



# Full wwPDB NMR Structure Validation Report ⓘ

Feb 19, 2018 – 07:12 pm GMT

PDB ID : 1G3F  
Title : NMR STRUCTURE OF A 9 RESIDUE PEPTIDE FROM SMAC/DIABLO COMPLEXED TO THE BIR3 DOMAIN OF XIAP  
Authors : Liu, Z.; Sun, C.; Olejniczak, E.T.; Meadows, R.P.; Betz, S.F.; Oost, T.; Herrmann, J.; Wu, J.C.; Fesik, S.W.  
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This is a Full wwPDB NMR 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

<https://www.wwpdb.org/validation/2017/NMRValidationReportHelp>

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:

Cyrange : Kirchner and Güntert (2011)  
NmrClust : Kelley et al. (1996)  
MolProbity : 4.02b-467  
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)  
RCI : v\_1n\_11\_5\_13\_A (Berjanski et al., 2005)  
PANAV : Wang et al. (2010)  
ShiftChecker : trunk30686  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : trunk30686

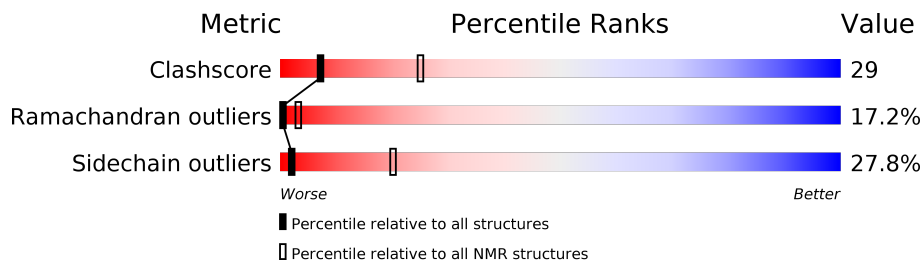
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*SOLUTION NMR*

The overall completeness of chemical shifts assignment was not calculated.

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)	NMR archive (#Entries)
Clashscore	136279	12091
Ramachandran outliers	132675	10835
Sidechain outliers	132484	10811

The table below summarises the geometric issues observed across the polymeric chains and their fit to the experimental data. The red, orange, yellow and green segments indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. A cyan segment indicates the fraction of residues that are not part of the well-defined cores, and 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  $\leq 5\%$

Mol	Chain	Length	Quality of chain
1	A	117	
2	B	9	

## 2 Ensemble composition and analysis

This entry contains 1 models. Identification of well-defined residues and clustering analysis are not possible.

### 3 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 1970 atoms, of which 958 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called INHIBITOR OF APOPTOSIS PROTEIN 3.

Mol	Chain	Residues	Atoms					Trace	
			Total	C	H	N	O		S
1	A	117	1832	597	887	162	180	6	0

There is a discrepancy between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	240	MET	-	CLONING ARTIFACT	UNP P98170

- Molecule 2 is a protein called SMAC.

Mol	Chain	Residues	Atoms				Trace	
			Total	C	H	N		O
2	B	9	137	41	71	11	14	0

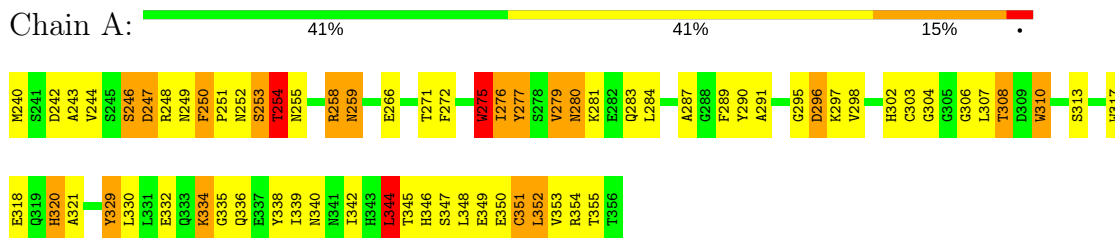
- Molecule 3 is ZINC ION (three-letter code: ZN) (formula: Zn).

Mol	Chain	Residues	Atoms	
			Total	Zn
3	A	1	1	1

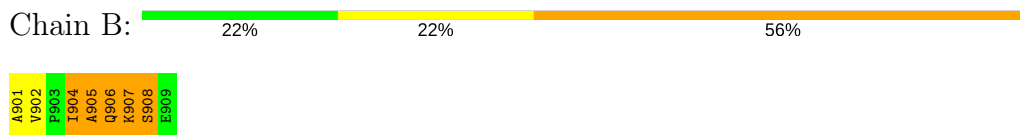
## 4 Residue-property plots [i](#)

These plots are provided for all protein, RNA and DNA chains in the entry. The first graphic is the same as shown in the summary in section 1 of this report. The second graphic shows the sequence where residues are colour-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 outliers are shown as green connectors. Residues which are classified as ill-defined in the NMR ensemble, are shown in cyan with an underline colour-coded according to the previous scheme. Residues which were present in the experimental sample, but not modelled in the final structure are shown in grey.

- Molecule 1: INHIBITOR OF APOPTOSIS PROTEIN 3



- Molecule 2: SMAC



## 5 Refinement protocol and experimental data overview

The models were refined using the following method: *simulated annealing*.

Of the ? calculated structures, 1 were deposited, based on the following criterion: ?.

The following table shows the software used for structure solution, optimisation and refinement.

Software name	Classification	Version
cnx	refinement	2000

No chemical shift data was provided. No validations of the models with respect to experimental NMR restraints is performed at this time.

## 6 Model quality i

### 6.1 Standard geometry i

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

There are no covalent bond-length or bond-angle outliers.

There are no bond-length outliers.

There are no bond-angle outliers.

There are no chirality outliers.

There are no planarity outliers.

### 6.2 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 each 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 averaged over the ensemble.

Mol	Chain	Non-H	H(model)	H(added)	Clashes
1	A	945	887	881	54
2	B	66	71	68	8
All	All	1012	958	949	56

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 29.

All clashes are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Clash(Å)	Distance(Å)
1:A:290:TYR:C	1:A:298:VAL:HG23	0.70	2.06
1:A:308:THR:O	2:B:902:VAL:HG22	0.70	1.87
1:A:287:ALA:HB2	1:A:317:TRP:CD1	0.65	2.25
1:A:318:GLU:HA	1:A:342:ILE:HG21	0.62	1.69
1:A:307:LEU:HD12	2:B:901:ALA:HB3	0.60	1.71
1:A:307:LEU:HD12	2:B:901:ALA:CB	0.60	2.25
1:A:283:GLN:NE2	1:A:348:LEU:HD12	0.59	2.13
1:A:306:GLY:HA3	2:B:904:ILE:HD12	0.59	1.73
1:A:338:TYR:OH	1:A:348:LEU:HD22	0.58	1.99
1:A:279:VAL:HG23	1:A:280:ASN:N	0.58	2.13
1:A:340:ASN:OD1	1:A:344:LEU:HD12	0.56	2.01
1:A:277:TYR:CD1	1:A:279:VAL:HG22	0.55	2.36

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Atom-1	Atom-2	Clash(Å)	Distance(Å)
1:A:306:GLY:C	1:A:307:LEU:HD22	0.55	2.21
1:A:352:LEU:HD22	1:A:353:VAL:N	0.54	2.18
1:A:271:THR:OG1	1:A:291:ALA:HB3	0.53	2.04
1:A:352:LEU:N	1:A:352:LEU:HD13	0.53	2.18
1:A:277:TYR:OH	1:A:284:LEU:HD21	0.52	2.04
1:A:277:TYR:CE2	1:A:310:TRP:CD1	0.51	2.97
1:A:276:ILE:HD13	1:A:281:LYS:HG2	0.51	1.80
1:A:330:LEU:HD23	1:A:339:ILE:CD1	0.51	2.36
2:B:904:ILE:HG22	2:B:905:ALA:N	0.51	2.19
1:A:318:GLU:CD	1:A:342:ILE:HG23	0.51	2.26
1:A:317:TRP:HB3	1:A:342:ILE:HD11	0.51	1.83
1:A:302:HIS:CD2	1:A:329:TYR:CD1	0.50	2.99
1:A:275:TRP:CH2	1:A:277:TYR:CE2	0.50	3.00
1:A:318:GLU:OE2	1:A:342:ILE:HG23	0.50	2.07
1:A:275:TRP:CZ2	1:A:277:TYR:CE2	0.50	2.99
1:A:350:GLU:O	1:A:352:LEU:HD13	0.48	2.08
1:A:250:PHE:CD1	1:A:250:PHE:N	0.47	2.83
1:A:253:SER:O	1:A:254:THR:HG23	0.47	2.09
1:A:317:TRP:CE3	1:A:330:LEU:HD11	0.46	2.45
1:A:276:ILE:HD12	1:A:277:TYR:N	0.46	2.25
1:A:242:ASP:O	1:A:243:ALA:HB3	0.46	2.11
1:A:317:TRP:CZ2	1:A:334:LYS:CE	0.45	3.00
1:A:352:LEU:C	1:A:353:VAL:HG23	0.45	2.32
1:A:277:TYR:OH	1:A:284:LEU:HD11	0.45	2.12
1:A:281:LYS:HA	1:A:284:LEU:HD12	0.45	1.89
1:A:306:GLY:CA	2:B:904:ILE:HD12	0.44	2.42
1:A:350:GLU:C	1:A:352:LEU:HD13	0.43	2.33
1:A:317:TRP:CD2	1:A:330:LEU:HD11	0.43	2.49
1:A:297:LYS:HG2	2:B:904:ILE:HD11	0.43	1.90
1:A:272:PHE:CD1	1:A:291:ALA:HB2	0.42	2.49
1:A:271:THR:CB	1:A:291:ALA:HB3	0.42	2.45
1:A:350:GLU:O	1:A:351:CYS:CB	0.42	2.67
1:A:244:VAL:HG12	1:A:248:ARG:HB3	0.42	1.91
1:A:320:HIS:CD2	1:A:321:ALA:N	0.42	2.87
1:A:306:GLY:O	1:A:307:LEU:HD22	0.42	2.15
1:A:275:TRP:CZ2	1:A:277:TYR:CD2	0.42	3.08
1:A:295:GLY:O	1:A:296:ASP:CB	0.41	2.67
1:A:272:PHE:CE1	1:A:291:ALA:HB2	0.41	2.50
1:A:317:TRP:CE3	1:A:338:TYR:CD1	0.41	3.08
1:A:330:LEU:CD2	1:A:339:ILE:CD1	0.41	2.99
1:A:277:TYR:CE1	1:A:279:VAL:HG22	0.41	2.51
1:A:354:ARG:C	1:A:355:THR:HG23	0.40	2.36

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Atom-1	Atom-2	Clash(Å)	Distance(Å)
1:A:317:TRP:CH2	1:A:330:LEU:CD1	0.40	3.04
2:B:906:GLN:O	2:B:908:SER:N	0.40	2.55

## 6.3 Torsion angles [i](#)

### 6.3.1 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 PDB entries followed by that with respect to all NMR entries. 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	115/117 (98%)	67 (58%)	31 (27%)	17 (15%)	1	4
2	B	7/9 (78%)	2 (29%)	1 (14%)	4 (57%)	0	0
All	All	122/126 (97%)	69 (57%)	32 (26%)	21 (17%)	0	3

All 21 Ramachandran outliers are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type
1	A	335	GLY
1	A	259	ASN
2	B	904	ILE
1	A	304	GLY
2	B	905	ALA
1	A	247	ASP
1	A	246	SER
1	A	276	ILE
2	B	906	GLN
1	A	296	ASP
1	A	258	ARG
2	B	907	LYS
1	A	275	TRP
1	A	251	PRO
1	A	253	SER
1	A	249	ASN
1	A	344	LEU
1	A	254	THR
1	A	349	GLU
1	A	252	ASN

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Mol	Chain	Res	Type
1	A	310	TRP

### 6.3.2 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 PDB entries followed by that with respect to all NMR entries. 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	101/101 (100%)	73 (72%)	28 (28%)	2	20
2	B	7/7 (100%)	5 (71%)	2 (29%)	2	19
All	All	108/108 (100%)	78 (72%)	30 (28%)	2	20

All 30 residues with a non-rotameric sidechain are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type
1	A	250	PHE
1	A	347	SER
1	A	352	LEU
1	A	279	VAL
1	A	266	GLU
1	A	308	THR
1	A	277	TYR
1	A	351	CYS
1	A	254	THR
1	A	259	ASN
1	A	345	THR
1	A	320	HIS
1	A	246	SER
1	A	289	PHE
1	A	313	SER
1	A	332	GLU
1	A	258	ARG
1	A	329	TYR
2	B	908	SER
1	A	255	ASN
1	A	247	ASP
1	A	334	LYS
1	A	240	MET

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Mol	Chain	Res	Type
2	B	907	LYS
1	A	280	ASN
1	A	336	GLN
1	A	344	LEU
1	A	275	TRP
1	A	346	HIS
1	A	303	CYS

### 6.3.3 RNA [i](#)

There are no RNA molecules in this entry.

### 6.4 Non-standard residues in protein, DNA, RNA chains [i](#)

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

### 6.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

### 6.6 Ligand geometry [i](#)

Of 1 ligands modelled in this entry, 1 is monoatomic - leaving 0 for Mogul analysis.

### 6.7 Other polymers [i](#)

There are no such molecules in this entry.

### 6.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 7 Chemical shift validation

No chemical shift data were provided