Full wwPDB X-ray Structure Validation Report ⓘ

Apr 21, 2026 – 03:19 AM JST

PDB ID	:	9UOU / pdb_00009uou
Title	:	Crystal structure of the fusion protein of T-lineage protein Themis and adaptor protein Grb2
Authors	:	Ouyang, S.; Zhao, Y.
Deposited on	:	2025-04-26
Resolution	:	3.06 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:

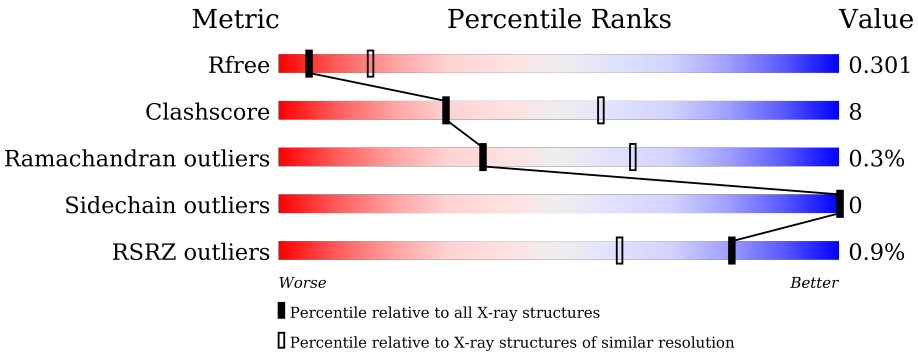
MolProbity	:	4-5-2 with Phenix2.0
Xtriage (Phenix)	:	2.0
EDS	:	3.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
CCP4	:	9.0.010 (Gargrove)
Density-Fitness	:	1.0.12
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
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 3.06 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	2469 (3.10-3.02)
Clashscore	190562	2569 (3.10-3.02)
Ramachandran outliers	187476	2424 (3.10-3.02)
Sidechain outliers	187428	2423 (3.10-3.02)
RSRZ outliers	180081	2469 (3.10-3.02)

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	648	64% 18% 18%
1	B	648	.% 61% 18% 21%

2 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 8452 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 Protein THEMIS,Growth factor receptor-bound protein 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	B	513	Total	C	N	O	S	0	0	0
			4153	2675	697	762	19			
1	A	530	Total	C	N	O	S	0	0	0
			4299	2768	718	793	20			

There are 60 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
B	-23	MET	-	initiating methionine	UNP Q8N1K5
B	-22	HIS	-	expression tag	UNP Q8N1K5
B	-21	HIS	-	expression tag	UNP Q8N1K5
B	-20	HIS	-	expression tag	UNP Q8N1K5
B	-19	HIS	-	expression tag	UNP Q8N1K5
B	-18	HIS	-	expression tag	UNP Q8N1K5
B	-17	HIS	-	expression tag	UNP Q8N1K5
B	-16	SER	-	expression tag	UNP Q8N1K5
B	-15	SER	-	expression tag	UNP Q8N1K5
B	-14	GLY	-	expression tag	UNP Q8N1K5
B	-13	VAL	-	expression tag	UNP Q8N1K5
B	-12	ASP	-	expression tag	UNP Q8N1K5
B	-11	LEU	-	expression tag	UNP Q8N1K5
B	-10	GLY	-	expression tag	UNP Q8N1K5
B	-9	THR	-	expression tag	UNP Q8N1K5
B	-8	GLU	-	expression tag	UNP Q8N1K5
B	-7	ASN	-	expression tag	UNP Q8N1K5
B	-6	LEU	-	expression tag	UNP Q8N1K5
B	-5	TYR	-	expression tag	UNP Q8N1K5
B	-4	PHE	-	expression tag	UNP Q8N1K5
B	-3	GLN	-	expression tag	UNP Q8N1K5
B	-2	SER	-	expression tag	UNP Q8N1K5
B	-1	ASN	-	expression tag	UNP Q8N1K5
B	0	ALA	-	expression tag	UNP Q8N1K5
B	562	GLY	-	linker	UNP Q8N1K5

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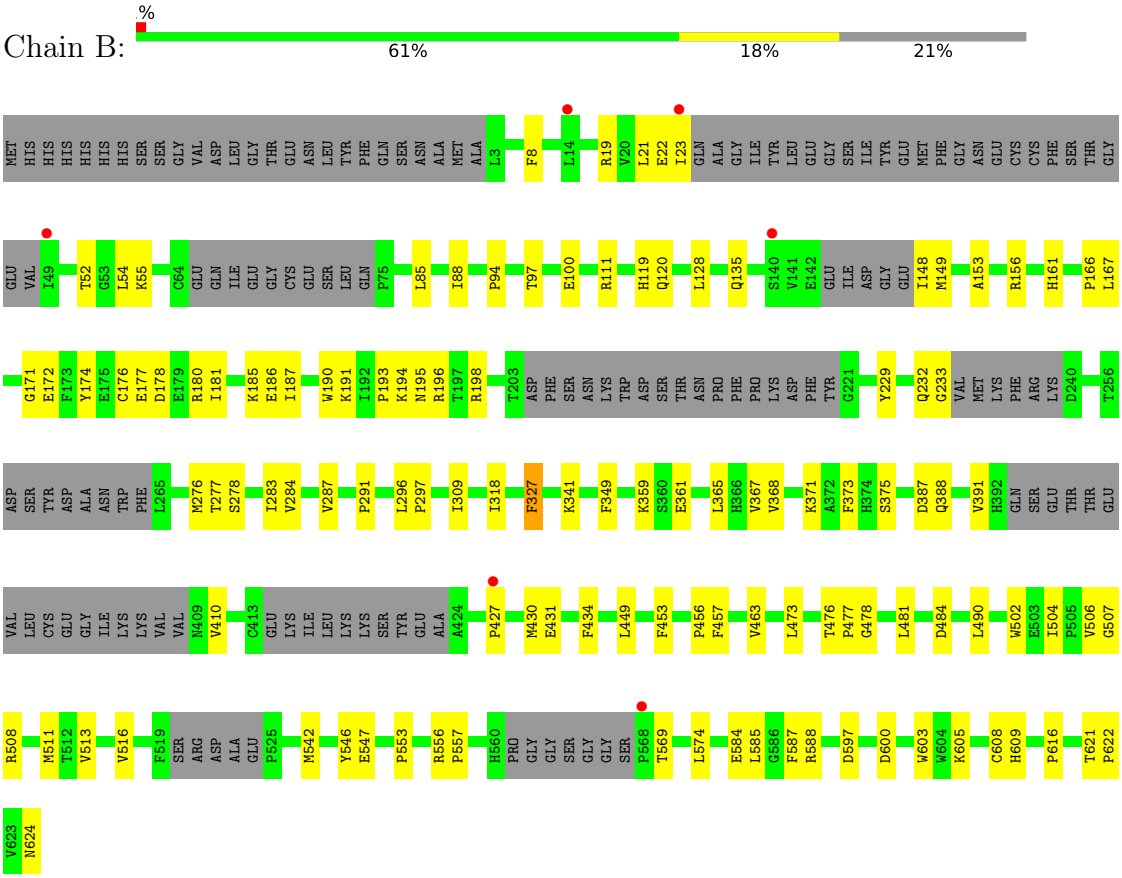
Chain	Residue	Modelled	Actual	Comment	Reference
B	563	GLY	-	linker	UNP Q8N1K5
B	564	SER	-	linker	UNP Q8N1K5
B	565	GLY	-	linker	UNP Q8N1K5
B	566	GLY	-	linker	UNP Q8N1K5
B	567	SER	-	linker	UNP Q8N1K5
A	-23	MET	-	initiating methionine	UNP Q8N1K5
A	-22	HIS	-	expression tag	UNP Q8N1K5
A	-21	HIS	-	expression tag	UNP Q8N1K5
A	-20	HIS	-	expression tag	UNP Q8N1K5
A	-19	HIS	-	expression tag	UNP Q8N1K5
A	-18	HIS	-	expression tag	UNP Q8N1K5
A	-17	HIS	-	expression tag	UNP Q8N1K5
A	-16	SER	-	expression tag	UNP Q8N1K5
A	-15	SER	-	expression tag	UNP Q8N1K5
A	-14	GLY	-	expression tag	UNP Q8N1K5
A	-13	VAL	-	expression tag	UNP Q8N1K5
A	-12	ASP	-	expression tag	UNP Q8N1K5
A	-11	LEU	-	expression tag	UNP Q8N1K5
A	-10	GLY	-	expression tag	UNP Q8N1K5
A	-9	THR	-	expression tag	UNP Q8N1K5
A	-8	GLU	-	expression tag	UNP Q8N1K5
A	-7	ASN	-	expression tag	UNP Q8N1K5
A	-6	LEU	-	expression tag	UNP Q8N1K5
A	-5	TYR	-	expression tag	UNP Q8N1K5
A	-4	PHE	-	expression tag	UNP Q8N1K5
A	-3	GLN	-	expression tag	UNP Q8N1K5
A	-2	SER	-	expression tag	UNP Q8N1K5
A	-1	ASN	-	expression tag	UNP Q8N1K5
A	0	ALA	-	expression tag	UNP Q8N1K5
A	562	GLY	-	linker	UNP Q8N1K5
A	563	GLY	-	linker	UNP Q8N1K5
A	564	SER	-	linker	UNP Q8N1K5
A	565	GLY	-	linker	UNP Q8N1K5
A	566	GLY	-	linker	UNP Q8N1K5
A	567	SER	-	linker	UNP Q8N1K5

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.

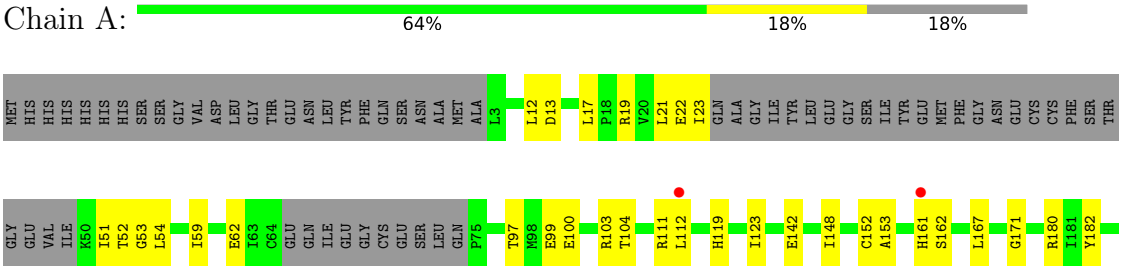
• Molecule 1: Protein THEMIS,Growth factor receptor-bound protein 2

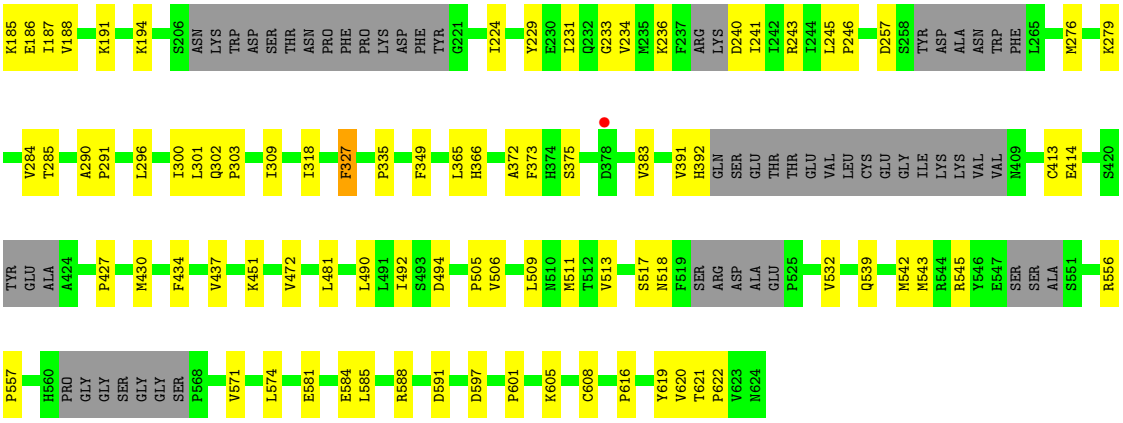
Chain B:



• Molecule 1: Protein THEMIS,Growth factor receptor-bound protein 2

Chain A:




K185 E186 I187 V188 K191 K194 S206 ASN LYS TRP ASP SER THR ASN PRO PHE PRO LYS ASP PHE TYR G221 I224 Y229 E230 I231 Q232 G233 V234 M235 K236 F237 ARG LYS D240 I241 I242 R243 I244 L245 P246 D257 S258 TYR ASP ALA ASN TRP PHE L265 M276 K279
V284 T285 A290 P291 L296 I300 L301 Q302 P303 I309 I318 F327 P335 F349 L365 H366 A372 F373 H374 S375 D378 V383 V391 H392 GLN SER GLU THR THR GLU VAL LEU CYS GLU GLY ILE LYS LYS VAL VAL N409 C413 E414 S420
TYR GLU ALA A424 P427 M430 F434 V437 K451 V472 L481 L490 L491 I492 S493 D494 P505 V506 L509 N510 M511 T512 V513 S517 N518 F519 SER ARG ASP ALA GLU P525 V532 Q539 M542 M543 R544 R545 Y546 E547 SER SER ALA S551 R556
P557 H560 PRO GLY GLY SER GLY GLY SER P568 V571 L574 E581 E584 L585 R588 D591 D597 P601 K605 C608 P616 Y619 V620 T621 P622 V623 N624

4 Data and refinement statistics (i)

Property	Value	Source
Space group	C 1 2 1	Depositor
Cell constants a, b, c, α, β, γ	101.80Å 136.54Å 116.52Å 90.00° 112.61° 90.00°	Depositor
Resolution (Å)	35.94 – 3.06 35.94 – 3.06	Depositor EDS
% Data completeness (in resolution range)	94.5 (35.94-3.06) 94.5 (35.94-3.06)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	2.50 (at 3.07Å)	Xtriage
Refinement program	PHENIX (1.19.2_4158: ???)	Depositor
R, R_{free}	0.261 , 0.302 0.261 , 0.301	Depositor DCC
R_{free} test set	1993 reflections (7.19%)	wwPDB-VP
Wilson B-factor (Å^2)	74.2	Xtriage
Anisotropy	0.719	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.33 , 47.1	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.31$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.93	EDS
Total number of atoms	8452	wwPDB-VP
Average B, all atoms (Å^2)	98.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 43.91 % of the origin peak, indicating pseudo-translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo-translational symmetry is equal to 1.6483e-04. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

[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	0.09	0/4396	0.28	0/5942
1	B	0.09	0/4248	0.27	0/5748
All	All	0.09	0/8644	0.28	0/11690

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	4299	0	4314	76	0
1	B	4153	0	4168	81	0
All	All	8452	0	8482	144	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 8.

All (144) 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:22:GLU:HG2	1:B:23:ILE:HG12	1.68	0.74
1:A:365:LEU:HB2	1:A:391:VAL:HB	1.73	0.71

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:156:ARG:HB2	1:B:161:HIS:CE1	2.29	0.69
1:B:291:PRO:HG3	1:B:511:MET:HB2	1.76	0.68
1:A:12:LEU:O	1:A:194:LYS:NZ	2.26	0.68
1:B:187:ILE:HA	1:B:191:LYS:HB2	1.77	0.67
1:B:367:VAL:HG11	1:B:434:PHE:HB3	1.79	0.65
1:B:556:ARG:NH2	1:A:581:GLU:OE1	2.30	0.63
1:A:112:LEU:O	1:A:191:LYS:NZ	2.31	0.62
1:A:291:PRO:HG3	1:A:511:MET:HB3	1.80	0.62
1:B:88:ILE:HD11	1:B:191:LYS:HG3	1.82	0.61
1:A:597:ASP:HB3	1:A:605:LYS:HB3	1.81	0.61
1:B:97:THR:HG23	1:B:100:GLU:H	1.65	0.61
1:A:300:ILE:HD13	1:A:494:ASP:HB2	1.82	0.61
1:A:54:LEU:HD21	1:A:229:TYR:HB3	1.82	0.61
1:B:584:GLU:OE2	1:A:556:ARG:NH2	2.34	0.61
1:B:148:ILE:HD12	1:B:167:LEU:HD12	1.83	0.60
1:A:585:LEU:HD11	1:A:608:CYS:HB3	1.84	0.60
1:B:361:GLU:HG2	1:B:453:PHE:HD1	1.68	0.59
1:A:391:VAL:HA	1:A:413:CYS:HB2	1.86	0.57
1:B:149:MET:HG2	1:B:166:PRO:HA	1.87	0.57
1:B:297:PRO:HD2	1:B:504:ILE:HD11	1.87	0.56
1:B:556:ARG:NH2	1:A:584:GLU:OE2	2.37	0.56
1:B:111:ARG:NH1	1:A:591:ASP:OD2	2.37	0.56
1:A:302:GLN:HG3	1:A:303:PRO:HD2	1.88	0.56
1:A:318:ILE:HG21	1:A:481:LEU:HG	1.89	0.54
1:B:341:LYS:HB2	1:B:463:VAL:HG22	1.89	0.54
1:B:490:LEU:HG	1:B:506:VAL:HG22	1.89	0.54
1:B:473:LEU:HD12	1:B:476:THR:HG21	1.88	0.54
1:B:622:PRO:HB2	1:A:327:PHE:HZ	1.71	0.54
1:A:99:GLU:HB2	1:A:167:LEU:HB3	1.88	0.54
1:A:13:ASP:HB2	1:A:103:ARG:HD3	1.89	0.54
1:B:149:MET:HE2	1:B:166:PRO:HB3	1.88	0.53
1:B:277:THR:HG23	1:B:278:SER:H	1.73	0.53
1:A:19:ARG:O	1:A:51:ILE:N	2.32	0.53
1:B:410:VAL:HG12	1:B:427:PRO:HA	1.89	0.53
1:B:287:VAL:HA	1:B:513:VAL:HG12	1.92	0.52
1:B:587:PHE:O	1:B:588:ARG:NH1	2.43	0.52
1:A:59:ILE:HD11	1:A:188:VAL:HG22	1.91	0.52
1:A:245:LEU:HD23	1:A:245:LEU:H	1.75	0.51
1:B:194:LYS:NZ	1:B:195:ASN:OD1	2.42	0.51
1:B:135:GLN:HG2	1:B:176:CYS:SG	2.51	0.51
1:B:55:LYS:HB2	1:B:232:GLN:HE22	1.74	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:119:HIS:NE2	1:B:171:GLY:HA3	2.26	0.51
1:B:427:PRO:O	1:B:430:MET:HG2	2.11	0.51
1:A:142:GLU:O	1:A:148:ILE:HG13	2.11	0.50
1:A:574:LEU:HD11	1:A:621:THR:HB	1.92	0.50
1:B:193:PRO:HB2	1:B:196:ARG:HB2	1.92	0.50
1:B:349:PHE:HB2	1:B:434:PHE:HB2	1.94	0.50
1:A:97:THR:HG23	1:A:100:GLU:H	1.76	0.50
1:A:119:HIS:NE2	1:A:171:GLY:HA3	2.26	0.50
1:A:296:LEU:HB3	1:A:301:LEU:HD12	1.94	0.50
1:B:616:PRO:HB3	1:A:557:PRO:HG2	1.94	0.49
1:A:472:VAL:HG12	1:A:532:VAL:HG23	1.94	0.49
1:B:557:PRO:HG2	1:A:616:PRO:HB3	1.94	0.49
1:B:88:ILE:HD12	1:B:178:ASP:OD2	2.13	0.49
1:A:119:HIS:CD2	1:A:123:ILE:HD11	2.48	0.49
1:A:22:GLU:HG2	1:A:23:ILE:H	1.78	0.49
1:A:62:GLU:HB3	1:A:224:ILE:HB	1.95	0.49
1:A:284:VAL:HB	1:A:517:SER:HB3	1.94	0.48
1:A:392:HIS:ND1	1:A:414:GLU:OE1	2.42	0.48
1:A:240:ASP:N	1:A:240:ASP:OD1	2.46	0.48
1:A:490:LEU:HG	1:A:506:VAL:HG12	1.95	0.48
1:B:371:LYS:HD2	1:B:431:GLU:HG2	1.95	0.48
1:B:153:ALA:HA	1:B:161:HIS:O	2.13	0.47
1:B:365:LEU:HB2	1:B:391:VAL:HG12	1.96	0.47
1:A:17:LEU:HD11	1:A:53:GLY:HA2	1.96	0.47
1:B:507:GLY:C	1:B:508:ARG:HG2	2.40	0.47
1:A:231:ILE:HG23	1:A:246:PRO:HG3	1.95	0.47
1:A:383:VAL:HG21	1:A:430:MET:HE1	1.97	0.47
1:A:505:PRO:HG2	1:A:509:LEU:HD23	1.97	0.47
1:A:186:GLU:OE1	1:A:545:ARG:NH1	2.48	0.46
1:B:585:LEU:HD11	1:B:608:CYS:HB3	1.97	0.46
1:A:104:THR:HG23	1:A:194:LYS:HB3	1.96	0.46
1:A:372:ALA:HA	1:A:383:VAL:HG12	1.98	0.46
1:B:574:LEU:HD11	1:B:621:THR:HB	1.98	0.46
1:A:21:LEU:HD12	1:A:51:ILE:HD11	1.97	0.46
1:A:335:PRO:HD2	1:A:532:VAL:HG12	1.96	0.46
1:B:283:ILE:HG12	1:B:309:ILE:HB	1.98	0.45
1:B:431:GLU:HB2	1:A:601:PRO:HG3	1.98	0.45
1:A:290:ALA:HB2	1:A:303:PRO:HD3	1.99	0.45
1:B:88:ILE:HD11	1:B:191:LYS:CG	2.46	0.45
1:B:359:LYS:HA	1:B:359:LYS:HD2	1.79	0.45
1:B:111:ARG:NH1	1:A:588:ARG:HG3	2.31	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:373:PHE:CZ	1:B:375:SER:HB3	2.51	0.45
1:B:94:PRO:HB3	1:B:174:TYR:CE2	2.51	0.45
1:A:276:MET:HG3	1:A:279:LYS:HB2	1.99	0.45
1:B:186:GLU:O	1:B:190:TRP:HB2	2.17	0.45
1:B:284:VAL:HG23	1:B:516:VAL:HB	1.99	0.45
1:A:234:VAL:HG22	1:A:236:LYS:H	1.82	0.45
1:A:539:GLN:O	1:A:543:MET:HG2	2.17	0.44
1:B:600:ASP:HB3	1:B:603:TRP:O	2.17	0.44
1:A:257:ASP:OD1	1:A:257:ASP:N	2.50	0.44
1:B:85:LEU:HD12	1:B:181:ILE:HG22	1.99	0.44
1:B:368:VAL:HG22	1:B:388:GLN:HG2	1.99	0.44
1:B:185:LYS:HD3	1:B:542:MET:HE1	1.99	0.44
1:A:349:PHE:HB2	1:A:434:PHE:HB2	2.00	0.44
1:B:387:ASP:OD1	1:B:388:GLN:N	2.50	0.44
1:A:52:THR:HG23	1:A:233:GLY:HA2	1.99	0.44
1:B:54:LEU:HD21	1:B:229:TYR:HD2	1.82	0.43
1:B:318:ILE:HG13	1:B:484:ASP:OD1	2.18	0.43
1:A:153:ALA:HA	1:A:161:HIS:O	2.18	0.43
1:A:309:ILE:HG13	1:A:492:ILE:HG22	2.00	0.43
1:B:52:THR:HG23	1:B:233:GLY:HA2	2.01	0.43
1:A:180:ARG:NE	1:A:182:TYR:OH	2.51	0.43
1:A:518:ASN:O	1:A:518:ASN:ND2	2.51	0.43
1:B:569:THR:HA	1:B:624:ASN:HB3	2.00	0.43
1:B:8:PHE:CE2	1:B:21:LEU:HD11	2.54	0.43
1:B:449:LEU:HD13	1:B:457:PHE:HE2	1.84	0.43
1:A:241:ILE:HG22	1:A:243:ARG:HG3	2.01	0.43
1:B:609:HIS:CD2	1:A:111:ARG:HH21	2.36	0.43
1:A:167:LEU:HD12	1:A:167:LEU:H	1.84	0.43
1:B:8:PHE:HZ	1:B:19:ARG:HD2	1.82	0.43
1:B:276:MET:HE3	1:B:276:MET:HB2	1.82	0.43
1:B:191:LYS:O	1:B:198:ARG:NE	2.49	0.42
1:B:297:PRO:HG3	1:B:502:TRP:CG	2.55	0.42
1:B:327:PHE:CZ	1:A:622:PRO:HB2	2.54	0.42
1:B:128:LEU:HD11	1:B:156:ARG:NH1	2.34	0.42
1:B:54:LEU:HD21	1:B:229:TYR:CD2	2.54	0.42
1:B:327:PHE:HZ	1:A:622:PRO:HB2	1.83	0.42
1:B:296:LEU:HD23	1:B:504:ILE:HD12	2.00	0.42
1:B:476:THR:HA	1:B:477:PRO:HD3	1.84	0.42
1:B:597:ASP:HB3	1:B:605:LYS:HB3	2.02	0.42
1:B:111:ARG:O	1:B:180:ARG:NH1	2.53	0.42
1:A:285:THR:HB	1:A:513:VAL:HB	2.01	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:451:LYS:HE3	1:A:451:LYS:HB2	1.82	0.42
1:B:371:LYS:HB2	1:B:371:LYS:HE3	1.84	0.41
1:B:172:GLU:OE1	1:B:174:TYR:OH	2.30	0.41
1:A:543:MET:HE3	1:A:543:MET:HB3	1.92	0.41
1:B:504:ILE:HD13	1:B:504:ILE:HA	1.88	0.41
1:B:546:TYR:CG	1:B:547:GLU:N	2.89	0.41
1:A:152:CYS:O	1:A:162:SER:HA	2.20	0.41
1:A:427:PRO:O	1:A:430:MET:HG2	2.20	0.41
1:B:553:PRO:HB2	1:A:619:TYR:CZ	2.56	0.41
1:A:571:VAL:HB	1:A:620:VAL:HB	2.03	0.41
1:B:177:GLU:H	1:B:177:GLU:HG2	1.72	0.41
1:A:112:LEU:H	1:A:112:LEU:HD23	1.86	0.41
1:B:119:HIS:CD2	1:B:120:GLN:H	2.39	0.40
1:A:185:LYS:HD3	1:A:542:MET:HE1	2.03	0.40
1:A:187:ILE:HA	1:A:191:LYS:HB2	2.03	0.40
1:A:240:ASP:HB2	1:A:241:ILE:H	1.68	0.40
1:A:366:HIS:ND1	1:A:437:VAL:HB	2.36	0.40
1:A:373:PHE:CE2	1:A:375:SER:HB3	2.56	0.40
1:B:456:PRO:HA	1:B:481:LEU:O	2.21	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	508/648 (78%)	486 (96%)	21 (4%)	1 (0%)	43	70
1	B	491/648 (76%)	458 (93%)	31 (6%)	2 (0%)	30	57
All	All	999/1296 (77%)	944 (94%)	52 (5%)	3 (0%)	36	63

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	B	478	GLY
1	A	327	PHE
1	B	327	PHE

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	489/588 (83%)	489 (100%)	0	100	100
1	B	471/588 (80%)	471 (100%)	0	100	100
All	All	960/1176 (82%)	960 (100%)	0	100	100

There are no protein residues with a non-rotameric sidechain to report.

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (5) such sidechains are listed below:

Mol	Chain	Res	Type
1	B	159	GLN
1	B	609	HIS
1	A	164	ASN
1	A	298	GLN
1	A	624	ASN

5.3.3 RNA (i)

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains (i)

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

5.5 Carbohydrates (i)

There are no oligosaccharides in this entry.

5.6 Ligand geometry (i)

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)

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	530/648 (81%)	0.15	3 (0%)	85	69	63, 93, 151, 200	0
1	B	513/648 (79%)	0.15	6 (1%)	76	55	61, 90, 149, 208	0
All	All	1043/1296 (80%)	0.15	9 (0%)	81	61	61, 91, 151, 208	0

All (9) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	161	HIS	2.9
1	B	568	PRO	2.7
1	A	112	LEU	2.7
1	B	49	ILE	2.6
1	B	14	LEU	2.6
1	B	427	PRO	2.1
1	A	378	ASP	2.1
1	B	140	SER	2.0
1	B	23	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

There are no oligosaccharides 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.