



# Full wwPDB NMR Structure Validation Report ⓘ

Apr 20, 2024 – 01:26 PM EDT

PDB ID : 2JVV  
Title : Solution Structure of E. coli NusG carboxyterminal domain  
Authors : Schweimer, K.; Scheckenhofer, U.; Roesch, P.  
Deposited on : 2007-09-26

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.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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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)  
wwPDB-RCI : v\_1n\_11\_5\_13\_A (Berjanski et al., 2005)  
PANAV : Wang et al. (2010)  
wwPDB-ShiftChecker : v1.2  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.36.2

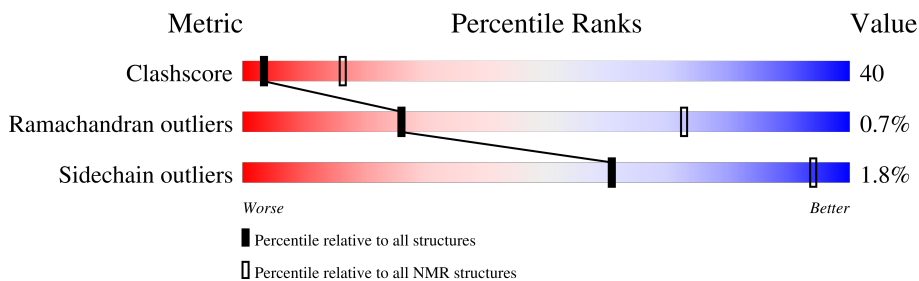
# 1 Overall quality at a glance

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	181	

## 2 Ensemble composition and analysis i

This entry contains 20 models. Model 2 is the overall representative, medoid model (most similar to other models). The authors have identified model 1 as representative, based on the following criterion: *lowest energy*.

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:128-A:163, A:167-A:181 (51)	0.46	2

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 4 clusters and 1 single-model cluster was found.

Cluster number	Models
1	6, 11, 12, 14, 18, 20
2	4, 5, 7, 9, 15
3	2, 3, 16, 17, 19
4	8, 10, 13
Single-model clusters	1

### 3 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 926 atoms, of which 459 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Transcription antitermination protein nusG.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	59	926	297	459	78	91	1	0





Chain A:  67%

MET SER GLU LYS PHE ALA PRO LYS TYR ARG TRP TYR VAL VAL VAL VAL VAL VAL VAL VAL VAL PHE SER ASP PHE PHE GLY GLY ARG VAL VAL THR SER LEU LEU ARG GLU HIS ILE MET GLU THR ASN LEU HIS ASP

GLU ARG LYS PHE PHE PRO LYS TYR VAL VAL VAL VAL VAL VAL VAL MET MET MET ASN ASP GLY ALA PHE SER TRP TRP HIS VAL VAL VAL THR ARG SER VAL VAL PRO ARG VAL VAL MET ILE MET ASN ARG GLY GLN VAL VAL VAL THR LYS VAL ASP VAL VAL ILE MET ASN ARG GLN GLN ARG LYS ASP

LYS PRO R123 P124 K125 T126 L127 F128 E129 M133 V134 R135 F141 A142 D143 F144 V147 V148 V151 R157 L158 K159 V160 T164 F165 G166 A168 T169 P170 E171 E172 L173 D174 F175 V178 E179 K180 A181

#### 4.2.6 Score per residue for model 6

- Molecule 1: Transcription antitermination protein nusG

Chain A:  67%

MET SER GLU LYS PHE ALA PRO LYS TYR ARG TRP TYR VAL VAL VAL VAL VAL VAL VAL VAL VAL PHE SER ASP PHE PHE GLY GLY ARG VAL VAL THR SER LEU LEU ARG GLU HIS ILE MET GLU THR ASN LEU HIS ASP

GLU ARG LYS PHE PHE PRO LYS TYR VAL VAL VAL VAL VAL VAL VAL MET MET MET ASN ASP GLY ALA PHE SER TRP TRP HIS VAL VAL VAL THR ARG SER VAL VAL PRO ARG VAL VAL MET ILE MET ASN ARG GLY GLN VAL VAL VAL THR LYS VAL ASP VAL VAL ILE MET ASN ARG GLN GLN ARG LYS ASP

LYS PRO R123 P124 K125 T126 L127 F128 E129 P130 V134 R135 V136 M137 D138 A142 D143 F144 V147 V148 V151 D152 Y153 S156 R157 L158 K159 V160 T164 F165 G166 T169 P170 V171 E172 L173 D174 F175 S176 Q177 V178 A181

#### 4.2.7 Score per residue for model 7

- Molecule 1: Transcription antitermination protein nusG

Chain A:  67%

MET SER GLU LYS PHE ALA PRO LYS TYR ARG TRP TYR VAL VAL VAL VAL VAL VAL VAL VAL VAL PHE SER ASP PHE PHE GLY GLY ARG VAL VAL THR SER LEU LEU ARG GLU HIS ILE MET GLU THR ASN LEU HIS ASP

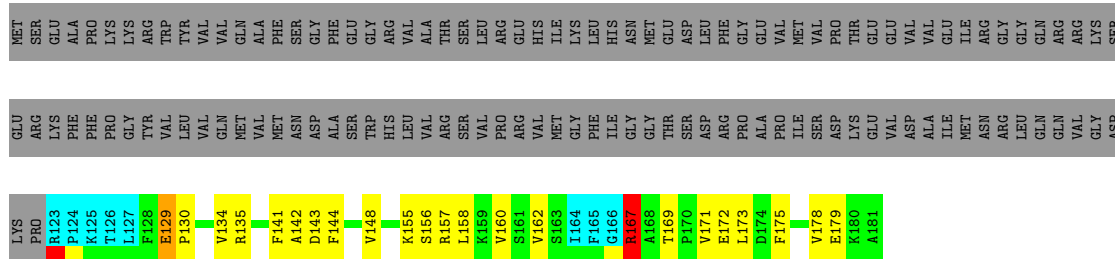
GLU ARG LYS PHE PHE PRO LYS TYR VAL VAL VAL VAL VAL VAL VAL MET MET MET ASN ASP GLY ALA PHE SER TRP TRP HIS VAL VAL VAL THR ARG SER VAL VAL PRO ARG VAL VAL MET ILE MET ASN ARG GLY GLN VAL VAL VAL THR LYS VAL ASP VAL VAL ILE MET ASN ARG GLN GLN ARG LYS ASP

LYS PRO R123 P124 K125 T126 L127 F128 E129 M133 V134 R135 D138 G139 F140 F141 A142 D143 F144 V147 V148 R157 L158 K159 V160 S161 V162 S163 T164 F165 G166 R167 A168 T169 P170 V171 E172 L173 D174 F175 S176 Q177 V178 E179 K180 A181

#### 4.2.8 Score per residue for model 8

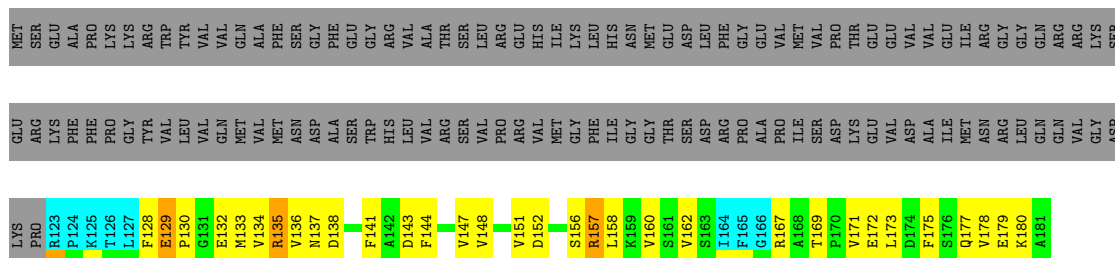
- Molecule 1: Transcription antitermination protein nusG

Chain A:  67%



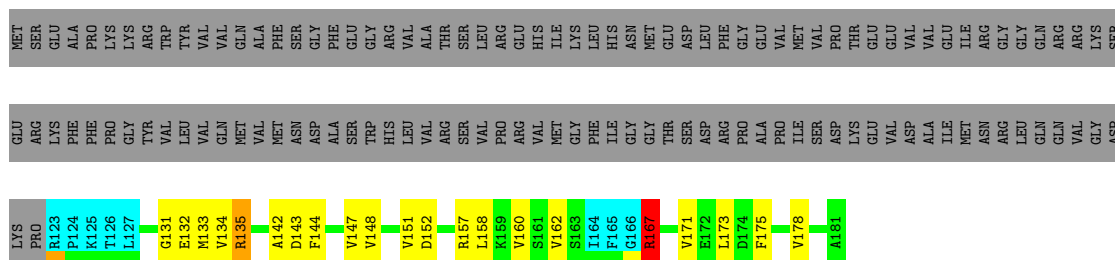
#### 4.2.9 Score per residue for model 9

- Molecule 1: Transcription antitermination protein nusG



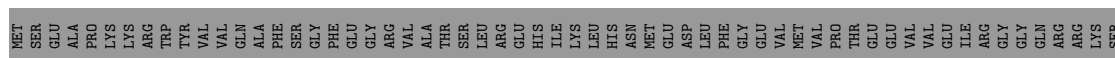
#### 4.2.10 Score per residue for model 10

- Molecule 1: Transcription antitermination protein nusG

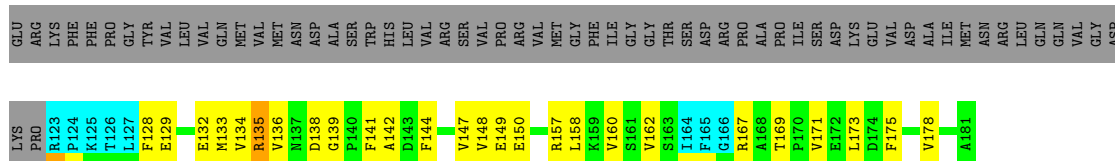


#### 4.2.11 Score per residue for model 11

- Molecule 1: Transcription antitermination protein nusG

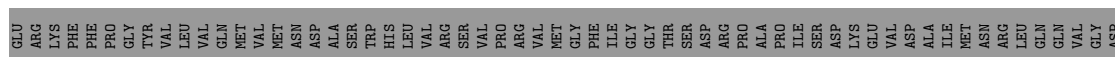
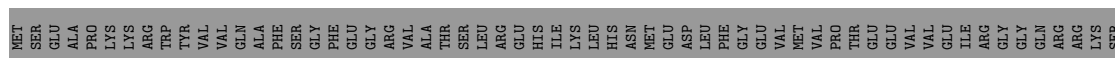






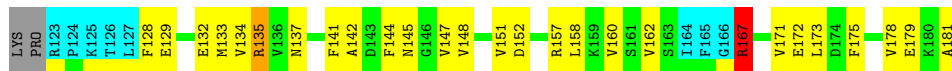
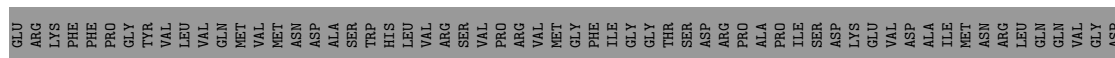
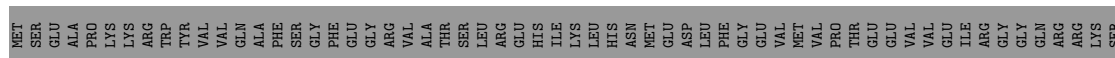
#### 4.2.12 Score per residue for model 12

- Molecule 1: Transcription antitermination protein nusG



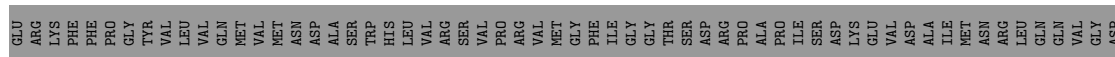
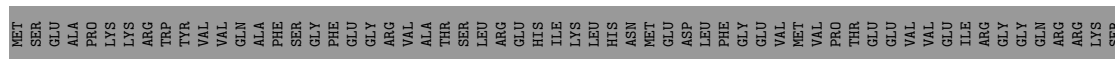
#### 4.2.13 Score per residue for model 13

- Molecule 1: Transcription antitermination protein nusG



#### 4.2.14 Score per residue for model 14

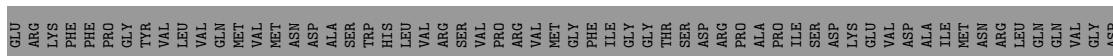
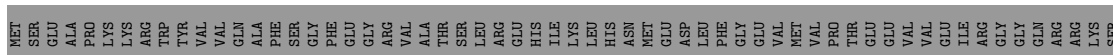
- Molecule 1: Transcription antitermination protein nusG





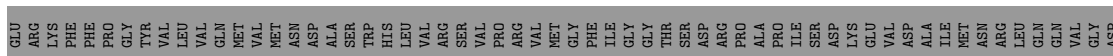
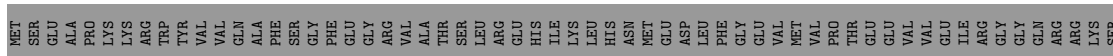
#### 4.2.15 Score per residue for model 15

- Molecule 1: Transcription antitermination protein nusG



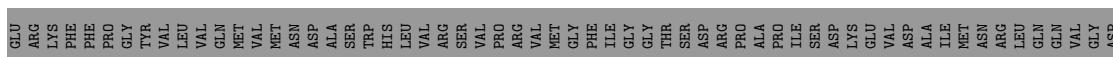
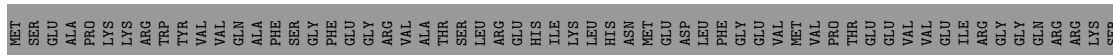
#### 4.2.16 Score per residue for model 16

- Molecule 1: Transcription antitermination protein nusG



#### 4.2.17 Score per residue for model 17

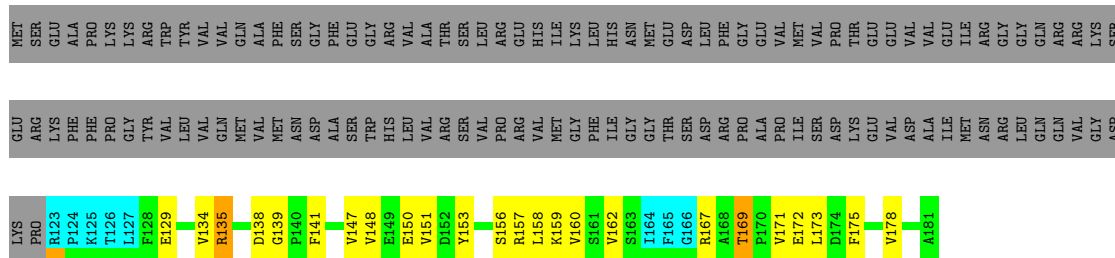
- Molecule 1: Transcription antitermination protein nusG



### 4.2.18 Score per residue for model 18

- Molecule 1: Transcription antitermination protein nusG

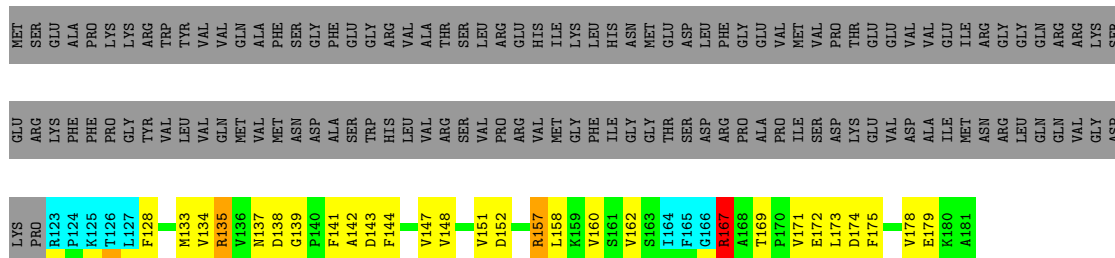
Chain A:  15% 12% . . 67%



### 4.2.19 Score per residue for model 19

- Molecule 1: Transcription antitermination protein nusG

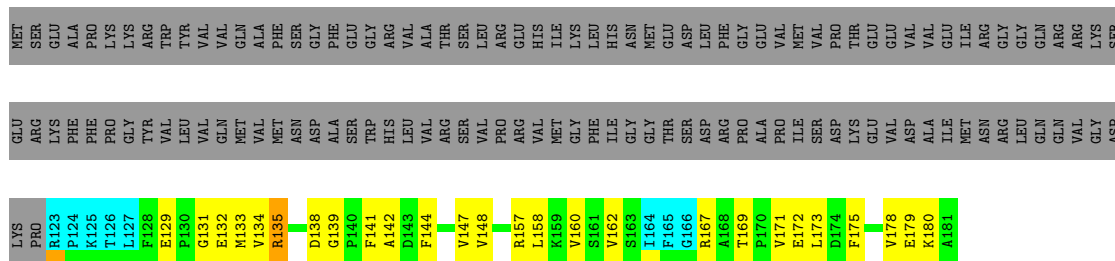
Chain A:  13% 14% . . 67%



### 4.2.20 Score per residue for model 20

- Molecule 1: Transcription antitermination protein nusG

Chain A:  14% 14% . . 67%



## 5 Refinement protocol and experimental data overview

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

Of the 120 calculated structures, 20 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
X-PLOR NIH	structure solution	1.2.1
X-PLOR NIH	refinement	1.2.1

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.

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	Chirality	Planarity
1	A	0.0±0.0	2.9±0.4
All	All	0	57

There are no bond-length outliers.

There are no bond-angle outliers.

There are no chirality outliers.

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

Mol	Chain	Res	Type	Group	Models (Total)
1	A	157	ARG	Sidechain	20
1	A	167	ARG	Sidechain	19
1	A	135	ARG	Sidechain	18

### 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	402	385	385	31±4
All	All	8040	7700	7700	625

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 40.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:171:VAL:HG23	1:A:173:LEU:HD21	1.07	1.22	13	8
1:A:141:PHE:CD1	1:A:162:VAL:HG21	1.06	1.86	8	4
1:A:158:LEU:HD11	1:A:175:PHE:CD1	1.05	1.85	12	11
1:A:151:VAL:HG13	1:A:158:LEU:CD2	0.95	1.91	16	7
1:A:133:MET:SD	1:A:147:VAL:HG22	0.90	2.06	15	5
1:A:147:VAL:O	1:A:160:VAL:HG13	0.87	1.69	9	16
1:A:134:VAL:CG2	1:A:148:VAL:HG23	0.83	2.03	11	9
1:A:134:VAL:HG21	1:A:148:VAL:HG23	0.82	1.51	11	6
1:A:158:LEU:HD12	1:A:158:LEU:N	0.81	1.91	12	6
1:A:141:PHE:CZ	1:A:171:VAL:HG11	0.80	2.12	11	8
1:A:128:PHE:O	1:A:151:VAL:HG21	0.79	1.76	16	2
1:A:171:VAL:HG23	1:A:173:LEU:CD2	0.79	2.06	13	7
1:A:171:VAL:CG2	1:A:173:LEU:HD21	0.78	2.07	13	3
1:A:173:LEU:HD22	1:A:173:LEU:N	0.78	1.93	19	8
1:A:158:LEU:HD11	1:A:175:PHE:CE1	0.78	2.13	4	7
1:A:147:VAL:C	1:A:160:VAL:HG13	0.77	1.99	13	11
1:A:172:GLU:C	1:A:173:LEU:HD22	0.77	1.99	2	8
1:A:132:GLU:O	1:A:147:VAL:HG13	0.77	1.80	20	5
1:A:169:THR:O	1:A:171:VAL:HG13	0.77	1.80	15	16
1:A:173:LEU:HD22	1:A:177:GLN:NE2	0.75	1.97	12	3
1:A:158:LEU:HD11	1:A:175:PHE:CG	0.74	2.16	14	1
1:A:148:VAL:HG11	1:A:151:VAL:HG22	0.74	1.58	4	3
1:A:136:VAL:HG22	1:A:173:LEU:CD1	0.71	2.15	6	5
1:A:148:VAL:HG22	1:A:160:VAL:HG22	0.70	1.61	7	5
1:A:148:VAL:HG21	1:A:151:VAL:HG22	0.70	1.61	1	7
1:A:134:VAL:HG21	1:A:148:VAL:CG2	0.69	2.18	6	8
1:A:172:GLU:O	1:A:173:LEU:HD23	0.68	1.88	5	9
1:A:128:PHE:CE2	1:A:134:VAL:HG13	0.65	2.26	16	1
1:A:158:LEU:CD1	1:A:175:PHE:CE1	0.65	2.79	7	5
1:A:148:VAL:HG22	1:A:160:VAL:CG2	0.65	2.22	4	2
1:A:148:VAL:CA	1:A:160:VAL:HG22	0.65	2.21	10	8
1:A:158:LEU:CD1	1:A:175:PHE:CD1	0.63	2.81	11	5
1:A:128:PHE:CD1	1:A:158:LEU:CD1	0.63	2.81	16	1
1:A:151:VAL:HG13	1:A:158:LEU:HD23	0.63	1.70	2	2
1:A:151:VAL:HG13	1:A:158:LEU:HD22	0.63	1.70	16	3
1:A:148:VAL:HA	1:A:160:VAL:HG22	0.62	1.69	10	9
1:A:173:LEU:HD12	1:A:178:VAL:CG1	0.61	2.25	9	3
1:A:133:MET:HG2	1:A:147:VAL:HG22	0.61	1.72	10	5
1:A:128:PHE:CE1	1:A:134:VAL:HG13	0.61	2.30	19	2
1:A:158:LEU:HD21	1:A:175:PHE:CE1	0.61	2.31	6	9
1:A:141:PHE:CE2	1:A:171:VAL:HG11	0.61	2.31	5	2
1:A:136:VAL:HG22	1:A:173:LEU:HD12	0.59	1.75	12	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:141:PHE:CZ	1:A:169:THR:HG21	0.59	2.32	15	3
1:A:148:VAL:HG11	1:A:151:VAL:CG2	0.59	2.28	5	2
1:A:162:VAL:HG12	1:A:169:THR:HB	0.59	1.74	18	3
1:A:141:PHE:CD1	1:A:162:VAL:HG11	0.58	2.32	18	2
1:A:132:GLU:C	1:A:147:VAL:HG13	0.58	2.17	10	2
1:A:175:PHE:N	1:A:175:PHE:CD1	0.58	2.70	17	13
1:A:173:LEU:N	1:A:173:LEU:CD2	0.58	2.67	2	7
1:A:158:LEU:N	1:A:158:LEU:CD1	0.58	2.67	9	4
1:A:173:LEU:CB	1:A:178:VAL:CG1	0.57	2.82	19	17
1:A:173:LEU:CD1	1:A:178:VAL:CG1	0.57	2.81	9	2
1:A:128:PHE:CD2	1:A:158:LEU:HD21	0.57	2.34	7	4
1:A:157:ARG:C	1:A:158:LEU:HD12	0.57	2.19	9	6
1:A:134:VAL:CG2	1:A:148:VAL:CG2	0.56	2.83	18	4
1:A:172:GLU:O	1:A:173:LEU:HD13	0.56	2.00	2	8
1:A:148:VAL:CG2	1:A:160:VAL:HG22	0.56	2.30	4	1
1:A:128:PHE:CE1	1:A:180:LYS:CG	0.56	2.88	2	1
1:A:128:PHE:CE1	1:A:180:LYS:HG3	0.56	2.36	2	1
1:A:148:VAL:HB	1:A:160:VAL:HG22	0.56	1.78	2	4
1:A:136:VAL:CG2	1:A:173:LEU:CD1	0.56	2.83	6	3
1:A:173:LEU:HB2	1:A:178:VAL:HG11	0.55	1.78	14	6
1:A:142:ALA:O	1:A:144:PHE:CD2	0.55	2.59	13	15
1:A:141:PHE:HZ	1:A:169:THR:HG21	0.55	1.62	15	1
1:A:158:LEU:CD2	1:A:175:PHE:CE1	0.54	2.90	6	4
1:A:173:LEU:HD12	1:A:178:VAL:HG11	0.54	1.79	4	2
1:A:158:LEU:HD11	1:A:175:PHE:CZ	0.53	2.38	11	1
1:A:132:GLU:O	1:A:148:VAL:HG12	0.53	2.03	9	1
1:A:173:LEU:CD2	1:A:173:LEU:N	0.53	2.70	13	1
1:A:158:LEU:HD12	1:A:175:PHE:CE1	0.52	2.39	11	1
1:A:152:ASP:O	1:A:156:SER:N	0.52	2.43	9	3
1:A:128:PHE:CD1	1:A:158:LEU:HD11	0.52	2.40	16	1
1:A:142:ALA:O	1:A:143:ASP:CB	0.52	2.58	19	7
1:A:135:ARG:N	1:A:179:GLU:O	0.51	2.43	2	6
1:A:128:PHE:CD2	1:A:158:LEU:HD11	0.51	2.41	13	2
1:A:134:VAL:HG12	1:A:135:ARG:H	0.51	1.66	6	20
1:A:132:GLU:OE2	1:A:180:LYS:NZ	0.51	2.43	20	1
1:A:151:VAL:HG13	1:A:158:LEU:HD21	0.51	1.78	16	1
1:A:141:PHE:HD1	1:A:162:VAL:HG21	0.50	1.52	8	1
1:A:162:VAL:HG13	1:A:162:VAL:O	0.50	2.06	20	1
1:A:141:PHE:CE1	1:A:169:THR:HG21	0.50	2.42	8	2
1:A:148:VAL:CG2	1:A:151:VAL:HG22	0.50	2.36	1	1
1:A:173:LEU:HD12	1:A:177:GLN:NE2	0.50	2.21	7	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:148:VAL:CB	1:A:160:VAL:HG22	0.50	2.36	13	4
1:A:173:LEU:HB2	1:A:178:VAL:CG1	0.49	2.36	3	13
1:A:147:VAL:HG12	1:A:148:VAL:N	0.49	2.22	6	3
1:A:148:VAL:HG13	1:A:148:VAL:O	0.49	2.07	12	4
1:A:135:ARG:O	1:A:179:GLU:N	0.49	2.44	16	8
1:A:138:ASP:OD1	1:A:139:GLY:N	0.49	2.46	18	9
1:A:173:LEU:CB	1:A:178:VAL:HG13	0.49	2.38	9	5
1:A:131:GLY:C	1:A:147:VAL:CG1	0.49	2.81	10	2
1:A:142:ALA:O	1:A:144:PHE:CD1	0.48	2.67	19	1
1:A:135:ARG:CZ	1:A:179:GLU:OE1	0.48	2.61	5	1
1:A:158:LEU:HD11	1:A:175:PHE:CE2	0.47	2.44	11	1
1:A:136:VAL:O	1:A:143:ASP:N	0.47	2.47	9	3
1:A:156:SER:O	1:A:157:ARG:CG	0.47	2.63	6	1
1:A:133:MET:SD	1:A:147:VAL:CG2	0.47	2.98	12	3
1:A:149:GLU:O	1:A:150:GLU:CG	0.47	2.63	15	1
1:A:129:GLU:CB	1:A:130:PRO:HD2	0.47	2.40	6	6
1:A:132:GLU:O	1:A:147:VAL:CG1	0.47	2.57	20	2
1:A:161:SER:OG	1:A:170:PRO:N	0.47	2.48	4	1
1:A:173:LEU:HB3	1:A:178:VAL:CG1	0.46	2.41	11	3
1:A:144:PHE:HB3	1:A:162:VAL:CG1	0.46	2.41	7	8
1:A:175:PHE:O	1:A:178:VAL:O	0.46	2.33	3	10
1:A:135:ARG:NH2	1:A:145:ASN:OD1	0.46	2.49	15	1
1:A:138:ASP:CB	1:A:177:GLN:OE1	0.46	2.64	9	1
1:A:135:ARG:O	1:A:178:VAL:CA	0.46	2.64	16	12
1:A:144:PHE:HB3	1:A:162:VAL:HG13	0.45	1.86	7	3
1:A:139:GLY:O	1:A:142:ALA:N	0.45	2.49	12	1
1:A:136:VAL:HG11	1:A:141:PHE:HB2	0.45	1.87	16	2
1:A:137:ASN:O	1:A:138:ASP:OD1	0.45	2.35	4	3
1:A:138:ASP:HB2	1:A:177:GLN:OE1	0.44	2.13	9	1
1:A:148:VAL:CG1	1:A:151:VAL:HG22	0.44	2.40	17	1
1:A:129:GLU:CG	1:A:130:PRO:HD2	0.43	2.43	4	2
1:A:157:ARG:NH1	1:A:172:GLU:O	0.43	2.51	4	1
1:A:141:PHE:CE1	1:A:162:VAL:HG11	0.43	2.48	17	1
1:A:173:LEU:HB3	1:A:178:VAL:HG13	0.43	1.91	1	3
1:A:174:ASP:O	1:A:178:VAL:HG22	0.43	2.13	2	1
1:A:156:SER:HA	1:A:175:PHE:CZ	0.43	2.49	3	2
1:A:135:ARG:O	1:A:178:VAL:HA	0.43	2.14	16	13
1:A:142:ALA:O	1:A:143:ASP:HB3	0.43	2.14	1	3
1:A:162:VAL:O	1:A:162:VAL:CG1	0.43	2.66	20	1
1:A:151:VAL:O	1:A:152:ASP:OD1	0.43	2.36	10	7
1:A:128:PHE:CE2	1:A:180:LYS:HD3	0.43	2.48	3	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:147:VAL:O	1:A:160:VAL:CG1	0.43	2.57	15	1
1:A:151:VAL:HG11	1:A:153:TYR:CZ	0.43	2.49	6	3
1:A:137:ASN:OD1	1:A:137:ASN:C	0.43	2.57	17	5
1:A:150:GLU:HG2	1:A:151:VAL:N	0.43	2.29	12	1
1:A:160:VAL:O	1:A:171:VAL:O	0.43	2.37	10	3
1:A:145:ASN:O	1:A:145:ASN:OD1	0.42	2.36	13	1
1:A:149:GLU:N	1:A:159:LYS:O	0.42	2.52	16	1
1:A:136:VAL:HG12	1:A:142:ALA:HA	0.42	1.91	3	1
1:A:133:MET:O	1:A:181:ALA:HB3	0.42	2.15	4	2
1:A:161:SER:CA	1:A:170:PRO:HA	0.42	2.44	1	1
1:A:173:LEU:CD1	1:A:178:VAL:HG12	0.42	2.44	9	1
1:A:149:GLU:O	1:A:150:GLU:CD	0.42	2.58	11	1
1:A:136:VAL:HG22	1:A:173:LEU:HD13	0.42	1.92	11	1
1:A:133:MET:O	1:A:181:ALA:CB	0.42	2.67	7	1
1:A:128:PHE:CG	1:A:158:LEU:HD21	0.42	2.49	11	1
1:A:129:GLU:O	1:A:132:GLU:CB	0.42	2.67	13	1
1:A:141:PHE:CZ	1:A:169:THR:CG2	0.42	3.02	5	1
1:A:155:LYS:O	1:A:156:SER:C	0.41	2.57	8	2
1:A:132:GLU:OE2	1:A:180:LYS:CE	0.41	2.68	20	1
1:A:157:ARG:HD2	1:A:174:ASP:OD1	0.41	2.15	3	1
1:A:155:LYS:O	1:A:156:SER:OG	0.41	2.39	14	1
1:A:129:GLU:O	1:A:132:GLU:HB2	0.41	2.15	13	1
1:A:128:PHE:CD2	1:A:158:LEU:CD1	0.41	3.04	17	1
1:A:135:ARG:O	1:A:178:VAL:HB	0.41	2.16	4	10
1:A:137:ASN:C	1:A:137:ASN:OD1	0.41	2.59	3	1
1:A:137:ASN:OD1	1:A:138:ASP:OD1	0.41	2.38	6	1
1:A:136:VAL:CG1	1:A:141:PHE:O	0.41	2.68	12	1
1:A:157:ARG:CD	1:A:174:ASP:OD1	0.41	2.68	19	2
1:A:129:GLU:O	1:A:132:GLU:HG2	0.41	2.15	11	2
1:A:162:VAL:CG1	1:A:169:THR:HB	0.41	2.44	17	1
1:A:157:ARG:HD3	1:A:174:ASP:OD1	0.41	2.16	19	1
1:A:135:ARG:NE	1:A:179:GLU:OE1	0.41	2.54	5	1
1:A:149:GLU:O	1:A:150:GLU:HG3	0.41	2.16	15	1
1:A:156:SER:OG	1:A:156:SER:O	0.40	2.35	1	1
1:A:128:PHE:CE2	1:A:180:LYS:CG	0.40	3.04	16	1
1:A:128:PHE:CE1	1:A:180:LYS:HG2	0.40	2.51	17	1
1:A:132:GLU:OE2	1:A:180:LYS:HE2	0.40	2.16	20	1
1:A:173:LEU:CB	1:A:178:VAL:HG11	0.40	2.46	19	1
1:A:158:LEU:HD11	1:A:175:PHE:CD2	0.40	2.52	11	1
1:A:128:PHE:CE2	1:A:180:LYS:HG2	0.40	2.50	16	1
1:A:161:SER:CB	1:A:170:PRO:HA	0.40	2.47	7	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:150:GLU:HB2	1:A:159:LYS:CD	0.40	2.47	18	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	50/181 (28%)	48±1 (95±2%)	2±1 (4±2%)	0±0 (1±1%)	26	73
All	All	1000/3620 (28%)	953 (95%)	40 (4%)	7 (1%)	26	73

All 2 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	167	ARG	4
1	A	170	PRO	3

### 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	45/158 (28%)	44±1 (98±2%)	1±1 (2±2%)	61	94
All	All	900/3160 (28%)	884 (98%)	16 (2%)	61	94

All 4 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	129	GLU	10
1	A	156	SER	3

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Mol	Chain	Res	Type	Models (Total)
1	A	169	THR	2
1	A	157	ARG	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