Full wwPDB X-ray Structure Validation Report ⓘ

Jun 12, 2024 – 04:42 AM EDT

PDB ID	:	2HF0
Title	:	Bifidobacterium longum bile salt hydrolase
Authors	:	Suresh, C.G.; Kumar, R.S.; Brannigan, J.A.
Deposited on	:	2006-06-22
Resolution	:	2.30 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:

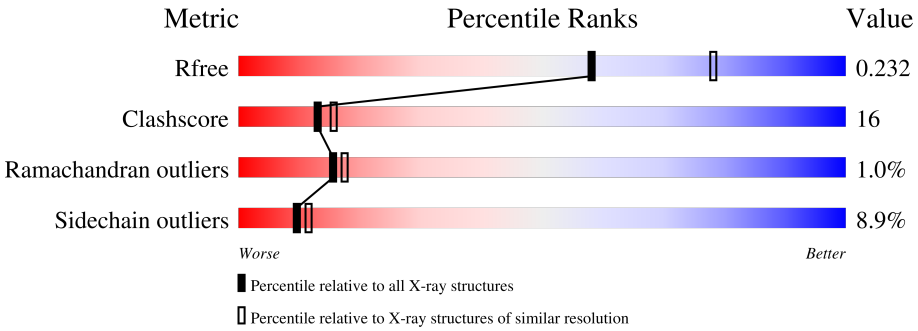
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.20.1
EDS	:	2.36.2
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.36.2

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 2.30 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}	130704	5042 (2.30-2.30)
Clashscore	141614	5643 (2.30-2.30)
Ramachandran outliers	138981	5575 (2.30-2.30)
Sidechain outliers	138945	5575 (2.30-2.30)

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%

Mol	Chain	Length	Quality of chain
1	A	316	65% 29% 5% •
1	B	316	73% 21% 5% •

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 5177 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 Bile salt hydrolase.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	316	Total	C	N	O	S	15	0	0
			2463	1547	417	482	17			
1	B	316	Total	C	N	O	S	14	0	0
			2463	1547	417	482	17			

- Molecule 2 is water.

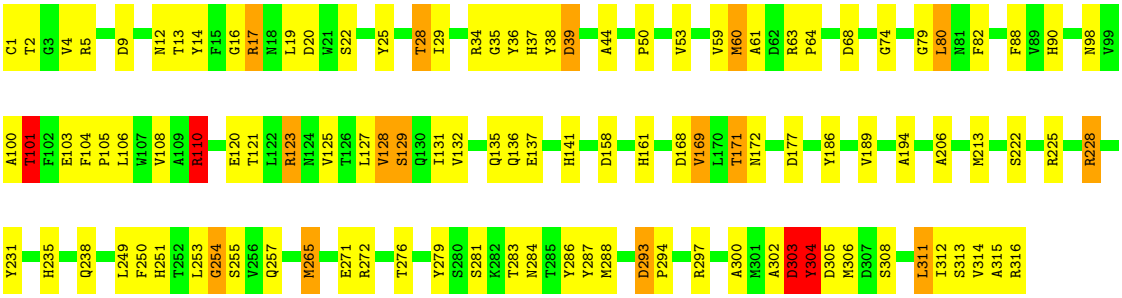
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	120	Total	O	0	0
			120	120		
2	B	131	Total	O	0	0
			131	131		

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. 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. 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.

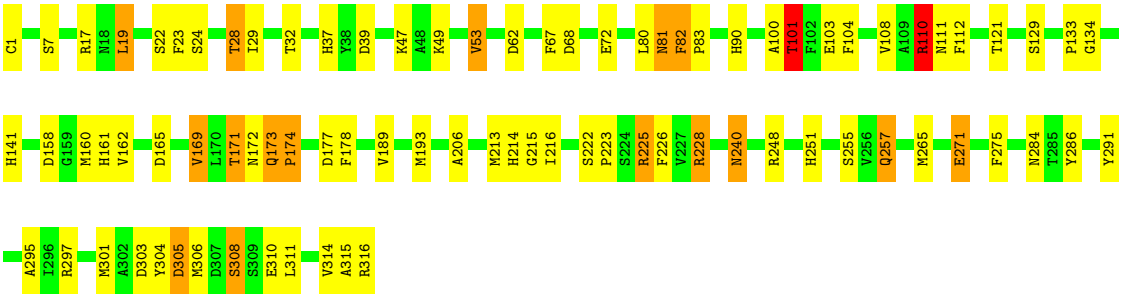
- Molecule 1: Bile salt hydrolase

Chain A:



- Molecule 1: Bile salt hydrolase

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 61 2 2	Depositor
Cell constants a, b, c, α, β, γ	123.98Å 123.98Å 219.56Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	20.00 – 2.30 30.24 – 2.25	Depositor EDS
% Data completeness (in resolution range)	99.7 (20.00-2.30) 97.2 (30.24-2.25)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.49 (at 2.24Å)	Xtriage
Refinement program	REFMAC 5.1.24	Depositor
R, R_{free}	0.185 , 0.228 0.194 , 0.232	Depositor DCC
R_{free} test set	2364 reflections (5.07%)	wwPDB-VP
Wilson B-factor (Å^2)	41.9	Xtriage
Anisotropy	0.108	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.34 , 43.7	EDS
L-test for twinning[2]	$< \|L\| > = 0.51$, $< L^2 > = 0.35$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	5177	wwPDB-VP
Average B, all atoms (Å^2)	39.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.46% 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	1.50	21/2528 (0.8%)	1.27	19/3437 (0.6%)
1	B	1.25	10/2528 (0.4%)	1.11	11/3437 (0.3%)
All	All	1.38	31/5056 (0.6%)	1.19	30/6874 (0.4%)

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	1	1

All (31) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	128	VAL	CA-CB	-23.08	1.06	1.54
1	A	128	VAL	C-O	14.54	1.50	1.23
1	A	127	LEU	C-N	14.18	1.66	1.34
1	A	128	VAL	CA-C	11.61	1.83	1.52
1	A	128	VAL	CB-CG2	9.85	1.73	1.52
1	A	127	LEU	CA-CB	-8.46	1.34	1.53
1	B	315	ALA	C-N	-8.11	1.15	1.34
1	B	310	GLU	CB-CG	7.12	1.65	1.52
1	A	128	VAL	CB-CG1	7.04	1.67	1.52
1	A	228	ARG	CD-NE	-6.83	1.34	1.46
1	A	127	LEU	C-O	6.58	1.35	1.23
1	A	315	ALA	C-N	-6.55	1.19	1.34
1	B	228	ARG	CD-NE	-6.33	1.35	1.46
1	A	25	TYR	CD2-CE2	6.16	1.48	1.39
1	A	250	PHE	CD1-CE1	6.13	1.51	1.39
1	A	137	GLU	CB-CG	-5.83	1.41	1.52
1	A	169	VAL	CB-CG1	-5.83	1.40	1.52
1	B	271	GLU	CD-OE2	-5.78	1.19	1.25

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	127	LEU	N-CA	5.75	1.57	1.46
1	B	226	PHE	CD1-CE1	5.55	1.50	1.39
1	B	162	VAL	CA-CB	-5.52	1.43	1.54
1	A	271	GLU	CD-OE2	-5.35	1.19	1.25
1	A	186	TYR	CD1-CE1	5.28	1.47	1.39
1	B	215	GLY	C-O	-5.26	1.15	1.23
1	B	295	ALA	CA-CB	5.21	1.63	1.52
1	A	4	VAL	CB-CG1	-5.21	1.42	1.52
1	A	177	ASP	CG-OD2	5.19	1.37	1.25
1	B	228	ARG	CG-CD	5.17	1.64	1.51
1	A	120	GLU	CG-CD	5.16	1.59	1.51
1	A	128	VAL	N-CA	5.05	1.56	1.46
1	B	53	VAL	CB-CG2	5.04	1.63	1.52

All (30) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	228	ARG	NE-CZ-NH2	-23.98	108.31	120.30
1	B	228	ARG	NE-CZ-NH2	-20.03	110.28	120.30
1	A	228	ARG	NE-CZ-NH1	18.33	129.47	120.30
1	B	228	ARG	NE-CZ-NH1	11.66	126.13	120.30
1	A	177	ASP	CB-CG-OD1	-9.35	109.89	118.30
1	A	228	ARG	CD-NE-CZ	8.05	134.87	123.60
1	A	128	VAL	CG1-CB-CG2	-7.17	99.42	110.90
1	A	253	LEU	C-N-CA	-7.15	107.28	122.30
1	B	177	ASP	CB-CG-OD2	7.07	124.67	118.30
1	B	225	ARG	NE-CZ-NH2	-7.07	116.77	120.30
1	A	177	ASP	CB-CG-OD2	7.06	124.65	118.30
1	B	228	ARG	CD-NE-CZ	6.54	132.75	123.60
1	A	169	VAL	CG1-CB-CG2	6.35	121.06	110.90
1	A	128	VAL	O-C-N	-6.25	112.69	122.70
1	A	168	ASP	CB-CG-OD2	-6.12	112.80	118.30
1	A	303	ASP	C-N-CA	5.86	136.34	121.70
1	A	305	ASP	CB-CG-OD2	-5.85	113.04	118.30
1	B	101	THR	N-CA-CB	-5.78	99.32	110.30
1	A	265	MET	CG-SD-CE	-5.69	91.10	100.20
1	A	250	PHE	O-C-N	-5.53	113.85	122.70
1	B	110	ARG	NE-CZ-NH1	-5.52	117.54	120.30
1	A	293	ASP	CB-CG-OD1	5.50	123.25	118.30
1	A	303	ASP	CA-C-N	5.47	129.23	117.20
1	B	160	MET	CG-SD-CE	-5.46	91.47	100.20
1	A	101	THR	OG1-CB-CG2	5.31	122.22	110.00

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	165	ASP	CB-CG-OD2	-5.29	113.54	118.30
1	B	248	ARG	NE-CZ-NH1	5.29	122.94	120.30
1	B	169	VAL	CG1-CB-CG2	5.25	119.31	110.90
1	A	110	ARG	NE-CZ-NH1	5.25	122.92	120.30
1	A	137	GLU	N-CA-CB	5.14	119.84	110.60

All (1) chirality outliers are listed below:

Mol	Chain	Res	Type	Atom
1	A	304	TYR	CA

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	254	GLY	Peptide

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	2463	0	2289	94	0
1	B	2463	0	2289	64	0
2	A	120	0	0	7	0
2	B	131	0	0	4	0
All	All	5177	0	4578	155	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 16.

All (155) 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:128:VAL:CA	1:A:128:VAL:C	1.83	1.46
1:A:171:THR:CG2	1:A:172:ASN:H	1.52	1.21
1:B:171:THR:CG2	1:B:172:ASN:H	1.56	1.17
1:A:171:THR:HG22	1:A:172:ASN:H	1.07	1.15

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:171:THR:HG22	1:A:172:ASN:N	1.73	1.02
1:B:171:THR:HG22	1:B:172:ASN:H	1.24	0.98
1:B:171:THR:HG23	1:B:172:ASN:H	1.33	0.91
1:A:171:THR:CG2	1:A:172:ASN:N	2.21	0.90
1:B:171:THR:CG2	1:B:172:ASN:N	2.26	0.87
1:A:101:THR:HG21	2:A:346:HOH:O	1.75	0.86
1:B:171:THR:HG22	1:B:172:ASN:N	1.83	0.86
1:A:254:GLY:HA2	1:A:257:GLN:HB3	1.57	0.84
1:A:171:THR:HG23	1:A:172:ASN:H	1.42	0.83
1:A:35:GLY:HA3	1:A:308:SER:O	1.79	0.81
1:B:101:THR:HG21	2:B:371:HOH:O	1.80	0.81
1:A:22:SER:HB3	1:A:265:MET:CE	2.12	0.80
1:B:214:HIS:HD2	2:B:358:HOH:O	1.65	0.79
1:B:171:THR:HG21	1:B:222:SER:O	1.82	0.79
1:A:128:VAL:C	1:A:128:VAL:CB	2.47	0.79
1:B:22:SER:CB	1:B:265:MET:HE3	2.15	0.77
1:A:79:GLY:C	1:A:80:LEU:HD23	2.05	0.77
1:A:172:ASN:HD22	1:A:225:ARG:HH22	1.34	0.76
1:A:231:TYR:O	1:A:235:HIS:HD2	1.70	0.75
1:B:22:SER:N	1:B:265:MET:HE3	2.03	0.74
1:B:22:SER:HB3	1:B:265:MET:HE3	1.69	0.71
1:A:35:GLY:CA	1:A:308:SER:O	2.38	0.71
1:A:251:HIS:HD2	1:B:257:GLN:OE1	1.75	0.69
1:A:171:THR:HG23	1:A:172:ASN:N	2.04	0.67
1:A:194:ALA:HB3	1:A:206:ALA:HB2	1.76	0.67
1:A:80:LEU:HD23	1:A:80:LEU:N	2.10	0.66
1:B:47:LYS:HB2	1:B:111:ASN:HD22	1.61	0.66
1:B:172:ASN:HD22	1:B:225:ARG:HH22	1.43	0.65
1:B:90:HIS:HD2	1:B:129:SER:O	1.79	0.65
1:A:123:ARG:HG2	1:A:123:ARG:NH1	2.10	0.64
1:B:22:SER:CA	1:B:265:MET:HE3	2.27	0.64
1:A:110:ARG:NH1	2:A:401:HOH:O	2.31	0.64
1:B:47:LYS:H	1:B:111:ASN:ND2	1.96	0.63
1:B:240:ASN:ND2	1:B:240:ASN:H	1.96	0.63
1:A:16:GLY:HA3	1:A:249:LEU:HD11	1.81	0.62
1:A:22:SER:CB	1:A:265:MET:CE	2.77	0.62
1:B:240:ASN:H	1:B:240:ASN:HD22	1.46	0.62
1:B:228:ARG:HD2	1:B:255:SER:O	2.00	0.62
1:A:110:ARG:HG2	1:A:110:ARG:HH11	1.63	0.61
1:A:36:TYR:CD1	1:A:311:LEU:HD13	2.35	0.61
1:B:240:ASN:HD22	1:B:240:ASN:N	1.99	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:171:THR:CG2	1:B:222:SER:OG	2.48	0.61
1:A:158:ASP:OD1	1:A:161:HIS:HE1	1.82	0.61
1:A:231:TYR:O	1:A:235:HIS:CD2	2.53	0.61
1:A:22:SER:CB	1:A:265:MET:HE1	2.31	0.61
1:B:158:ASP:OD1	1:B:161:HIS:HE1	1.84	0.60
1:A:101:THR:HG23	2:A:384:HOH:O	2.02	0.60
1:A:123:ARG:HH11	1:A:123:ARG:CG	2.15	0.59
1:A:123:ARG:HG2	1:A:123:ARG:HH11	1.65	0.59
1:A:284:ASN:ND2	2:A:366:HOH:O	2.35	0.59
1:A:303:ASP:H	1:A:304:TYR:HA	1.68	0.59
1:A:39:ASP:CG	2:A:335:HOH:O	2.41	0.58
1:A:251:HIS:HE1	1:B:291:TYR:O	1.86	0.57
1:A:228:ARG:HD2	1:A:255:SER:O	2.04	0.57
1:A:104:PHE:O	1:A:108:VAL:HG13	2.05	0.56
1:B:171:THR:HG23	1:B:172:ASN:N	2.05	0.56
1:B:32:THR:HG22	1:B:110:ARG:HH12	1.71	0.56
1:B:304:TYR:HB2	1:B:306:MET:HE3	1.87	0.56
1:B:112:PHE:HE1	1:B:121:THR:HG1	1.55	0.55
1:B:28:THR:CG2	1:B:29:ILE:O	2.56	0.54
1:B:240:ASN:ND2	1:B:240:ASN:N	2.54	0.54
1:A:50:PRO:HB3	1:A:110:ARG:HD3	1.90	0.54
1:A:88:PHE:HB2	1:A:129:SER:HB2	1.90	0.53
1:B:22:SER:HB3	1:B:265:MET:CE	2.38	0.53
1:A:254:GLY:HA2	1:A:257:GLN:CB	2.34	0.52
1:A:257:GLN:NE2	1:B:251:HIS:ND1	2.58	0.52
1:A:12:ASN:ND2	2:A:435:HOH:O	2.36	0.51
1:A:36:TYR:O	1:A:110:ARG:NH2	2.42	0.51
1:A:39:ASP:O	1:A:63:ARG:NH2	2.44	0.50
1:A:171:THR:CG2	1:A:222:SER:OG	2.58	0.50
1:A:172:ASN:ND2	1:A:225:ARG:HH22	2.04	0.50
1:B:284:ASN:ND2	2:B:417:HOH:O	2.44	0.50
1:A:279:TYR:OH	1:A:284:ASN:ND2	2.44	0.50
1:B:37:HIS:NE2	1:B:39:ASP:OD1	2.39	0.49
1:B:189:VAL:HG13	1:B:213:MET:HA	1.94	0.49
1:A:2:THR:O	1:A:17:ARG:HA	2.13	0.49
1:A:34:ARG:HG3	1:A:306:MET:O	2.12	0.49
1:A:90:HIS:NE2	1:A:131:ILE:HD11	2.27	0.49
1:B:67:PHE:N	1:B:67:PHE:CD1	2.79	0.49
1:B:90:HIS:CD2	1:B:129:SER:O	2.62	0.49
1:A:132:VAL:HB	1:A:135:GLN:HB2	1.94	0.49
1:B:1:CYS:N	1:B:172:ASN:HD21	2.11	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:173:GLN:NE2	1:B:173:GLN:H	2.11	0.48
1:A:90:HIS:CD2	1:A:131:ILE:CD1	2.96	0.48
1:B:62:ASP:CG	1:B:62:ASP:O	2.51	0.48
1:B:173:GLN:H	1:B:173:GLN:HE21	1.62	0.48
1:A:80:LEU:N	1:A:80:LEU:CD2	2.76	0.48
1:B:110:ARG:NH1	2:B:388:HOH:O	2.46	0.48
1:A:37:HIS:CD2	1:A:39:ASP:OD1	2.67	0.47
1:A:158:ASP:OD1	1:A:161:HIS:CE1	2.66	0.47
1:A:171:THR:HG21	1:A:222:SER:O	2.12	0.47
1:A:254:GLY:CA	1:A:257:GLN:HB3	2.38	0.47
1:A:60:MET:O	1:A:61:ALA:HB3	2.14	0.47
1:B:104:PHE:O	1:B:108:VAL:HG13	2.14	0.47
1:B:265:MET:HE1	1:B:271:GLU:HG3	1.97	0.47
1:B:304:TYR:CB	1:B:306:MET:HE3	2.45	0.47
1:A:1:CYS:N	1:A:172:ASN:HD21	2.12	0.46
1:A:287:TYR:HA	1:A:297:ARG:O	2.16	0.46
1:B:301:MET:HB2	1:B:301:MET:HE2	1.82	0.46
1:B:305:ASP:O	1:B:308:SER:HB3	2.15	0.46
1:A:128:VAL:C	1:A:128:VAL:HB	2.33	0.46
1:B:72:GLU:HB3	1:B:301:MET:CE	2.46	0.46
1:A:79:GLY:C	1:A:80:LEU:CD2	2.80	0.46
1:B:1:CYS:HB3	1:B:80:LEU:HD22	1.98	0.46
1:A:38:TYR:OH	1:A:103:GLU:OE1	2.26	0.45
1:A:302:ALA:O	1:A:303:ASP:OD1	2.34	0.45
1:A:28:THR:HG21	1:A:313:SER:OG	2.16	0.45
1:A:300:ALA:O	1:A:303:ASP:HB2	2.16	0.45
1:A:64:PRO:HG2	1:A:106:LEU:HD22	1.98	0.44
1:A:172:ASN:HB2	1:A:222:SER:HB2	1.98	0.44
1:B:133:PRO:HA	1:B:134:GLY:HA2	1.70	0.44
1:A:1:CYS:H2	1:A:172:ASN:HD21	1.65	0.44
1:A:13:THR:HB	1:A:281:SER:HB3	2.00	0.44
1:B:172:ASN:ND2	1:B:225:ARG:HH22	2.14	0.44
1:A:100:ALA:O	1:A:103:GLU:HG2	2.18	0.43
1:A:283:THR:O	1:A:284:ASN:C	2.56	0.43
1:A:90:HIS:CD2	1:A:131:ILE:HD12	2.52	0.43
1:A:74:GLY:HA2	1:A:279:TYR:OH	2.18	0.43
1:A:104:PHE:HB3	1:A:105:PRO:HD3	2.01	0.43
1:B:19:LEU:HD22	1:B:275:PHE:CE2	2.54	0.43
1:A:44:ALA:HB2	1:A:98:ASN:O	2.18	0.43
1:B:22:SER:N	1:B:265:MET:CE	2.76	0.43
1:A:189:VAL:HG13	1:A:213:MET:HA	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:72:GLU:HB3	1:B:301:MET:HE3	2.00	0.43
1:B:28:THR:HG23	1:B:29:ILE:O	2.18	0.42
1:B:23:PHE:HD2	1:B:24:SER:O	2.03	0.42
1:A:28:THR:HG23	1:A:29:ILE:O	2.19	0.42
1:A:59:VAL:O	1:A:59:VAL:HG23	2.20	0.42
1:A:293:ASP:HA	1:A:294:PRO:HD2	1.94	0.42
1:A:5:ARG:HA	1:A:14:TYR:O	2.20	0.42
1:A:20:ASP:HA	1:A:272:ARG:O	2.20	0.42
1:A:276:THR:O	1:A:288:MET:HA	2.19	0.42
1:B:82:PHE:N	1:B:83:PRO:CD	2.82	0.42
1:A:22:SER:OG	1:A:265:MET:HE1	2.20	0.42
1:B:174:PRO:HG2	1:B:178:PHE:CG	2.55	0.42
1:A:28:THR:CG2	1:A:29:ILE:O	2.68	0.41
1:A:90:HIS:CD2	1:A:131:ILE:HD11	2.54	0.41
1:A:35:GLY:N	1:A:308:SER:O	2.54	0.41
1:B:67:PHE:N	1:B:67:PHE:HD1	2.17	0.41
1:B:193:MET:CE	1:B:206:ALA:HB3	2.50	0.41
1:A:121:THR:O	1:A:125:VAL:HG23	2.19	0.41
1:A:17:ARG:CD	1:A:17:ARG:C	2.89	0.41
1:B:81:ASN:HD22	1:B:81:ASN:HA	1.70	0.41
1:B:100:ALA:O	1:B:103:GLU:HG2	2.21	0.41
1:A:257:GLN:NE2	2:A:378:HOH:O	2.54	0.40
1:B:189:VAL:HG11	1:B:216:ILE:HG12	2.03	0.40
1:B:222:SER:HB3	1:B:223:PRO:HD3	2.02	0.40
1:A:22:SER:H	1:A:265:MET:HE1	1.86	0.40
1:A:90:HIS:HD2	1:A:129:SER:O	2.04	0.40
1:A:254:GLY:C	1:A:257:GLN:H	2.25	0.40
1:A:128:VAL:C	1:A:128:VAL:N	2.66	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	314/316 (99%)	297 (95%)	14 (4%)	3 (1%)	15 17
1	B	314/316 (99%)	302 (96%)	9 (3%)	3 (1%)	15 17
All	All	628/632 (99%)	599 (95%)	23 (4%)	6 (1%)	15 17

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	304	TYR
1	A	303	ASP
1	B	303	ASP
1	A	82	PHE
1	B	82	PHE
1	B	174	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	263/263 (100%)	239 (91%)	24 (9%)	9 11
1	B	263/263 (100%)	240 (91%)	23 (9%)	10 12
All	All	526/526 (100%)	479 (91%)	47 (9%)	9 11

All (47) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	9	ASP
1	A	17	ARG
1	A	19	LEU
1	A	28	THR
1	A	39	ASP
1	A	53	VAL
1	A	60	MET
1	A	68	ASP
1	A	80	LEU
1	A	101	THR

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Mol	Chain	Res	Type
1	A	110	ARG
1	A	123	ARG
1	A	129	SER
1	A	136	GLN
1	A	141	HIS
1	A	169	VAL
1	A	171	THR
1	A	238	GLN
1	A	286	TYR
1	A	304	TYR
1	A	311	LEU
1	A	312	ILE
1	A	314	VAL
1	A	316	ARG
1	B	7	SER
1	B	17	ARG
1	B	19	LEU
1	B	28	THR
1	B	49	LYS
1	B	53	VAL
1	B	68	ASP
1	B	81	ASN
1	B	101	THR
1	B	110	ARG
1	B	141	HIS
1	B	169	VAL
1	B	171	THR
1	B	173	GLN
1	B	240	ASN
1	B	257	GLN
1	B	286	TYR
1	B	297	ARG
1	B	305	ASP
1	B	308	SER
1	B	311	LEU
1	B	314	VAL
1	B	316	ARG

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (23) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	18	ASN

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Mol	Chain	Res	Type
1	A	37	HIS
1	A	81	ASN
1	A	90	HIS
1	A	111	ASN
1	A	135	GLN
1	A	161	HIS
1	A	172	ASN
1	A	235	HIS
1	A	245	ASN
1	A	251	HIS
1	A	257	GLN
1	A	284	ASN
1	B	18	ASN
1	B	81	ASN
1	B	90	HIS
1	B	111	ASN
1	B	161	HIS
1	B	172	ASN
1	B	173	GLN
1	B	240	ASN
1	B	245	ASN
1	B	284	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 (i)

There are no such residues in this entry.

5.8 Polymer linkage issues (i)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	A	2
1	B	1

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	127:LEU	C	128:VAL	N	1.66
1	A	315:ALA	C	316:ARG	N	1.19
1	B	315:ALA	C	316:ARG	N	1.15

6 Fit of model and data

6.1 Protein, DNA and RNA chains

Unable to reproduce the depositors R factor - this section is therefore empty.

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

Unable to reproduce the depositors R factor - this section is therefore empty.

6.3 Carbohydrates

Unable to reproduce the depositors R factor - this section is therefore empty.

6.4 Ligands

Unable to reproduce the depositors R factor - this section is therefore empty.

6.5 Other polymers

Unable to reproduce the depositors R factor - this section is therefore empty.