Full wwPDB X-ray Structure Validation Report ⓘ

Jun 23, 2025 – 10:08 am BST

PDB ID	:	9QYP / pdb_00009qyp
Title	:	Crystal structure of leaf branch compost cutinase variant
Authors	:	Bischoff, D.; Walla, B.; Brames, E.; Janowski, R.; Niessing, D.; Weuster-Botz, D.
Deposited on	:	2025-04-20
Resolution	:	2.01 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 ⓘ 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:

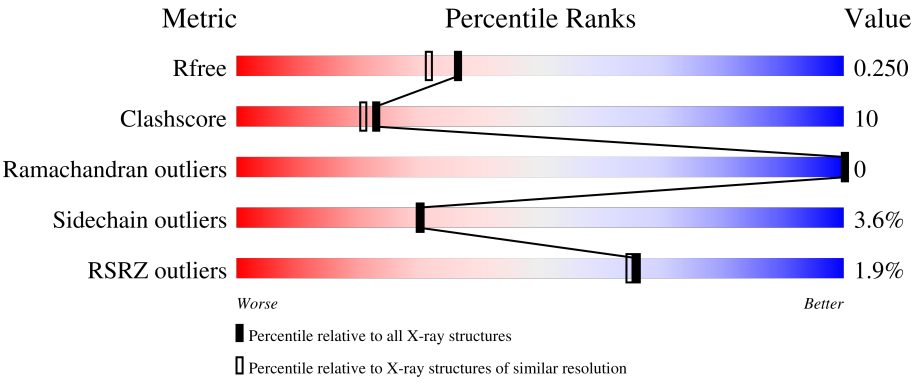
MolProbity	:	4-5-2 with Phenix2.0rc1
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.003 (Gargrove)
Density-Fitness	:	1.0.11
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.44

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 2.01 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	9409 (2.00-2.00)
Clashscore	180529	10737 (2.00-2.00)
Ramachandran outliers	177936	10628 (2.00-2.00)
Sidechain outliers	177891	10627 (2.00-2.00)
RSRZ outliers	164620	9409 (2.00-2.00)

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	267	2% 77% 16%
1	B	267	2% 75% 18%
1	C	267	% 75% 19%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 6202 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 Leaf-branch compost cutinase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	C	259	Total	C	N	O	S	0	0	0
			1956	1226	352	370	8			
1	A	260	Total	C	N	O	S	0	0	0
			1958	1229	350	371	8			
1	B	259	Total	C	N	O	S	0	0	0
			1956	1226	352	370	8			

There are 39 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
C	1	MET	-	initiating methionine	UNP G9BY57
C	93	GLY	TYR	conflict	UNP G9BY57
C	204	CYS	ASP	conflict	UNP G9BY57
C	209	ILE	PHE	conflict	UNP G9BY57
C	249	CYS	SER	conflict	UNP G9BY57
C	260	LEU	-	expression tag	UNP G9BY57
C	261	GLU	-	expression tag	UNP G9BY57
C	262	HIS	-	expression tag	UNP G9BY57
C	263	HIS	-	expression tag	UNP G9BY57
C	264	HIS	-	expression tag	UNP G9BY57
C	265	HIS	-	expression tag	UNP G9BY57
C	266	HIS	-	expression tag	UNP G9BY57
C	267	HIS	-	expression tag	UNP G9BY57
A	1	MET	-	initiating methionine	UNP G9BY57
A	93	GLY	TYR	conflict	UNP G9BY57
A	204	CYS	ASP	conflict	UNP G9BY57
A	209	ILE	PHE	conflict	UNP G9BY57
A	249	CYS	SER	conflict	UNP G9BY57
A	260	LEU	-	expression tag	UNP G9BY57
A	261	GLU	-	expression tag	UNP G9BY57
A	262	HIS	-	expression tag	UNP G9BY57
A	263	HIS	-	expression tag	UNP G9BY57
A	264	HIS	-	expression tag	UNP G9BY57

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Chain	Residue	Modelled	Actual	Comment	Reference
A	265	HIS	-	expression tag	UNP G9BY57
A	266	HIS	-	expression tag	UNP G9BY57
A	267	HIS	-	expression tag	UNP G9BY57
B	1	MET	-	initiating methionine	UNP G9BY57
B	93	GLY	TYR	conflict	UNP G9BY57
B	204	CYS	ASP	conflict	UNP G9BY57
B	209	ILE	PHE	conflict	UNP G9BY57
B	249	CYS	SER	conflict	UNP G9BY57
B	260	LEU	-	expression tag	UNP G9BY57
B	261	GLU	-	expression tag	UNP G9BY57
B	262	HIS	-	expression tag	UNP G9BY57
B	263	HIS	-	expression tag	UNP G9BY57
B	264	HIS	-	expression tag	UNP G9BY57
B	265	HIS	-	expression tag	UNP G9BY57
B	266	HIS	-	expression tag	UNP G9BY57
B	267	HIS	-	expression tag	UNP G9BY57

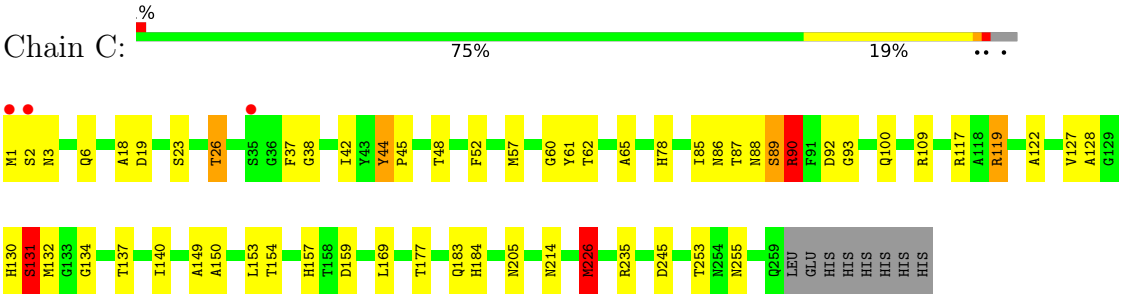
- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	C	91	Total O 91 91	0	0
2	A	132	Total O 132 132	0	0
2	B	109	Total O 109 109	0	0

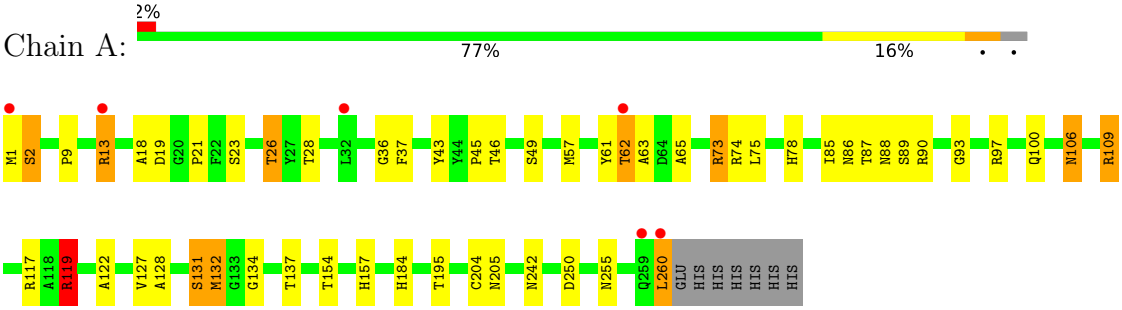
3 Residue-property plots (i)

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.

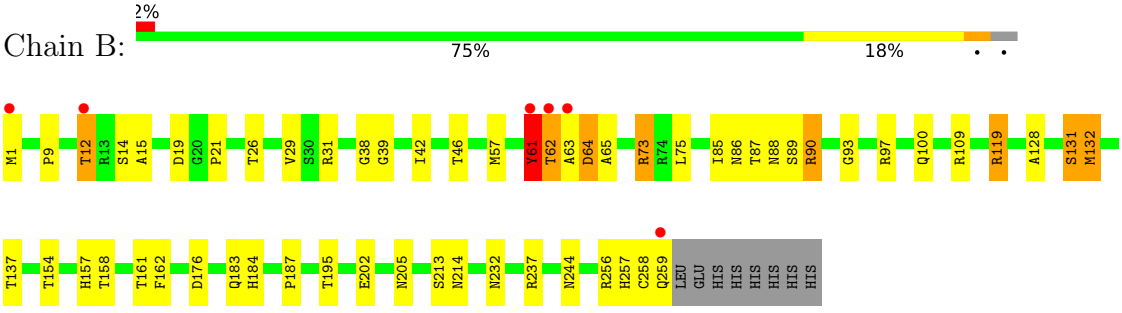
• Molecule 1: Leaf-branch compost cutinase



• Molecule 1: Leaf-branch compost cutinase



• Molecule 1: Leaf-branch compost cutinase



4 Data and refinement statistics (i)

Property	Value	Source
Space group	I 2 2 2	Depositor
Cell constants a, b, c, α, β, γ	97.91Å 101.87Å 265.81Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	48.95 – 2.01 48.95 – 2.01	Depositor EDS
% Data completeness (in resolution range)	99.9 (48.95-2.01) 99.9 (48.95-2.01)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.13 (at 2.01Å)	Xtriage
Refinement program	REFMAC 5.8.0430 (refmacat 0.4.100)	Depositor
R, R_{free}	0.208 , 0.250 0.208 , 0.250	Depositor DCC
R_{free} test set	4445 reflections (5.00%)	wwPDB-VP
Wilson B-factor (Å^2)	37.8	Xtriage
Anisotropy	0.624	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 36.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.34$	Xtriage
Estimated twinning fraction	0.009 for -k,-h,-l	Xtriage
F_o,F_c correlation	0.97	EDS
Total number of atoms	6202	wwPDB-VP
Average B, all atoms (Å^2)	46.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.37% 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

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	0.67	0/2008	1.35	25/2749 (0.9%)
1	B	0.61	0/2006	1.32	18/2745 (0.7%)
1	C	0.62	0/2006	1.31	16/2745 (0.6%)
All	All	0.63	0/6020	1.32	59/8239 (0.7%)

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	4
1	B	0	4
1	C	0	2
All	All	0	10

There are no bond length outliers.

All (59) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	74	ARG	N-CA-CB	8.76	122.99	109.94
1	A	46	THR	CA-CB-OG1	-7.93	97.71	109.60
1	A	13	ARG	CD-NE-CZ	7.65	135.11	124.40
1	A	204	CYS	CB-CA-C	-7.30	97.16	109.65
1	C	131	SER	CB-CA-C	-7.27	107.35	117.23
1	C	177	THR	CA-CB-OG1	-7.24	98.74	109.60
1	A	13	ARG	CB-CG-CD	7.24	127.94	111.30
1	B	38	GLY	CA-C-N	-7.04	107.62	121.41
1	B	38	GLY	C-N-CA	-7.04	107.62	121.41
1	A	242	ASN	CB-CA-C	-7.03	101.90	111.89
1	A	13	ARG	CA-CB-CG	7.03	128.16	114.10
1	A	28	THR	CA-CB-OG1	-6.79	99.41	109.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	119	ARG	N-CA-CB	-6.69	100.59	110.49
1	A	260	LEU	N-CA-CB	6.62	121.75	110.50
1	A	37	PHE	CA-CB-CG	6.61	120.41	113.80
1	B	256	ARG	CA-CB-CG	-6.59	100.92	114.10
1	B	161	THR	CA-CB-OG1	-6.57	99.75	109.60
1	A	250	ASP	CA-CB-CG	6.50	119.10	112.60
1	A	46	THR	OG1-CB-CG2	6.30	121.91	109.30
1	A	195	THR	CA-CB-OG1	-6.30	100.15	109.60
1	C	38	GLY	CA-C-N	-6.22	109.22	121.41
1	C	38	GLY	C-N-CA	-6.22	109.22	121.41
1	B	195	THR	CA-CB-OG1	-6.21	100.29	109.60
1	C	214	ASN	CB-CA-C	6.16	119.08	109.84
1	B	131	SER	CA-C-N	6.08	128.71	120.38
1	B	131	SER	C-N-CA	6.08	128.71	120.38
1	C	19	ASP	CB-CA-C	6.01	119.69	109.72
1	B	158	THR	CA-CB-OG1	-5.95	100.67	109.60
1	B	176	ASP	CA-CB-CG	5.91	118.51	112.60
1	C	131	SER	CA-C-N	5.86	128.46	120.54
1	C	131	SER	C-N-CA	5.86	128.46	120.54
1	B	46	THR	CA-CB-OG1	-5.85	100.83	109.60
1	C	245	ASP	CA-CB-CG	5.69	118.29	112.60
1	A	73	ARG	CG-CD-NE	-5.66	99.56	112.00
1	B	73	ARG	CG-CD-NE	-5.45	100.00	112.00
1	B	162	PHE	CA-CB-CG	-5.45	108.35	113.80
1	A	62	THR	OG1-CB-CG2	5.43	120.16	109.30
1	A	62	THR	CA-CB-OG1	-5.37	101.55	109.60
1	C	44	TYR	CB-CA-C	5.33	117.92	109.55
1	B	19	ASP	CB-CA-C	5.33	118.03	109.61
1	A	26	THR	CA-CB-OG1	-5.31	101.64	109.60
1	B	244	ASN	CB-CA-C	5.30	118.64	111.70
1	A	13	ARG	N-CA-CB	5.30	118.00	110.06
1	A	109	ARG	N-CA-CB	-5.28	102.17	110.30
1	C	90	ARG	N-CA-CB	-5.23	101.65	110.49
1	C	226	MET	CG-SD-CE	5.22	112.38	100.90
1	C	253	THR	CA-CB-OG1	-5.21	101.79	109.60
1	C	90	ARG	CA-CB-CG	5.17	124.43	114.10
1	B	61	TYR	CB-CA-C	5.15	119.88	110.36
1	B	232	ASN	CB-CA-C	-5.11	103.63	111.66
1	A	119	ARG	N-CA-CB	-5.10	102.94	110.49
1	B	90	ARG	CB-CA-C	5.09	120.96	110.31
1	A	19	ASP	CB-CA-C	5.09	117.90	109.70
1	C	255	ASN	CB-CA-C	-5.09	103.47	111.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	C	26	THR	CA-CB-OG1	-5.08	101.98	109.60
1	A	131	SER	CA-C-N	5.08	127.08	120.28
1	A	131	SER	C-N-CA	5.08	127.08	120.28
1	A	106	ASN	CA-CB-CG	-5.03	107.57	112.60
1	A	255	ASN	CB-CA-C	-5.02	103.17	111.36

There are no chirality outliers.

All (10) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	117	ARG	Sidechain
1	A	2	SER	Peptide
1	A	73	ARG	Sidechain
1	A	85	ILE	Peptide
1	B	31	ARG	Sidechain
1	B	73	ARG	Sidechain
1	B	85	ILE	Peptide
1	B	97	ARG	Sidechain
1	C	85	ILE	Peptide
1	C	90	ARG	Sidechain

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	1958	0	1908	38	0
1	B	1956	0	1908	39	0
1	C	1956	0	1908	50	0
2	A	132	0	0	4	0
2	B	109	0	0	4	0
2	C	91	0	0	5	0
All	All	6202	0	5724	118	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 10.

All (118) 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:B:131:SER:OG	1:B:132:MET:N	1.74	1.07
1:C:131:SER:OG	1:C:132:MET:N	1.71	1.04
1:A:131:SER:OG	1:A:132:MET:N	1.79	1.01
1:A:88:ASN:H	1:A:100:GLN:HE22	1.16	0.94
1:C:88:ASN:H	1:C:100:GLN:HE22	1.13	0.92
1:A:93:GLY:H	1:B:205:ASN:HD22	1.18	0.89
1:C:149:ALA:HB3	1:C:226:MET:HE1	1.53	0.89
1:C:109:ARG:HD2	2:C:383:HOH:O	1.73	0.87
1:C:149:ALA:HB3	1:C:226:MET:CE	2.04	0.87
1:B:88:ASN:H	1:B:100:GLN:HE22	1.25	0.82
1:C:205:ASN:HD22	1:B:93:GLY:H	1.28	0.81
1:C:90:ARG:HG3	1:C:90:ARG:HH11	1.49	0.77
1:A:88:ASN:H	1:A:100:GLN:NE2	1.83	0.75
1:A:93:GLY:H	1:B:205:ASN:ND2	1.84	0.74
1:A:63:ALA:HB2	1:A:90:ARG:HA	1.69	0.73
1:C:157:HIS:H	1:C:184:HIS:HD2	1.38	0.72
1:C:88:ASN:N	1:C:100:GLN:HE22	1.87	0.71
1:A:88:ASN:N	1:A:100:GLN:HE22	1.88	0.69
1:C:61:TYR:CZ	1:C:131:SER:HB2	2.30	0.67
1:C:93:GLY:H	1:A:205:ASN:HD22	1.40	0.67
1:B:12:THR:HG23	1:B:15:ALA:H	1.60	0.67
1:A:13:ARG:HD3	2:A:417:HOH:O	1.96	0.65
1:A:61:TYR:CZ	1:A:131:SER:HB2	2.32	0.65
1:C:226:MET:HA	1:C:226:MET:HE2	1.79	0.64
1:B:61:TYR:CZ	1:B:131:SER:HB2	2.33	0.63
1:B:157:HIS:H	1:B:184:HIS:HD2	1.47	0.63
1:B:202:GLU:OE1	2:B:301:HOH:O	2.16	0.62
1:C:65:ALA:H	1:C:86:ASN:ND2	1.98	0.62
1:B:88:ASN:H	1:B:100:GLN:NE2	1.96	0.62
1:B:88:ASN:N	1:B:100:GLN:HE22	1.97	0.61
1:A:157:HIS:H	1:A:184:HIS:HD2	1.49	0.61
1:A:62:THR:HA	1:A:90:ARG:HG3	1.83	0.60
1:A:93:GLY:O	1:A:97:ARG:HG3	2.01	0.60
1:C:88:ASN:H	1:C:100:GLN:NE2	1.92	0.60
1:A:65:ALA:H	1:A:86:ASN:ND2	2.01	0.58
1:A:78:HIS:HD2	2:A:350:HOH:O	1.87	0.57
1:C:93:GLY:H	1:A:205:ASN:ND2	2.03	0.56
1:C:149:ALA:CB	1:C:226:MET:CE	2.82	0.56
1:C:109:ARG:HG2	1:C:122:ALA:HB1	1.88	0.56
1:C:205:ASN:ND2	1:B:93:GLY:H	2.01	0.56
1:A:65:ALA:H	1:A:86:ASN:HD22	1.53	0.56
1:C:3:ASN:HD22	1:C:6:GLN:HB2	1.70	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:131:SER:HA	1:B:154:THR:O	2.07	0.55
1:C:157:HIS:H	1:C:184:HIS:CD2	2.23	0.55
1:B:12:THR:CG2	1:B:15:ALA:HB2	2.38	0.54
1:C:65:ALA:H	1:C:86:ASN:HD22	1.54	0.54
1:B:14:SER:HB3	2:B:352:HOH:O	2.07	0.54
1:C:1:MET:HE3	1:C:2:SER:H	1.72	0.53
1:B:157:HIS:H	1:B:184:HIS:CD2	2.26	0.53
1:C:61:TYR:CE2	1:C:131:SER:HB2	2.44	0.53
1:A:9:PRO:HD2	1:A:21:PRO:HG3	1.91	0.53
1:A:109:ARG:HG3	1:A:122:ALA:HB1	1.91	0.53
1:C:183:GLN:HE22	1:B:183:GLN:HE22	1.55	0.53
1:C:18:ALA:O	1:C:78:HIS:HE1	1.92	0.53
1:C:117:ARG:HG2	2:C:375:HOH:O	2.09	0.52
1:C:89:SER:HB3	1:C:92:ASP:OD1	2.10	0.52
1:A:18:ALA:O	1:A:78:HIS:HE1	1.92	0.52
1:A:93:GLY:N	1:B:205:ASN:HD22	1.99	0.52
1:A:184:HIS:HE1	2:A:410:HOH:O	1.94	0.51
1:B:57:MET:HA	1:B:128:ALA:O	2.11	0.51
1:B:65:ALA:H	1:B:86:ASN:ND2	2.10	0.49
1:C:6:GLN:HG3	1:C:235:ARG:HH21	1.76	0.49
1:B:26:THR:HA	1:B:42:ILE:O	2.13	0.49
1:B:57:MET:HE1	1:B:75:LEU:CD1	2.43	0.49
1:C:127:VAL:HG23	1:C:137:THR:HG23	1.94	0.49
1:A:157:HIS:H	1:A:184:HIS:CD2	2.31	0.48
1:B:184:HIS:O	1:B:187:PRO:HD2	2.13	0.48
1:B:14:SER:CB	2:B:352:HOH:O	2.60	0.48
1:C:45:PRO:HG2	1:C:52:PHE:CD1	2.49	0.48
1:C:226:MET:CE	1:C:226:MET:HA	2.43	0.48
1:C:119:ARG:NH2	2:C:305:HOH:O	2.46	0.48
1:A:57:MET:HE1	1:A:75:LEU:HD12	1.96	0.47
1:A:134:GLY:O	1:A:137:THR:HB	2.14	0.47
1:B:63:ALA:HB2	1:B:90:ARG:HA	1.97	0.47
1:B:237:ARG:NH1	1:B:257:HIS:O	2.48	0.47
1:C:149:ALA:CB	1:C:226:MET:HE1	2.37	0.46
1:A:63:ALA:HB2	1:A:90:ARG:CA	2.43	0.45
1:C:119:ARG:HH11	1:C:119:ARG:HA	1.81	0.45
1:B:57:MET:HE1	1:B:75:LEU:HD12	1.97	0.45
1:A:109:ARG:HG3	1:A:122:ALA:CB	2.47	0.45
1:B:258:CYS:O	1:B:259:GLN:C	2.60	0.45
1:B:12:THR:HG23	1:B:15:ALA:CB	2.47	0.45
1:C:134:GLY:O	1:C:137:THR:HB	2.17	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:62:THR:HG22	1:C:90:ARG:HH12	1.81	0.45
1:A:131:SER:HA	1:A:154:THR:O	2.17	0.45
1:C:26:THR:HA	1:C:42:ILE:O	2.17	0.44
1:C:184:HIS:HE1	2:C:384:HOH:O	2.00	0.44
1:A:57:MET:HA	1:A:128:ALA:O	2.17	0.44
1:B:29:VAL:O	1:B:39:GLY:HA3	2.17	0.44
1:C:183:GLN:HE22	1:B:183:GLN:NE2	2.13	0.44
1:A:109:ARG:HH11	1:A:109:ARG:HG2	1.82	0.44
1:C:153:LEU:O	1:C:154:THR:C	2.60	0.44
1:B:12:THR:HG23	1:B:15:ALA:HB2	2.00	0.44
1:B:62:THR:OG1	1:B:64:ASP:HB2	2.18	0.44
1:A:87:THR:HA	1:A:100:GLN:NE2	2.32	0.43
1:A:127:VAL:HG23	1:A:137:THR:HG23	1.99	0.43
1:B:1:MET:O	2:B:302:HOH:O	2.21	0.43
1:C:131:SER:OG	1:C:132:MET:HB2	2.19	0.43
1:A:87:THR:HA	1:A:100:GLN:HE22	1.84	0.43
1:C:60:GLY:HA2	1:C:130:HIS:O	2.19	0.42
1:C:87:THR:HA	1:C:100:GLN:NE2	2.34	0.42
1:B:9:PRO:HD2	1:B:21:PRO:HG3	2.02	0.42
1:C:57:MET:HA	1:C:128:ALA:O	2.19	0.42
1:A:23:SER:O	1:A:45:PRO:HA	2.19	0.42
1:A:36:GLY:O	1:A:100:GLN:HG2	2.20	0.41
1:C:137:THR:HG22	1:C:150:ALA:HB1	2.02	0.41
1:B:213:SER:O	1:B:214:ASN:C	2.63	0.41
1:A:119:ARG:HD2	2:A:324:HOH:O	2.20	0.41
1:A:26:THR:HG22	1:A:43:TYR:CD2	2.56	0.41
1:B:87:THR:HA	1:B:100:GLN:HE22	1.86	0.41
1:A:106:ASN:OD1	1:A:109:ARG:NH2	2.53	0.41
1:B:87:THR:HA	1:B:100:GLN:NE2	2.36	0.41
1:B:109:ARG:HH11	1:B:109:ARG:HD2	1.64	0.41
1:C:169:LEU:C	1:C:169:LEU:HD23	2.46	0.41
1:C:44:TYR:HA	1:C:45:PRO:HD3	1.90	0.41
1:C:159:ASP:HB3	2:C:348:HOH:O	2.21	0.40
1:C:37:PHE:HA	1:C:100:GLN:HE21	1.86	0.40
1:C:87:THR:HA	1:C:100:GLN:HE22	1.87	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	258/267 (97%)	247 (96%)	11 (4%)	0	100	100
1	B	257/267 (96%)	246 (96%)	11 (4%)	0	100	100
1	C	257/267 (96%)	245 (95%)	12 (5%)	0	100	100
All	All	772/801 (96%)	738 (96%)	34 (4%)	0	100	100

There are no Ramachandran outliers to report.

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	212/220 (96%)	205 (97%)	7 (3%)	33	33
1	B	212/220 (96%)	204 (96%)	8 (4%)	28	28
1	C	212/220 (96%)	204 (96%)	8 (4%)	28	28
All	All	636/660 (96%)	613 (96%)	23 (4%)	30	30

All (23) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	C	23	SER
1	C	48	THR
1	C	89	SER
1	C	90	ARG
1	C	119	ARG

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Mol	Chain	Res	Type
1	C	131	SER
1	C	140	ILE
1	C	226	MET
1	A	1	MET
1	A	2	SER
1	A	49	SER
1	A	89	SER
1	A	119	ARG
1	A	132	MET
1	A	260	LEU
1	B	12	THR
1	B	61	TYR
1	B	62	THR
1	B	64	ASP
1	B	89	SER
1	B	119	ARG
1	B	132	MET
1	B	137	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (28) such sidechains are listed below:

Mol	Chain	Res	Type
1	C	3	ASN
1	C	78	HIS
1	C	86	ASN
1	C	88	ASN
1	C	100	GLN
1	C	130	HIS
1	C	183	GLN
1	C	184	HIS
1	C	205	ASN
1	C	214	ASN
1	C	238	GLN
1	A	6	GLN
1	A	78	HIS
1	A	86	ASN
1	A	88	ASN
1	A	100	GLN
1	A	184	HIS
1	A	205	ASN
1	A	212	ASN
1	A	214	ASN

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Mol	Chain	Res	Type
1	B	78	HIS
1	B	86	ASN
1	B	100	GLN
1	B	123	ASN
1	B	183	GLN
1	B	184	HIS
1	B	205	ASN
1	B	214	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 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

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	260/267 (97%)	-0.36	6 (2%)	61	59	31, 42, 63, 119	0
1	B	259/267 (97%)	-0.41	6 (2%)	61	59	32, 43, 62, 148	0
1	C	259/267 (97%)	-0.26	3 (1%)	76	75	34, 45, 64, 127	0
All	All	778/801 (97%)	-0.34	15 (1%)	66	65	31, 43, 64, 148	0

All (15) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	260	LEU	7.8
1	A	1	MET	5.9
1	B	1	MET	4.3
1	B	61	TYR	3.8
1	C	1	MET	3.4
1	B	63	ALA	3.2
1	A	259	GLN	2.6
1	B	12	THR	2.6
1	B	62	THR	2.5
1	C	35	SER	2.4
1	A	62	THR	2.3
1	C	2	SER	2.3
1	A	32	LEU	2.1
1	B	259	GLN	2.1
1	A	13	ARG	2.0

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 (i)

There are no oligosaccharides 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.