2</b>   <b>1</b>
1	C	73/74 (99%)	68 (93%)	5 (7%)	<b>13</b>   <b>11</b>
All	All	223/222 (100%)	196 (88%)	27 (12%)	<b>4</b>   <b>2</b>

All (27) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	8	GLN
1	A	12	SER
1	A	44	LEU
1	A	50	LEU
1	A	52	LEU
1	A	53	THR
1	A	54	LEU
1	A	59	GLU
1	A	79	ARG
1	A	102	THR
1	A	103	LEU
1	B	23	SER
1	B	44	LEU
1	B	51	LEU
1	B	53	THR
1	B	56	ASP
1	B	61	LEU
1	B	68	VAL
1	B	79	ARG

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Mol	Chain	Res	Type
1	B	89	ASP
1	B	98	ASN
1	B	102	THR
1	C	44	LEU
1	C	47	GLU
1	C	56	ASP
1	C	102	THR
1	C	104	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

### 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 oligosaccharides in this entry.

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

There are no ligands in this entry.

### 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 [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

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	92/99 (92%)	-0.15	0 <a href="#">100</a> <a href="#">100</a>	38, 53, 75, 83	0
1	B	95/99 (95%)	-0.06	0 <a href="#">100</a> <a href="#">100</a>	39, 56, 81, 86	0
1	C	92/99 (92%)	-0.03	1 (1%) <a href="#">77</a> <a href="#">78</a>	39, 55, 75, 86	0
All	All	279/297 (93%)	-0.08	1 (0%) <a href="#">89</a> <a href="#">90</a>	38, 55, 80, 86	0

All (1) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	C	73	ALA	3.8

### 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](#)

There are no ligands in this entry.

### 6.5 Other polymers [i](#)

There are no such residues in this entry.