



# Full wwPDB NMR Structure Validation Report ⓘ

Feb 22, 2022 – 04:39 PM EST

PDB ID : 1WWV  
Title : Solution structure of the SAM domain of human connector enhancer of KSR-like protein CNK1  
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Deposited on : 2005-01-18

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

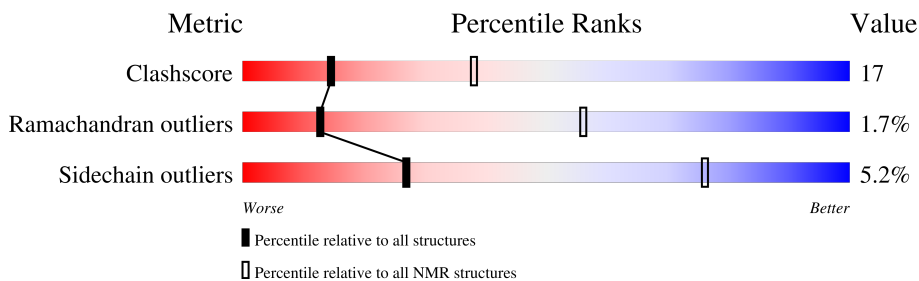
# 1 Overall quality at a glance

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	91	 54% 22% • 23%

## 2 Ensemble composition and analysis

This entry contains 20 models. Model 9 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 target function*.

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:9-A:78 (70)	0.22	9

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 3 clusters and 2 single-model clusters were found.

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

### 3 Entry composition

There is only 1 type of molecule in this entry. The entry contains 1349 atoms, of which 664 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Connector enhancer of kinase suppressor of ras 1.

Mol	Chain	Residues	Atoms						Trace
			Total	C	H	N	O	S	
1	A	91	1349	426	664	117	140	2	0

There are 13 discrepancies between the modelled and reference sequences:

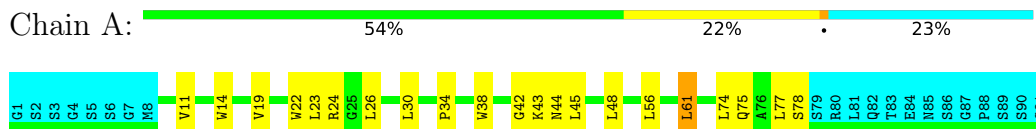
Chain	Residue	Modelled	Actual	Comment	Reference
A	1	GLY	-	cloning artifact	UNP Q969H4
A	2	SER	-	cloning artifact	UNP Q969H4
A	3	SER	-	cloning artifact	UNP Q969H4
A	4	GLY	-	cloning artifact	UNP Q969H4
A	5	SER	-	cloning artifact	UNP Q969H4
A	6	SER	-	cloning artifact	UNP Q969H4
A	7	GLY	-	cloning artifact	UNP Q969H4
A	86	SER	-	cloning artifact	UNP Q969H4
A	87	GLY	-	cloning artifact	UNP Q969H4
A	88	PRO	-	cloning artifact	UNP Q969H4
A	89	SER	-	cloning artifact	UNP Q969H4
A	90	SER	-	cloning artifact	UNP Q969H4
A	91	GLY	-	cloning artifact	UNP Q969H4

## 4 Residue-property plots

### 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: Connector enhancer of kinase suppressor of ras 1

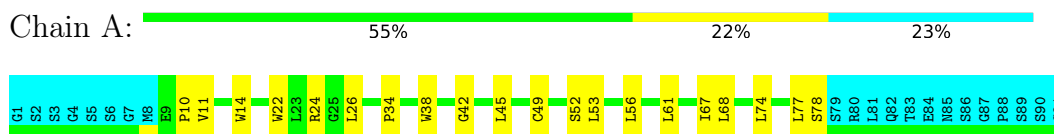


### 4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

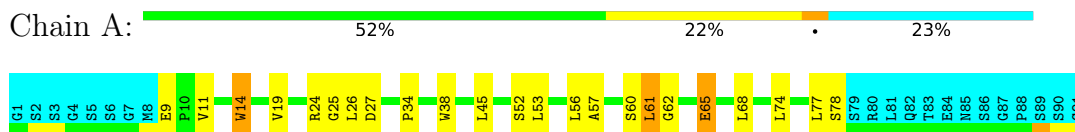
#### 4.2.1 Score per residue for model 1

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



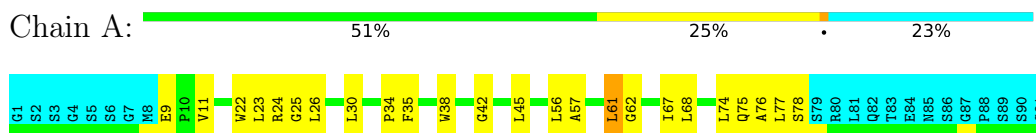
#### 4.2.2 Score per residue for model 2

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



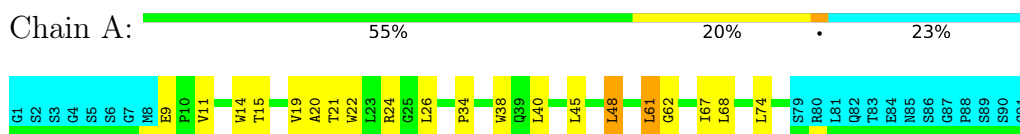
### 4.2.3 Score per residue for model 3

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



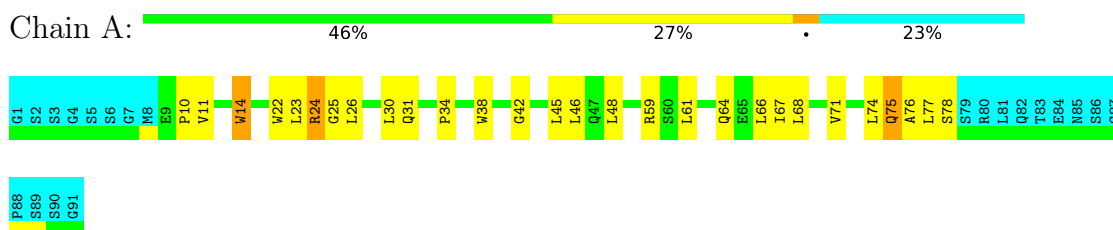
### 4.2.4 Score per residue for model 4

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



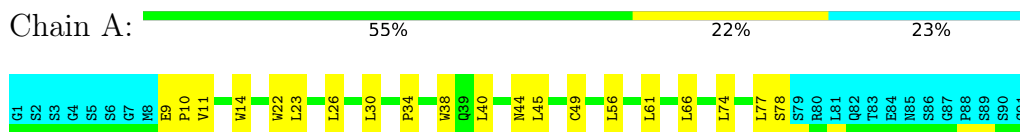
### 4.2.5 Score per residue for model 5

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



### 4.2.6 Score per residue for model 6

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



### 4.2.7 Score per residue for model 7

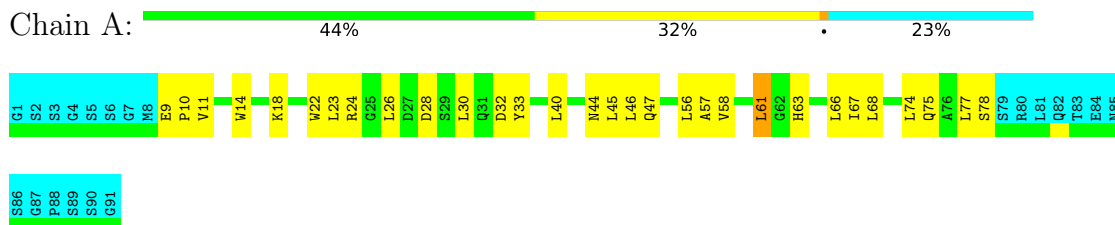
- Molecule 1: Connector enhancer of kinase suppressor of ras 1





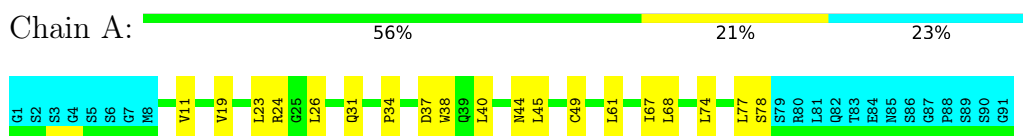
#### 4.2.8 Score per residue for model 8

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



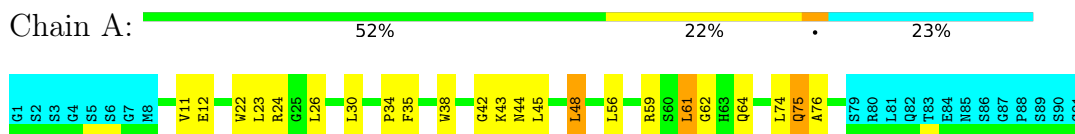
#### 4.2.9 Score per residue for model 9 (medoid)

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



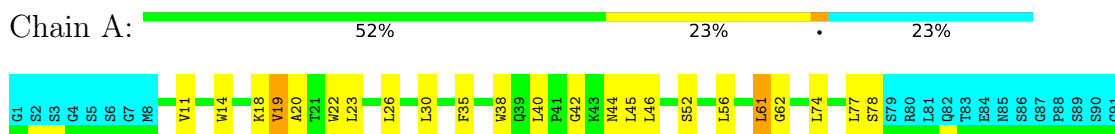
#### 4.2.10 Score per residue for model 10

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



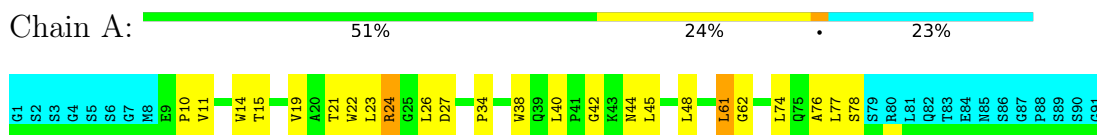
#### 4.2.11 Score per residue for model 11

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



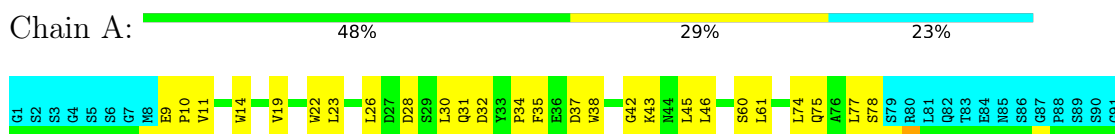
#### 4.2.12 Score per residue for model 12

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



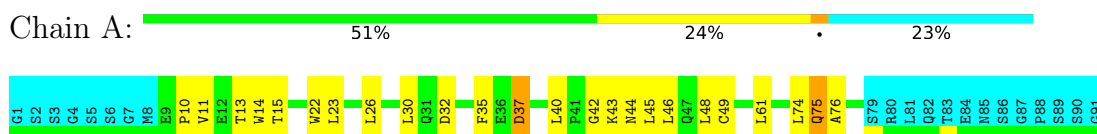
#### 4.2.13 Score per residue for model 13

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



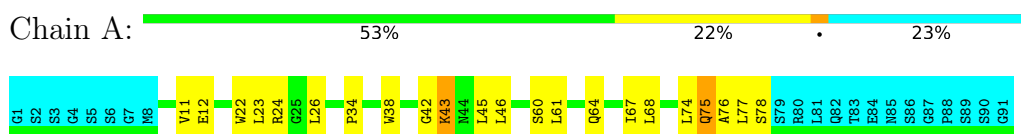
#### 4.2.14 Score per residue for model 14

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



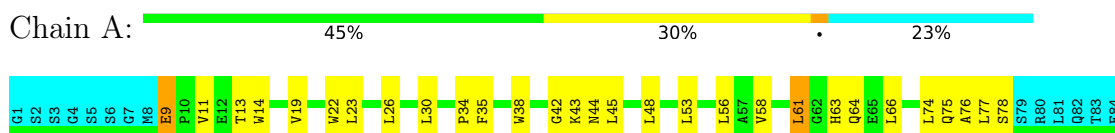
#### 4.2.15 Score per residue for model 15

- Molecule 1: Connector enhancer of kinase suppressor of ras 1



#### 4.2.16 Score per residue for model 16

- Molecule 1: Connector enhancer of kinase suppressor of ras 1





S85  
S86  
G87  
P88  
S89  
S90  
G91

#### 4.2.17 Score per residue for model 17

- Molecule 1: Connector enhancer of kinase suppressor of ras 1

Chain A: 

G1 S2 S3 S4 S5 S6 S7 S8 S9 P10 V11 V12 V13 V14 V15 V16 V17 V18 V19 V20 L21 L22 L23 L24 L25 L26 L27 D28 L29 L30 L31 Q32 P33 P34 P35 W36 W37 W38 G39 G40 G41 G42 G43 K44 M45 L46 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57 G58 G59 G60 G61 G62 G63 G64 G65 G66 L67 L68 L69 L70 L71 L72 L73 L74 L75 Q76 A77 A78 L79 L80 L81 L82 L83 L84 L85 L86 L87 L88 L89

S90  
G91

#### 4.2.18 Score per residue for model 18

- Molecule 1: Connector enhancer of kinase suppressor of ras 1

Chain A: 

G1 S2 S3 S4 S5 S6 S7 S8 S9 V10 V11 V12 V13 V14 V15 W16 W17 W18 W19 W20 W21 W22 W23 R24 R25 G26 L27 L28 L29 P30 P31 P32 P33 P34 P35 F36 W37 W38 W39 L40 L41 L42 L43 L44 L45 L46 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57 A58 L59 L60 L61 L62 G63 G64 G65 G66 G67 G68 L69 L70 L71 L72 L73 L74 L75 Q76 A77 A78 L79 L80 L81 L82 Q83 Q84 Q85 Q86 Q87 Q88 Q89

S90  
G91

#### 4.2.19 Score per residue for model 19

- Molecule 1: Connector enhancer of kinase suppressor of ras 1

Chain A: 

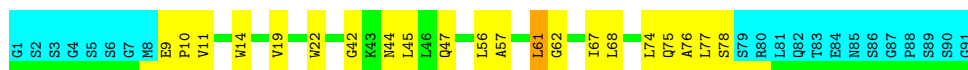
G1 S2 S3 S4 S5 S6 S7 S8 S9 V10 E11 E12 V13 V14 V15 V16 A17 A18 A19 A20 A21 L22 L23 L24 L25 L26 L27 D28 D29 S30 S31 L32 L33 L34 Q35 Q36 Y37 Y38 P39 F40 F41 E42 E43 E44 D45 D46 W47 W48 W49 W50 W51 W52 W53 W54 W55 W56 W57 W58 W59 W60 W61 W62 W63 W64 W65 W66 W67 W68 W69 W70 W71 W72 W73 W74 W75 W76 W77 W78 W79 W80 W81 W82 W83 W84 W85 W86 W87 W88 W89 W90 W91 W92 W93 W94 W95 W96 W97 W98 W99 W100

T83  
E84  
M85  
S86  
G87  
P88  
S89  
S90  
G91

#### 4.2.20 Score per residue for model 20

- Molecule 1: Connector enhancer of kinase suppressor of ras 1

Chain A: 



## 5 Refinement protocol and experimental data overview

The models were refined using the following method: *torsion angle dynamics*.

Of the 100 calculated structures, 20 were deposited, based on the following criterion: *target function*.

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

Software name	Classification	Version
CYANA	refinement	2.0.17

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	550	542	541	19±5
All	All	11000	10840	10820	373

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 17.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:22:TRP:CZ3	1:A:26:LEU:HD11	0.88	2.03	5	14
1:A:23:LEU:HD13	1:A:35:PHE:CD1	0.86	2.06	18	3
1:A:22:TRP:CZ2	1:A:74:LEU:HD11	0.81	2.10	20	7
1:A:77:LEU:HD12	1:A:78:SER:N	0.81	1.91	17	16
1:A:19:VAL:HG12	1:A:23:LEU:HD12	0.80	1.54	17	7
1:A:21:THR:HG23	1:A:24:ARG:NH2	0.79	1.92	12	1
1:A:30:LEU:HD23	1:A:63:HIS:ND1	0.75	1.96	16	2
1:A:56:LEU:HD22	1:A:56:LEU:N	0.73	1.98	18	1
1:A:11:VAL:CG1	1:A:45:LEU:HD23	0.71	2.14	6	15
1:A:23:LEU:HD23	1:A:26:LEU:HD12	0.70	1.64	13	6
1:A:11:VAL:HG11	1:A:45:LEU:HD23	0.70	1.64	11	16
1:A:40:LEU:CD2	1:A:48:LEU:HD11	0.68	2.19	14	4
1:A:46:LEU:HD12	1:A:75:GLN:CG	0.67	2.19	18	1
1:A:11:VAL:HB	1:A:46:LEU:HD21	0.67	1.67	18	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:46:LEU:HD22	1:A:75:GLN:HG2	0.66	1.66	13	1
1:A:23:LEU:HA	1:A:26:LEU:HD23	0.66	1.67	17	1
1:A:20:ALA:HB1	1:A:36:GLU:OE2	0.65	1.91	19	1
1:A:46:LEU:HD22	1:A:75:GLN:CG	0.64	2.22	15	6
1:A:23:LEU:HA	1:A:26:LEU:HD12	0.64	1.69	8	9
1:A:30:LEU:HD11	1:A:66:LEU:HB3	0.63	1.70	19	3
1:A:38:TRP:CD2	1:A:56:LEU:HD13	0.62	2.29	11	4
1:A:11:VAL:HG21	1:A:74:LEU:HD13	0.62	1.71	2	8
1:A:74:LEU:HD23	1:A:77:LEU:HD21	0.62	1.72	1	4
1:A:40:LEU:HD11	1:A:44:ASN:HB3	0.62	1.69	8	6
1:A:10:PRO:O	1:A:14:TRP:CD1	0.60	2.55	8	9
1:A:34:PRO:O	1:A:38:TRP:CD1	0.60	2.55	17	16
1:A:46:LEU:HD22	1:A:75:GLN:HG3	0.59	1.74	5	5
1:A:58:VAL:HG12	1:A:58:VAL:O	0.59	1.96	16	1
1:A:56:LEU:N	1:A:56:LEU:CD2	0.57	2.67	18	1
1:A:11:VAL:HG21	1:A:74:LEU:HD22	0.56	1.76	9	4
1:A:19:VAL:HG11	1:A:45:LEU:HD13	0.56	1.77	9	4
1:A:22:TRP:CE2	1:A:74:LEU:HD11	0.55	2.37	4	9
1:A:23:LEU:HD13	1:A:35:PHE:CE1	0.55	2.36	18	2
1:A:74:LEU:HD23	1:A:77:LEU:HD11	0.54	1.77	5	2
1:A:19:VAL:HG22	1:A:45:LEU:HD22	0.54	1.77	16	3
1:A:46:LEU:HD12	1:A:75:GLN:HG3	0.54	1.78	18	1
1:A:11:VAL:HB	1:A:46:LEU:HD11	0.54	1.80	11	2
1:A:23:LEU:HD23	1:A:26:LEU:CD1	0.53	2.33	9	3
1:A:38:TRP:CE3	1:A:56:LEU:HD13	0.52	2.38	11	4
1:A:19:VAL:CG1	1:A:45:LEU:HD13	0.52	2.34	9	1
1:A:61:LEU:HD13	1:A:61:LEU:O	0.52	2.05	8	1
1:A:32:ASP:CG	1:A:33:TYR:N	0.51	2.64	19	1
1:A:42:GLY:O	1:A:45:LEU:N	0.51	2.44	14	12
1:A:27:ASP:HB2	1:A:30:LEU:HD12	0.51	1.83	17	1
1:A:40:LEU:HD21	1:A:48:LEU:HD11	0.50	1.83	7	1
1:A:63:HIS:HA	1:A:66:LEU:HD12	0.50	1.84	16	2
1:A:77:LEU:HD12	1:A:78:SER:H	0.50	1.64	17	3
1:A:38:TRP:CZ2	1:A:58:VAL:CG2	0.50	2.95	16	1
1:A:44:ASN:OD1	1:A:47:GLN:NE2	0.50	2.45	20	1
1:A:74:LEU:O	1:A:76:ALA:N	0.49	2.45	5	8
1:A:9:GLU:HG3	1:A:14:TRP:CD1	0.49	2.42	13	5
1:A:19:VAL:HG12	1:A:23:LEU:CD1	0.49	2.33	17	2
1:A:46:LEU:HD12	1:A:75:GLN:HG2	0.49	1.81	18	1
1:A:65:GLU:OE1	1:A:65:GLU:N	0.49	2.45	2	1
1:A:24:ARG:O	1:A:31:GLN:CG	0.49	2.61	5	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:61:LEU:O	1:A:61:LEU:HD13	0.49	2.08	16	2
1:A:21:THR:HG23	1:A:24:ARG:CZ	0.49	2.37	12	1
1:A:30:LEU:O	1:A:35:PHE:CZ	0.48	2.66	14	4
1:A:46:LEU:O	1:A:75:GLN:NE2	0.48	2.45	14	1
1:A:74:LEU:CD2	1:A:77:LEU:HD11	0.48	2.38	5	2
1:A:56:LEU:O	1:A:57:ALA:HB3	0.48	2.09	2	6
1:A:59:ARG:O	1:A:64:GLN:NE2	0.48	2.47	5	2
1:A:38:TRP:CH2	1:A:58:VAL:HG21	0.48	2.44	16	1
1:A:12:GLU:O	1:A:43:LYS:N	0.47	2.47	19	1
1:A:38:TRP:CZ2	1:A:58:VAL:HG21	0.47	2.43	16	2
1:A:61:LEU:O	1:A:64:GLN:N	0.47	2.47	18	3
1:A:19:VAL:O	1:A:21:THR:N	0.47	2.48	4	1
1:A:77:LEU:HD12	1:A:77:LEU:C	0.47	2.31	19	1
1:A:61:LEU:CD1	1:A:65:GLU:OE1	0.46	2.63	2	1
1:A:11:VAL:CB	1:A:46:LEU:HD21	0.45	2.41	18	1
1:A:26:LEU:C	1:A:26:LEU:HD12	0.45	2.32	17	1
1:A:25:GLY:O	1:A:26:LEU:C	0.45	2.55	2	5
1:A:53:LEU:HD13	1:A:64:GLN:HG2	0.44	1.90	17	2
1:A:37:ASP:N	1:A:37:ASP:OD1	0.44	2.49	14	1
1:A:38:TRP:CE2	1:A:56:LEU:HB3	0.44	2.48	18	1
1:A:9:GLU:OE2	1:A:18:LYS:NZ	0.44	2.49	8	1
1:A:44:ASN:O	1:A:48:LEU:N	0.44	2.50	10	3
1:A:12:GLU:O	1:A:43:LYS:CA	0.44	2.66	15	3
1:A:59:ARG:O	1:A:61:LEU:N	0.44	2.51	19	1
1:A:61:LEU:O	1:A:61:LEU:CD1	0.44	2.65	16	1
1:A:30:LEU:HD21	1:A:66:LEU:HD12	0.43	1.90	6	1
1:A:44:ASN:O	1:A:47:GLN:N	0.43	2.51	7	2
1:A:33:TYR:CE2	1:A:58:VAL:HG22	0.43	2.48	8	1
1:A:61:LEU:O	1:A:62:GLY:C	0.43	2.56	10	10
1:A:74:LEU:O	1:A:75:GLN:C	0.43	2.55	17	5
1:A:40:LEU:HD11	1:A:44:ASN:CB	0.43	2.43	8	2
1:A:10:PRO:HG2	1:A:13:THR:HG23	0.43	1.89	14	1
1:A:74:LEU:C	1:A:76:ALA:N	0.43	2.72	3	5
1:A:9:GLU:OE1	1:A:9:GLU:CA	0.43	2.66	16	1
1:A:18:LYS:O	1:A:20:ALA:N	0.43	2.52	11	1
1:A:40:LEU:HD22	1:A:48:LEU:HD11	0.43	1.88	14	1
1:A:11:VAL:HG11	1:A:45:LEU:CD2	0.43	2.40	11	1
1:A:71:VAL:O	1:A:74:LEU:N	0.42	2.52	18	2
1:A:52:SER:O	1:A:53:LEU:C	0.42	2.57	2	2
1:A:67:ILE:O	1:A:68:LEU:C	0.42	2.57	15	9
1:A:61:LEU:CD1	1:A:61:LEU:C	0.42	2.87	16	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:26:LEU:O	1:A:27:ASP:CG	0.42	2.58	2	2
1:A:11:VAL:HA	1:A:14:TRP:CG	0.42	2.50	7	12
1:A:19:VAL:C	1:A:21:THR:N	0.42	2.73	4	1
1:A:30:LEU:C	1:A:32:ASP:N	0.42	2.73	13	2
1:A:11:VAL:O	1:A:11:VAL:HG12	0.42	2.14	15	2
1:A:61:LEU:C	1:A:61:LEU:HD13	0.42	2.36	17	1
1:A:46:LEU:HD13	1:A:71:VAL:HG13	0.42	1.91	18	1
1:A:11:VAL:CG2	1:A:74:LEU:HD22	0.41	2.45	1	1
1:A:30:LEU:O	1:A:32:ASP:N	0.41	2.52	13	1
1:A:9:GLU:HG3	1:A:14:TRP:NE1	0.41	2.31	13	2
1:A:58:VAL:O	1:A:58:VAL:CG1	0.41	2.66	16	1
1:A:13:THR:O	1:A:14:TRP:C	0.41	2.58	16	1
1:A:23:LEU:HB3	1:A:35:PHE:CZ	0.41	2.50	13	1
1:A:19:VAL:CG1	1:A:23:LEU:CD1	0.41	2.98	17	1
1:A:60:SER:O	1:A:61:LEU:C	0.41	2.58	19	1
1:A:40:LEU:HD21	1:A:45:LEU:HA	0.41	1.92	19	1
1:A:18:LYS:C	1:A:20:ALA:N	0.41	2.74	11	1
1:A:42:GLY:O	1:A:43:LYS:C	0.41	2.59	13	3

## 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	70/91 (77%)	56±2 (80±4%)	13±2 (18±3%)	1±1 (2±1%)	13	56
All	All	1400/1820 (77%)	1123 (80%)	253 (18%)	24 (2%)	13	56

All 7 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	75	GLN	8
1	A	14	TRP	5
1	A	60	SER	4
1	A	48	LEU	4

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Mol	Chain	Res	Type	Models (Total)
1	A	20	ALA	1
1	A	19	VAL	1
1	A	31	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	60/76 (79%)	57±1 (95±2%)	3±1 (5±2%)	27 76
All	All	1200/1520 (79%)	1138 (95%)	62 (5%)	27 76

All 16 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	61	LEU	17
1	A	24	ARG	11
1	A	49	CYS	4
1	A	9	GLU	4
1	A	15	THR	4
1	A	43	LYS	4
1	A	31	GLN	3
1	A	32	ASP	3
1	A	28	ASP	3
1	A	37	ASP	3
1	A	65	GLU	1
1	A	68	LEU	1
1	A	59	ARG	1
1	A	52	SER	1
1	A	26	LEU	1
1	A	56	LEU	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