Full wwPDB X-ray Structure Validation Report ⓘ

Sep 22, 2025 – 01:09 PM JST

PDB ID	:	9WHD / pdb_00009whd
Title	:	Crystal Structure of a GH167 Enzyme from Wenyingzhuangia aestuarii
Authors	:	Chen, F.; Chang, Y.
Deposited on	:	2025-08-26
Resolution	:	2.00 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:

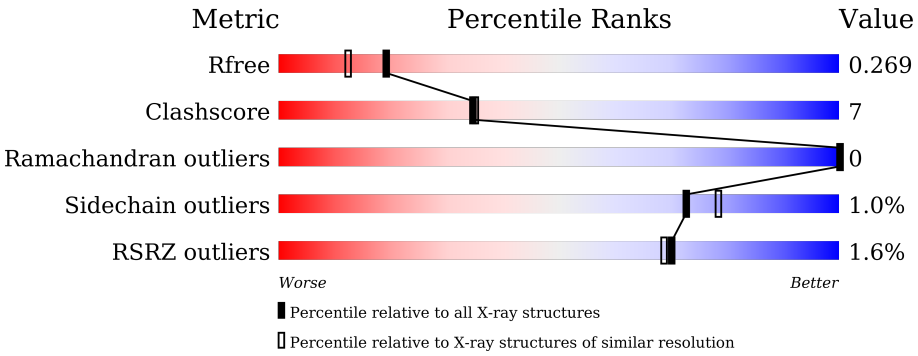
MolProbity	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.46

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 2.00 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	855	% 72% 14% 14%
1	B	855	2% 70% 17% 13%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 12878 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 GH167 glycoside hydrolase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	738	Total	C	N	O	S	0	0	0
			5934	3810	976	1126	22			
1	B	741	Total	C	N	O	S	0	0	0
			5949	3819	980	1128	22			

- Molecule 2 is water.

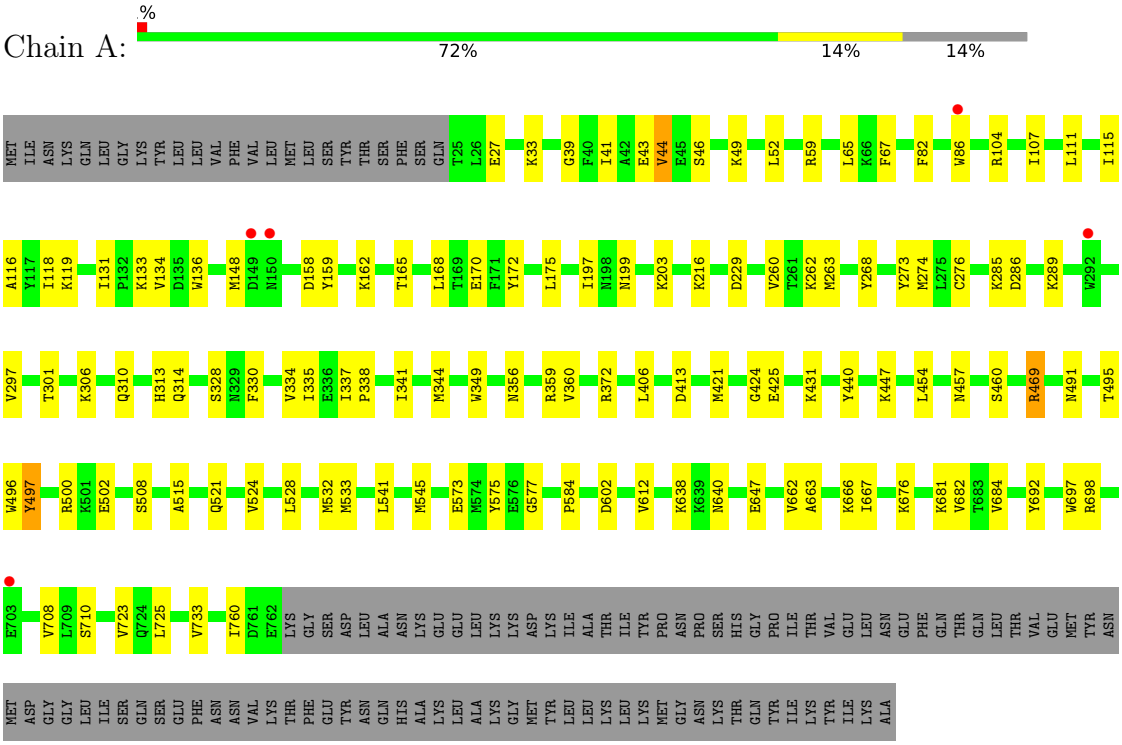
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	590	Total	O	0	0
			590	590		
2	B	405	Total	O	0	0
			405	405		

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.

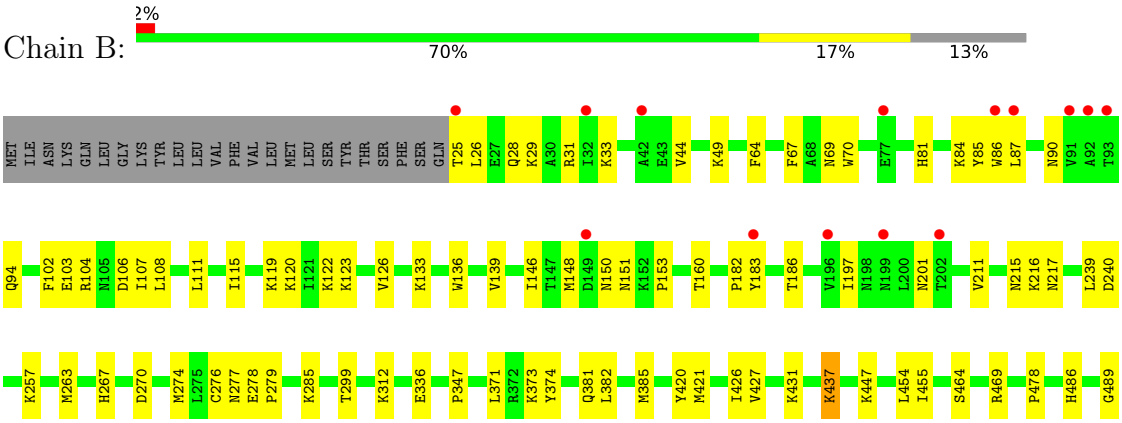
• Molecule 1: GH167 glycoside hydrolase

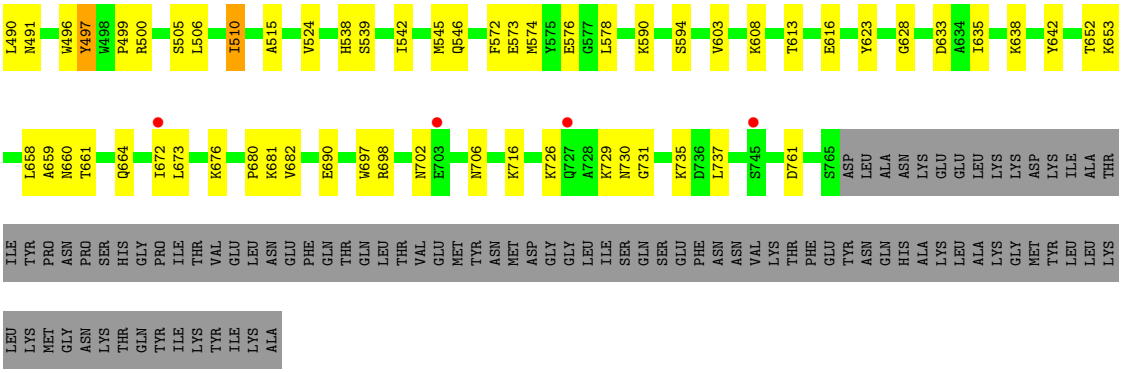
Chain A:



• Molecule 1: GH167 glycoside hydrolase

Chain B:




L490 N491 W496 Y497 W498 P499 R500 S505 L506 I510 A515 V524 H538 S539 I542 M545 Q546 F572 E573 M574 Y575 E576 G577 L578 K590 S594 V603 K608 T613 E616 Y623 G628 D633 A634 I635 K638 Y642 T652 K653
L658 A659 N660 T661 Q664 I672 L673 K676 P680 K681 V682 E690 W697 R698 N702 E703 N706 K716 K726 Q727 A728 K729 N730 G731 K735 D736 L737 S745 D761 S765 ASP LEU ALA ASN LYS GLU GLU LEU LYS LYS ASP LYS ILE ALA THR
ILE TYR PRO ASN PRO SER HIS GLY PRO ILE THR VAL GLU LEU ASN GLU PHE GLN THR GLN LEU THR VAL GLU MET TYR ASN MET ASP GLY GLY LEU ILE SER GLN SER GLU PHE ASN ASN VAL LYS THR PHE GLU TYR ASN GLN HIS ALA LYS LEU ALA LYS GLY MET TYR LEU LEU LYS
LEU LYS MET GLY ASN LYS THR GLN TYR ILE LYS TYR ILE LYS ALA

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	58.62Å 113.34Å 241.80Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	35.44 – 2.00 35.44 – 2.00	Depositor EDS
% Data completeness (in resolution range)	99.4 (35.44-2.00) 99.3 (35.44-2.00)	Depositor EDS
R_{merge}	0.15	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.20 (at 2.00Å)	Xtriage
Refinement program	PHENIX v1.19.2	Depositor
R, R_{free}	0.217 , 0.269 0.219 , 0.269	Depositor DCC
R_{free} test set	2000 reflections (1.82%)	wwPDB-VP
Wilson B-factor (Å^2)	23.6	Xtriage
Anisotropy	0.432	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 39.4	EDS
L-test for twinning[2]	$< \|L\| > = 0.40$, $< L^2 > = 0.23$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	12878	wwPDB-VP
Average B, all atoms (Å^2)	26.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.75% 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	0.41	0/6075	0.63	0/8237
1	B	0.35	0/6090	0.60	0/8256
All	All	0.38	0/12165	0.61	0/16493

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	5934	0	5867	82	0
1	B	5949	0	5884	94	0
2	A	590	0	0	12	0
2	B	405	0	0	7	0
All	All	12878	0	11751	175	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 (175) 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:86:TRP:HD1	1:A:424:GLY:HA3	1.42	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:86:TRP:CD1	1:A:424:GLY:HA3	2.14	0.83
1:A:421:MET:HE3	1:A:424:GLY:H	1.48	0.75
1:B:111:LEU:O	1:B:115:ILE:HG13	1.87	0.75
1:A:52:LEU:HD21	1:A:133:LYS:HE2	1.72	0.72
1:A:260:VAL:HA	1:A:263:MET:HE2	1.72	0.72
1:B:658:LEU:HD12	2:B:968:HOH:O	1.88	0.72
1:A:44:VAL:HG13	1:A:49:LYS:HB2	1.76	0.67
1:B:312:LYS:NZ	2:B:908:HOH:O	2.27	0.66
1:A:131:ILE:HG21	1:A:533:MET:HB3	1.76	0.66
1:A:421:MET:HE3	1:A:424:GLY:N	2.10	0.66
1:A:647:GLU:HG2	2:A:1041:HOH:O	1.94	0.66
1:B:69:ASN:OD1	1:B:104:ARG:NH2	2.28	0.66
1:A:684:VAL:HG22	1:A:723:VAL:HG22	1.79	0.64
1:B:545:MET:O	1:B:698:ARG:NH2	2.30	0.63
1:A:306:LYS:O	1:A:310:GLN:HG3	1.99	0.63
1:B:431:LYS:HE2	1:B:576:GLU:OE2	1.99	0.62
1:A:573:GLU:HG2	1:A:662:VAL:HG21	1.81	0.62
1:B:86:TRP:HB2	1:B:421:MET:HE1	1.82	0.61
1:A:158:ASP:OD1	1:A:162:LYS:HE3	2.00	0.61
1:B:454:LEU:HG	1:B:491:ASN:HB2	1.82	0.61
1:A:33:LYS:HB2	1:A:111:LEU:HD13	1.81	0.61
1:B:216:LYS:HE3	1:B:240:ASP:OD1	2.00	0.61
1:B:274:MET:HE3	1:B:277:ASN:N	2.16	0.61
1:B:94:GLN:N	1:B:94:GLN:OE1	2.35	0.59
1:B:186:THR:HA	2:B:926:HOH:O	2.03	0.59
1:A:372:ARG:NH2	2:A:913:HOH:O	2.36	0.59
1:A:39:GLY:O	1:A:43:GLU:HG3	2.05	0.57
1:B:469:ARG:HD2	1:B:515:ALA:O	2.04	0.57
1:A:131:ILE:CG2	1:A:533:MET:HB3	2.33	0.57
1:B:257:LYS:HG3	1:B:374:TYR:CE1	2.40	0.57
1:A:521:GLN:HB3	1:A:524:VAL:HB	1.87	0.56
1:B:486:HIS:CE1	1:B:490:LEU:HD23	2.40	0.56
1:B:499:PRO:HB2	1:B:510:ILE:HD11	1.86	0.56
1:A:681:LYS:N	1:A:681:LYS:HD2	2.21	0.56
1:B:120:LYS:HE3	1:B:126:VAL:HG13	1.88	0.55
1:B:197:ILE:O	1:B:201:ASN:ND2	2.39	0.55
1:B:81:HIS:CE1	1:B:84:LYS:HZ2	2.25	0.55
1:B:672:ILE:O	1:B:676:LYS:HG3	2.06	0.55
1:B:681:LYS:HA	1:B:726:LYS:HD2	1.90	0.54
1:B:633:ASP:HB3	1:B:660:ASN:HA	1.90	0.54
1:B:672:ILE:HD12	1:B:673:LEU:N	2.23	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:81:HIS:HA	1:B:84:LYS:HE3	1.90	0.54
1:A:460:SER:HB3	1:A:495:THR:HA	1.90	0.54
1:B:496:TRP:HA	1:B:497:TYR:HB3	1.91	0.53
1:B:652:THR:OG1	1:B:653:LYS:N	2.38	0.53
1:A:454:LEU:HG	1:A:491:ASN:HB2	1.91	0.53
1:A:359:ARG:HG3	1:A:360:VAL:N	2.22	0.53
1:B:613:THR:OG1	1:B:616:GLU:HG3	2.08	0.52
1:B:690:GLU:OE1	1:B:716:LYS:HE3	2.10	0.52
1:B:26:LEU:HB2	2:B:930:HOH:O	2.09	0.52
1:B:103:GLU:O	1:B:107:ILE:HG13	2.09	0.52
1:B:729:LYS:HG2	1:B:730:ASN:OD1	2.10	0.52
1:A:165:THR:HG21	1:A:502:GLU:HG2	1.92	0.52
1:A:508:SER:HB2	1:B:122:LYS:O	2.10	0.52
1:B:81:HIS:HE2	1:B:506:LEU:HD12	1.75	0.51
1:B:437:LYS:HG3	1:B:572:PHE:CD1	2.45	0.51
1:A:104:ARG:HA	1:A:107:ILE:HD12	1.92	0.51
1:B:183:TYR:HD2	1:B:217:ASN:HB3	1.76	0.51
1:A:335:ILE:HD13	1:A:337:ILE:HD11	1.93	0.51
1:A:199:ASN:ND2	2:A:931:HOH:O	2.43	0.51
1:A:27:GLU:HG3	1:A:65:LEU:HD22	1.94	0.50
1:B:279:PRO:HG3	1:B:382:LEU:HD23	1.91	0.50
1:A:612:VAL:O	1:A:640:ASN:HA	2.12	0.50
1:A:162:LYS:HE2	1:A:172:TYR:O	2.11	0.50
1:B:211:VAL:HG11	1:B:263:MET:HE1	1.93	0.50
1:B:119:LYS:O	1:B:123:LYS:HG3	2.12	0.50
1:A:638:LYS:NZ	2:A:939:HOH:O	2.46	0.49
1:A:67:PHE:CE2	1:A:500:ARG:HD2	2.47	0.49
1:A:115:ILE:O	1:A:119:LYS:HG3	2.12	0.49
1:B:735:LYS:HD3	1:B:737:LEU:HD23	1.95	0.49
1:B:44:VAL:HG13	1:B:49:LYS:HB2	1.95	0.48
1:A:136:TRP:NE1	2:A:916:HOH:O	2.37	0.48
1:A:310:GLN:HG2	1:A:330:PHE:CG	2.49	0.48
1:A:541:LEU:HD13	1:A:708:VAL:HG11	1.96	0.48
1:A:59:ARG:NH2	1:A:170:GLU:OE1	2.48	0.47
1:A:663:ALA:O	1:A:667:ILE:HG13	2.15	0.47
1:B:81:HIS:NE2	1:B:506:LEU:HD12	2.29	0.47
1:B:87:LEU:HD13	1:B:426:ILE:HG13	1.96	0.47
1:A:421:MET:HA	1:A:425:GLU:O	2.15	0.47
1:A:545:MET:HB3	1:A:698:ARG:CZ	2.45	0.47
1:B:240:ASP:OD1	2:B:901:HOH:O	2.20	0.47
1:B:160:THR:HB	1:B:497:TYR:HB2	1.97	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:413:ASP:HA	1:A:457:ASN:OD1	2.15	0.47
1:B:150:ASN:O	1:B:151:ASN:HB2	2.14	0.46
1:A:328:SER:O	2:A:901:HOH:O	2.20	0.46
1:B:115:ILE:HG22	1:B:119:LYS:HD2	1.96	0.46
1:B:85:TYR:OH	1:B:421:MET:HG3	2.16	0.46
1:B:215:ASN:HB3	1:B:239:LEU:HG	1.98	0.46
1:B:659:ALA:HB1	1:B:664:GLN:HB2	1.98	0.46
1:A:313:HIS:O	1:A:314:GLN:HB2	2.16	0.46
1:A:274:MET:HE3	1:A:276:CYS:C	2.41	0.46
1:B:603:VAL:HG11	1:B:672:ILE:HD11	1.97	0.46
1:A:682:VAL:HG22	1:A:725:LEU:HD23	1.97	0.46
1:B:25:THR:HG23	1:B:28:GLN:OE1	2.16	0.46
1:B:299:THR:HG23	2:B:1205:HOH:O	2.15	0.46
1:A:285:LYS:HG3	1:A:338:PRO:HB2	1.97	0.45
1:A:263:MET:HE3	1:A:273:TYR:CE2	2.51	0.45
1:B:702:ASN:HD21	1:B:706:ASN:HB2	1.79	0.45
1:B:67:PHE:CE2	1:B:500:ARG:HD2	2.52	0.45
1:B:661:THR:OG1	1:B:664:GLN:HG3	2.16	0.45
1:A:158:ASP:OD1	1:A:159:TYR:N	2.38	0.45
1:B:731:GLY:O	1:B:761:ASP:HA	2.17	0.45
1:B:70:TRP:CE2	1:B:505:SER:HA	2.52	0.45
1:A:197:ILE:HD12	1:A:262:LYS:HE3	1.98	0.45
1:A:431:LYS:HG3	1:A:692:TYR:OH	2.17	0.44
1:A:584:PRO:HG3	1:A:698:ARG:NH2	2.32	0.44
1:A:263:MET:CE	1:A:273:TYR:HE2	2.30	0.44
1:A:541:LEU:HG	2:A:1265:HOH:O	2.16	0.44
1:B:623:TYR:CZ	1:B:628:GLY:HA3	2.53	0.44
1:A:116:ALA:HA	1:A:119:LYS:NZ	2.32	0.44
1:B:489:GLY:HA2	1:B:546:GLN:HG2	1.98	0.44
1:B:680:PRO:C	1:B:682:VAL:H	2.25	0.44
1:A:440:TYR:HB3	1:A:575:TYR:OH	2.17	0.44
1:B:25:THR:O	1:B:29:LYS:HG3	2.18	0.43
1:B:31:ARG:HA	1:B:31:ARG:HD2	1.87	0.43
1:A:41:ILE:HA	1:A:118:ILE:HD11	2.01	0.43
1:A:297:VAL:HB	1:A:301:THR:HB	2.00	0.43
1:A:697:TRP:HA	1:A:710:SER:O	2.17	0.43
1:B:136:TRP:O	1:B:139:VAL:HG22	2.17	0.43
1:B:182:PRO:HG2	1:B:216:LYS:O	2.18	0.43
1:B:64:PHE:HB3	1:B:107:ILE:HD11	2.00	0.43
1:B:139:VAL:HA	1:B:148:MET:HA	2.00	0.43
1:B:81:HIS:CD2	1:B:510:ILE:HG21	2.54	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:81:HIS:CD2	1:B:506:LEU:HD12	2.53	0.43
1:B:285:LYS:NZ	1:B:336:GLU:OE2	2.52	0.43
1:A:82:PHE:CD1	1:A:515:ALA:HB1	2.54	0.42
1:B:478:PRO:HG3	1:B:524:VAL:HG13	2.01	0.42
1:A:286:ASP:OD2	1:A:289:LYS:HD2	2.20	0.42
1:A:203:LYS:HE3	1:A:268:TYR:CD2	2.54	0.42
1:B:447:LYS:HG2	1:B:455:ILE:HD11	2.02	0.42
1:B:638:LYS:HB2	2:B:912:HOH:O	2.19	0.42
1:B:672:ILE:HD12	1:B:672:ILE:C	2.44	0.42
1:A:162:LYS:HD2	1:A:168:LEU:HB3	2.02	0.42
1:A:577:GLY:O	1:A:666:LYS:HD2	2.20	0.42
1:B:464:SER:HB2	1:B:469:ARG:HG3	2.02	0.42
1:B:608:LYS:HG2	1:B:635:ILE:HD11	2.01	0.42
1:A:43:GLU:O	1:A:46:SER:OG	2.30	0.42
1:A:286:ASP:OD2	2:A:902:HOH:O	2.21	0.42
1:A:528:LEU:O	1:A:532:MET:HG2	2.20	0.42
1:B:347:PRO:HB3	1:B:642:TYR:CD1	2.54	0.42
1:B:420:TYR:HB2	1:B:427:VAL:HG23	2.01	0.42
1:A:496:TRP:HA	1:A:497:TYR:HB3	2.00	0.42
1:A:67:PHE:CZ	1:A:500:ARG:HD2	2.54	0.42
1:A:134:VAL:HA	1:A:148:MET:HE1	2.02	0.42
1:A:216:LYS:HB3	1:A:216:LYS:HE3	1.80	0.42
1:B:33:LYS:HE3	1:B:108:LEU:HD22	2.02	0.42
1:B:274:MET:HE3	1:B:276:CYS:C	2.44	0.42
1:A:469:ARG:HG3	2:A:1127:HOH:O	2.20	0.41
1:B:278:GLU:HG2	1:B:385:MET:HG3	2.01	0.41
1:B:146:ILE:HD11	1:B:454:LEU:HD11	2.02	0.41
1:A:165:THR:HG21	1:A:502:GLU:CG	2.51	0.41
1:A:447:LYS:HE2	2:A:1237:HOH:O	2.20	0.41
1:B:133:LYS:HD2	1:B:133:LYS:HA	1.65	0.41
1:B:153:PRO:HG2	1:B:539:SER:OG	2.19	0.41
1:B:574:MET:O	1:B:578:LEU:HD12	2.20	0.41
1:B:183:TYR:CD2	1:B:217:ASN:HB3	2.54	0.41
1:B:437:LYS:HB2	1:B:437:LYS:HE3	1.90	0.41
1:A:263:MET:HE3	1:A:273:TYR:HE2	1.85	0.41
1:B:590:LYS:O	1:B:594:SER:HB3	2.20	0.41
1:A:136:TRP:CZ3	1:A:175:LEU:HA	2.55	0.41
1:A:431:LYS:HE3	2:A:1214:HOH:O	2.21	0.41
1:A:344:MET:HA	1:A:349:TRP:CG	2.56	0.41
1:B:267:HIS:ND1	1:B:270:ASP:OD2	2.50	0.41
1:B:373:LYS:HB2	1:B:374:TYR:CZ	2.55	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:310:GLN:HG2	1:A:330:PHE:CD2	2.55	0.40
1:A:229:ASP:HB3	2:A:1394:HOH:O	2.21	0.40
1:A:356:ASN:HA	1:A:359:ARG:HG2	2.03	0.40
1:B:102:PHE:O	1:B:106:ASP:HB2	2.21	0.40
1:B:160:THR:HB	1:B:497:TYR:CB	2.52	0.40
1:B:538:HIS:O	1:B:542:ILE:HG12	2.21	0.40
1:A:602:ASP:HB3	1:A:676:LYS:HD2	2.04	0.40
1:A:733:VAL:HG23	1:A:760:ILE:HB	2.03	0.40
1:B:263:MET:HB3	1:B:263:MET:HE3	1.91	0.40
1:B:697:TRP:C	1:B:698:ARG:HG2	2.46	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	736/855 (86%)	707 (96%)	29 (4%)	0	100	100
1	B	739/855 (86%)	705 (95%)	34 (5%)	0	100	100
All	All	1475/1710 (86%)	1412 (96%)	63 (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	644/749 (86%)	638 (99%)	6 (1%)	75 81
1	B	645/749 (86%)	638 (99%)	7 (1%)	70 76
All	All	1289/1498 (86%)	1276 (99%)	13 (1%)	73 78

All (13) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	44	VAL
1	A	334	VAL
1	A	341	ILE
1	A	406	LEU
1	A	469	ARG
1	A	497	TYR
1	B	90	ASN
1	B	371	LEU
1	B	381	GLN
1	B	437	LYS
1	B	497	TYR
1	B	510	ILE
1	B	573	GLU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (17) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	105	ASN
1	A	143	GLN
1	A	194	GLN
1	A	198	ASN
1	A	199	ASN
1	A	314	GLN
1	A	381	GLN
1	A	417	ASN
1	A	494	GLN
1	A	626	ASN
1	A	671	GLN
1	B	194	GLN
1	B	519	ASN
1	B	526	ASN
1	B	677	ASN
1	B	704	GLN
1	B	746	GLN

5.3.3 RNA

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains

There are no non-standard protein/DNA/RNA residues in this entry.

5.5 Carbohydrates

There are no oligosaccharides in this entry.

5.6 Ligand geometry

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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	738/855 (86%)	-0.26	5 (0%)	84	83	11, 21, 34, 52	0
1	B	741/855 (86%)	0.21	18 (2%)	59	58	14, 29, 46, 61	0
All	All	1479/1710 (86%)	-0.03	23 (1%)	70	69	11, 24, 43, 61	0

All (23) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	86	TRP	3.1
1	B	91	VAL	2.8
1	A	150	ASN	2.8
1	B	93	THR	2.8
1	B	25	THR	2.7
1	B	202	THR	2.7
1	B	727	GLN	2.5
1	A	292	TRP	2.5
1	B	149	ASP	2.5
1	B	183	TYR	2.4
1	B	196	VAL	2.3
1	B	77	GLU	2.3
1	A	86	TRP	2.3
1	B	703	GLU	2.3
1	B	199	ASN	2.3
1	B	672	ILE	2.2
1	B	42	ALA	2.2
1	B	92	ALA	2.2
1	B	32	ILE	2.1
1	B	87	LEU	2.1
1	A	149	ASP	2.1
1	A	703	GLU	2.1
1	B	745	SER	2.1

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 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.