Full wwPDB X-ray Structure Validation Report ⓘ

Mar 17, 2026 – 10:57 PM UTC

PDB ID	:	6VIN / pdb_00006vin
Title	:	Crystallographic structure of the circularly permuted human Taspase1 protein
Authors	:	Martin-Garcia, J.M.; Fromme, P.
Deposited on	:	2020-01-13
Resolution	:	3.04 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:

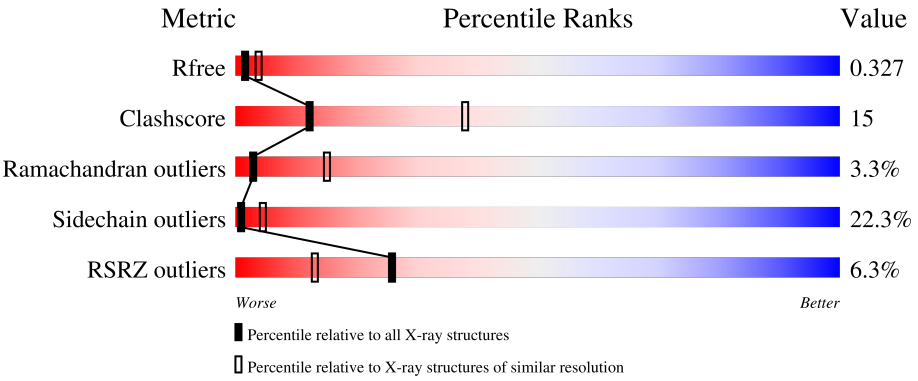
MolProbity	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

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 3.04 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}	180053	3685 (3.08-3.00)
Clashscore	190562	4007 (3.08-3.00)
Ramachandran outliers	187476	3834 (3.08-3.00)
Sidechain outliers	187428	3836 (3.08-3.00)
RSRZ outliers	180081	3684 (3.08-3.00)

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	389	5% 62% 24% 7% • 6%
1	B	389	7% 56% 29% 7% • 6%

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 10500 atoms, of which 5151 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 Threonine aspartase 1.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	364	Total	C	H	N	O	S	129	0	0
			5257	1659	2582	484	511	21			
1	B	364	Total	C	H	N	O	S	129	0	0
			5243	1659	2569	483	511	21			

There are 26 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	1	MET	-	initiating methionine	UNP Q9H6P5
A	185	GLY	-	linker	UNP Q9H6P5
A	186	SER	-	linker	UNP Q9H6P5
A	187	GLY	-	linker	UNP Q9H6P5
A	188	SER	-	linker	UNP Q9H6P5
A	382	LEU	-	expression tag	UNP Q9H6P5
A	383	GLU	-	expression tag	UNP Q9H6P5
A	384	HIS	-	expression tag	UNP Q9H6P5
A	385	HIS	-	expression tag	UNP Q9H6P5
A	386	HIS	-	expression tag	UNP Q9H6P5
A	387	HIS	-	expression tag	UNP Q9H6P5
A	388	HIS	-	expression tag	UNP Q9H6P5
A	389	HIS	-	expression tag	UNP Q9H6P5
B	1	MET	-	initiating methionine	UNP Q9H6P5
B	185	GLY	-	linker	UNP Q9H6P5
B	186	SER	-	linker	UNP Q9H6P5
B	187	GLY	-	linker	UNP Q9H6P5
B	188	SER	-	linker	UNP Q9H6P5
B	382	LEU	-	expression tag	UNP Q9H6P5
B	383	GLU	-	expression tag	UNP Q9H6P5
B	384	HIS	-	expression tag	UNP Q9H6P5
B	385	HIS	-	expression tag	UNP Q9H6P5
B	386	HIS	-	expression tag	UNP Q9H6P5
B	387	HIS	-	expression tag	UNP Q9H6P5
B	388	HIS	-	expression tag	UNP Q9H6P5

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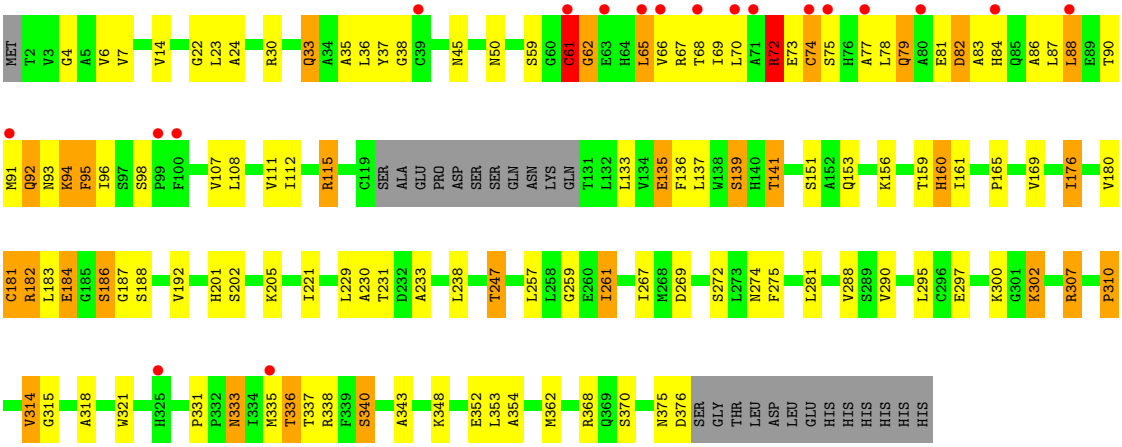
Chain	Residue	Modelled	Actual	Comment	Reference
B	389	HIS	-	expression tag	UNP Q9H6P5

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.

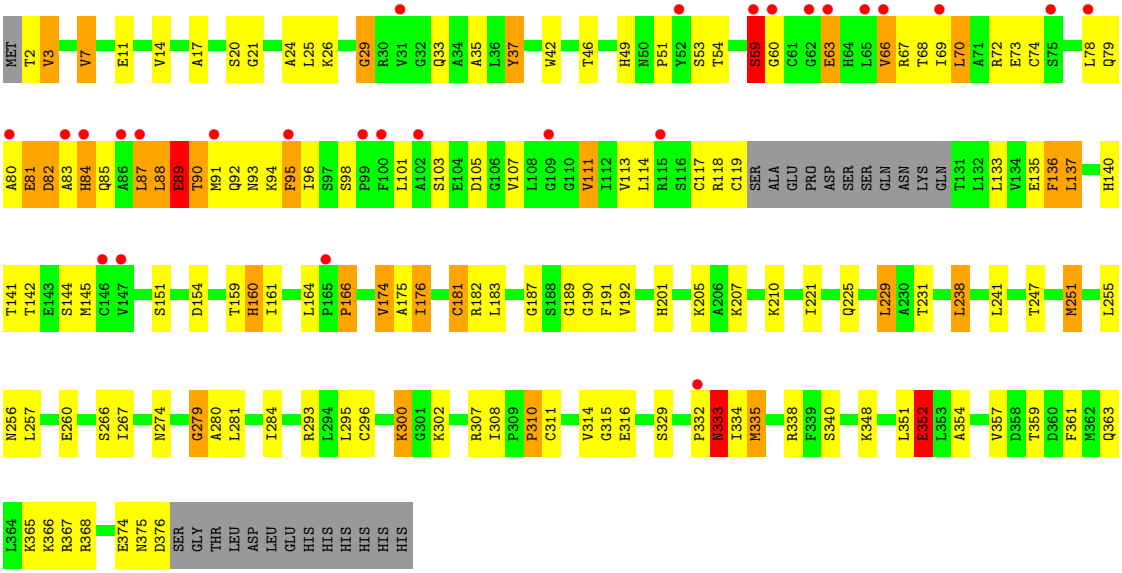
• Molecule 1: Threonine aspartase 1

Chain A:



• Molecule 1: Threonine aspartase 1

Chain B:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	H 3 2	Depositor
Cell constants a, b, c, α, β, γ	196.00Å 196.00Å 196.91Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	49.05 – 3.04 49.05 – 3.04	Depositor EDS
% Data completeness (in resolution range)	54.4 (49.05-3.04) 54.5 (49.05-3.04)	Depositor EDS
R_{merge}	0.07	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.37 (at 3.07Å)	Xtriage
Refinement program	REFMAC 5.8.0253	Depositor
R, R_{free}	0.237 , 0.307 0.266 , 0.327	Depositor DCC
R_{free} test set	1568 reflections (5.56%)	wwPDB-VP
Wilson B-factor (Å^2)	140.2	Xtriage
Anisotropy	0.261	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.36 , 134.9	EDS
L-test for twinning[2]	$< \|L\| > = 0.48$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	10500	wwPDB-VP
Average B, all atoms (Å^2)	165.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 6.48% 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	1.13	3/2718 (0.1%)	1.73	25/3667 (0.7%)
1	B	1.17	3/2718 (0.1%)	1.73	25/3668 (0.7%)
All	All	1.15	6/5436 (0.1%)	1.73	50/7335 (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	1
1	B	0	1
All	All	0	2

All (6) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	B	59	SER	C-N	16.07	1.56	1.33
1	A	165	PRO	C-O	-7.18	1.18	1.24
1	A	343	ALA	C-O	-5.71	1.17	1.24
1	A	331	PRO	C-O	-5.06	1.20	1.24
1	B	70	LEU	C-O	-5.06	1.18	1.24
1	B	29	GLY	C-O	-5.05	1.17	1.23

All (50) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	95	PHE	CA-CB-CG	11.67	125.47	113.80
1	B	59	SER	CA-C-N	-10.60	100.63	121.41
1	B	59	SER	C-N-CA	-10.60	100.63	121.41
1	A	68	THR	CB-CA-C	-9.97	94.51	110.85
1	A	335	MET	O-C-N	-9.09	112.49	122.12
1	B	300	LYS	CA-C-N	8.80	129.71	119.94

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	300	LYS	C-N-CA	8.80	129.71	119.94
1	A	23	LEU	CA-C-O	-8.68	111.44	121.16
1	B	49	HIS	CA-C-N	8.33	142.13	121.80
1	B	49	HIS	C-N-CA	8.33	142.13	121.80
1	B	59	SER	N-CA-C	7.86	118.62	108.24
1	B	66	VAL	N-CA-C	-7.42	103.56	110.53
1	A	74	CYS	N-CA-CB	7.31	120.58	109.98
1	A	73	GLU	N-CA-C	-7.24	103.54	112.38
1	B	46	THR	CB-CA-C	7.07	121.45	109.72
1	B	279	GLY	CA-C-O	-6.32	114.87	121.63
1	A	96	ILE	N-CA-CB	6.30	121.63	111.23
1	B	189	GLY	CA-C-N	6.00	129.19	121.27
1	B	189	GLY	C-N-CA	6.00	129.19	121.27
1	B	335	MET	N-CA-C	-5.99	104.75	111.28
1	A	318	ALA	CA-C-N	5.79	127.97	120.44
1	A	318	ALA	C-N-CA	5.79	127.97	120.44
1	A	72	ARG	CA-C-O	-5.78	114.75	120.82
1	A	82	ASP	N-CA-C	5.69	116.88	108.86
1	B	21	GLY	CA-C-N	5.66	131.53	121.01
1	B	21	GLY	C-N-CA	5.66	131.53	121.01
1	A	95	PHE	CA-C-O	-5.64	112.44	120.51
1	A	353	LEU	CA-C-O	-5.64	115.89	122.37
1	A	159	THR	CA-C-N	5.59	132.23	121.54
1	A	159	THR	C-N-CA	5.59	132.23	121.54
1	A	82	ASP	N-CA-CB	-5.55	102.04	111.31
1	A	353	LEU	O-C-N	5.53	129.04	122.46
1	B	352	GLU	N-CA-C	-5.50	104.98	110.97
1	A	4	GLY	CA-C-O	-5.47	116.17	121.75
1	A	318	ALA	N-CA-C	-5.38	105.42	111.28
1	A	22	GLY	CA-C-O	-5.31	117.69	122.57
1	B	63	GLU	CA-C-O	-5.30	115.43	121.00
1	A	73	GLU	O-C-N	-5.28	115.52	122.39
1	B	89	GLU	N-CA-C	-5.28	106.68	113.01
1	A	353	LEU	CA-C-N	5.25	131.56	121.54
1	A	353	LEU	C-N-CA	5.25	131.56	121.54
1	B	159	THR	CB-CA-C	5.22	120.81	110.42
1	B	82	ASP	N-CA-C	5.15	115.85	108.74
1	B	142	THR	CA-CB-OG1	-5.13	101.90	109.60
1	A	247	THR	CB-CA-C	-5.08	101.97	110.29
1	B	190	GLY	CA-C-O	-5.05	116.51	121.06
1	B	82	ASP	N-CA-CB	-5.03	102.81	111.21
1	A	368	ARG	N-CA-C	-5.03	105.89	112.23

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Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	B	159	THR	CA-C-N	5.02	131.13	121.54
1	B	159	THR	C-N-CA	5.02	131.13	121.54

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	72	ARG	Sidechain
1	B	375	ASN	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	2675	2582	2662	76	15
1	B	2674	2569	2656	102	10
All	All	5349	5151	5318	165	16

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 (165) 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:88:LEU:HG	1:B:91:MET:HB2	1.27	1.14
1:B:7:VAL:HG23	1:B:192:VAL:HG23	1.29	1.13
1:B:88:LEU:HG	1:B:91:MET:CB	1.91	1.00
1:A:70:LEU:HD11	1:A:91:MET:HG3	1.45	0.98
1:B:51:PRO:HD2	1:B:79:GLN:OE1	1.68	0.93
1:B:7:VAL:CG2	1:B:192:VAL:HG23	2.00	0.92
1:A:95:PHE:CE2	1:A:107:VAL:HG12	2.06	0.91
1:A:50:ASN:OD1	1:A:79:GLN:NE2	2.05	0.89
1:B:88:LEU:CG	1:B:91:MET:HB2	2.02	0.88
1:B:84:HIS:CD2	1:B:137:LEU:HD21	2.10	0.85
1:A:59:SER:C	1:A:65:LEU:HD21	2.02	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:72:ARG:NH2	1:B:68:THR:O	2.12	0.83
1:A:78:LEU:HD23	1:A:86:ALA:O	1.80	0.81
1:B:137:LEU:HD12	1:B:137:LEU:N	1.96	0.80
1:B:251:MET:HE2	1:B:334:ILE:HG22	1.65	0.76
1:A:302:LYS:HA	1:A:302:LYS:HE2	1.66	0.76
1:A:95:PHE:CD2	1:A:107:VAL:CG1	2.68	0.76
1:A:33:GLN:CD	1:A:65:LEU:HD13	2.11	0.75
1:A:72:ARG:HD2	1:B:69:ILE:HD12	1.69	0.75
1:B:88:LEU:HD21	1:B:92:GLN:HG3	1.67	0.75
1:B:83:ALA:HB3	1:B:84:HIS:HD2	1.53	0.73
1:B:88:LEU:HA	1:B:91:MET:HB2	1.69	0.73
1:A:33:GLN:NE2	1:A:65:LEU:HD13	2.03	0.72
1:B:83:ALA:HB3	1:B:84:HIS:CD2	2.24	0.71
1:A:74:CYS:SG	1:A:90:THR:OG1	2.38	0.71
1:A:69:ILE:CD1	1:B:72:ARG:CD	2.69	0.70
1:B:89:GLU:HG2	1:B:93:ASN:HD22	1.56	0.69
1:A:302:LYS:O	1:A:302:LYS:HG3	1.93	0.69
1:A:95:PHE:CD2	1:A:107:VAL:HG12	2.28	0.69
1:B:63:GLU:OE1	1:B:63:GLU:HA	1.92	0.67
1:B:88:LEU:HD11	1:B:174:VAL:HG21	1.78	0.66
1:A:95:PHE:CE2	1:A:107:VAL:CG1	2.79	0.66
1:B:74:CYS:O	1:B:78:LEU:HD12	1.97	0.65
1:A:82:ASP:OD1	1:A:83:ALA:N	2.28	0.64
1:B:88:LEU:HD11	1:B:174:VAL:CG2	2.27	0.64
1:B:79:GLN:OE1	1:B:79:GLN:HA	1.97	0.64
1:B:84:HIS:CD2	1:B:84:HIS:N	2.65	0.64
1:B:284:ILE:O	1:B:335:MET:HE1	1.98	0.64
1:B:136:PHE:C	1:B:137:LEU:HD12	2.23	0.63
1:B:164:LEU:HD23	1:B:175:ALA:CB	2.29	0.63
1:A:69:ILE:HD12	1:B:72:ARG:NE	2.14	0.63
1:A:38:GLY:C	1:A:69:ILE:HG23	2.24	0.62
1:B:68:THR:HG21	1:B:95:PHE:CD1	2.35	0.62
1:B:144:SER:OG	1:B:161:ILE:HD11	1.99	0.61
1:A:75:SER:HA	1:A:78:LEU:HD12	1.81	0.61
1:B:251:MET:HE2	1:B:334:ILE:CG2	2.32	0.60
1:A:314:VAL:HG11	1:B:314:VAL:HG21	1.83	0.58
1:B:70:LEU:C	1:B:70:LEU:HD23	2.29	0.58
1:B:284:ILE:O	1:B:335:MET:CE	2.52	0.58
1:A:107:VAL:HG12	1:A:107:VAL:O	2.03	0.57
1:B:333:ASN:C	1:B:333:ASN:ND2	2.62	0.57
1:B:88:LEU:CA	1:B:91:MET:HB2	2.35	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:107:VAL:HG12	1:B:107:VAL:O	2.05	0.56
1:B:84:HIS:HA	1:B:137:LEU:CD2	2.35	0.56
1:B:88:LEU:CD2	1:B:92:GLN:HG3	2.33	0.56
1:B:92:GLN:HA	1:B:96:ILE:HB	1.87	0.55
1:A:95:PHE:CD2	1:A:107:VAL:HG11	2.42	0.55
1:A:352:GLU:HA	1:A:352:GLU:OE1	2.07	0.55
1:B:88:LEU:HA	1:B:91:MET:CB	2.37	0.55
1:B:164:LEU:HD23	1:B:175:ALA:HB2	1.88	0.55
1:B:88:LEU:CD2	1:B:92:GLN:CG	2.85	0.54
1:B:181:CYS:SG	1:B:182:ARG:N	2.81	0.54
1:A:281:LEU:HD21	1:A:290:VAL:HG21	1.89	0.53
1:B:83:ALA:CB	1:B:84:HIS:HD2	2.21	0.53
1:A:69:ILE:HD12	1:B:72:ARG:CD	2.38	0.53
1:A:267:ILE:HG23	1:A:295:LEU:HD12	1.91	0.53
1:B:174:VAL:HG22	1:B:174:VAL:O	2.08	0.53
1:A:141:THR:O	1:A:141:THR:OG1	2.23	0.52
1:A:69:ILE:CD1	1:B:72:ARG:HD3	2.39	0.52
1:A:83:ALA:HB2	1:A:135:GLU:OE1	2.09	0.52
1:B:2:THR:HG23	1:B:20:SER:HB2	1.91	0.52
1:B:89:GLU:O	1:B:93:ASN:HB2	2.09	0.52
1:B:88:LEU:C	1:B:91:MET:H	2.18	0.52
1:A:83:ALA:HA	1:A:115:ARG:NH2	2.26	0.51
1:A:139:SER:HB2	1:A:176:ILE:HG23	1.92	0.51
1:B:352:GLU:HA	1:B:352:GLU:OE2	2.11	0.51
1:A:297:GLU:OE1	1:A:297:GLU:HA	2.10	0.51
1:A:37:TYR:HA	1:A:275:PHE:CZ	2.46	0.51
1:B:88:LEU:O	1:B:88:LEU:HD23	2.11	0.51
1:A:307:ARG:NH2	1:B:351:LEU:HD11	2.25	0.51
1:B:136:PHE:CD1	1:B:191:PHE:CZ	2.99	0.50
1:A:267:ILE:HG23	1:A:295:LEU:CD1	2.42	0.50
1:B:357:VAL:O	1:B:357:VAL:HG12	2.11	0.50
1:B:7:VAL:CG2	1:B:192:VAL:CG2	2.84	0.50
1:A:77:ALA:O	1:A:86:ALA:HB1	2.12	0.49
1:B:84:HIS:CD2	1:B:137:LEU:CD2	2.90	0.49
1:B:164:LEU:HD23	1:B:175:ALA:HB3	1.94	0.49
1:A:36:LEU:HD12	1:A:66:VAL:HG22	1.95	0.49
1:A:61:CYS:SG	1:A:62:GLY:N	2.84	0.49
1:B:95:PHE:N	1:B:98:SER:OG	2.46	0.49
1:A:90:THR:HA	1:A:94:LYS:HB2	1.95	0.49
1:A:247:THR:O	1:A:247:THR:OG1	2.28	0.48
1:A:261:ILE:HG22	1:A:261:ILE:O	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:17:ALA:HB3	1:B:238:LEU:CD2	2.42	0.48
1:B:136:PHE:CD1	1:B:136:PHE:N	2.81	0.48
1:B:17:ALA:HB3	1:B:238:LEU:HD23	1.94	0.48
1:B:51:PRO:CD	1:B:79:GLN:OE1	2.52	0.48
1:B:82:ASP:OD1	1:B:83:ALA:N	2.42	0.48
1:A:93:ASN:O	1:A:98:SER:CB	2.62	0.47
1:B:137:LEU:N	1:B:137:LEU:CD1	2.70	0.47
1:A:83:ALA:HA	1:A:115:ARG:CZ	2.44	0.47
1:A:6:VAL:HG22	1:A:112:ILE:CD1	2.45	0.47
1:A:69:ILE:CD1	1:B:72:ARG:HD2	2.43	0.47
1:A:69:ILE:HD13	1:B:72:ARG:HD3	1.96	0.47
1:A:307:ARG:HH22	1:B:351:LEU:HD11	1.78	0.47
1:A:333:ASN:O	1:A:336:THR:N	2.48	0.47
1:B:70:LEU:HD23	1:B:70:LEU:O	2.14	0.47
1:A:59:SER:C	1:A:65:LEU:CD2	2.82	0.46
1:A:181:CYS:SG	1:A:182:ARG:N	2.89	0.46
1:A:192:VAL:HG13	1:A:192:VAL:O	2.15	0.45
1:A:307:ARG:HD2	1:A:307:ARG:N	2.31	0.45
1:B:95:PHE:HD2	1:B:107:VAL:CG1	2.29	0.45
1:B:25:LEU:HD23	1:B:351:LEU:HD12	1.98	0.45
1:B:238:LEU:HD13	1:B:238:LEU:HA	1.84	0.45
1:B:267:ILE:HG23	1:B:295:LEU:HD12	1.99	0.45
1:A:184:GLU:OE2	1:A:186:SER:OG	2.33	0.45
1:A:202:SER:O	1:A:202:SER:OG	2.29	0.45
1:A:321:TRP:O	1:A:321:TRP:CE3	2.70	0.45
1:B:67:ARG:HB2	1:B:101:LEU:HD21	1.97	0.45
1:B:84:HIS:HD2	1:B:84:HIS:N	2.12	0.45
1:B:293:ARG:HD2	1:B:293:ARG:HA	1.84	0.44
1:A:67:ARG:O	1:B:37:TYR:OH	2.24	0.44
1:B:333:ASN:C	1:B:333:ASN:HD22	2.25	0.44
1:A:93:ASN:O	1:A:98:SER:HB3	2.18	0.44
1:A:88:LEU:HD22	1:A:88:LEU:HA	1.78	0.44
1:B:302:LYS:HD2	1:B:302:LYS:HA	1.75	0.44
1:A:33:GLN:HB3	1:A:66:VAL:HG23	1.99	0.44
1:A:201:HIS:CG	1:A:201:HIS:O	2.70	0.43
1:A:337:THR:OG1	1:A:340:SER:OG	2.24	0.43
1:A:38:GLY:O	1:A:69:ILE:CG2	2.66	0.43
1:B:88:LEU:HD23	1:B:92:GLN:HB2	1.98	0.43
1:A:69:ILE:HG22	1:A:69:ILE:O	2.19	0.43
1:A:88:LEU:C	1:A:90:THR:N	2.75	0.43
1:B:247:THR:O	1:B:247:THR:OG1	2.36	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:279:GLY:O	1:B:281:LEU:N	2.50	0.43
1:B:201:HIS:O	1:B:201:HIS:CG	2.71	0.43
1:B:316:GLU:OE1	1:B:316:GLU:N	2.52	0.43
1:B:363:GLN:O	1:B:367:ARG:HD2	2.19	0.43
1:B:68:THR:HG1	1:B:95:PHE:HE1	1.66	0.43
1:B:84:HIS:HD2	1:B:137:LEU:HD21	1.76	0.43
1:B:316:GLU:H	1:B:316:GLU:CD	2.26	0.43
1:A:238:LEU:HB3	1:A:288:VAL:HG11	2.01	0.42
1:A:269:ASP:OD2	1:A:272:SER:OG	2.37	0.42
1:B:59:SER:OG	1:B:60:GLY:N	2.53	0.42
1:A:88:LEU:HD13	1:A:91:MET:C	2.45	0.42
1:B:88:LEU:HD11	1:B:174:VAL:HG22	2.00	0.42
1:B:73:GLU:OE2	1:B:73:GLU:HA	2.19	0.42
1:B:229:LEU:N	1:B:229:LEU:CD1	2.83	0.42
1:A:37:TYR:CD1	1:B:66:VAL:HG12	2.55	0.41
1:B:95:PHE:CD2	1:B:107:VAL:HG13	2.55	0.41
1:A:93:ASN:O	1:A:98:SER:HB2	2.21	0.41
1:B:90:THR:HA	1:B:94:LYS:HB2	2.01	0.41
1:B:3:VAL:HG21	1:B:241:LEU:HB3	2.03	0.41
1:A:281:LEU:CD2	1:A:290:VAL:HG21	2.50	0.41
1:A:38:GLY:O	1:A:69:ILE:HG23	2.19	0.41
1:B:140:HIS:CD2	1:B:140:HIS:N	2.85	0.41
1:B:87:LEU:HD11	1:B:111:VAL:HG21	2.02	0.41
1:B:94:LYS:HA	1:B:98:SER:CB	2.51	0.41
1:B:24:ALA:O	1:B:255:LEU:O	2.39	0.40
1:B:80:ALA:O	1:B:82:ASP:N	2.53	0.40
1:B:284:ILE:HD13	1:B:284:ILE:HA	1.92	0.40
1:A:88:LEU:O	1:A:92:GLN:N	2.54	0.40
1:A:230:ALA:O	1:A:233:ALA:HB3	2.22	0.40
1:A:79:GLN:OE1	1:A:79:GLN:CA	2.70	0.40
1:A:91:MET:HA	1:A:95:PHE:HB3	2.03	0.40

All (16) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:93:ASN:HD21	1:B:81:GLU:O[3_555]	0.24	1.36
1:A:93:ASN:ND2	1:B:81:GLU:O[3_555]	0.99	1.21
1:A:187:GLY:N	1:A:187:GLY:N[5_555]	1.70	0.50
1:A:187:GLY:N	1:A:187:GLY:H[5_555]	1.14	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:187:GLY:H	1:A:187:GLY:H[5_555]	1.15	0.45
1:A:176:ILE:O	1:B:176:ILE:O[3_555]	1.83	0.37
1:A:93:ASN:ND2	1:B:81:GLU:C[3_555]	1.88	0.32
1:B:361:PHE:HE1	1:B:361:PHE:HE1[4_555]	1.29	0.31
1:A:187:GLY:CA	1:A:187:GLY:H[5_555]	1.42	0.18
1:A:187:GLY:N	1:A:187:GLY:CA[5_555]	2.04	0.16
1:A:259:GLY:O	1:A:333:ASN:OD1[18_444]	2.05	0.15
1:A:93:ASN:HD21	1:B:81:GLU:C[3_555]	1.48	0.12
1:A:93:ASN:CG	1:B:81:GLU:O[3_555]	2.10	0.10
1:A:93:ASN:HD22	1:B:81:GLU:O[3_555]	1.53	0.07
1:A:84:HIS:NE2	1:B:176:ILE:HG22[3_555]	1.57	0.03
1:A:81:GLU:O	1:B:93:ASN:OD1[3_555]	2.18	0.02

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	360/389 (92%)	309 (86%)	42 (12%)	9 (2%)	4 20
1	B	360/389 (92%)	300 (83%)	45 (12%)	15 (4%)	2 11
All	All	720/778 (92%)	609 (85%)	87 (12%)	24 (3%)	3 15

All (24) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	24	ALA
1	B	81	GLU
1	B	87	LEU
1	B	280	ALA
1	A	35	ALA
1	A	160	HIS
1	A	169	VAL
1	A	315	GLY

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Mol	Chain	Res	Type
1	A	354	ALA
1	B	35	ALA
1	B	315	GLY
1	B	354	ALA
1	B	29	GLY
1	B	187	GLY
1	B	333	ASN
1	A	61	CYS
1	B	37	TYR
1	B	95	PHE
1	B	160	HIS
1	B	166	PRO
1	B	332	PRO
1	B	310	PRO
1	A	310	PRO
1	A	62	GLY

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	280/304 (92%)	224 (80%)	56 (20%)	1 6
1	B	280/304 (92%)	211 (75%)	69 (25%)	1 3
All	All	560/608 (92%)	435 (78%)	125 (22%)	1 4

All (125) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	7	VAL
1	A	14	VAL
1	A	30	ARG
1	A	33	GLN
1	A	45	ASN
1	A	61	CYS
1	A	65	LEU

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Mol	Chain	Res	Type
1	A	72	ARG
1	A	79	GLN
1	A	87	LEU
1	A	88	LEU
1	A	92	GLN
1	A	94	LYS
1	A	108	LEU
1	A	111	VAL
1	A	115	ARG
1	A	133	LEU
1	A	135	GLU
1	A	136	PHE
1	A	137	LEU
1	A	139	SER
1	A	141	THR
1	A	151	SER
1	A	153	GLN
1	A	156	LYS
1	A	160	HIS
1	A	161	ILE
1	A	176	ILE
1	A	180	VAL
1	A	181	CYS
1	A	182	ARG
1	A	183	LEU
1	A	184	GLU
1	A	186	SER
1	A	188	SER
1	A	205	LYS
1	A	221	ILE
1	A	229	LEU
1	A	231	THR
1	A	257	LEU
1	A	261	ILE
1	A	274	ASN
1	A	300	LYS
1	A	302	LYS
1	A	307	ARG
1	A	310	PRO
1	A	314	VAL
1	A	333	ASN
1	A	336	THR

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Mol	Chain	Res	Type
1	A	338	ARG
1	A	340	SER
1	A	348	LYS
1	A	362	MET
1	A	370	SER
1	A	375	ASN
1	A	376	ASP
1	B	3	VAL
1	B	7	VAL
1	B	11	GLU
1	B	14	VAL
1	B	26	LYS
1	B	33	GLN
1	B	42	TRP
1	B	53	SER
1	B	54	THR
1	B	59	SER
1	B	84	HIS
1	B	85	GLN
1	B	88	LEU
1	B	89	GLU
1	B	90	THR
1	B	103	SER
1	B	105	ASP
1	B	111	VAL
1	B	113	VAL
1	B	114	LEU
1	B	117	CYS
1	B	118	ARG
1	B	119	CYS
1	B	133	LEU
1	B	135	GLU
1	B	136	PHE
1	B	137	LEU
1	B	141	THR
1	B	145	MET
1	B	151	SER
1	B	154	ASP
1	B	160	HIS
1	B	166	PRO
1	B	174	VAL
1	B	176	ILE

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Mol	Chain	Res	Type
1	B	181	CYS
1	B	183	LEU
1	B	205	LYS
1	B	207	LYS
1	B	210	LYS
1	B	221	ILE
1	B	225	GLN
1	B	229	LEU
1	B	231	THR
1	B	238	LEU
1	B	251	MET
1	B	256	ASN
1	B	257	LEU
1	B	260	GLU
1	B	266	SER
1	B	274	ASN
1	B	296	CYS
1	B	300	LYS
1	B	307	ARG
1	B	308	ILE
1	B	310	PRO
1	B	311	CYS
1	B	329	SER
1	B	333	ASN
1	B	338	ARG
1	B	340	SER
1	B	348	LYS
1	B	352	GLU
1	B	359	THR
1	B	365	LYS
1	B	366	LYS
1	B	368	ARG
1	B	374	GLU
1	B	376	ASP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (18) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	33	GLN
1	A	64	HIS
1	A	85	GLN
1	A	92	GLN

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Mol	Chain	Res	Type
1	A	153	GLN
1	A	160	HIS
1	A	218	GLN
1	A	286	ASN
1	A	333	ASN
1	A	347	ASN
1	B	64	HIS
1	B	84	HIS
1	B	93	ASN
1	B	211	HIS
1	B	286	ASN
1	B	333	ASN
1	B	347	ASN
1	B	369	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	364/389 (93%)	0.29	19 (5%)	33	16	102, 154, 227, 285	0
1	B	364/389 (93%)	0.32	27 (7%)	20	10	112, 156, 218, 378	0
All	All	728/778 (93%)	0.30	46 (6%)	26	13	102, 155, 221, 378	0

All (46) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	66	VAL	6.7
1	B	78	LEU	6.4
1	B	83	ALA	5.6
1	B	84	HIS	5.4
1	A	84	HIS	5.1
1	B	115	ARG	5.1
1	A	61	CYS	4.7
1	B	91	MET	4.5
1	B	66	VAL	4.1
1	A	68	THR	4.0
1	B	100	PHE	3.9
1	B	65	LEU	3.4
1	A	91	MET	3.3
1	A	70	LEU	3.3
1	A	100	PHE	3.2
1	B	75	SER	3.2
1	B	80	ALA	3.1
1	B	59	SER	3.1
1	B	99	PRO	3.0
1	A	39	CYS	2.8
1	B	147	VAL	2.8
1	B	102	ALA	2.8
1	A	65	LEU	2.8
1	B	165	PRO	2.7

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Mol	Chain	Res	Type	RSRZ
1	A	99	PRO	2.7
1	B	62	GLY	2.6
1	B	109	GLY	2.5
1	B	60	GLY	2.5
1	A	80	ALA	2.4
1	A	77	ALA	2.4
1	B	86	ALA	2.4
1	A	335	MET	2.3
1	B	52	TYR	2.3
1	B	31	VAL	2.3
1	B	69	ILE	2.3
1	A	88	LEU	2.3
1	B	63	GLU	2.2
1	A	75	SER	2.2
1	B	87	LEU	2.2
1	A	63	GLU	2.1
1	B	146	CYS	2.1
1	A	74	CYS	2.1
1	B	95	PHE	2.1
1	A	71	ALA	2.0
1	B	332	PRO	2.0
1	A	325	HIS	2.0

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.