



Full wwPDB X-ray Structure Validation Report ⓘ

Mar 9, 2026 – 11:23 AM UTC

PDB ID : 6JDW / pdb_00006jdw
Title : CRYSTAL STRUCTURE OF HUMAN L-ARGININE:GLYCINE AMIDINO-TRANSFERASE IN COMPLEX WITH GAMMA-AMINO BUTYRIC ACID
Authors : Fritsche, E.; Humm, A.; Huber, R.
Deposited on : 1998-10-12
Resolution : 2.50 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
Mogul	:	2022.3.0, CSD as543be (2022)
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.49

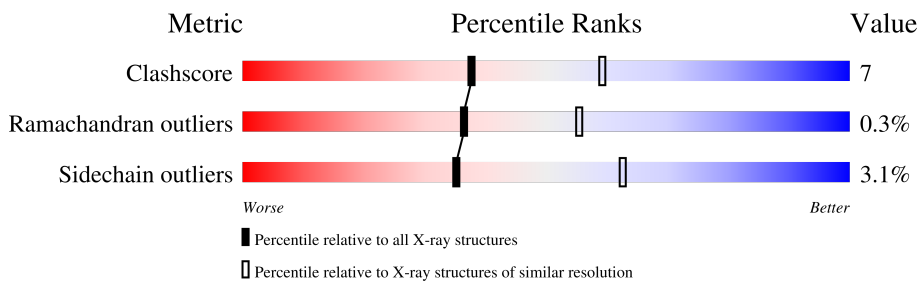
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.50 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))
Clashscore	190562	6492 (2.50-2.50)
Ramachandran outliers	187476	6378 (2.50-2.50)
Sidechain outliers	187428	6380 (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 $\leq 5\%$

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	386	

2 Entry composition [i](#)

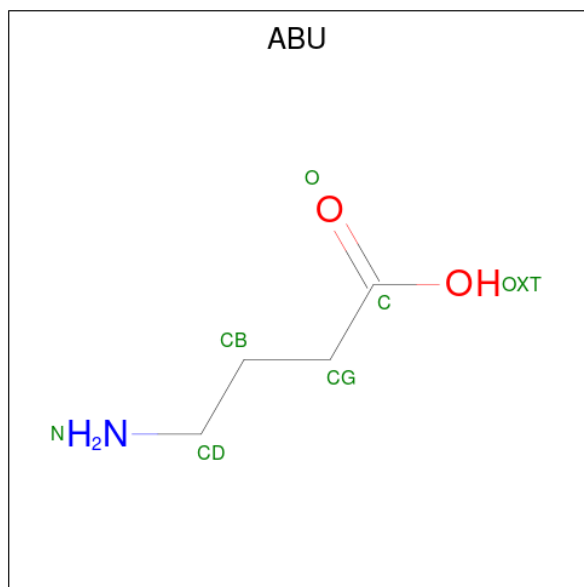
There are 3 unique types of molecules in this entry. The entry contains 4019 atoms, of which 930 are hydrogens and 0 are deuteriums.

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 (L-ARGININE:GLYCINE AMIDINOTRANSFERASE).

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	360	Total	C	H	N	O	S	0	0	0
			3577	1888	639	504	528	18			

- Molecule 2 is GAMMA-AMINO-BUTANOIC ACID (CCD ID: ABU) (formula: C₄H₉NO₂).



Mol	Chain	Residues	Atoms					ZeroOcc	AltConf
2	A	1	Total	C	H	N	O	0	0
			10	4	3	1	2		

- Molecule 3 is water.

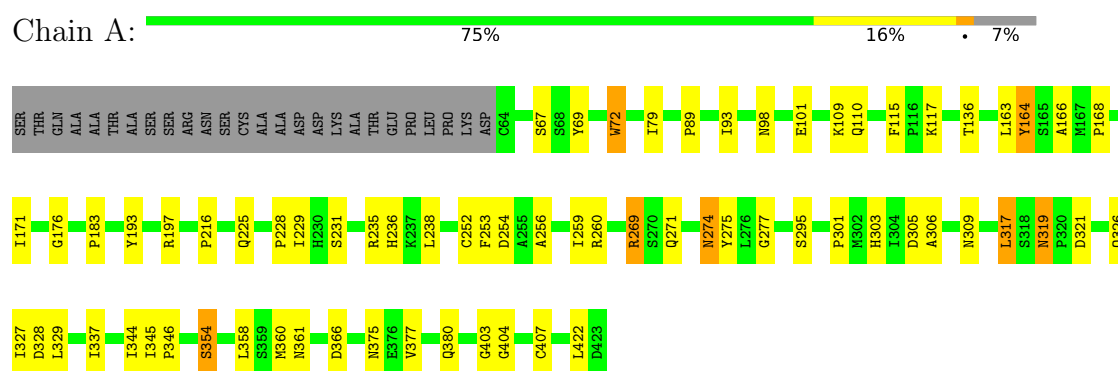
Mol	Chain	Residues	Atoms			ZeroOcc	AltConf
3	A	144	Total	H	O	0	0
			432	288	144		

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. 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.

Note EDS was not executed.

• Molecule 1: PROTEIN (L-ARGININE:GLYCINE AMIDINOTRANSFERASE)



4 Data and refinement statistics

Xtriage (Phenix) and EDS were not executed - this section is therefore incomplete.

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, α , β , γ	83.62Å 83.62Å 200.38Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	8.00 – 2.50	Depositor
% Data completeness (in resolution range)	89.5 (8.00-2.50)	Depositor
R_{merge}	(Not available)	Depositor
R_{sym}	0.12	Depositor
Refinement program	X-PLOR	Depositor
R, R_{free}	0.164 , (Not available)	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	4019	wwPDB-VP
Average B, all atoms (Å ²)	17.0	wwPDB-VP

5 Model quality

5.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: ABU

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	0.60	0/3027	1.01	13/4114 (0.3%)

There are no bond length outliers.

All (13) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	305	ASP	N-CA-C	8.33	123.10	113.19
1	A	422	LEU	N-CA-C	-7.11	103.78	113.30
1	A	117	LYS	N-CA-C	6.42	119.27	111.82
1	A	72	TRP	N-CA-C	6.22	122.33	114.31
1	A	269	ARG	N-CA-C	-6.21	99.88	109.76
1	A	260	ARG	N-CA-C	6.08	119.74	109.76
1	A	93	ILE	N-CA-C	6.08	116.74	110.36
1	A	197	ARG	N-CA-C	5.69	117.48	111.28
1	A	171	ILE	N-CA-C	5.37	118.33	112.96
1	A	254	ASP	N-CA-C	-5.21	101.20	109.59
1	A	79	ILE	N-CA-C	-5.18	100.92	108.17
1	A	403	GLY	N-CA-C	5.14	120.65	111.03
1	A	115	PHE	N-CA-C	-5.09	102.87	110.20

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	2938	639	2877	41	1
2	A	7	3	0	2	0
3	A	144	288	0	3	1
All	All	3089	930	2877	41	1

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 7.

All (41) 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:295:SER:H	1:A:326:GLN:HE22	1.27	0.81
1:A:344:ILE:HD11	1:A:375:ASN:O	1.87	0.74
1:A:327:ILE:HD11	1:A:337:ILE:HG12	1.74	0.70
1:A:295:SER:H	1:A:326:GLN:NE2	1.91	0.67
1:A:319:ASN:HD22	1:A:321:ASP:H	1.47	0.63
1:A:319:ASN:ND2	1:A:321:ASP:H	1.99	0.60
1:A:98:ASN:HD22	1:A:301:PRO:HB2	1.66	0.58
1:A:98:ASN:ND2	1:A:301:PRO:HB2	2.19	0.58
1:A:274:ASN:ND2	1:A:277:GLY:H	2.01	0.58
1:A:361:ASN:HD22	1:A:404:GLY:H	1.54	0.56
1:A:319:ASN:HD22	1:A:319:ASN:C	2.15	0.55
1:A:101:GLU:HG2	1:A:231:SER:HA	1.89	0.53
1:A:235:ARG:HD2	3:A:606:HOH:O	2.09	0.53
1:A:407:CYS:SG	2:A:500:ABU:CD	2.97	0.52
1:A:164:TYR:C	1:A:164:TYR:CD1	2.90	0.50
1:A:274:ASN:HD22	1:A:277:GLY:H	1.60	0.49
1:A:164:TYR:C	1:A:164:TYR:HD1	2.20	0.49
1:A:361:ASN:ND2	1:A:404:GLY:H	2.10	0.49
1:A:236:HIS:CD2	3:A:606:HOH:O	2.66	0.48
1:A:89:PRO:HD3	1:A:163:LEU:CD1	2.43	0.48
1:A:109:LYS:HG3	1:A:110:GLN:HE21	1.79	0.48
1:A:228:PRO:HG2	1:A:238:LEU:HD11	1.96	0.48
1:A:377:VAL:O	1:A:380:GLN:HB2	2.15	0.47
1:A:306:ALA:HB3	2:A:500:ABU:OXT	2.15	0.47
1:A:317:LEU:HB3	1:A:360:MET:HE3	1.96	0.46
1:A:69:TYR:CE1	1:A:176:GLY:HA2	2.51	0.46
1:A:252:CYS:O	1:A:253:PHE:HB3	2.17	0.44
1:A:345:ILE:HA	1:A:346:PRO:HD3	1.85	0.44
1:A:354:SER:OG	1:A:358:LEU:HD21	2.18	0.43
1:A:319:ASN:HD22	1:A:321:ASP:N	2.14	0.43
1:A:361:ASN:HD22	1:A:404:GLY:N	2.14	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:269:ARG:HG3	1:A:275:TYR:CE2	2.53	0.43
1:A:309:ASN:ND2	3:A:511:HOH:O	2.48	0.42
1:A:256:ALA:HB3	1:A:303:HIS:CD2	2.55	0.42
1:A:274:ASN:HD22	1:A:274:ASN:C	2.27	0.42
1:A:183:PRO:HB3	1:A:216:PRO:HD3	2.01	0.41
1:A:225:GLN:H	1:A:225:GLN:HG2	1.69	0.41
1:A:361:ASN:HD22	1:A:404:GLY:CA	2.33	0.41
1:A:72:TRP:O	1:A:366:ASP:HA	2.21	0.41
1:A:166:ALA:O	1:A:168:PRO:HD3	2.21	0.41
1:A:98:ASN:HD21	1:A:271:GLN:HB2	1.86	0.40

All (1) 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:193:TYR:HH	3:A:531:HOH:H2[7_555]	1.28	0.32

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	358/386 (93%)	334 (93%)	23 (6%)	1 (0%)	36	55

All (1) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	67	SER

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	319/339 (94%)	309 (97%)	10 (3%)	35 62

All (10) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	136	THR
1	A	164	TYR
1	A	229	ILE
1	A	259	ILE
1	A	274	ASN
1	A	317	LEU
1	A	319	ASN
1	A	328	ASP
1	A	329	LEU
1	A	354	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (15) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	98	ASN
1	A	108	GLN
1	A	110	GLN
1	A	177	ASN
1	A	224	ASN
1	A	225	GLN
1	A	236	HIS
1	A	241	GLN
1	A	268	GLN
1	A	274	ASN
1	A	309	ASN
1	A	319	ASN
1	A	326	GLN
1	A	361	ASN
1	A	380	GLN

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](#)

1 ligand is modelled in this entry.

In the following table, the Counts columns list the number of bonds (or angles) for which Mogul statistics could be retrieved, the number of bonds (or angles) that are observed in the model and the number of bonds (or angles) that are defined in the Chemical Component Dictionary. The Link column lists molecule types, if any, to which the group is linked. 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 $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Type	Chain	Res	Link	Bond lengths			Bond angles		
					Counts	RMSZ	$\# Z > 2$	Counts	RMSZ	$\# Z > 2$
2	ABU	A	500	-	6,6,6	0.69	0	6,6,6	0.85	0

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the Chemical Component Dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
2	ABU	A	500	-	-	2/4/4/4	-

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

All (2) torsion outliers are listed below:

Mol	Chain	Res	Type	Atoms
2	A	500	ABU	OXT-C-CG-CB
2	A	500	ABU	O-C-CG-CB

There are no ring outliers.

1 monomer is involved in 2 short contacts:

Mol	Chain	Res	Type	Clashes	Symm-Clashes
2	A	500	ABU	2	0

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

EDS was not executed - this section is therefore empty.

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

EDS was not executed - this section is therefore empty.

6.3 Carbohydrates

EDS was not executed - this section is therefore empty.

6.4 Ligands

EDS was not executed - this section is therefore empty.

6.5 Other polymers

EDS was not executed - this section is therefore empty.