



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 13, 2017 – 01:06 am GMT

PDB ID : 1AXN  
Title : THE HIGH RESOLUTION STRUCTURE OF ANNEXIN III SHOWS DIFFERENCES WITH ANNEXIN V  
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Deposited on : 1995-08-21  
Resolution : 1.78 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](mailto:validation@mail.wwpdb.org)

A user guide is available at

<http://wwpdb.org/validation/2016/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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The following versions of software and data (see [references ⓘ](#)) were used in the production of this report:

MolProbity	:	4.02b-467
Xtriage (Phenix)	:	NOT EXECUTED
EDS	:	NOT EXECUTED
Percentile statistics	:	20161228.v01 (using entries in the PDB archive December 28th 2016)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	recalc28949

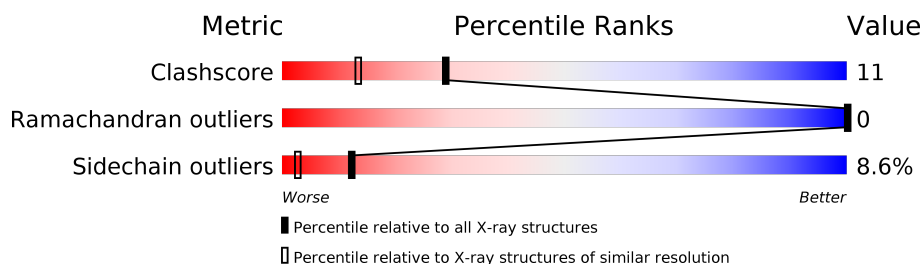
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 1.78 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	112137	8247 (1.80-1.76)
Ramachandran outliers	110173	8154 (1.80-1.76)
Sidechain outliers	110143	8153 (1.80-1.76)

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 on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. 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  $\leq 5\%$ . 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.

Note EDS was not executed.

Mol	Chain	Length	Quality of chain
1	A	323	

## 2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 2846 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 ANNEXIN III.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	323	Total	C	N	O	S	0	1	0
			2560	1608	441	503	8			

- Molecule 2 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	5	Total	Ca	0	0
			5	5		

- Molecule 3 is water.

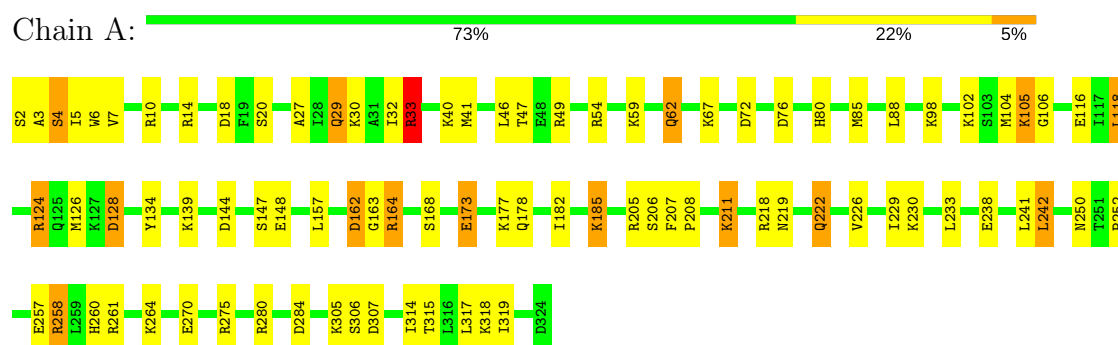
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	A	281	Total	O	0	0
			281	281		

### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA 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.

Note EDS was not executed.

#### • Molecule 1: ANNEXIN III



## 4 Data and refinement statistics

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

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	42.54Å 69.08Å 50.95Å 90.00° 95.55° 90.00°	Depositor
Resolution (Å)	8.00 – 1.78	Depositor
% Data completeness (in resolution range)	(Not available) (8.00-1.78)	Depositor
$R_{merge}$	0.04	Depositor
$R_{sym}$	(Not available)	Depositor
Refinement program	PROLSQ	Depositor
R, $R_{free}$	0.177 , 0.221	Depositor
Estimated twinning fraction	No twinning to report.	Xtriage
Total number of atoms	2846	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	20.0	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:  
CA

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	0.51	0/2604	1.37	25/3502 (0.7%)

There are no bond length outliers.

All (25) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	144	ASP	CB-CG-OD2	11.11	128.30	118.30
1	A	164	ARG	NE-CZ-NH1	9.80	125.20	120.30
1	A	205	ARG	NE-CZ-NH1	9.17	124.89	120.30
1	A	33	ARG	CD-NE-CZ	8.46	135.45	123.60
1	A	275	ARG	NE-CZ-NH1	8.05	124.33	120.30
1	A	258	ARG	NE-CZ-NH1	7.79	124.19	120.30
1	A	18	ASP	N-CA-CB	-7.35	97.37	110.60
1	A	49	ARG	NE-CZ-NH1	7.21	123.91	120.30
1	A	218	ARG	NE-CZ-NH1	6.75	123.67	120.30
1	A	14	ARG	NE-CZ-NH1	6.65	123.62	120.30
1	A	10	ARG	CD-NE-CZ	6.57	132.80	123.60
1	A	284	ASP	CB-CG-OD2	6.06	123.75	118.30
1	A	134	TYR	CB-CG-CD1	-5.80	117.52	121.00
1	A	139	LYS	N-CA-CB	5.79	121.02	110.60
1	A	134	TYR	CB-CG-CD2	5.69	124.42	121.00
1	A	33	ARG	CG-CD-NE	5.42	123.19	111.80
1	A	280	ARG	NE-CZ-NH2	5.39	122.99	120.30
1	A	3	ALA	N-CA-C	-5.35	96.55	111.00
1	A	20	SER	N-CA-CB	5.33	118.50	110.50
1	A	128	ASP	CB-CG-OD2	-5.26	113.56	118.30
1	A	33	ARG	NE-CZ-NH1	5.20	122.90	120.30
1	A	164	ARG	NE-CZ-NH2	-5.18	117.71	120.30
1	A	10	ARG	NE-CZ-NH1	5.08	122.84	120.30
1	A	218	ARG	CD-NE-CZ	5.07	130.69	123.60

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	173	GLU	OE1-CD-OE2	-5.04	117.25	123.30

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	2560	0	2565	56	0
2	A	5	0	0	0	0
3	A	281	0	0	10	0
All	All	2846	0	2565	56	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 11.

All (56) 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:30[A]:LYS:HZ1	1:A:41:MET:HG2	1.23	1.02
1:A:30[A]:LYS:NZ	1:A:41:MET:HG2	1.85	0.91
1:A:185:LYS:HD2	3:A:520:HOH:O	1.69	0.90
1:A:178:GLN:O	1:A:182:ILE:HG12	1.81	0.80
1:A:30[A]:LYS:HZ1	1:A:41:MET:CG	1.93	0.79
1:A:98:LYS:O	1:A:102:LYS:HD3	1.86	0.74
1:A:208:PRO:HA	1:A:211:LYS:HE3	1.72	0.70
1:A:32:ILE:HD12	1:A:72:ASP:HB3	1.74	0.70
1:A:32:ILE:CD1	1:A:72:ASP:HB3	2.28	0.63
1:A:30[A]:LYS:NZ	1:A:41:MET:CG	2.60	0.59
1:A:257:GLU:OE1	3:A:594:HOH:O	2.16	0.59
1:A:62:GLN:HA	1:A:62:GLN:HE21	1.68	0.58
1:A:30[A]:LYS:HD2	3:A:533:HOH:O	2.03	0.57
1:A:30[A]:LYS:HZ1	1:A:41:MET:CE	2.17	0.57
1:A:164:ARG:HH11	1:A:164:ARG:HG2	1.70	0.57
1:A:29:GLN:O	1:A:33:ARG:HB2	2.05	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:104:MET:HB3	1:A:148:GLU:HG3	1.86	0.56
1:A:27:ALA:O	1:A:30[A]:LYS:HD3	2.06	0.56
1:A:207:PHE:N	1:A:208:PRO:CD	2.69	0.56
1:A:105:LYS:HE2	1:A:106:GLY:H	1.70	0.55
1:A:46:LEU:HD12	1:A:85:MET:HE1	1.88	0.54
1:A:47:THR:OG1	1:A:318:LYS:HE3	2.07	0.54
1:A:46:LEU:HD12	1:A:85:MET:CE	2.38	0.54
1:A:163:GLY:HA2	3:A:568:HOH:O	2.08	0.53
1:A:305:LYS:HG2	1:A:317:LEU:HD11	1.92	0.51
1:A:27:ALA:HA	1:A:30[A]:LYS:HD3	1.91	0.51
1:A:40:LYS:NZ	1:A:314:ILE:HD13	2.26	0.51
1:A:30[A]:LYS:NZ	1:A:41:MET:CE	2.74	0.51
1:A:80:HIS:HB2	3:A:579:HOH:O	2.11	0.50
1:A:233:LEU:CD1	1:A:241:LEU:HD12	2.42	0.50
1:A:162:ASP:HB3	1:A:164:ARG:HG3	1.93	0.49
1:A:30[A]:LYS:HZ1	1:A:41:MET:HE2	1.78	0.48
1:A:40:LYS:HZ3	1:A:314:ILE:HD13	1.77	0.48
1:A:315:THR:O	1:A:319:ILE:HG12	2.13	0.48
1:A:118:LEU:HD23	1:A:157:LEU:HD22	1.94	0.48
1:A:116:GLU:OE1	1:A:258:ARG:NH2	2.46	0.48
1:A:30[A]:LYS:NZ	1:A:41:MET:SD	2.86	0.48
1:A:226:VAL:HG12	1:A:230:LYS:NZ	2.31	0.46
1:A:30[A]:LYS:HE2	3:A:492:HOH:O	2.15	0.46
1:A:177:LYS:HE3	3:A:639:HOH:O	2.16	0.45
1:A:238:GLU:HG2	1:A:242:LEU:CD2	2.46	0.45
1:A:4:SER:HB3	1:A:7:VAL:HB	1.98	0.45
1:A:80:HIS:CD2	1:A:270:GLU:HG2	2.53	0.44
1:A:5:ILE:HG21	1:A:124:ARG:HD2	1.99	0.44
1:A:67:LYS:HD2	1:A:72:ASP:OD2	2.18	0.44
1:A:206:SER:OG	1:A:208:PRO:HD2	2.18	0.44
1:A:229:ILE:HG21	1:A:242:LEU:HD13	2.01	0.43
1:A:260:HIS:O	1:A:264:LYS:HG2	2.19	0.43
1:A:5:ILE:HG13	1:A:6:TRP:CD1	2.54	0.42
1:A:105:LYS:CE	1:A:106:GLY:H	2.32	0.42
1:A:5:ILE:HG21	1:A:124:ARG:CD	2.50	0.42
1:A:80:HIS:ND1	3:A:457:HOH:O	2.23	0.42
1:A:222:GLN:HG2	3:A:642:HOH:O	2.20	0.41
1:A:250:ASN:OD1	1:A:252:PRO:HD2	2.19	0.41
1:A:258:ARG:HD3	3:A:643:HOH:O	2.21	0.41
1:A:54:ARG:HD2	1:A:88:LEU:O	2.21	0.40

There are no symmetry-related clashes.



## 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	322/323 (100%)	316 (98%)	6 (2%)	0	100	100

There are no Ramachandran outliers to report.

### 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	279/278 (100%)	255 (91%)	24 (9%)	12	3

All (24) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	2	SER
1	A	4	SER
1	A	29	GLN
1	A	33	ARG
1	A	59	LYS
1	A	62	GLN
1	A	76	ASP
1	A	105	LYS
1	A	118	LEU
1	A	124	ARG
1	A	126	MET
1	A	128	ASP
1	A	147	SER

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Mol	Chain	Res	Type
1	A	162	ASP
1	A	168	SER
1	A	173	GLU
1	A	185	LYS
1	A	211	LYS
1	A	219	ASN
1	A	222	GLN
1	A	242	LEU
1	A	261	ARG
1	A	306	SER
1	A	307	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (3) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	62	GLN
1	A	189	ASN
1	A	274	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 carbohydrates in this entry.

## 5.6 Ligand geometry ⓘ

Of 5 ligands modelled in this entry, 5 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 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

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.