Full wwPDB X-ray Structure Validation Report (i)

Oct 16, 2023 – 09:43 AM EDT

PDB ID	:	1NP2
Title	:	Crystal structure of thermostable beta-glycosidase from thermophilic eubacterium Thermus nonproteolyticus HG102
Authors	:	Liang, D.C.; Chang, W.R.; Wang, X.Q.; He, X.Y.
Deposited on	:	2003-01-16
Resolution	:	2.40 Å(reported)

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

|		
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.36
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)	:	2.36

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 2.40 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	Percentile Ranks	Value
Rfree		0.273
Clashscore		15
Ramachandran outliers		0.9%
Sidechain outliers		5.7%
RSRZ outliers		1.1%

Worse   *Better*

▮ Percentile relative to all X-ray structures

▯ Percentile relative to X-ray structures of similar resolution
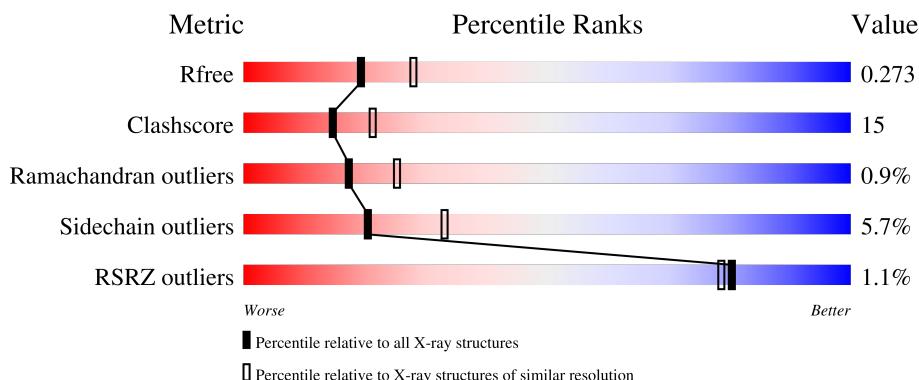
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)
RSRZ outliers	127900	3811 (2.40-2.40)

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	436	68% 28% · ·
1	B	436	2% 68% 26% · ·
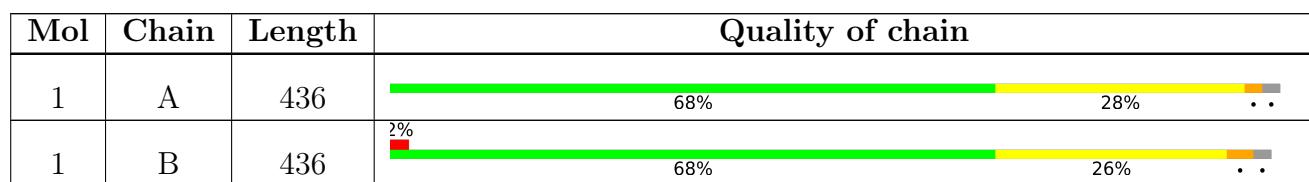
2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 7156 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 beta-glycosidase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	426	Total 3411	C 2199	N 606	O 601	S 5	0	0	0
1	B	426	Total 3411	C 2199	N 606	O 601	S 5	0	0	0

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	154	Total 154	O 154	0	0
2	B	180	Total 180	O 180	0	0

3 Residue-property plots ⓘ

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: beta-glycosidase
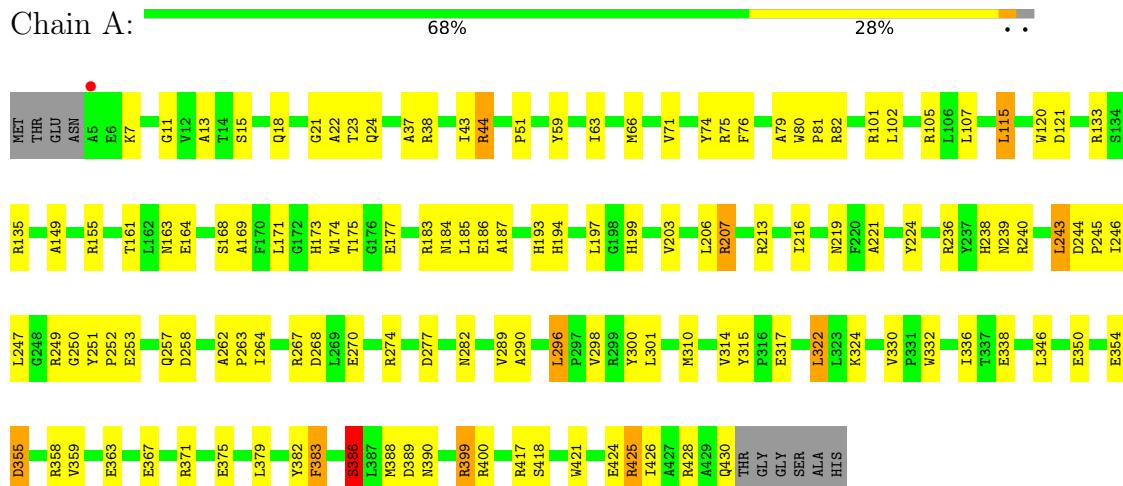
- Molecule 1: beta-glycosidase
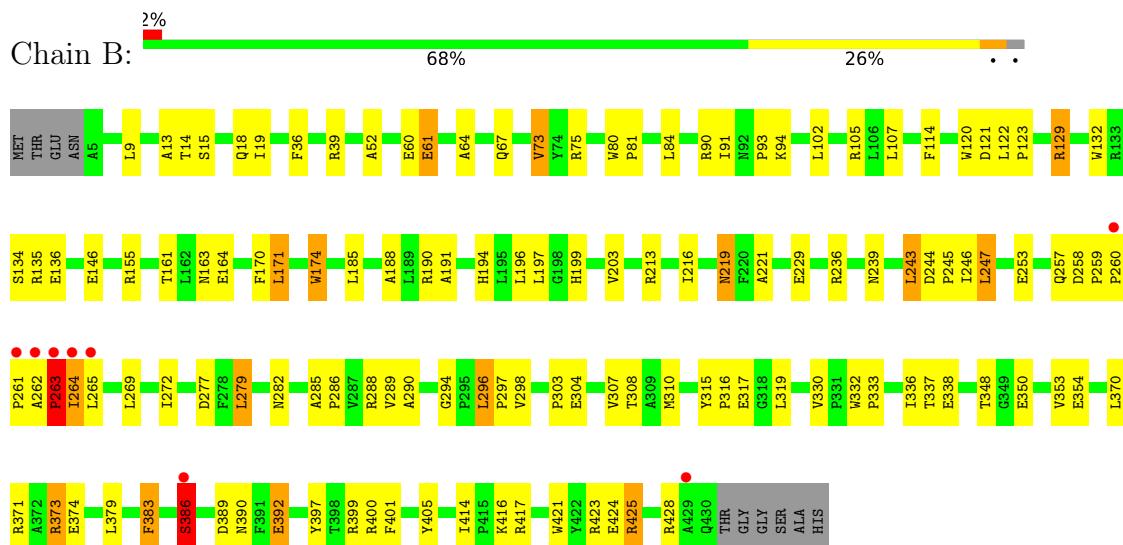
4 Data and refinement statistics ⓘ

Property	Value	Source
Space group	P 21 21 21	Depositor
Cell constants a, b, c, α, β, γ	66.70Å 94.75Å 176.72Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 2.40 83.51 – 2.40	Depositor EDS
% Data completeness (in resolution range)	94.0 (50.00-2.40) 94.0 (83.51-2.40)	Depositor EDS
R_{merge}	0.18	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	3.77 (at 2.40Å)	Xtriage
Refinement program	CNS 1.0	Depositor
R, R_{free}	0.230 , 0.272 0.230 , 0.273	Depositor DCC
R_{free} test set	2102 reflections (5.01%)	wwPDB-VP
Wilson B-factor (Å^2)	24.7	Xtriage
Anisotropy	1.182	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 44.7	EDS
L-test for twinning[2]	$< |L| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	7156	wwPDB-VP
Average B, all atoms (Å^2)	29.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.79% 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	0.38	0/3525	0.62	1/4814 (0.0%)
1	B	0.37	0/3525	0.64	0/4814
All	All	0.37	0/7050	0.63	1/9628 (0.0%)

There are no bond length outliers.

All (1) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	115	LEU	CA-CB-CG	6.67	130.63	115.30

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	3411	0	3282	105	0
1	B	3411	0	3282	103	0
2	A	154	0	0	7	0
2	B	180	0	0	10	0
All	All	7156	0	6564	205	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 15.

All (205) 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:221:ALA:H	1:A:239:ASN:HD21	1.08	0.94
1:B:243:LEU:HD22	1:B:247:LEU:HD22	1.55	0.89
1:B:373:ARG:HD3	1:B:379:LEU:O	1.76	0.84
1:A:213:ARG:HG3	1:A:213:ARG:HH11	1.42	0.83
1:B:310:MET:HE1	1:B:401:PHE:HZ	1.45	0.81
1:A:264:ILE:H	1:B:67:GLN:HE22	1.29	0.81
1:B:194:HIS:HD2	1:B:197:LEU:HD12	1.45	0.81
1:B:262:ALA:HB1	1:B:263:PRO:HD2	1.66	0.77
1:B:421:TRP:CZ2	1:B:425:ARG:HG3	2.20	0.75
1:A:13:ALA:O	1:A:386:SER:HA	1.88	0.73
1:A:161:THR:OG1	1:A:199:HIS:HD2	1.73	0.72
1:B:221:ALA:H	1:B:239:ASN:HD21	1.36	0.71
1:A:221:ALA:H	1:A:239:ASN:ND2	1.86	0.71
1:B:75:ARG:HH22	1:B:163:ASN:ND2	1.89	0.70
1:B:107:LEU:HD11	1:B:155:ARG:HB3	1.72	0.69
1:B:310:MET:HE1	1:B:401:PHE:CZ	2.27	0.69
1:B:135:ARG:HD3	2:B:499:HOH:O	1.92	0.68
1:A:310:MET:SD	1:A:399:ARG:HG2	2.33	0.68
1:A:324:LYS:HD3	2:A:530:HOH:O	1.93	0.67
1:B:262:ALA:HB1	1:B:263:PRO:CD	2.24	0.67
1:A:354:GLU:OE1	1:A:417:ARG:HD3	1.95	0.67
1:A:75:ARG:HH22	1:A:163:ASN:ND2	1.94	0.66
1:A:175:THR:OG1	1:A:177:GLU:HG2	1.95	0.65
1:A:213:ARG:HG3	1:A:213:ARG:NH1	2.09	0.65
1:B:421:TRP:CE2	1:B:425:ARG:HG3	2.32	0.64
1:B:296:LEU:HD13	1:B:298:VAL:HB	1.77	0.64
1:A:350:GLU:H	1:A:350:GLU:CD	2.00	0.64
1:B:161:THR:OG1	1:B:199:HIS:HD2	1.81	0.63
1:B:373:ARG:HG2	1:B:379:LEU:HB3	1.78	0.63
1:A:289:VAL:HB	1:A:298:VAL:HG13	1.81	0.63
1:A:389:ASP:OD1	1:A:400:ARG:HB3	1.99	0.63
1:A:382:TYR:C	1:A:383:PHE:HD1	2.02	0.62
1:B:94:LYS:HG3	2:B:519:HOH:O	1.99	0.62
1:A:236:ARG:HD2	1:A:253:GLU:O	1.99	0.61
1:A:107:LEU:HD11	1:A:155:ARG:HB3	1.82	0.61
1:A:18:GLN:O	1:A:390:ASN:HB2	2.00	0.61
1:B:9:LEU:HB3	1:B:73:VAL:CG2	2.31	0.61
1:A:363:GLU:O	1:A:367:GLU:HG3	2.00	0.61
1:B:424:GLU:O	1:B:428:ARG:HG3	2.02	0.59
1:B:94:LYS:HE2	2:B:566:HOH:O	2.02	0.59
1:A:44:ARG:HH11	1:A:44:ARG:HB3	1.67	0.59
1:A:289:VAL:HB	1:A:298:VAL:CG1	2.33	0.58

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:221:ALA:H	1:B:239:ASN:ND2	2.01	0.58
1:B:374:GLU:HB3	2:B:506:HOH:O	2.04	0.58
1:B:190:ARG:NH1	2:B:475:HOH:O	2.36	0.58
1:A:253:GLU:HG3	1:B:423:ARG:HD3	1.86	0.57
1:B:282:ASN:CG	1:B:338:GLU:HB2	2.23	0.57
1:B:288:ARG:CZ	1:B:304:GLU:HG3	2.33	0.57
1:A:240:ARG:HB3	1:A:244:ASP:OD2	2.05	0.57
1:A:424:GLU:OE2	1:A:428:ARG:HD3	2.04	0.57
1:B:262:ALA:O	1:B:263:PRO:C	2.42	0.57
1:B:170:PHE:O	1:B:174:TRP:HB3	2.05	0.57
1:A:274:ARG:HA	1:A:274:ARG:HE	1.69	0.57
1:B:244:ASP:HB2	1:B:245:PRO:HD3	1.87	0.56
1:B:199:HIS:O	1:B:203:VAL:HG23	2.06	0.56
1:B:414:ILE:HD12	1:B:414:ILE:N	2.21	0.56
1:A:383:PHE:HD1	1:A:383:PHE:N	2.04	0.56
1:B:75:ARG:NH2	1:B:338:GLU:OE2	2.39	0.56
1:B:91:ILE:O	1:B:93:PRO:HD3	2.05	0.56
1:A:383:PHE:N	1:A:383:PHE:CD1	2.74	0.56
1:B:13:ALA:O	1:B:386:SER:HA	2.06	0.56
1:B:36:PHE:HA	1:B:39:ARG:HH11	1.71	0.56
1:B:146:GLU:HG3	2:B:487:HOH:O	2.04	0.56
1:B:18:GLN:O	1:B:390:ASN:HB2	2.07	0.55
1:A:330:VAL:HG12	1:A:332:TRP:H	1.72	0.55
1:B:330:VAL:HG12	1:B:332:TRP:H	1.72	0.55
1:B:386:SER:OG	1:B:390:ASN:ND2	2.39	0.55
1:B:282:ASN:OD1	1:B:338:GLU:HB2	2.07	0.55
1:A:244:ASP:HB2	1:A:245:PRO:HD3	1.89	0.55
1:A:207:ARG:NH2	1:A:277:ASP:OD2	2.32	0.54
1:A:267:ARG:O	1:A:270:GLU:HG2	2.07	0.54
1:B:163:ASN:OD1	1:B:164:GLU:HG3	2.07	0.54
1:A:371:ARG:O	1:A:375:GLU:HG3	2.08	0.54
1:A:23:THR:HG22	1:A:24:GLN:HG3	1.90	0.53
1:A:11:GLY:HA2	1:A:71:VAL:HG13	1.91	0.53
1:A:80:TRP:N	1:A:81:PRO:HD2	2.24	0.53
1:A:59:TYR:OH	1:A:101:ARG:NE	2.42	0.52
1:A:174:TRP:O	1:A:183:ARG:HA	2.09	0.52
1:A:199:HIS:O	1:A:203:VAL:HG23	2.10	0.52
1:A:133:ARG:HD3	1:A:187:ALA:HB1	1.91	0.52
1:A:389:ASP:CG	1:A:400:ARG:HB3	2.30	0.51
1:A:15:SER:OG	1:A:18:GLN:HG3	2.10	0.51
1:A:193:HIS:O	1:A:197:LEU:HG	2.10	0.51

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:303:PRO:HG3	1:B:307:VAL:HG11	1.93	0.51
1:B:105:ARG:HD2	2:B:551:HOH:O	2.10	0.50
1:B:279:LEU:HD12	1:B:330:VAL:HG21	1.94	0.50
1:A:135:ARG:HD3	2:A:557:HOH:O	2.12	0.50
1:B:185:LEU:O	1:B:188:ALA:HB3	2.12	0.49
1:A:243:LEU:HD22	1:A:247:LEU:CD1	2.41	0.49
1:B:14:THR:HB	1:B:19:ILE:HD13	1.94	0.49
1:B:216:ILE:HG21	1:B:246:ILE:HD13	1.93	0.49
1:B:120:TRP:N	1:B:120:TRP:CD1	2.80	0.49
1:A:251:TYR:CE2	1:A:264:ILE:HD13	2.48	0.49
1:A:37:ALA:HA	1:A:43:ILE:HD13	1.94	0.49
1:A:169:ALA:O	1:A:173:HIS:HB2	2.12	0.49
1:A:300:TYR:CD1	1:A:300:TYR:N	2.81	0.49
1:B:9:LEU:HB3	1:B:73:VAL:HG21	1.95	0.49
1:A:240:ARG:HD3	2:A:547:HOH:O	2.13	0.48
1:B:336:ILE:HG13	1:B:379:LEU:HD11	1.95	0.48
1:A:315:TYR:CZ	1:A:317:GLU:HB3	2.48	0.48
1:B:315:TYR:CE1	1:B:317:GLU:HB3	2.48	0.48
1:B:354:GLU:OE1	1:B:417:ARG:HG3	2.13	0.48
1:A:355:ASP:CG	1:A:358:ARG:HH11	2.15	0.48
1:A:336:ILE:HG13	1:A:379:LEU:HD11	1.96	0.48
1:B:337:THR:O	1:B:338:GLU:HG3	2.14	0.48
1:A:194:HIS:HD2	1:A:197:LEU:HD12	1.79	0.48
1:B:84:LEU:HD23	1:B:90:ARG:O	2.14	0.48
1:A:79:ALA:HA	1:A:121:ASP:OD2	2.14	0.48
1:A:355:ASP:OD2	1:A:358:ARG:HD2	2.14	0.48
1:B:194:HIS:CD2	1:B:197:LEU:HD12	2.36	0.48
1:A:197:LEU:HD21	1:A:268:ASP:OD2	2.14	0.47
1:B:75:ARG:HH22	1:B:163:ASN:HD21	1.61	0.47
1:A:388:MET:HB3	1:A:388:MET:HE2	1.70	0.47
1:B:132:TRP:O	1:B:191:ALA:HA	2.15	0.47
1:B:219:ASN:ND2	2:B:514:HOH:O	2.46	0.47
1:A:199:HIS:HE1	2:A:440:HOH:O	1.98	0.47
1:B:389:ASP:OD1	1:B:400:ARG:HB3	2.15	0.47
1:A:355:ASP:OD1	1:A:358:ARG:NH1	2.48	0.47
1:B:14:THR:CB	1:B:19:ILE:HD13	2.45	0.47
1:B:257:GLN:NE2	1:B:294:GLY:O	2.48	0.47
1:A:282:ASN:CG	1:A:338:GLU:HB2	2.35	0.47
1:B:52:ALA:HA	1:B:397:TYR:OH	2.15	0.47
1:B:243:LEU:HD22	1:B:247:LEU:CD2	2.36	0.47
1:A:184:ASN:HD21	1:A:186:GLU:HB3	1.79	0.47

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:426:ILE:O	1:A:430:GLN:HG3	2.15	0.47
1:B:194:HIS:HD2	1:B:197:LEU:CD1	2.23	0.46
1:A:221:ALA:N	1:A:239:ASN:HD21	1.92	0.46
1:B:196:LEU:HD22	1:B:272:ILE:HG21	1.97	0.46
1:A:224:TYR:HH	1:A:315:TYR:HE2	1.62	0.46
1:A:238:HIS:HE1	1:A:300:TYR:OH	1.99	0.46
1:A:244:ASP:OD1	1:A:249:ARG:HD2	2.15	0.46
1:B:75:ARG:HA	1:B:114:PHE:O	2.16	0.46
1:A:38:ARG:HD2	2:A:507:HOH:O	2.16	0.46
1:A:101:ARG:HH21	1:A:105:ARG:HH12	1.64	0.46
1:B:317:GLU:OE2	1:B:371:ARG:NH1	2.49	0.45
1:A:121:ASP:OD1	1:A:121:ASP:N	2.48	0.45
1:A:44:ARG:HH11	1:A:44:ARG:CB	2.29	0.45
1:A:257:GLN:O	1:A:258:ASP:OD1	2.34	0.45
1:B:288:ARG:NE	1:B:304:GLU:HG3	2.32	0.45
1:A:263:PRO:HD3	1:B:60:GLU:O	2.16	0.45
1:B:260:PRO:HA	1:B:261:PRO:HD2	1.88	0.45
1:B:405:TYR:N	1:B:414:ILE:O	2.45	0.45
1:A:168:SER:O	1:A:173:HIS:CD2	2.69	0.45
1:A:120:TRP:CD1	1:A:120:TRP:N	2.85	0.44
1:B:236:ARG:NH1	1:B:253:GLU:O	2.44	0.44
1:B:316:PRO:HG2	2:B:513:HOH:O	2.17	0.44
1:B:310:MET:HG2	1:B:399:ARG:HE	1.83	0.44
1:A:63:ILE:HA	1:A:66:MET:CE	2.48	0.44
1:A:274:ARG:HA	1:A:274:ARG:NE	2.33	0.44
1:B:265:LEU:O	1:B:269:LEU:HG	2.18	0.43
1:B:290:ALA:HA	2:B:550:HOH:O	2.18	0.43
1:A:74:TYR:CE2	1:A:76:PHE:HB3	2.52	0.43
1:A:386:SER:OG	1:A:390:ASN:ND2	2.51	0.43
1:A:168:SER:O	1:A:173:HIS:HD2	2.01	0.43
1:A:290:ALA:HB2	1:A:301:LEU:HD11	2.01	0.43
1:A:243:LEU:HD22	1:A:247:LEU:HD11	2.01	0.43
1:A:21:GLY:O	1:A:22:ALA:C	2.57	0.43
1:A:428:ARG:C	1:A:430:GLN:H	2.22	0.43
1:B:121:ASP:OD1	1:B:121:ASP:N	2.52	0.43
1:A:75:ARG:HH22	1:A:163:ASN:HD22	1.63	0.43
1:A:262:ALA:HB1	1:A:263:PRO:HD2	2.01	0.43
1:B:353:VAL:O	1:B:416:LYS:HA	2.19	0.43
1:B:370:LEU:O	1:B:374:GLU:HG2	2.19	0.43
1:A:105:ARG:HA	1:A:105:ARG:HD3	1.74	0.43
1:A:240:ARG:NH1	1:A:252:PRO:HB3	2.34	0.43

Continued on next page...

Continued from previous page...

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:15:SER:OG	1:B:18:GLN:HG3	2.18	0.43
1:A:296:LEU:HD22	1:A:298:VAL:HB	2.00	0.42
1:B:383:PHE:CD1	1:B:383:PHE:N	2.86	0.42
1:A:11:GLY:O	1:A:383:PHE:HA	2.19	0.42
1:B:285:ALA:HB1	1:B:286:PRO:HD2	2.01	0.42
1:A:149:ALA:HB2	1:A:206:LEU:HD23	2.00	0.42
1:A:216:ILE:HG21	1:A:246:ILE:HD13	1.99	0.42
1:A:322:LEU:HD22	1:A:322:LEU:O	2.19	0.42
1:B:60:GLU:OE1	1:B:105:ARG:NH1	2.52	0.42
1:B:296:LEU:O	1:B:298:VAL:N	2.47	0.42
1:A:257:GLN:NE2	2:A:473:HOH:O	2.52	0.42
1:B:105:ARG:HH11	1:B:105:ARG:HG3	1.85	0.42
1:B:392:GLU:HA	1:B:392:GLU:OE1	2.19	0.42
1:A:203:VAL:O	1:A:207:ARG:HB2	2.20	0.41
1:A:421:TRP:CZ2	1:A:425:ARG:HG3	2.54	0.41
1:A:177:GLU:HG2	1:A:177:GLU:H	1.64	0.41
1:B:129:ARG:HH11	1:B:129:ARG:HB3	1.84	0.41
1:A:135:ARG:HG2	2:A:508:HOH:O	2.20	0.41
1:A:44:ARG:HH11	1:A:44:ARG:CG	2.34	0.41
1:A:164:GLU:HG2	1:A:219:ASN:HB3	2.01	0.41
1:B:213:ARG:HA	1:B:277:ASP:OD2	2.21	0.41
1:B:247:LEU:HD12	1:B:247:LEU:HA	1.93	0.41
1:B:332:TRP:HB3	1:B:333:PRO:HD2	2.02	0.41
1:B:61:GLU:O	1:B:64:ALA:HB3	2.20	0.41
1:B:80:TRP:N	1:B:81:PRO:HD2	2.36	0.41
1:B:263:PRO:O	1:B:264:ILE:HG13	2.21	0.41
1:A:101:ARG:NH2	1:A:105:ARG:HH12	2.18	0.41
1:A:244:ASP:HB3	1:A:250:GLY:O	2.20	0.41
1:B:80:TRP:HB3	1:B:81:PRO:CD	2.51	0.41
1:B:171:LEU:HA	1:B:171:LEU:HD12	1.78	0.41
1:B:308:THR:C	1:B:310:MET:H	2.24	0.41
1:B:317:GLU:CD	1:B:371:ARG:HH12	2.25	0.41
1:B:216:ILE:HD13	1:B:246:ILE:CD1	2.50	0.41
1:B:288:ARG:NE	1:B:304:GLU:CG	2.84	0.41
1:B:348:THR:OG1	1:B:350:GLU:HG3	2.21	0.40
1:A:251:TYR:HE2	1:A:264:ILE:HD13	1.85	0.40
1:B:134:SER:OG	1:B:136:GLU:HG2	2.21	0.40
1:A:213:ARG:NH1	1:A:213:ARG:CG	2.77	0.40
1:A:359:VAL:HG22	1:A:418:SER:HA	2.04	0.40
1:B:122:LEU:HD12	1:B:123:PRO:HD2	2.03	0.40

There are no symmetry-related clashes.

5.3 Torsion angles ⓘ

5.3.1 Protein backbone ⓘ

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	424/436 (97%)	394 (93%)	28 (7%)	2 (0%)	29	41
1	B	424/436 (97%)	393 (93%)	25 (6%)	6 (1%)	11	15
All	All	848/872 (97%)	787 (93%)	53 (6%)	8 (1%)	17	25

All (8) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	259	PRO
1	A	7	LYS
1	A	386	SER
1	B	264	ILE
1	B	263	PRO
1	B	258	ASP
1	B	386	SER
1	B	297	PRO

5.3.2 Protein sidechains ⓘ

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	333/340 (98%)	315 (95%)	18 (5%)	22	36
1	B	333/340 (98%)	313 (94%)	20 (6%)	19	31
All	All	666/680 (98%)	628 (94%)	38 (6%)	20	33

All (38) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	44	ARG
1	A	51	PRO
1	A	82	ARG
1	A	102	LEU
1	A	115	LEU
1	A	171	LEU
1	A	185	LEU
1	A	207	ARG
1	A	243	LEU
1	A	296	LEU
1	A	314	VAL
1	A	322	LEU
1	A	346	LEU
1	A	355	ASP
1	A	383	PHE
1	A	386	SER
1	A	399	ARG
1	A	425	ARG
1	B	61	GLU
1	B	73	VAL
1	B	102	LEU
1	B	129	ARG
1	B	171	LEU
1	B	174	TRP
1	B	219	ASN
1	B	229	GLU
1	B	243	LEU
1	B	247	LEU
1	B	263	PRO
1	B	279	LEU
1	B	289	VAL
1	B	296	LEU
1	B	319	LEU
1	B	373	ARG
1	B	383	PHE
1	B	386	SER
1	B	392	GLU
1	B	425	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (26) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	18	GLN

Continued on next page...

Continued from previous page...

Mol	Chain	Res	Type
1	A	119	HIS
1	A	124	GLN
1	A	163	ASN
1	A	173	HIS
1	A	184	ASN
1	A	194	HIS
1	A	199	HIS
1	A	238	HIS
1	A	239	ASN
1	A	257	GLN
1	A	321	HIS
1	A	390	ASN
1	B	18	GLN
1	B	67	GLN
1	B	92	ASN
1	B	119	HIS
1	B	124	GLN
1	B	163	ASN
1	B	173	HIS
1	B	194	HIS
1	B	199	HIS
1	B	219	ASN
1	B	238	HIS
1	B	239	ASN
1	B	390	ASN

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 monosaccharides 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, 95th 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(Å²)	Q<0.9
1	A	426/436 (97%)	-0.24	1 (0%)	95	94	17, 29, 44, 69	1 (0%)
1	B	426/436 (97%)	-0.16	8 (1%)	66	64	18, 27, 45, 90	1 (0%)
All	All	852/872 (97%)	-0.20	9 (1%)	80	79	17, 28, 45, 90	2 (0%)

All (9) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	B	262	ALA	6.4
1	B	263	PRO	6.1
1	B	261	PRO	5.2
1	B	264	ILE	5.1
1	B	260	PRO	5.0
1	B	429	ALA	3.5
1	A	5	ALA	3.0
1	B	265	LEU	2.1
1	B	386	SER	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 ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers (i)

There are no such residues in this entry.