



# Full wwPDB NMR Structure Validation Report ⓘ

Feb 19, 2022 – 01:10 PM EST

PDB ID : 1QVP  
Title : C terminal SH3-like domain from Diphtheria toxin Repressor residues 144-226.  
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Deposited on : 2003-08-28

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:

MolProbity : 4.02b-467  
Percentile statistics : 20191225.v01 (using entries in the PDB archive December 25th 2019)  
RCI : v\_1n\_11\_5\_13\_A (Berjanski et al., 2005)  
PANAV : Wang et al. (2010)  
ShiftChecker : 2.26  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.26

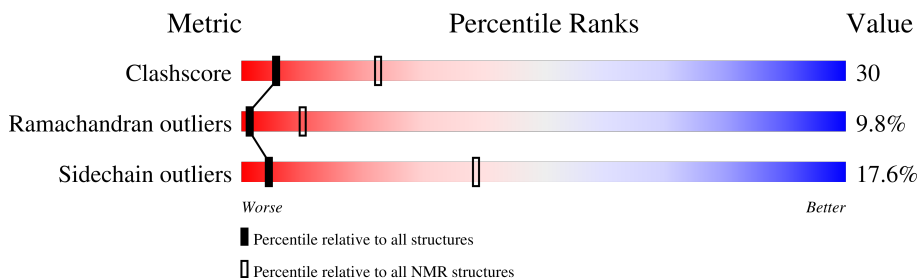
# 1 Overall quality at a glance

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	158937	12864
Ramachandran outliers	154571	11451
Sidechain outliers	154315	11428

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	87	

## 2 Ensemble composition and analysis

This entry contains 13 models. Model 1 is the overall representative, medoid model (most similar to other models).

The following residues are included in the computation of the global validation metrics.

Well-defined (core) protein residues			
Well-defined core	Residue range (total)	Backbone RMSD (Å)	Medoid model
1	A:148-A:226 (79)	0.95	1

Ill-defined regions of proteins are excluded from the global statistics.

Ligands and non-protein polymers are included in the analysis.

The models can be grouped into 2 clusters and 7 single-model clusters were found.

Cluster number	Models
1	1, 7, 8, 9
2	6, 12
Single-model clusters	2; 3; 4; 5; 10; 11; 13

### 3 Entry composition

There is only 1 type of molecule in this entry. The entry contains 1351 atoms, of which 674 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Diphtheria toxin repressor.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	87	1351	416	674	121	138	2	0

There are 4 discrepancies between the modelled and reference sequences:

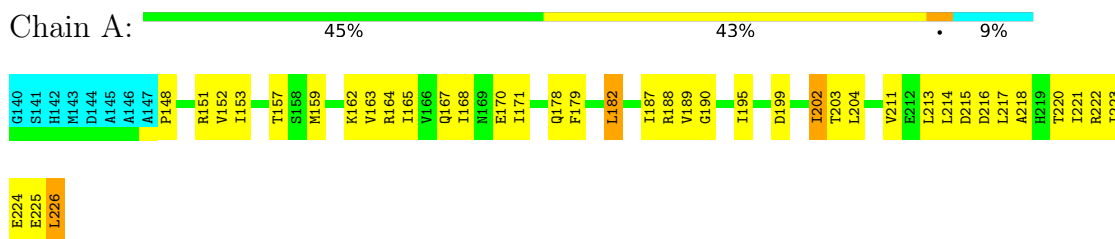
Chain	Residue	Modelled	Actual	Comment	Reference
A	140	GLY	-	cloning artifact	UNP P33120
A	141	SER	-	cloning artifact	UNP P33120
A	142	HIS	-	cloning artifact	UNP P33120
A	143	MET	-	cloning artifact	UNP P33120

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

### 4.1 Average score per residue in the NMR ensemble

These plots are provided for all protein, RNA, DNA and oligosaccharide 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: Diphtheria toxin repressor

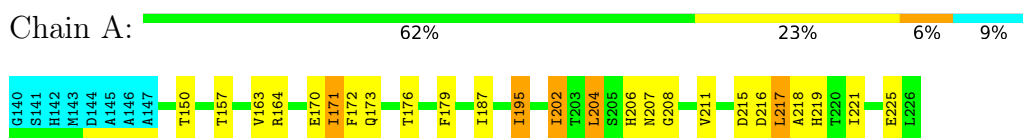


### 4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

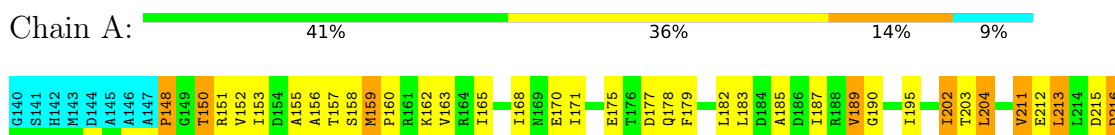
#### 4.2.1 Score per residue for model 1 (medoid)

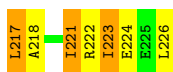
- Molecule 1: Diphtheria toxin repressor



#### 4.2.2 Score per residue for model 2

- Molecule 1: Diphtheria toxin repressor

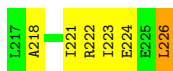




### 4.2.3 Score per residue for model 3

- Molecule 1: Diphtheria toxin repressor

Chain A: 44% 33% 14% 9%



### 4.2.4 Score per residue for model 4

- Molecule 1: Diphtheria toxin repressor

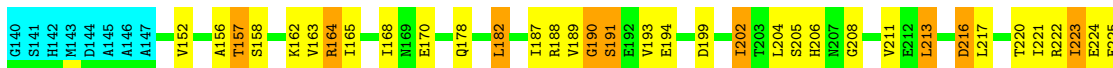
Chain A: 46% 34% 10% 9%



### 4.2.5 Score per residue for model 5

- Molecule 1: Diphtheria toxin repressor

Chain A: 49% 31% 10% 9%



### 4.2.6 Score per residue for model 6

- Molecule 1: Diphtheria toxin repressor

Chain A: 59% 28% 5% 9%



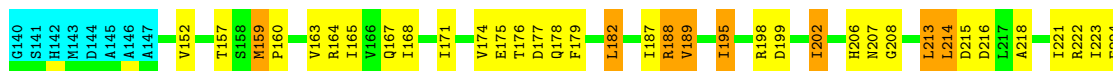
#### 4.2.7 Score per residue for model 7

- Molecule 1: Diphtheria toxin repressor



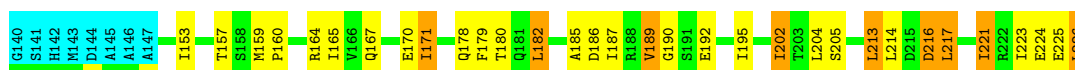
#### 4.2.8 Score per residue for model 8

- Molecule 1: Diphtheria toxin repressor



#### 4.2.9 Score per residue for model 9

- Molecule 1: Diphtheria toxin repressor



#### 4.2.10 Score per residue for model 10

- Molecule 1: Diphtheria toxin repressor





#### 4.2.11 Score per residue for model 11

- Molecule 1: Diphtheria toxin repressor



#### 4.2.12 Score per residue for model 12

- Molecule 1: Diphtheria toxin repressor



#### 4.2.13 Score per residue for model 13

- Molecule 1: Diphtheria toxin repressor





## 5 Refinement protocol and experimental data overview

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

Of the 64 calculated structures, 13 were deposited, based on the following criterion: *structures with the lowest energy*.

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

Software name	Classification	Version
CNS	refinement	1.0
CNS	structure solution	1.0

No chemical shift data was provided.

## 6 Model quality i

### 6.1 Standard geometry i

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	626	628	625	38±15
All	All	8138	8164	8125	495

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 30.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:168:ILE:HG22	1:A:220:THR:HG21	0.98	1.31	11	1
1:A:166:VAL:HG23	1:A:223:ILE:CG2	0.95	1.91	10	1
1:A:166:VAL:HB	1:A:223:ILE:HG22	0.94	1.35	10	1
1:A:166:VAL:CB	1:A:223:ILE:HG22	0.93	1.93	10	1
1:A:182:LEU:HD11	1:A:213:LEU:HD13	0.93	1.41	13	1
1:A:166:VAL:HA	1:A:222:ARG:O	0.92	1.63	10	1
1:A:182:LEU:HD22	1:A:213:LEU:HD13	0.92	1.42	10	3
1:A:151:ARG:HB2	1:A:223:ILE:HD13	0.90	1.43	2	2
1:A:165:ILE:HD13	1:A:223:ILE:HG23	0.88	1.45	5	2
1:A:151:ARG:N	1:A:223:ILE:HD11	0.87	1.85	3	2
1:A:165:ILE:O	1:A:222:ARG:O	0.86	1.93	10	1
1:A:166:VAL:CG2	1:A:223:ILE:CG2	0.84	2.56	10	1
1:A:152:VAL:HG23	1:A:153:ILE:HD12	0.81	1.50	13	1
1:A:151:ARG:CA	1:A:155:ALA:HB3	0.81	2.06	2	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:151:ARG:HA	1:A:155:ALA:CB	0.80	2.07	2	2
1:A:179:PHE:CZ	1:A:180:THR:HG23	0.79	2.12	13	1
1:A:163:VAL:HG11	1:A:195:ILE:HD11	0.77	1.56	11	1
1:A:226:LEU:HD23	1:A:226:LEU:O	0.77	1.80	13	2
1:A:168:ILE:HG22	1:A:220:THR:HG23	0.74	1.58	13	1
1:A:182:LEU:C	1:A:182:LEU:HD13	0.73	2.04	12	1
1:A:152:VAL:HG21	1:A:220:THR:O	0.72	1.85	13	1
1:A:168:ILE:N	1:A:189:VAL:HG11	0.72	1.99	8	1
1:A:177:ASP:O	1:A:182:LEU:HD13	0.72	1.85	13	1
1:A:182:LEU:HD13	1:A:183:LEU:N	0.71	2.01	12	1
1:A:178:GLN:HA	1:A:182:LEU:HD13	0.71	1.61	13	1
1:A:198:ARG:HA	1:A:202:ILE:HG23	0.71	1.62	10	1
1:A:153:ILE:HG23	1:A:218:ALA:O	0.71	1.86	12	1
1:A:152:VAL:HG21	1:A:219:HIS:HA	0.70	1.63	11	1
1:A:151:ARG:CA	1:A:155:ALA:CB	0.70	2.68	2	2
1:A:163:VAL:HA	1:A:226:LEU:HD11	0.70	1.61	10	1
1:A:166:VAL:CB	1:A:223:ILE:CG2	0.69	2.70	10	1
1:A:165:ILE:HG22	1:A:189:VAL:HB	0.68	1.65	3	7
1:A:165:ILE:O	1:A:165:ILE:HD12	0.68	1.88	10	1
1:A:151:ARG:O	1:A:155:ALA:HB3	0.68	1.88	3	1
1:A:163:VAL:CG1	1:A:223:ILE:HD12	0.68	2.19	10	1
1:A:165:ILE:CD1	1:A:223:ILE:HG23	0.67	2.20	5	3
1:A:213:LEU:HD22	1:A:214:LEU:N	0.67	2.02	9	1
1:A:178:GLN:O	1:A:182:LEU:HD12	0.67	1.90	12	2
1:A:152:VAL:HG13	1:A:223:ILE:HG21	0.67	1.66	2	1
1:A:179:PHE:O	1:A:183:LEU:HG	0.66	1.91	13	1
1:A:204:LEU:CD2	1:A:218:ALA:HB2	0.65	2.21	4	1
1:A:225:GLU:O	1:A:226:LEU:HD22	0.65	1.91	8	1
1:A:168:ILE:HG22	1:A:220:THR:HG22	0.65	1.67	7	1
1:A:151:ARG:CB	1:A:155:ALA:HB3	0.65	2.21	2	2
1:A:151:ARG:HB2	1:A:223:ILE:CD1	0.65	2.22	3	1
1:A:166:VAL:HG22	1:A:222:ARG:O	0.65	1.91	3	1
1:A:170:GLU:O	1:A:171:ILE:HG22	0.65	1.91	7	1
1:A:149:GLY:HA3	1:A:223:ILE:CG1	0.64	2.21	10	1
1:A:182:LEU:HD23	1:A:211:VAL:HG12	0.64	1.67	4	1
1:A:152:VAL:HG23	1:A:163:VAL:HG21	0.64	1.70	3	1
1:A:165:ILE:HD12	1:A:165:ILE:N	0.64	2.07	7	7
1:A:182:LEU:HD22	1:A:213:LEU:O	0.64	1.92	8	1
1:A:165:ILE:HG22	1:A:189:VAL:CB	0.64	2.22	3	8
1:A:164:ARG:O	1:A:223:ILE:HG22	0.64	1.93	10	1
1:A:187:ILE:HG23	1:A:187:ILE:O	0.64	1.92	3	9

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:182:LEU:CD1	1:A:213:LEU:HD13	0.64	2.21	13	1
1:A:152:VAL:HG13	1:A:153:ILE:HD12	0.64	1.70	4	1
1:A:182:LEU:HD22	1:A:217:LEU:HD11	0.63	1.69	4	1
1:A:182:LEU:HD21	1:A:213:LEU:HB2	0.63	1.71	4	1
1:A:187:ILE:HG21	1:A:211:VAL:HG21	0.63	1.70	2	1
1:A:179:PHE:O	1:A:183:LEU:CG	0.62	2.47	13	1
1:A:189:VAL:HG23	1:A:189:VAL:O	0.62	1.94	4	5
1:A:213:LEU:HD12	1:A:216:ASP:HB3	0.62	1.71	3	1
1:A:165:ILE:HG22	1:A:190:GLY:N	0.62	2.09	10	1
1:A:166:VAL:HB	1:A:223:ILE:CG2	0.62	2.18	10	1
1:A:187:ILE:O	1:A:187:ILE:HG23	0.62	1.94	1	1
1:A:152:VAL:HG22	1:A:220:THR:O	0.62	1.95	5	1
1:A:178:GLN:HG2	1:A:182:LEU:HD22	0.62	1.72	13	1
1:A:178:GLN:C	1:A:182:LEU:HD21	0.62	2.15	3	2
1:A:162:LYS:O	1:A:226:LEU:HD11	0.62	1.95	5	1
1:A:167:GLN:O	1:A:222:ARG:N	0.62	2.32	11	1
1:A:164:ARG:O	1:A:166:VAL:N	0.61	2.32	10	1
1:A:168:ILE:HG22	1:A:220:THR:CG2	0.61	2.20	11	3
1:A:153:ILE:HG21	1:A:219:HIS:CE1	0.61	2.30	12	1
1:A:149:GLY:HA3	1:A:223:ILE:HG13	0.60	1.72	10	1
1:A:178:GLN:O	1:A:182:LEU:HD21	0.60	1.96	3	3
1:A:151:ARG:HA	1:A:155:ALA:HB2	0.60	1.74	2	2
1:A:225:GLU:O	1:A:226:LEU:HD23	0.60	1.97	10	1
1:A:178:GLN:O	1:A:182:LEU:HD11	0.60	1.97	3	2
1:A:196:VAL:HG13	1:A:197:ASP:H	0.60	1.56	10	1
1:A:182:LEU:HD12	1:A:214:LEU:HB3	0.59	1.73	7	1
1:A:178:GLN:HA	1:A:182:LEU:HD21	0.59	1.73	3	2
1:A:195:ILE:HA	1:A:204:LEU:HD13	0.59	1.73	3	1
1:A:156:ALA:CB	1:A:195:ILE:HD13	0.59	2.28	6	1
1:A:167:GLN:O	1:A:221:ILE:HG22	0.59	1.97	9	1
1:A:165:ILE:HG22	1:A:190:GLY:H	0.59	1.58	10	1
1:A:214:LEU:HD13	1:A:215:ASP:N	0.59	2.12	7	1
1:A:165:ILE:HD13	1:A:222:ARG:O	0.59	1.98	2	1
1:A:166:VAL:O	1:A:189:VAL:HG21	0.59	1.98	11	2
1:A:164:ARG:O	1:A:223:ILE:HA	0.59	1.97	10	1
1:A:153:ILE:HD11	1:A:221:ILE:O	0.58	1.98	3	1
1:A:165:ILE:CG2	1:A:189:VAL:HG12	0.58	2.28	4	8
1:A:193:VAL:CG2	1:A:204:LEU:HD21	0.58	2.28	5	3
1:A:168:ILE:HG23	1:A:222:ARG:CD	0.58	2.28	11	1
1:A:204:LEU:HD23	1:A:205:SER:N	0.58	2.14	6	2
1:A:151:ARG:CB	1:A:155:ALA:CB	0.58	2.81	2	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:164:ARG:O	1:A:224:GLU:N	0.58	2.37	11	6
1:A:189:VAL:O	1:A:190:GLY:C	0.58	2.42	5	2
1:A:163:VAL:CG2	1:A:195:ILE:HD11	0.58	2.28	1	2
1:A:165:ILE:HG13	1:A:224:GLU:N	0.58	2.14	10	1
1:A:204:LEU:HD13	1:A:205:SER:N	0.57	2.15	12	2
1:A:152:VAL:N	1:A:223:ILE:HD11	0.57	2.14	7	1
1:A:196:VAL:HG22	1:A:197:ASP:N	0.57	2.14	10	1
1:A:178:GLN:CA	1:A:182:LEU:HD21	0.57	2.29	3	2
1:A:168:ILE:HG23	1:A:222:ARG:HD3	0.57	1.74	11	1
1:A:152:VAL:HG12	1:A:223:ILE:CD1	0.57	2.30	11	1
1:A:178:GLN:CA	1:A:182:LEU:HD13	0.56	2.30	13	1
1:A:177:ASP:O	1:A:182:LEU:CD1	0.56	2.52	13	1
1:A:202:ILE:N	1:A:202:ILE:HD13	0.56	2.14	9	12
1:A:164:ARG:O	1:A:165:ILE:C	0.56	2.42	10	1
1:A:165:ILE:HD12	1:A:221:ILE:CG1	0.56	2.31	2	1
1:A:193:VAL:HG21	1:A:204:LEU:HD21	0.56	1.77	13	1
1:A:158:SER:O	1:A:159:MET:CB	0.56	2.54	2	1
1:A:182:LEU:CD2	1:A:217:LEU:HD21	0.56	2.31	13	1
1:A:156:ALA:CB	1:A:195:ILE:HG21	0.56	2.31	2	1
1:A:216:ASP:HA	1:A:221:ILE:HD13	0.55	1.78	2	1
1:A:204:LEU:HD13	1:A:217:LEU:HB2	0.55	1.78	2	1
1:A:193:VAL:HB	1:A:204:LEU:HD21	0.55	1.78	6	1
1:A:150:THR:O	1:A:152:VAL:N	0.55	2.39	10	1
1:A:213:LEU:N	1:A:213:LEU:HD13	0.55	2.17	11	1
1:A:225:GLU:HB3	1:A:226:LEU:HD22	0.55	1.78	11	1
1:A:204:LEU:HG	1:A:217:LEU:HD13	0.55	1.78	12	1
1:A:152:VAL:HG22	1:A:223:ILE:HG12	0.55	1.78	2	1
1:A:168:ILE:HD11	1:A:171:ILE:HG21	0.55	1.76	7	1
1:A:166:VAL:HG23	1:A:223:ILE:HG23	0.55	1.74	10	1
1:A:163:VAL:HG12	1:A:223:ILE:HD12	0.55	1.78	10	1
1:A:167:GLN:O	1:A:222:ARG:CA	0.55	2.55	11	1
1:A:182:LEU:HD12	1:A:214:LEU:CB	0.55	2.32	7	1
1:A:148:PRO:HG3	1:A:222:ARG:HB3	0.55	1.77	10	1
1:A:179:PHE:O	1:A:183:LEU:CD2	0.55	2.55	13	1
1:A:165:ILE:HA	1:A:222:ARG:O	0.54	2.02	11	1
1:A:152:VAL:HG11	1:A:218:ALA:O	0.54	2.02	11	1
1:A:164:ARG:C	1:A:223:ILE:HG22	0.54	2.22	12	1
1:A:189:VAL:HG23	1:A:190:GLY:N	0.54	2.16	2	3
1:A:196:VAL:HG13	1:A:197:ASP:N	0.54	2.17	10	1
1:A:195:ILE:HG23	1:A:204:LEU:CD1	0.54	2.33	7	1
1:A:212:GLU:O	1:A:213:LEU:HD12	0.54	2.03	13	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:204:LEU:HD12	1:A:217:LEU:HB2	0.54	1.77	1	1
1:A:164:ARG:HB2	1:A:224:GLU:O	0.54	2.02	10	2
1:A:151:ARG:HB3	1:A:155:ALA:HB3	0.53	1.79	2	1
1:A:163:VAL:CG2	1:A:223:ILE:HG21	0.53	2.33	5	2
1:A:202:ILE:HD12	1:A:202:ILE:O	0.53	2.04	10	1
1:A:162:LYS:HB3	1:A:226:LEU:HD22	0.53	1.80	2	1
1:A:157:THR:HG23	1:A:158:SER:N	0.53	2.19	10	1
1:A:165:ILE:CG2	1:A:222:ARG:HG2	0.53	2.34	11	1
1:A:198:ARG:N	1:A:201:HIS:O	0.53	2.41	10	1
1:A:163:VAL:HG22	1:A:193:VAL:O	0.53	2.03	11	1
1:A:151:ARG:H	1:A:223:ILE:HD11	0.53	1.58	3	1
1:A:152:VAL:HG12	1:A:223:ILE:HG12	0.53	1.81	5	2
1:A:216:ASP:O	1:A:221:ILE:HD13	0.52	2.05	9	2
1:A:187:ILE:HD13	1:A:214:LEU:CD1	0.52	2.34	6	1
1:A:193:VAL:HG23	1:A:204:LEU:HD21	0.52	1.82	5	2
1:A:165:ILE:O	1:A:190:GLY:N	0.52	2.42	9	4
1:A:226:LEU:HD23	1:A:226:LEU:N	0.52	2.20	9	5
1:A:204:LEU:HD22	1:A:218:ALA:HA	0.52	1.81	4	1
1:A:195:ILE:CG2	1:A:204:LEU:HD23	0.51	2.35	9	1
1:A:164:ARG:O	1:A:166:VAL:HB	0.51	2.04	10	1
1:A:204:LEU:HD23	1:A:217:LEU:HD22	0.51	1.81	12	1
1:A:167:GLN:O	1:A:168:ILE:CG1	0.51	2.59	3	1
1:A:178:GLN:HB2	1:A:214:LEU:HD12	0.51	1.81	4	1
1:A:168:ILE:O	1:A:221:ILE:HG22	0.51	2.06	4	1
1:A:151:ARG:C	1:A:223:ILE:HD11	0.51	2.24	12	1
1:A:151:ARG:C	1:A:155:ALA:HB3	0.51	2.26	3	2
1:A:163:VAL:HG21	1:A:195:ILE:HD11	0.51	1.81	1	4
1:A:180:THR:O	1:A:183:LEU:HD12	0.51	2.05	13	1
1:A:171:ILE:HG23	1:A:171:ILE:O	0.51	2.06	9	1
1:A:216:ASP:O	1:A:221:ILE:HG21	0.51	2.05	9	1
1:A:159:MET:HB3	1:A:160:PRO:HD3	0.51	1.82	2	1
1:A:156:ALA:HB2	1:A:195:ILE:HD13	0.51	1.83	6	1
1:A:152:VAL:HG13	1:A:220:THR:O	0.51	2.06	11	1
1:A:168:ILE:HG23	1:A:222:ARG:NE	0.50	2.21	11	1
1:A:151:ARG:CB	1:A:223:ILE:HD13	0.50	2.27	2	1
1:A:189:VAL:O	1:A:189:VAL:CG2	0.50	2.59	4	2
1:A:178:GLN:HA	1:A:182:LEU:CD1	0.50	2.36	13	1
1:A:204:LEU:C	1:A:204:LEU:HD13	0.50	2.27	5	1
1:A:204:LEU:HD11	1:A:217:LEU:CB	0.50	2.37	9	1
1:A:153:ILE:HD12	1:A:153:ILE:N	0.50	2.21	3	1
1:A:216:ASP:O	1:A:220:THR:HG22	0.50	2.06	4	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:204:LEU:HD12	1:A:217:LEU:CB	0.50	2.36	1	1
1:A:151:ARG:N	1:A:223:ILE:CD1	0.50	2.74	2	1
1:A:166:VAL:O	1:A:166:VAL:HG13	0.50	2.06	10	1
1:A:182:LEU:HD13	1:A:214:LEU:CD2	0.50	2.37	8	1
1:A:179:PHE:O	1:A:183:LEU:HD12	0.50	2.06	2	1
1:A:165:ILE:HB	1:A:189:VAL:O	0.50	2.07	13	2
1:A:165:ILE:O	1:A:222:ARG:C	0.50	2.50	10	1
1:A:171:ILE:HD12	1:A:172:PHE:N	0.50	2.21	11	1
1:A:159:MET:N	1:A:160:PRO:CD	0.49	2.74	13	4
1:A:167:GLN:C	1:A:222:ARG:CD	0.49	2.80	11	1
1:A:165:ILE:HG22	1:A:189:VAL:CG1	0.49	2.37	4	6
1:A:196:VAL:HG12	1:A:203:THR:H	0.49	1.67	10	1
1:A:168:ILE:CD1	1:A:171:ILE:HG21	0.49	2.37	7	1
1:A:203:THR:C	1:A:204:LEU:HD23	0.49	2.28	4	1
1:A:171:ILE:C	1:A:171:ILE:HD12	0.49	2.27	10	1
1:A:179:PHE:O	1:A:183:LEU:HD21	0.49	2.07	13	1
1:A:165:ILE:HG22	1:A:190:GLY:CA	0.49	2.38	10	1
1:A:166:VAL:HG23	1:A:167:GLN:H	0.49	1.68	11	1
1:A:158:SER:O	1:A:159:MET:HB2	0.49	2.07	2	1
1:A:165:ILE:HG12	1:A:224:GLU:HB2	0.49	1.85	10	1
1:A:148:PRO:HG3	1:A:222:ARG:CB	0.49	2.38	10	1
1:A:185:ALA:HB1	1:A:187:ILE:HD13	0.48	1.85	4	1
1:A:152:VAL:HG11	1:A:221:ILE:HB	0.48	1.85	3	1
1:A:170:GLU:O	1:A:171:ILE:O	0.48	2.31	10	2
1:A:187:ILE:HD13	1:A:211:VAL:CG2	0.48	2.38	2	1
1:A:165:ILE:HG22	1:A:189:VAL:HG12	0.48	1.85	4	4
1:A:173:GLN:O	1:A:174:VAL:HG22	0.48	2.08	7	1
1:A:158:SER:O	1:A:160:PRO:HD3	0.48	2.07	2	1
1:A:166:VAL:CG2	1:A:223:ILE:HG21	0.48	2.34	10	1
1:A:165:ILE:HG13	1:A:222:ARG:O	0.48	2.09	11	1
1:A:211:VAL:HG12	1:A:213:LEU:HD12	0.48	1.85	11	1
1:A:151:ARG:O	1:A:155:ALA:N	0.48	2.46	2	1
1:A:204:LEU:HD13	1:A:217:LEU:O	0.48	2.08	4	1
1:A:187:ILE:HG23	1:A:188:ARG:N	0.48	2.24	8	2
1:A:182:LEU:C	1:A:182:LEU:CD1	0.48	2.77	12	1
1:A:213:LEU:HD13	1:A:214:LEU:O	0.48	2.08	9	1
1:A:185:ALA:HB1	1:A:187:ILE:CD1	0.48	2.39	4	1
1:A:168:ILE:HG23	1:A:189:VAL:HG12	0.48	1.86	5	1
1:A:204:LEU:HD11	1:A:217:LEU:HB3	0.48	1.86	9	1
1:A:165:ILE:N	1:A:165:ILE:CD1	0.48	2.77	4	4
1:A:165:ILE:HG13	1:A:223:ILE:HA	0.48	1.86	10	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:217:LEU:HD12	1:A:217:LEU:O	0.47	2.08	5	2
1:A:168:ILE:CG2	1:A:220:THR:HG23	0.47	2.36	13	1
1:A:179:PHE:O	1:A:179:PHE:CD2	0.47	2.68	13	1
1:A:179:PHE:C	1:A:183:LEU:HG	0.47	2.29	13	1
1:A:204:LEU:CD2	1:A:218:ALA:CB	0.47	2.92	4	1
1:A:148:PRO:HG2	1:A:222:ARG:HA	0.47	1.87	10	1
1:A:179:PHE:CE1	1:A:180:THR:HG23	0.47	2.45	13	1
1:A:165:ILE:HG13	1:A:223:ILE:C	0.47	2.30	10	1
1:A:195:ILE:HG12	1:A:217:LEU:HD11	0.47	1.87	10	1
1:A:185:ALA:HB3	1:A:211:VAL:HG11	0.47	1.86	3	1
1:A:152:VAL:HG11	1:A:219:HIS:O	0.47	2.10	4	1
1:A:182:LEU:HB3	1:A:217:LEU:HD21	0.47	1.85	4	1
1:A:187:ILE:O	1:A:187:ILE:HG22	0.47	2.09	4	1
1:A:178:GLN:O	1:A:182:LEU:CD2	0.47	2.63	9	3
1:A:156:ALA:O	1:A:158:SER:N	0.47	2.45	5	1
1:A:148:PRO:CG	1:A:222:ARG:HA	0.47	2.40	10	1
1:A:166:VAL:CA	1:A:223:ILE:HG22	0.47	2.38	10	1
1:A:165:ILE:HG23	1:A:222:ARG:CG	0.47	2.40	11	1
1:A:157:THR:CG2	1:A:158:SER:N	0.46	2.77	5	1
1:A:194:GLU:O	1:A:204:LEU:HD22	0.46	2.10	5	1
1:A:195:ILE:HG23	1:A:204:LEU:HD11	0.46	1.87	7	1
1:A:164:ARG:HA	1:A:191:SER:O	0.46	2.11	13	2
1:A:182:LEU:HD23	1:A:211:VAL:CG1	0.46	2.40	4	1
1:A:165:ILE:HG21	1:A:189:VAL:HG12	0.46	1.88	12	1
1:A:164:ARG:O	1:A:223:ILE:CA	0.46	2.64	10	1
1:A:189:VAL:O	1:A:191:SER:N	0.46	2.49	5	1
1:A:204:LEU:HD22	1:A:218:ALA:CA	0.46	2.41	4	1
1:A:165:ILE:HG13	1:A:223:ILE:CA	0.46	2.41	10	1
1:A:182:LEU:HD11	1:A:213:LEU:CD1	0.46	2.30	13	1
1:A:170:GLU:O	1:A:171:ILE:CG2	0.45	2.61	7	1
1:A:173:GLN:O	1:A:174:VAL:CG2	0.45	2.65	7	1
1:A:187:ILE:O	1:A:187:ILE:CG2	0.45	2.64	2	5
1:A:165:ILE:O	1:A:189:VAL:O	0.45	2.34	8	4
1:A:171:ILE:HD12	1:A:171:ILE:O	0.45	2.10	8	1
1:A:190:GLY:O	1:A:191:SER:C	0.45	2.54	13	2
1:A:215:ASP:O	1:A:221:ILE:HD13	0.45	2.12	12	1
1:A:176:THR:O	1:A:177:ASP:C	0.45	2.54	13	1
1:A:164:ARG:N	1:A:226:LEU:HD23	0.45	2.26	11	1
1:A:212:GLU:C	1:A:213:LEU:HD13	0.45	2.32	11	1
1:A:182:LEU:HA	1:A:211:VAL:HG11	0.45	1.87	7	1
1:A:168:ILE:HG23	1:A:169:ASN:H	0.45	1.71	10	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:165:ILE:HD12	1:A:221:ILE:HG13	0.45	1.89	2	1
1:A:195:ILE:HG23	1:A:204:LEU:HD12	0.45	1.89	2	1
1:A:182:LEU:CD2	1:A:213:LEU:HD13	0.45	2.30	10	1
1:A:192:GLU:HG2	1:A:226:LEU:HD22	0.45	1.88	9	1
1:A:152:VAL:HA	1:A:223:ILE:CD1	0.45	2.42	11	1
1:A:176:THR:O	1:A:179:PHE:HB3	0.45	2.11	13	1
1:A:203:THR:HG23	1:A:212:GLU:HB2	0.45	1.87	7	3
1:A:185:ALA:O	1:A:187:ILE:N	0.44	2.50	2	5
1:A:196:VAL:CG1	1:A:197:ASP:H	0.44	2.25	10	1
1:A:218:ALA:C	1:A:221:ILE:HD11	0.44	2.32	10	1
1:A:165:ILE:HG23	1:A:221:ILE:HD11	0.44	1.88	8	1
1:A:165:ILE:O	1:A:165:ILE:CD1	0.44	2.63	10	1
1:A:187:ILE:HG21	1:A:214:LEU:HD11	0.44	1.89	6	1
1:A:167:GLN:O	1:A:221:ILE:HD12	0.44	2.11	8	1
1:A:152:VAL:HG12	1:A:221:ILE:HA	0.44	1.90	4	1
1:A:196:VAL:HG13	1:A:196:VAL:O	0.44	2.12	4	1
1:A:178:GLN:O	1:A:182:LEU:HG	0.44	2.13	6	1
1:A:164:ARG:O	1:A:223:ILE:CG2	0.44	2.64	10	1
1:A:152:VAL:HG12	1:A:223:ILE:CG1	0.44	2.42	11	1
1:A:178:GLN:HA	1:A:182:LEU:HD22	0.44	1.89	13	1
1:A:179:PHE:O	1:A:179:PHE:CG	0.44	2.69	13	1
1:A:178:GLN:CB	1:A:213:LEU:HD23	0.44	2.43	9	1
1:A:163:VAL:CA	1:A:226:LEU:HD13	0.43	2.43	2	1
1:A:203:THR:HG23	1:A:212:GLU:CB	0.43	2.43	7	1
1:A:182:LEU:HD13	1:A:214:LEU:HG	0.43	1.90	8	1
1:A:182:LEU:CD2	1:A:213:LEU:CB	0.43	2.96	9	1
1:A:150:THR:O	1:A:153:ILE:HD12	0.43	2.12	2	1
1:A:151:ARG:H	1:A:223:ILE:CD1	0.43	2.26	2	1
1:A:204:LEU:HD13	1:A:204:LEU:C	0.43	2.34	12	1
1:A:165:ILE:O	1:A:223:ILE:HA	0.43	2.13	10	1
1:A:168:ILE:HG22	1:A:216:ASP:O	0.43	2.13	4	1
1:A:213:LEU:HD22	1:A:213:LEU:C	0.43	2.32	9	1
1:A:165:ILE:HG22	1:A:189:VAL:HA	0.43	1.91	11	1
1:A:195:ILE:HD12	1:A:195:ILE:O	0.43	2.14	6	1
1:A:196:VAL:HG12	1:A:203:THR:N	0.43	2.27	10	1
1:A:206:HIS:O	1:A:208:GLY:N	0.43	2.52	1	4
1:A:165:ILE:HG23	1:A:222:ARG:CB	0.43	2.44	11	1
1:A:167:GLN:O	1:A:221:ILE:HG23	0.43	2.13	12	1
1:A:168:ILE:HG23	1:A:189:VAL:CG1	0.43	2.44	4	1
1:A:166:VAL:HG23	1:A:223:ILE:HG21	0.42	1.81	10	1
1:A:202:ILE:O	1:A:202:ILE:CD1	0.42	2.67	10	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:204:LEU:CD1	1:A:211:VAL:HG23	0.42	2.44	4	1
1:A:173:GLN:O	1:A:174:VAL:HG13	0.42	2.14	3	1
1:A:157:THR:HG22	1:A:158:SER:N	0.42	2.29	5	1
1:A:174:VAL:HG11	1:A:178:GLN:HB3	0.42	1.90	8	1
1:A:165:ILE:CG2	1:A:221:ILE:HD11	0.42	2.45	8	1
1:A:178:GLN:HB3	1:A:213:LEU:HD23	0.42	1.91	9	1
1:A:182:LEU:HD12	1:A:182:LEU:H	0.42	1.75	13	1
1:A:215:ASP:O	1:A:217:LEU:N	0.42	2.53	1	1
1:A:221:ILE:HG23	1:A:222:ARG:N	0.42	2.30	6	1
1:A:173:GLN:O	1:A:174:VAL:O	0.42	2.37	7	1
1:A:168:ILE:HG22	1:A:220:THR:HA	0.42	1.92	13	1
1:A:215:ASP:O	1:A:216:ASP:O	0.42	2.38	3	1
1:A:197:ASP:C	1:A:201:HIS:O	0.42	2.57	10	1
1:A:178:GLN:HA	1:A:213:LEU:HD13	0.42	1.92	2	1
1:A:204:LEU:HD21	1:A:216:ASP:OD2	0.42	2.15	10	1
1:A:203:THR:HG23	1:A:211:VAL:O	0.42	2.15	13	1
1:A:164:ARG:O	1:A:223:ILE:CB	0.41	2.68	10	1
1:A:225:GLU:O	1:A:226:LEU:C	0.41	2.59	13	1
1:A:162:LYS:O	1:A:226:LEU:CD1	0.41	2.68	10	1
1:A:166:VAL:HG23	1:A:167:GLN:N	0.41	2.30	11	1
1:A:165:ILE:CG2	1:A:189:VAL:HA	0.41	2.45	11	1
1:A:159:MET:CB	1:A:160:PRO:HD3	0.41	2.45	8	1
1:A:196:VAL:HG22	1:A:197:ASP:H	0.41	1.73	10	1
1:A:182:LEU:HD23	1:A:214:LEU:HD21	0.41	1.91	12	1
1:A:204:LEU:HD21	1:A:218:ALA:HB2	0.41	1.92	4	1
1:A:164:ARG:CB	1:A:224:GLU:O	0.41	2.69	5	1
1:A:225:GLU:O	1:A:226:LEU:CB	0.41	2.69	5	1
1:A:148:PRO:HG3	1:A:222:ARG:CD	0.41	2.46	10	1
1:A:163:VAL:HB	1:A:223:ILE:CG2	0.41	2.46	12	1
1:A:202:ILE:N	1:A:202:ILE:CD1	0.41	2.83	2	1
1:A:165:ILE:HG13	1:A:223:ILE:HG22	0.41	1.93	3	1
1:A:202:ILE:HB	1:A:218:ALA:HB1	0.41	1.91	4	1
1:A:204:LEU:HB3	1:A:217:LEU:HD22	0.41	1.91	5	1
1:A:164:ARG:HB3	1:A:224:GLU:O	0.41	2.16	8	1
1:A:213:LEU:HD12	1:A:216:ASP:H	0.41	1.76	10	1
1:A:165:ILE:HG23	1:A:222:ARG:O	0.41	2.16	11	1
1:A:152:VAL:HG21	1:A:221:ILE:CG2	0.41	2.46	2	1
1:A:168:ILE:HD11	1:A:216:ASP:OD2	0.41	2.16	2	1
1:A:168:ILE:O	1:A:221:ILE:HG23	0.41	2.16	3	1
1:A:215:ASP:O	1:A:221:ILE:HD11	0.41	2.15	3	1
1:A:211:VAL:HG12	1:A:213:LEU:CD2	0.41	2.46	5	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:152:VAL:HG13	1:A:223:ILE:CG2	0.41	2.42	2	1
1:A:167:GLN:CB	1:A:222:ARG:CB	0.41	2.99	7	1
1:A:150:THR:O	1:A:151:ARG:C	0.41	2.59	10	1
1:A:166:VAL:HG23	1:A:221:ILE:O	0.40	2.16	11	1
1:A:204:LEU:HD23	1:A:204:LEU:C	0.40	2.37	13	1
1:A:152:VAL:HG11	1:A:220:THR:O	0.40	2.17	4	1
1:A:193:VAL:HG12	1:A:206:HIS:HA	0.40	1.92	5	1
1:A:152:VAL:HG21	1:A:218:ALA:O	0.40	2.16	7	1
1:A:152:VAL:HB	1:A:195:ILE:HD13	0.40	1.92	8	1
1:A:170:GLU:O	1:A:171:ILE:HG23	0.40	2.17	2	1
1:A:221:ILE:HG22	1:A:222:ARG:N	0.40	2.31	3	1
1:A:180:THR:CG2	1:A:181:GLN:N	0.40	2.85	12	1

## 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	78/87 (90%)	50±4 (64±5%)	20±3 (26±4%)	8±2 (10±3%)	<b>1</b>	<b>10</b>
All	All	1014/1131 (90%)	649 (64%)	266 (26%)	99 (10%)	<b>1</b>	<b>10</b>

All 35 unique Ramachandran outliers are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Models (Total)
1	A	216	ASP	9
1	A	199	ASP	9
1	A	171	ILE	7
1	A	207	ASN	5
1	A	218	ALA	5
1	A	170	GLU	4
1	A	175	GLU	4
1	A	188	ARG	4
1	A	172	PHE	3
1	A	221	ILE	3

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Mol	Chain	Res	Type	Models (Total)
1	A	148	PRO	3
1	A	186	ASP	3
1	A	189	VAL	3
1	A	190	GLY	3
1	A	215	ASP	3
1	A	225	GLU	3
1	A	213	LEU	3
1	A	159	MET	2
1	A	177	ASP	2
1	A	151	ARG	2
1	A	168	ILE	2
1	A	220	THR	2
1	A	191	SER	2
1	A	162	LYS	2
1	A	150	THR	1
1	A	154	ASP	1
1	A	173	GLN	1
1	A	174	VAL	1
1	A	176	THR	1
1	A	157	THR	1
1	A	165	ILE	1
1	A	196	VAL	1
1	A	208	GLY	1
1	A	160	PRO	1
1	A	178	GLN	1

### 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	71/75 (95%)	59±2 (82±3%)	12±2 (18±3%)	<b>4</b> 39
All	All	923/975 (95%)	761 (82%)	162 (18%)	<b>4</b> 39

All 44 unique residues with a non-rotameric sidechain are listed below. They are sorted by the frequency of occurrence in the ensemble.

Mol	Chain	Res	Type	Models (Total)
1	A	157	THR	13
1	A	202	ILE	13
1	A	223	ILE	10
1	A	182	LEU	10
1	A	179	PHE	9
1	A	226	LEU	8
1	A	211	VAL	7
1	A	213	LEU	7
1	A	217	LEU	6
1	A	222	ARG	6
1	A	221	ILE	5
1	A	210	ASP	5
1	A	216	ASP	5
1	A	204	LEU	4
1	A	180	THR	4
1	A	164	ARG	3
1	A	195	ILE	3
1	A	219	HIS	3
1	A	215	ASP	3
1	A	150	THR	2
1	A	176	THR	2
1	A	225	GLU	2
1	A	161	ARG	2
1	A	169	ASN	2
1	A	162	LYS	2
1	A	167	GLN	2
1	A	205	SER	2
1	A	188	ARG	2
1	A	203	THR	2
1	A	214	LEU	2
1	A	153	ILE	2
1	A	197	ASP	2
1	A	171	ILE	1
1	A	173	GLN	1
1	A	189	VAL	1
1	A	152	VAL	1
1	A	181	GLN	1
1	A	151	ARG	1
1	A	206	HIS	1
1	A	198	ARG	1
1	A	172	PHE	1
1	A	168	ILE	1
1	A	191	SER	1

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Mol	Chain	Res	Type	Models (Total)
1	A	192	GLU	1

### 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 monosaccharides in this entry.

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

There are no ligands in this entry.

### 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