Full wwPDB X-ray Structure Validation Report ⓘ

Aug 3, 2025 – 10:07 PM JST

PDB ID	:	9LNF / pdb_00009lnf
Title	:	Crystal structure of SpoIVB_101-426-S378A
Authors	:	Jiang, L.G.; Zhu, J.; Huang, M.D.
Deposited on	:	2025-01-21
Resolution	:	2.49 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:

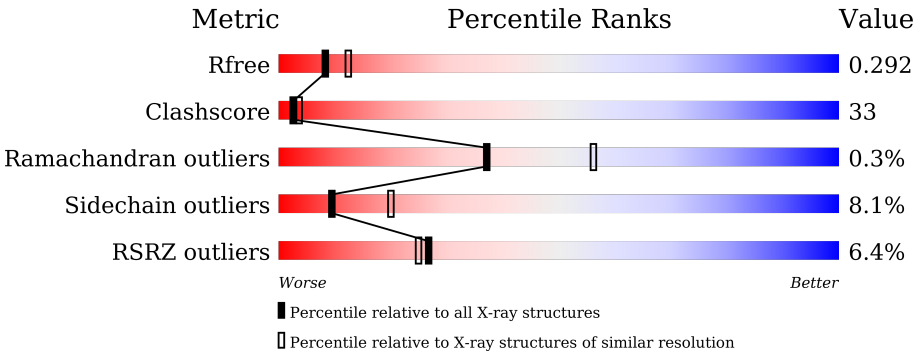
MolProbity	:	4-5-2 with Phenix2.0rc1
Xtriage (Phenix)	:	2.0rc1
EDS	:	3.0
Percentile statistics	:	20231227.v01 (using entries in the PDB archive December 27th 2023)
CCP4	:	9.0.006 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.45.1

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 2.49 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	5504 (2.50-2.50)
Clashscore	180529	6282 (2.50-2.50)
Ramachandran outliers	177936	6191 (2.50-2.50)
Sidechain outliers	177891	6193 (2.50-2.50)
RSRZ outliers	164620	5504 (2.50-2.50)

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	330	6% 63% 32% 5%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 2509 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 SpoIVB peptidase 42 kDa isoform.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	330	Total	C	N	O	S	0	0	0
			2497	1583	426	480	8			

There are 6 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-4	ARG	-	expression tag	UNP P17896
A	-3	HIS	-	expression tag	UNP P17896
A	-2	MET	-	expression tag	UNP P17896
A	-1	GLY	-	expression tag	UNP P17896
A	378	ALA	SER	conflict	UNP P17896
A	380	ALA	SER	conflict	UNP P17896

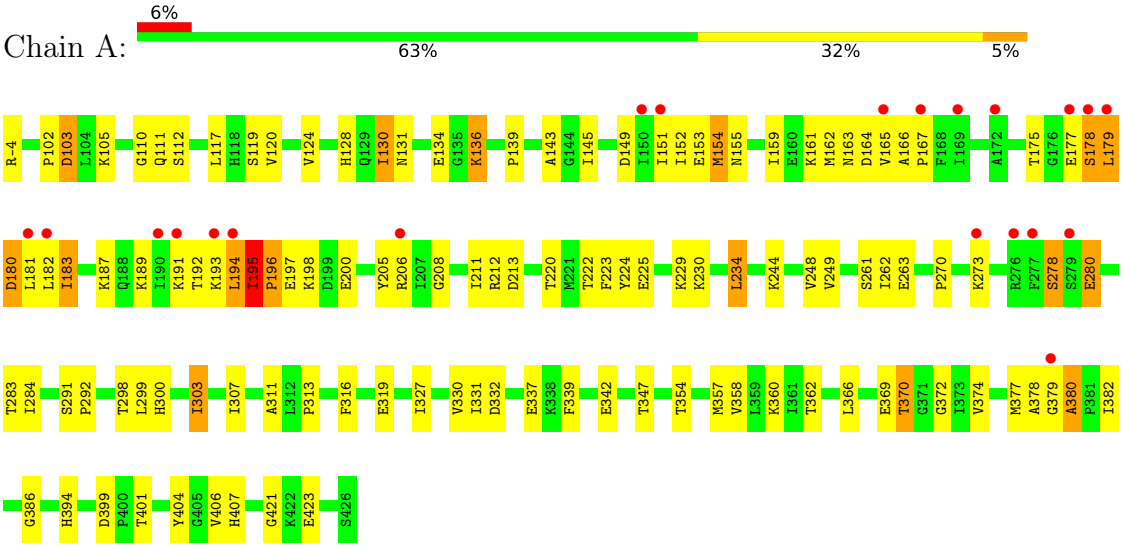
- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	12	Total	O	0	0
			12	12		

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: SpoIVB peptidase 42 kDa isoform



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 62	Depositor
Cell constants a, b, c, α, β, γ	72.19Å 72.19Å 108.44Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	23.63 – 2.49 23.63 – 2.49	Depositor EDS
% Data completeness (in resolution range)	99.8 (23.63-2.49) 99.8 (23.63-2.49)	Depositor EDS
R_{merge}	0.12	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.61 (at 2.51Å)	Xtriage
Refinement program	PHENIX (1.19.2_4158: ???)	Depositor
R, R_{free}	0.236 , 0.287 0.246 , 0.292	Depositor DCC
R_{free} test set	544 reflections (4.86%)	wwPDB-VP
Wilson B-factor (Å^2)	64.1	Xtriage
Anisotropy	0.312	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.35 , 78.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.50$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.075 for h,-h-k,-l	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	2509	wwPDB-VP
Average B, all atoms (Å^2)	91.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.42% 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	0.90	4/2538 (0.2%)	1.23	8/3418 (0.2%)

All (4) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	196	PRO	N-CA	18.39	1.69	1.47
1	A	380	ALA	C-N	12.82	1.49	1.33
1	A	225	GLU	C-N	12.44	1.50	1.34
1	A	195	ILE	C-N	8.84	1.45	1.33

All (8) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	195	ILE	CA-C-N	19.79	140.15	119.76
1	A	195	ILE	C-N-CA	19.79	140.15	119.76
1	A	225	GLU	CA-C-N	13.34	133.85	119.05
1	A	225	GLU	C-N-CA	13.34	133.85	119.05
1	A	380	ALA	CA-C-N	11.49	132.31	120.14
1	A	380	ALA	C-N-CA	11.49	132.31	120.14
1	A	196	PRO	CA-N-CD	-8.32	100.35	112.00
1	A	380	ALA	O-C-N	-5.61	114.87	121.32

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	2497	0	2577	169	0
2	A	12	0	0	3	0
All	All	2509	0	2577	169	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 33.

All (169) 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:182:LEU:HD13	1:A:191:LYS:CE	1.25	1.48
1:A:182:LEU:CD1	1:A:191:LYS:CD	1.90	1.47
1:A:196:PRO:N	1:A:196:PRO:CA	1.69	1.40
1:A:182:LEU:HD13	1:A:191:LYS:CD	1.55	1.33
1:A:143:ALA:CB	1:A:194:LEU:HD22	1.60	1.32
1:A:182:LEU:CD1	1:A:191:LYS:HE2	1.27	1.26
1:A:179:LEU:HB2	1:A:194:LEU:O	1.43	1.16
1:A:143:ALA:HB1	1:A:194:LEU:HD22	1.32	1.10
1:A:182:LEU:CD1	1:A:191:LYS:CG	2.32	1.07
1:A:182:LEU:HD13	1:A:191:LYS:CG	1.84	1.05
1:A:182:LEU:CD1	1:A:191:LYS:HD3	1.78	1.04
1:A:182:LEU:HD12	1:A:191:LYS:CD	1.87	1.03
1:A:234:LEU:O	1:A:378:ALA:O	1.77	1.02
1:A:130:ILE:HG21	1:A:206:ARG:HB3	1.41	1.00
1:A:182:LEU:HD22	1:A:191:LYS:CE	1.76	0.98
1:A:143:ALA:HB1	1:A:192:THR:CG2	1.93	0.98
1:A:182:LEU:CD1	1:A:191:LYS:HG2	1.92	0.98
1:A:179:LEU:O	1:A:193:LYS:HA	1.66	0.95
1:A:154:MET:HE1	1:A:165:VAL:HG22	1.49	0.95
1:A:136:LYS:HZ2	1:A:136:LYS:HB3	1.31	0.93
1:A:162:MET:HE2	1:A:213:ASP:N	1.83	0.93
1:A:182:LEU:CD1	1:A:191:LYS:CE	1.82	0.93
1:A:143:ALA:O	1:A:192:THR:HG23	1.70	0.91
1:A:283:THR:HG22	1:A:300:HIS:HE1	1.33	0.91
1:A:182:LEU:CD2	1:A:191:LYS:HE2	1.83	0.90
1:A:143:ALA:HB1	1:A:192:THR:HG22	1.53	0.90
1:A:130:ILE:CG2	1:A:206:ARG:CG	2.52	0.88
1:A:130:ILE:HG21	1:A:206:ARG:CB	2.03	0.88
1:A:182:LEU:HD12	1:A:191:LYS:CG	2.02	0.86
1:A:128:HIS:NE2	1:A:206:ARG:CZ	2.39	0.86
1:A:229:LYS:NZ	1:A:300:HIS:O	2.09	0.86
1:A:111:GLN:NE2	1:A:303:ILE:HD12	1.91	0.85

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:143:ALA:CB	1:A:194:LEU:CD2	2.53	0.83
1:A:130:ILE:HG21	1:A:206:ARG:CG	2.09	0.82
1:A:151:ILE:HG12	1:A:183:ILE:HD12	1.61	0.82
1:A:182:LEU:HD12	1:A:191:LYS:HD3	1.47	0.81
1:A:307:ILE:CD1	1:A:337:GLU:HA	2.10	0.81
1:A:130:ILE:CG2	1:A:206:ARG:HG2	2.09	0.81
1:A:130:ILE:HG22	1:A:206:ARG:HG2	1.63	0.80
1:A:130:ILE:CG2	1:A:206:ARG:HB3	2.12	0.80
1:A:128:HIS:CD2	1:A:206:ARG:NH2	2.49	0.79
1:A:143:ALA:HB2	1:A:194:LEU:HD22	1.63	0.78
1:A:128:HIS:NE2	1:A:206:ARG:NH2	2.31	0.78
1:A:182:LEU:HD12	1:A:191:LYS:HG2	1.64	0.77
1:A:143:ALA:HB1	1:A:192:THR:HG21	1.67	0.77
1:A:143:ALA:C	1:A:192:THR:HG21	2.11	0.75
1:A:307:ILE:HD12	1:A:337:GLU:HA	1.66	0.75
1:A:162:MET:HE2	1:A:213:ASP:H	1.48	0.75
1:A:139:PRO:HB3	1:A:194:LEU:HD12	1.68	0.74
1:A:139:PRO:CB	1:A:194:LEU:HD12	2.18	0.74
1:A:103:ASP:OD1	1:A:103:ASP:N	2.13	0.73
1:A:182:LEU:CA	1:A:191:LYS:HD3	2.01	0.73
1:A:339:PHE:CE1	1:A:366:LEU:HD13	2.22	0.73
1:A:143:ALA:O	1:A:192:THR:CG2	2.37	0.73
1:A:182:LEU:HD13	1:A:191:LYS:HG2	1.64	0.73
1:A:182:LEU:HA	1:A:191:LYS:HD3	1.70	0.73
1:A:220:THR:O	1:A:379:GLY:HA3	1.89	0.72
1:A:198:LYS:HA	1:A:205:TYR:HA	1.72	0.71
1:A:291:SER:OG	1:A:292:PRO:HD2	1.90	0.71
1:A:143:ALA:HB1	1:A:194:LEU:CD2	2.17	0.71
1:A:143:ALA:C	1:A:192:THR:CG2	2.65	0.70
1:A:131:ASN:HD22	1:A:200:GLU:HG3	1.56	0.70
1:A:181:LEU:HD13	1:A:183:ILE:HD11	1.74	0.69
1:A:283:THR:HG22	1:A:300:HIS:CE1	2.22	0.69
1:A:130:ILE:CG2	1:A:206:ARG:CB	2.70	0.69
1:A:143:ALA:CB	1:A:192:THR:HG21	2.22	0.69
1:A:-4:ARG:NH2	2:A:501:HOH:O	2.25	0.68
1:A:181:LEU:HD12	1:A:181:LEU:O	1.94	0.68
1:A:339:PHE:CD1	1:A:366:LEU:HD13	2.28	0.67
1:A:136:LYS:HB3	1:A:136:LYS:NZ	2.00	0.67
1:A:178:SER:HA	1:A:195:ILE:HG23	1.77	0.67
1:A:128:HIS:CD2	1:A:206:ARG:CZ	2.77	0.67
1:A:111:GLN:NE2	1:A:303:ILE:CD1	2.58	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:154:MET:HA	1:A:181:LEU:HB3	1.78	0.66
1:A:149:ASP:HB3	1:A:183:ILE:HG21	1.76	0.65
1:A:354:THR:N	2:A:503:HOH:O	2.26	0.65
1:A:162:MET:CE	1:A:213:ASP:H	2.09	0.65
1:A:143:ALA:CB	1:A:192:THR:CG2	2.72	0.65
1:A:162:MET:HE3	1:A:213:ASP:OD1	1.97	0.63
1:A:182:LEU:HD13	1:A:191:LYS:HE2	0.92	0.62
1:A:220:THR:HB	1:A:380:ALA:N	2.14	0.61
1:A:139:PRO:C	1:A:194:LEU:HD13	2.26	0.60
1:A:278:SER:O	1:A:278:SER:OG	2.18	0.60
1:A:151:ILE:HG22	1:A:151:ILE:O	2.01	0.59
1:A:370:THR:OG1	1:A:372:GLY:O	2.20	0.59
1:A:154:MET:HG3	1:A:181:LEU:HD23	1.85	0.59
1:A:143:ALA:HB3	1:A:194:LEU:HD22	1.76	0.58
1:A:399:ASP:OD1	1:A:401:THR:OG1	2.22	0.58
1:A:291:SER:OG	1:A:292:PRO:CD	2.51	0.58
1:A:357:MET:HE2	1:A:407:HIS:CD2	2.39	0.58
1:A:111:GLN:HE22	1:A:303:ILE:HD12	1.68	0.57
1:A:162:MET:HG3	1:A:213:ASP:HB3	1.87	0.56
1:A:143:ALA:HB2	1:A:194:LEU:CB	2.35	0.56
1:A:220:THR:HG21	1:A:380:ALA:HA	1.88	0.56
1:A:331:ILE:HD12	1:A:369:GLU:HG2	1.87	0.56
1:A:222:THR:OG1	1:A:379:GLY:O	2.19	0.56
1:A:143:ALA:HB2	1:A:194:LEU:HB3	1.87	0.56
1:A:155:ASN:H	1:A:181:LEU:HA	1.71	0.56
1:A:180:ASP:HA	1:A:193:LYS:HA	1.87	0.56
1:A:307:ILE:HD11	1:A:337:GLU:HA	1.85	0.55
1:A:423:GLU:N	1:A:423:GLU:OE1	2.40	0.55
1:A:131:ASN:HD22	1:A:200:GLU:CG	2.21	0.54
1:A:327:ILE:HG13	1:A:339:PHE:HB2	1.89	0.54
1:A:374:VAL:HG22	1:A:377:MET:HE3	1.89	0.54
1:A:105:LYS:HB3	1:A:311:ALA:HB1	1.89	0.54
1:A:117:LEU:CD2	1:A:249:VAL:HG22	2.38	0.53
1:A:179:LEU:O	1:A:194:LEU:N	2.41	0.53
1:A:143:ALA:HB2	1:A:194:LEU:CD2	2.32	0.53
1:A:120:VAL:HG12	1:A:152:ILE:HG22	1.90	0.53
1:A:179:LEU:CB	1:A:194:LEU:O	2.37	0.53
1:A:139:PRO:CB	1:A:194:LEU:CD1	2.86	0.52
1:A:124:VAL:HA	1:A:211:ILE:HG22	1.92	0.52
1:A:261:SER:OG	1:A:263:GLU:OE2	2.22	0.52
1:A:128:HIS:HB3	1:A:208:GLY:C	2.35	0.52

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:143:ALA:HB2	1:A:194:LEU:CG	2.40	0.51
1:A:222:THR:HG22	1:A:223:PHE:HD1	1.73	0.51
1:A:339:PHE:CD1	1:A:366:LEU:HB2	2.46	0.50
1:A:182:LEU:HD21	1:A:189:LYS:HD3	1.92	0.49
1:A:273:LYS:HD2	1:A:374:VAL:HG23	1.95	0.49
1:A:143:ALA:HB2	1:A:194:LEU:HD13	1.94	0.49
1:A:347:THR:O	1:A:407:HIS:HE1	1.95	0.49
1:A:339:PHE:CE1	1:A:366:LEU:CD1	2.94	0.49
1:A:112:SER:H	1:A:330:VAL:HG21	1.79	0.48
1:A:197:GLU:O	1:A:205:TYR:HD1	1.97	0.48
1:A:161:LYS:HE2	1:A:163:ASN:HB2	1.96	0.48
1:A:316:PHE:N	1:A:319:GLU:OE2	2.31	0.48
1:A:197:GLU:OE2	1:A:197:GLU:HA	2.14	0.47
1:A:139:PRO:HB2	1:A:194:LEU:CD1	2.45	0.47
1:A:119:SER:HA	1:A:248:VAL:O	2.15	0.47
1:A:154:MET:HA	1:A:181:LEU:CB	2.43	0.47
1:A:143:ALA:CB	1:A:194:LEU:HB3	2.45	0.46
1:A:179:LEU:HD23	1:A:179:LEU:HA	1.74	0.46
1:A:139:PRO:HB2	1:A:194:LEU:HD12	1.95	0.45
1:A:358:VAL:HG22	1:A:404:TYR:CE1	2.52	0.45
1:A:342:GLU:HG3	1:A:362:THR:HG21	1.99	0.45
1:A:130:ILE:HG22	1:A:206:ARG:CG	2.31	0.45
1:A:360:LYS:NZ	1:A:401:THR:OG1	2.49	0.45
1:A:153:GLU:HG2	1:A:182:LEU:HB3	1.99	0.45
1:A:262:ILE:HD12	1:A:369:GLU:O	2.16	0.45
1:A:283:THR:O	1:A:300:HIS:ND1	2.50	0.45
1:A:284:ILE:HG13	1:A:299:LEU:HD22	1.98	0.45
1:A:130:ILE:HG21	1:A:206:ARG:HG3	1.94	0.44
1:A:117:LEU:HD22	1:A:249:VAL:HG22	1.99	0.44
1:A:262:ILE:CD1	1:A:369:GLU:HG3	2.47	0.44
1:A:179:LEU:O	1:A:193:LYS:CA	2.51	0.44
1:A:182:LEU:HD11	1:A:189:LYS:HB3	2.00	0.44
1:A:166:ALA:N	1:A:167:PRO:HD2	2.33	0.43
1:A:102:PRO:O	1:A:421:GLY:HA3	2.18	0.43
1:A:280:GLU:H	1:A:280:GLU:HG3	1.49	0.43
1:A:162:MET:HE2	1:A:212:ARG:C	2.41	0.43
1:A:196:PRO:N	1:A:196:PRO:C	2.65	0.43
1:A:244:LYS:HB3	1:A:244:LYS:HE3	1.56	0.42
1:A:117:LEU:HD21	1:A:249:VAL:HG22	2.01	0.42
1:A:162:MET:HE3	1:A:213:ASP:CG	2.44	0.42
1:A:339:PHE:CZ	1:A:366:LEU:HD13	2.54	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:111:GLN:OE1	1:A:111:GLN:N	2.41	0.42
1:A:149:ASP:HB3	1:A:183:ILE:CG2	2.44	0.42
1:A:313:PRO:HD2	1:A:386:GLY:O	2.19	0.42
1:A:347:THR:O	1:A:407:HIS:CE1	2.71	0.42
1:A:327:ILE:HG22	1:A:382:ILE:HG12	2.00	0.42
1:A:394:HIS:HB2	1:A:404:TYR:HB2	2.01	0.41
1:A:130:ILE:HG13	1:A:197:GLU:HB2	2.01	0.41
1:A:159:ILE:HG23	1:A:164:ASP:CB	2.50	0.41
1:A:110:GLY:O	1:A:330:VAL:HG23	2.20	0.41
1:A:182:LEU:HA	1:A:191:LYS:HA	2.02	0.41
1:A:130:ILE:CG2	1:A:206:ARG:HG3	2.48	0.41
1:A:224:TYR:HA	1:A:230:LYS:O	2.20	0.41
1:A:406:VAL:HA	2:A:505:HOH:O	2.21	0.40
1:A:182:LEU:HD22	1:A:191:LYS:HE2	1.62	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	328/330 (99%)	310 (94%)	17 (5%)	1 (0%)	37 56

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	270	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	273/273 (100%)	251 (92%)	22 (8%)	9 20

All (22) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	103	ASP
1	A	130	ILE
1	A	134	GLU
1	A	136	LYS
1	A	145	ILE
1	A	154	MET
1	A	175	THR
1	A	177	GLU
1	A	178	SER
1	A	179	LEU
1	A	180	ASP
1	A	183	ILE
1	A	187	LYS
1	A	194	LEU
1	A	195	ILE
1	A	234	LEU
1	A	278	SER
1	A	280	GLU
1	A	298	THR
1	A	303	ILE
1	A	332	ASP
1	A	370	THR

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (4) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	131	ASN
1	A	170	GLN
1	A	288	ASN
1	A	301	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	330/330 (100%)	0.35	21 (6%) 27 25	43, 80, 160, 201	0

All (21) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	177	GLU	4.8
1	A	178	SER	3.9
1	A	193	LYS	3.6
1	A	206	ARG	3.6
1	A	151	ILE	3.6
1	A	279	SER	3.5
1	A	273	LYS	2.8
1	A	194	LEU	2.7
1	A	172	ALA	2.6
1	A	190	ILE	2.5
1	A	276	ARG	2.5
1	A	277	PHE	2.5
1	A	179	LEU	2.5
1	A	182	LEU	2.3
1	A	191	LYS	2.2
1	A	150	ILE	2.2
1	A	379	GLY	2.2
1	A	167	PRO	2.1
1	A	165	VAL	2.1
1	A	181	LEU	2.0
1	A	169	ILE	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.