



Full wwPDB NMR Structure Validation Report ⓘ

Mar 8, 2026 – 04:07 PM UTC

PDB ID : 2I2H / pdb_00002i2h
Title : NMR structure of TPC3 in TFE
Authors : Syvitski, R.T.; Jakeman, D.L.; Li, Y.
Deposited on : 2006-08-16

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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>.

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

MolProbity	:	4-5-2 with Phenix2.0
Percentile statistics	:	20250101.v01 (using entries in the PDB archive January 1st 2025)
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)	:	2.49

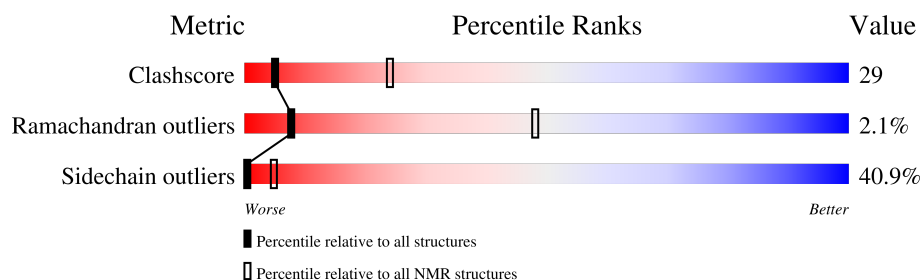
1 Overall quality at a glance

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	229148	14424
Ramachandran outliers	224038	12848
Sidechain outliers	223484	12823

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 ≥ 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	19	

2 Ensemble composition and analysis

This entry contains 22 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:4-A:18 (15)	0.43	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 5 clusters and 3 single-model clusters were found.

Cluster number	Models
1	1, 2, 5, 7, 9, 15
2	10, 12, 13, 18, 20
3	3, 4, 17
4	11, 14, 21
5	16, 22
Single-model clusters	6; 8; 19

3 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 294 atoms, of which 146 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called signaling peptide TCP3.

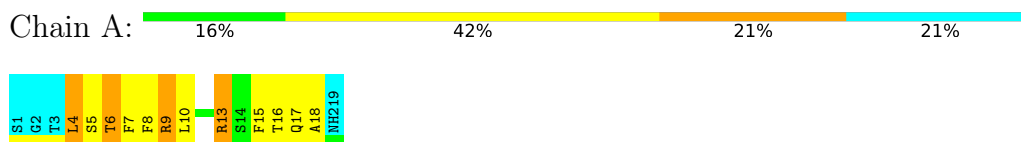
Mol	Chain	Residues	Atoms					Trace
1	A	19	Total	C	H	N	O	1
			294	95	146	27	26	

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: signaling peptide TCP3

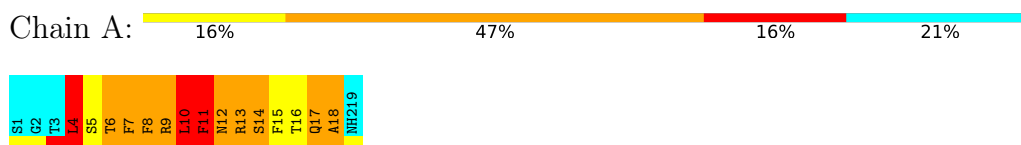


4.2 Scores per residue for each member of the ensemble

Colouring as in section [4.1](#) above.

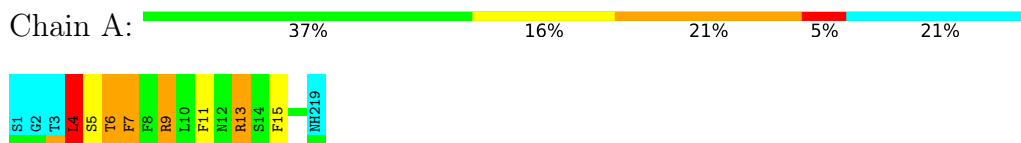
4.2.1 Score per residue for model 1 (medoid)

- Molecule 1: signaling peptide TCP3



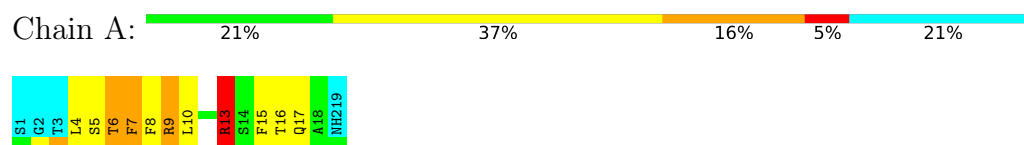
4.2.2 Score per residue for model 2

- Molecule 1: signaling peptide TCP3



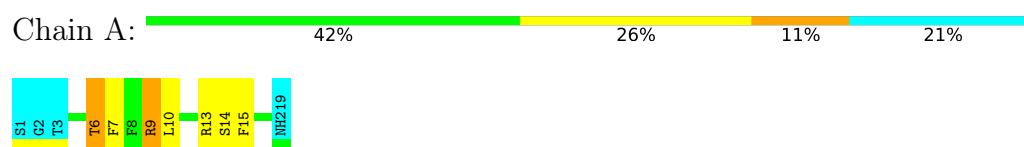
4.2.3 Score per residue for model 3

- Molecule 1: signaling peptide TCP3



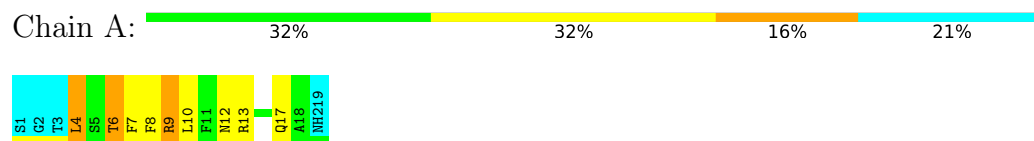
4.2.4 Score per residue for model 4

- Molecule 1: signaling peptide TCP3



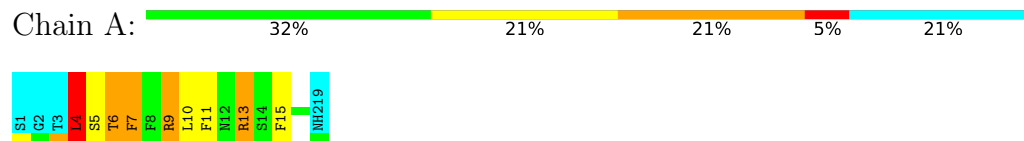
4.2.5 Score per residue for model 5

- Molecule 1: signaling peptide TCP3



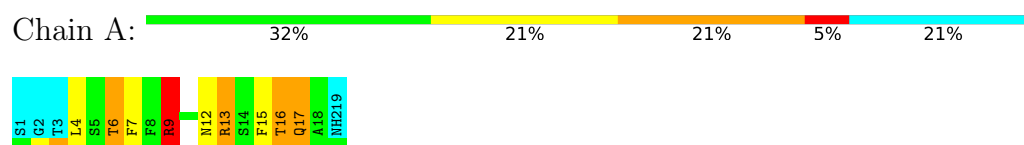
4.2.6 Score per residue for model 6

- Molecule 1: signaling peptide TCP3



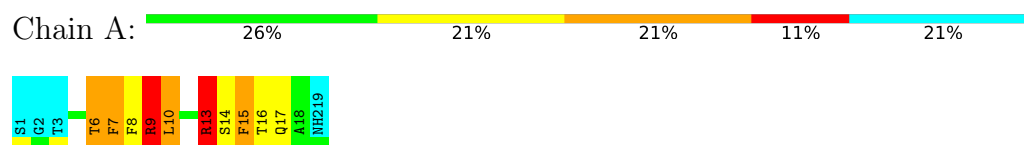
4.2.7 Score per residue for model 7

- Molecule 1: signaling peptide TCP3



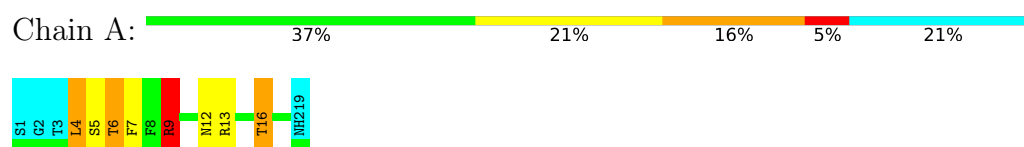
4.2.8 Score per residue for model 8

- Molecule 1: signaling peptide TCP3



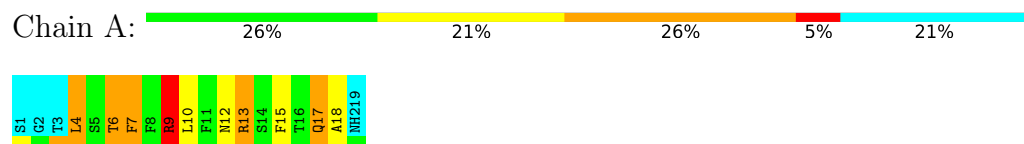
4.2.9 Score per residue for model 9

- Molecule 1: signaling peptide TCP3



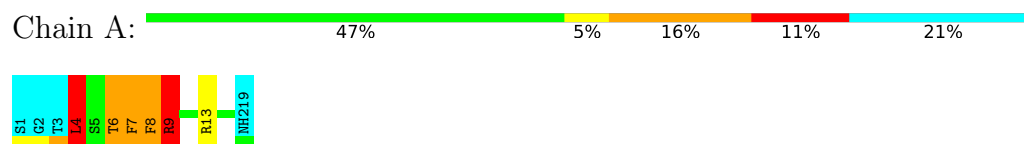
4.2.10 Score per residue for model 10

- Molecule 1: signaling peptide TCP3



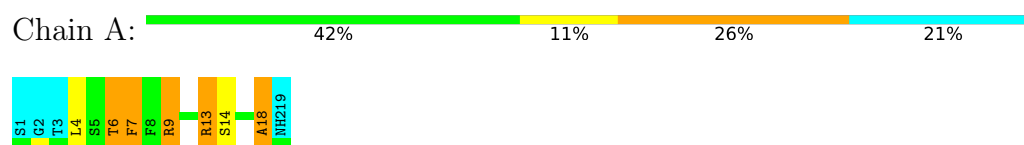
4.2.11 Score per residue for model 11

- Molecule 1: signaling peptide TCP3



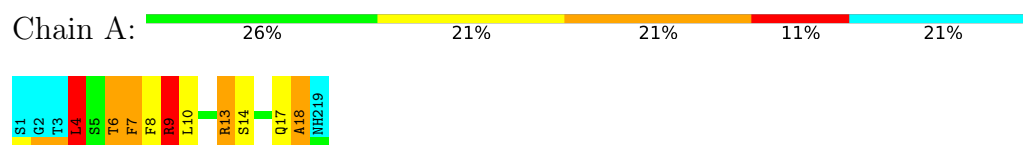
4.2.12 Score per residue for model 12

- Molecule 1: signaling peptide TCP3



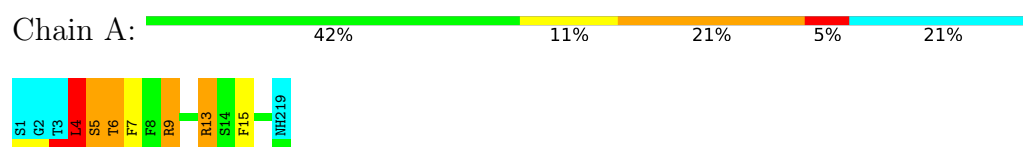
4.2.13 Score per residue for model 13

- Molecule 1: signaling peptide TCP3



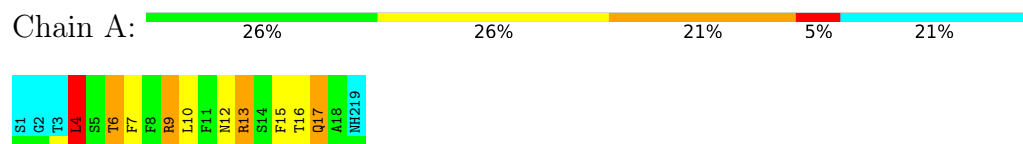
4.2.14 Score per residue for model 14

- Molecule 1: signaling peptide TCP3



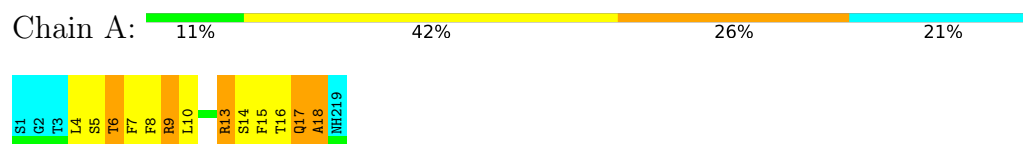
4.2.15 Score per residue for model 15

- Molecule 1: signaling peptide TCP3



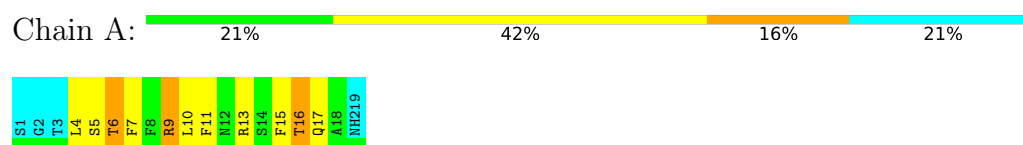
4.2.16 Score per residue for model 16

- Molecule 1: signaling peptide TCP3



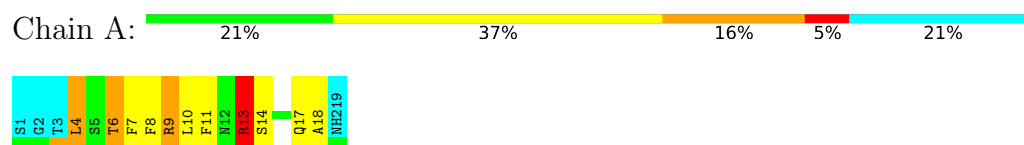
4.2.17 Score per residue for model 17

- Molecule 1: signaling peptide TCP3



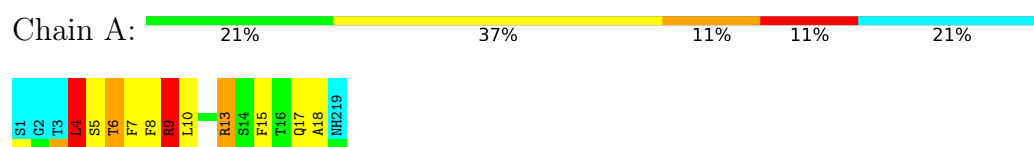
4.2.18 Score per residue for model 18

- Molecule 1: signaling peptide TCP3



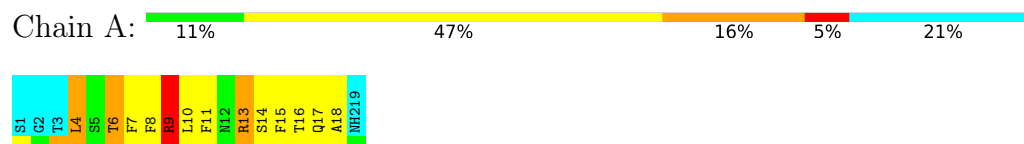
4.2.19 Score per residue for model 19

- Molecule 1: signaling peptide TCP3



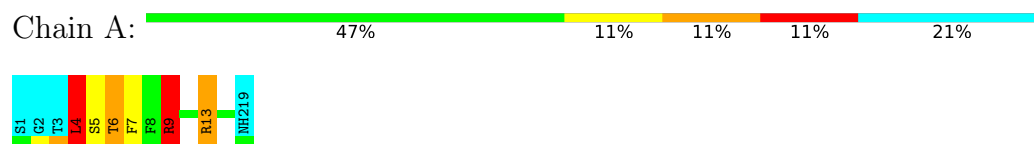
4.2.20 Score per residue for model 20

- Molecule 1: signaling peptide TCP3



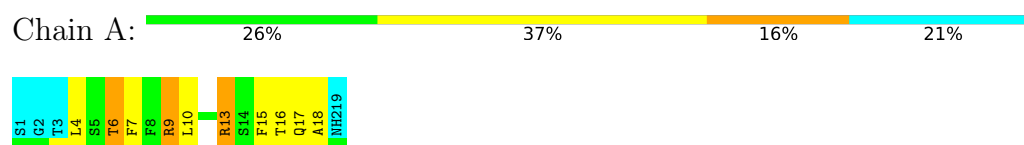
4.2.21 Score per residue for model 21

- Molecule 1: signaling peptide TCP3



4.2.22 Score per residue for model 22

- Molecule 1: signaling peptide TCP3



5 Refinement protocol and experimental data overview ⓘ

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

Of the 100 calculated structures, 22 were deposited, based on the following criterion: *non-violating structures*.

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

Software name	Classification	Version
X-PLOR	refinement	3.1

No chemical shift data was provided.

6 Model quality

6.1 Standard geometry

Bond lengths and bond angles in the following residue types are not validated in this section: NH2

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 (average) 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	2.21±3.73	3±12/133 (2.1± 9.4%)	1.97±1.97	3±10/177 (1.5± 5.6%)
All	All	4.33	60/2926 (2.1%)	2.78	58/3894 (1.5%)

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±0.2	1.9±0.4
All	All	1	42

All unique bond outliers are listed below. They are sorted according to the Z-score of the worst occurrence in the ensemble.

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)	Models	
								Worst	Total
1	A	13	ARG	CZ-NH2	-65.44	0.48	1.33	1	1
1	A	9	ARG	NE-CZ	-59.68	0.67	1.33	1	1
1	A	13	ARG	CD-NE	-54.66	0.69	1.46	1	1
1	A	17	GLN	CD-OE1	-53.43	0.22	1.23	1	1
1	A	13	ARG	NE-CZ	-53.34	0.74	1.33	1	1
1	A	18	ALA	CA-C	-52.89	0.41	1.52	1	1
1	A	9	ARG	CD-NE	-52.54	0.72	1.46	1	1
1	A	18	ALA	C-O	-52.19	0.19	1.23	1	1
1	A	9	ARG	CZ-NH1	-51.74	0.60	1.32	1	1
1	A	9	ARG	CZ-NH2	-45.79	0.73	1.33	1	1
1	A	13	ARG	CZ-NH1	-41.65	0.74	1.32	1	1
1	A	17	GLN	CD-NE2	-39.38	0.50	1.33	1	1
1	A	14	SER	CB-OG	-38.00	0.66	1.42	1	1
1	A	12	ASN	CG-OD1	-35.46	0.56	1.23	1	1

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)	Models	
								Worst	Total
1	A	5	SER	CB-OG	-28.61	0.84	1.42	1	1
1	A	17	GLN	CG-CD	-28.41	0.81	1.52	1	1
1	A	17	GLN	C-N	-27.59	0.94	1.33	1	1
1	A	8	PHE	CG-CD2	-26.63	0.82	1.38	1	1
1	A	12	ASN	CG-ND2	-25.57	0.79	1.33	1	1
1	A	18	ALA	CA-CB	-24.93	0.70	1.52	1	1
1	A	16	THR	CB-OG1	-24.48	1.04	1.43	1	1
1	A	15	PHE	CG-CD2	-23.57	0.89	1.38	1	1
1	A	17	GLN	C-O	-23.02	0.95	1.23	1	1
1	A	10	LEU	CG-CD2	-22.75	0.77	1.52	1	1
1	A	13	ARG	CG-CD	-20.81	0.90	1.52	1	1
1	A	4	LEU	CG-CD1	-20.80	0.83	1.52	1	1
1	A	17	GLN	CA-C	-20.60	1.26	1.53	1	1
1	A	4	LEU	CG-CD2	-20.52	0.84	1.52	1	1
1	A	10	LEU	CG-CD1	-20.50	0.84	1.52	1	1
1	A	4	LEU	CB-CG	-20.37	1.12	1.53	1	1
1	A	17	GLN	CA-CB	-20.04	1.21	1.53	1	1
1	A	15	PHE	CG-CD1	-19.39	0.98	1.38	1	1
1	A	9	ARG	CG-CD	-18.93	0.95	1.52	1	1
1	A	8	PHE	CE1-CZ	-18.57	0.82	1.38	1	1
1	A	8	PHE	CG-CD1	-18.40	1.00	1.38	1	1
1	A	15	PHE	CE1-CZ	-16.43	0.89	1.38	1	1
1	A	17	GLN	CB-CG	-16.39	1.03	1.52	1	1
1	A	15	PHE	CE2-CZ	-13.51	0.98	1.38	1	1
1	A	11	PHE	CG-CD1	-13.41	1.10	1.38	1	1
1	A	8	PHE	CE2-CZ	-12.82	1.00	1.38	1	1
1	A	18	ALA	N-CA	-12.39	1.22	1.46	1	1
1	A	16	THR	CB-CG2	-12.38	1.11	1.52	1	1
1	A	11	PHE	CG-CD2	-11.97	1.13	1.38	1	1
1	A	7	PHE	CG-CD2	-11.88	1.14	1.38	1	1
1	A	7	PHE	CG-CD1	-11.55	1.14	1.38	1	1
1	A	11	PHE	CE2-CZ	-9.33	1.10	1.38	1	1
1	A	8	PHE	CB-CG	-9.16	1.29	1.50	1	1
1	A	13	ARG	CB-CG	-8.60	1.26	1.52	1	1
1	A	11	PHE	CE1-CZ	-8.31	1.13	1.38	1	1
1	A	7	PHE	CE1-CZ	-8.23	1.14	1.38	1	1
1	A	9	ARG	CB-CG	-8.06	1.28	1.52	1	1
1	A	7	PHE	CE2-CZ	-8.04	1.14	1.38	1	1
1	A	16	THR	C-O	-7.24	1.15	1.24	1	1
1	A	16	THR	C-N	-7.11	1.24	1.33	1	1
1	A	10	LEU	CB-CG	-6.76	1.40	1.53	1	1

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)	Models	
								Worst	Total
1	A	15	PHE	CB-CG	-6.32	1.36	1.50	1	1
1	A	8	PHE	CD2-CE2	-6.16	1.20	1.38	1	1
1	A	8	PHE	CD1-CE1	-6.14	1.20	1.38	1	1
1	A	4	LEU	CA-CB	-5.79	1.43	1.53	1	1
1	A	11	PHE	CB-CG	-5.64	1.37	1.50	1	1

All unique angle outliers are listed below. They are sorted according to the Z-score of the worst occurrence in the ensemble.

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)	Models	
								Worst	Total
1	A	17	GLN	OE1-CD-NE2	-79.51	43.09	122.60	1	1
1	A	12	ASN	OD1-CG-ND2	-60.31	62.29	122.60	1	1
1	A	9	ARG	CD-NE-CZ	36.48	175.47	124.40	1	1
1	A	17	GLN	CG-CD-NE2	33.43	166.55	116.40	1	1
1	A	13	ARG	CD-NE-CZ	31.60	168.65	124.40	1	1
1	A	18	ALA	N-CA-CB	25.32	148.38	110.40	1	1
1	A	12	ASN	CB-CG-ND2	24.71	153.47	116.40	1	1
1	A	18	ALA	CA-C-O	24.62	162.66	120.80	1	1
1	A	18	ALA	CB-CA-C	-24.04	74.44	110.50	1	1
1	A	9	ARG	CG-CD-NE	24.00	164.80	112.00	1	1
1	A	13	ARG	NE-CZ-NH1	20.73	142.23	121.50	1	1
1	A	17	GLN	CB-CG-CD	18.68	144.36	112.60	1	1
1	A	13	ARG	CG-CD-NE	17.33	150.13	112.00	1	1
1	A	15	PHE	CD1-CG-CD2	-15.40	95.50	118.60	1	1
1	A	4	LEU	CD1-CG-CD2	-15.02	77.75	110.80	1	1
1	A	17	GLN	CG-CD-OE1	14.78	150.36	120.80	1	1
1	A	15	PHE	CE1-CZ-CE2	-13.61	95.50	120.00	1	1
1	A	10	LEU	CD1-CG-CD2	-13.51	81.08	110.80	1	1
1	A	8	PHE	CD1-CG-CD2	-13.42	98.46	118.60	1	1
1	A	14	SER	CA-CB-OG	12.52	136.14	111.10	1	1
1	A	9	ARG	NE-CZ-NH1	-12.13	109.36	121.50	1	1
1	A	13	ARG	CB-CG-CD	12.04	138.99	111.30	1	1
1	A	8	PHE	CE1-CZ-CE2	-12.00	98.41	120.00	1	1
1	A	9	ARG	NE-CZ-NH2	11.91	129.92	119.20	1	1
1	A	9	ARG	CB-CG-CD	11.73	138.27	111.30	1	1
1	A	12	ASN	CB-CG-OD1	11.72	144.24	120.80	1	1
1	A	13	ARG	NE-CZ-NH2	-11.71	108.67	119.20	1	1
1	A	8	PHE	CB-CG-CD1	9.62	137.06	120.70	1	1
1	A	8	PHE	CG-CD1-CE1	9.59	137.00	120.70	1	1
1	A	8	PHE	CZ-CE2-CD2	9.50	137.10	120.00	1	1
1	A	15	PHE	CB-CG-CD1	8.54	135.21	120.70	1	1

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)	Models	
								Worst	Total
1	A	15	PHE	CG-CD1-CE1	8.53	135.21	120.70	1	1
1	A	15	PHE	CZ-CE2-CD2	8.45	135.20	120.00	1	1
1	A	13	ARG	NH1-CZ-NH2	-7.84	109.11	119.30	1	1
1	A	10	LEU	CB-CG-CD1	7.58	133.44	110.70	1	1
1	A	5	SER	CA-CB-OG	7.18	125.47	111.10	1	1
1	A	4	LEU	CB-CG-CD1	6.69	130.78	110.70	1	1
1	A	7	PHE	CD1-CG-CD2	-6.19	109.31	118.60	1	1
1	A	16	THR	CA-CB-OG1	6.06	118.69	109.60	1	1
1	A	7	PHE	CE1-CZ-CE2	-5.95	109.29	120.00	1	1
1	A	17	GLN	CA-C-O	5.84	127.61	120.31	1	1
1	A	4	LEU	N-CA-CB	-5.68	105.30	113.65	20	10
1	A	18	ALA	N-CA-C	5.57	126.59	111.00	1	1
1	A	11	PHE	CD1-CG-CD2	-5.26	110.71	118.60	1	1
1	A	11	PHE	CE1-CZ-CE2	-5.19	110.66	120.00	1	1
1	A	15	PHE	CD1-CE1-CZ	5.17	129.30	120.00	1	1
1	A	15	PHE	CG-CD2-CE2	5.06	129.31	120.70	1	1
1	A	15	PHE	CB-CG-CD2	5.05	129.29	120.70	1	1
1	A	17	GLN	O-C-N	-5.01	115.54	122.30	1	1

All unique chiral outliers are listed below.

Mol	Chain	Res	Type	Atoms	Models (Total)
1	A	18	ALA	CA	1

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	9	ARG	Sidechain	21
1	A	13	ARG	Sidechain	21

6.2 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 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	130	127	127	8±14

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Mol	Chain	Non-H	H(model)	H(added)	Clashes
All	All	2860	2794	2791	165

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:17:GLN:CD	1:A:17:GLN:CB	1.55	1.75	1	1
1:A:10:LEU:CD2	1:A:10:LEU:CB	1.42	1.94	1	1
1:A:13:ARG:CD	1:A:13:ARG:CB	1.35	2.02	1	1
1:A:18:ALA:CB	1:A:18:ALA:N	1.34	1.85	1	1
1:A:10:LEU:CB	1:A:10:LEU:CD1	1.27	2.07	1	1
1:A:18:ALA:N	1:A:18:ALA:O	1.27	1.68	1	1
1:A:12:ASN:OD1	1:A:12:ASN:CB	1.21	1.88	1	1
1:A:12:ASN:CB	1:A:12:ASN:ND2	1.11	2.14	1	1
1:A:18:ALA:CB	1:A:18:ALA:O	1.06	0.76	1	1
1:A:18:ALA:O	1:A:18:ALA:HB3	1.06	1.30	1	1
1:A:14:SER:OG	1:A:14:SER:CA	1.05	2.05	1	1
1:A:14:SER:OG	1:A:14:SER:HB2	1.01	1.29	1	1
1:A:10:LEU:CD2	1:A:10:LEU:HG	1.00	1.59	1	1
1:A:18:ALA:O	1:A:18:ALA:HA	1.00	1.50	1	1
1:A:14:SER:OG	1:A:14:SER:HB3	1.00	1.29	1	1
1:A:10:LEU:CD1	1:A:10:LEU:HG	0.98	1.58	1	1
1:A:14:SER:OG	1:A:14:SER:CB	0.95	0.66	1	1
1:A:10:LEU:CG	1:A:10:LEU:HD12	0.95	1.48	1	1
1:A:10:LEU:CG	1:A:10:LEU:HD11	0.93	1.48	1	1
1:A:13:ARG:CD	1:A:13:ARG:HG2	0.92	1.45	1	1
1:A:10:LEU:CG	1:A:10:LEU:HD13	0.91	1.48	1	1
1:A:18:ALA:CB	1:A:18:ALA:HA	0.90	1.46	1	1
1:A:18:ALA:O	1:A:18:ALA:CA	0.90	0.60	1	1
1:A:13:ARG:CD	1:A:13:ARG:CG	0.89	0.90	1	1
1:A:12:ASN:ND2	1:A:12:ASN:CG	0.89	0.79	1	1
1:A:13:ARG:CD	1:A:13:ARG:HG3	0.89	1.45	1	1
1:A:17:GLN:CD	1:A:17:GLN:HG2	0.89	1.37	1	1
1:A:10:LEU:CG	1:A:10:LEU:HD22	0.88	1.43	1	1
1:A:10:LEU:CG	1:A:10:LEU:HD23	0.88	1.43	1	1
1:A:10:LEU:CG	1:A:10:LEU:HD21	0.87	1.43	1	1
1:A:12:ASN:OD1	1:A:12:ASN:ND2	0.87	0.73	1	1
1:A:17:GLN:CD	1:A:17:GLN:HG3	0.87	1.37	1	1
1:A:10:LEU:CD1	1:A:10:LEU:CG	0.84	0.84	1	1
1:A:18:ALA:HB2	1:A:18:ALA:CA	0.83	1.37	1	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:13:ARG:NE	1:A:13:ARG:HD2	0.83	1.28	1	1
1:A:13:ARG:CG	1:A:13:ARG:HD2	0.81	1.42	1	1
1:A:17:GLN:CD	1:A:17:GLN:CG	0.81	0.81	1	1
1:A:12:ASN:OD1	1:A:12:ASN:CG	0.80	0.56	1	1
1:A:18:ALA:HB3	1:A:18:ALA:C	0.80	1.29	1	1
1:A:18:ALA:O	1:A:18:ALA:HB1	0.78	1.02	1	1
1:A:12:ASN:CG	1:A:12:ASN:HD21	0.77	1.43	1	1
1:A:18:ALA:HB3	1:A:18:ALA:CA	0.77	1.37	1	1
1:A:10:LEU:CD2	1:A:10:LEU:CG	0.77	0.77	1	1
1:A:12:ASN:CG	1:A:12:ASN:HD22	0.74	1.43	1	1
1:A:13:ARG:NE	1:A:13:ARG:HD3	0.74	1.28	1	1
1:A:17:GLN:C	1:A:18:ALA:CB	0.74	2.49	1	1
1:A:13:ARG:CG	1:A:13:ARG:HD3	0.73	1.42	1	1
1:A:18:ALA:CB	1:A:18:ALA:CA	0.69	0.70	1	1
1:A:13:ARG:CZ	1:A:13:ARG:HH12	0.69	1.39	1	1
1:A:9:ARG:CZ	1:A:9:ARG:HH21	0.68	1.38	1	1
1:A:18:ALA:CB	1:A:18:ALA:C	0.68	0.71	1	1
1:A:9:ARG:CZ	1:A:9:ARG:HH22	0.67	1.38	1	1
1:A:4:LEU:HD23	1:A:8:PHE:CD1	0.66	2.26	11	1
1:A:13:ARG:CZ	1:A:13:ARG:HH11	0.66	1.39	1	1
1:A:18:ALA:C	1:A:18:ALA:HB1	0.65	1.14	1	1
1:A:17:GLN:CD	1:A:17:GLN:HB3	0.63	2.09	1	1
1:A:12:ASN:O	1:A:16:THR:HG23	0.59	1.96	15	1
1:A:10:LEU:CD2	1:A:10:LEU:HB3	0.59	2.18	1	1
1:A:17:GLN:O	1:A:18:ALA:HB3	0.59	1.97	20	5
1:A:13:ARG:CZ	1:A:13:ARG:NH1	0.59	0.74	1	1
1:A:9:ARG:CZ	1:A:9:ARG:NH2	0.58	0.73	1	1
1:A:17:GLN:O	1:A:18:ALA:HB2	0.58	1.98	16	1
1:A:9:ARG:CZ	1:A:9:ARG:HH11	0.57	1.27	1	1
1:A:15:PHE:CD1	1:A:15:PHE:C	0.57	2.82	7	3
1:A:9:ARG:CZ	1:A:9:ARG:HH12	0.56	1.27	1	1
1:A:17:GLN:CD	1:A:17:GLN:HE22	0.54	1.19	1	1
1:A:17:GLN:CD	1:A:17:GLN:HE21	0.54	1.19	1	1
1:A:14:SER:CB	1:A:14:SER:HG	0.52	1.23	1	1
1:A:10:LEU:O	1:A:14:SER:CB	0.52	2.57	8	1
1:A:11:PHE:O	1:A:15:PHE:CB	0.52	2.57	6	1
1:A:14:SER:O	1:A:18:ALA:N	0.51	2.44	20	3
1:A:7:PHE:O	1:A:11:PHE:CD1	0.50	2.64	6	1
1:A:6:THR:O	1:A:9:ARG:N	0.49	2.45	4	22
1:A:6:THR:O	1:A:7:PHE:C	0.49	2.56	8	22
1:A:15:PHE:O	1:A:16:THR:C	0.48	2.57	22	4

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:4:LEU:HD23	1:A:8:PHE:HD1	0.48	1.67	11	1
1:A:13:ARG:CZ	1:A:13:ARG:HH22	0.47	1.18	1	1
1:A:16:THR:O	1:A:17:GLN:C	0.46	2.57	17	2
1:A:4:LEU:CD1	1:A:4:LEU:N	0.46	2.78	22	1
1:A:13:ARG:CZ	1:A:13:ARG:HH21	0.46	1.18	1	1
1:A:7:PHE:CE2	1:A:11:PHE:CZ	0.46	3.04	6	1
1:A:13:ARG:O	1:A:16:THR:OG1	0.46	2.34	15	1
1:A:9:ARG:O	1:A:13:ARG:CG	0.45	2.65	3	2
1:A:7:PHE:O	1:A:11:PHE:HB2	0.45	2.12	1	1
1:A:9:ARG:CZ	1:A:9:ARG:NH1	0.45	0.60	1	1
1:A:5:SER:O	1:A:6:THR:C	0.45	2.59	14	1
1:A:15:PHE:O	1:A:15:PHE:CD1	0.44	2.70	17	1
1:A:4:LEU:HD13	1:A:7:PHE:HB3	0.44	1.90	13	1
1:A:9:ARG:O	1:A:13:ARG:HG2	0.44	2.13	8	1
1:A:13:ARG:O	1:A:17:GLN:CB	0.43	2.67	13	1
1:A:13:ARG:CD	1:A:13:ARG:NE	0.43	0.69	1	1
1:A:10:LEU:O	1:A:14:SER:HB2	0.43	2.13	1	1
1:A:12:ASN:O	1:A:16:THR:OG1	0.43	2.36	9	1
1:A:10:LEU:HA	1:A:13:ARG:CG	0.43	2.42	8	1
1:A:5:SER:OG	1:A:6:THR:N	0.43	2.50	14	3
1:A:9:ARG:O	1:A:13:ARG:HG3	0.42	2.14	3	1
1:A:4:LEU:N	1:A:4:LEU:HD12	0.42	2.28	22	1
1:A:10:LEU:O	1:A:14:SER:HB3	0.42	2.14	8	1
1:A:17:GLN:O	1:A:18:ALA:CB	0.41	2.65	16	1
1:A:4:LEU:O	1:A:5:SER:C	0.41	2.63	9	2
1:A:15:PHE:C	1:A:17:GLN:N	0.41	2.78	16	2
1:A:9:ARG:O	1:A:13:ARG:HB2	0.41	2.15	18	1
1:A:15:PHE:O	1:A:17:GLN:N	0.41	2.53	22	1
1:A:4:LEU:CD1	1:A:7:PHE:HB3	0.41	2.46	13	1
1:A:4:LEU:O	1:A:8:PHE:CD1	0.41	2.74	18	1
1:A:13:ARG:CD	1:A:13:ARG:HH21	0.40	1.58	1	1

6.3 Torsion angles ⓘ

6.3.1 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 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	15/19 (79%)	12±1 (82±7%)	2±1 (16±6%)	0±0 (2±3%)	8	48
All	All	330/418 (79%)	270 (82%)	53 (16%)	7 (2%)	8	48

All 4 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	18	ALA	4
1	A	4	LEU	1
1	A	16	THR	1
1	A	17	GLN	1

6.3.2 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 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	14/16 (88%)	8±2 (59±12%)	6±2 (41±12%)	0	5
All	All	308/352 (88%)	182 (59%)	126 (41%)	0	5

All 14 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	6	THR	22
1	A	4	LEU	15
1	A	10	LEU	15
1	A	13	ARG	14
1	A	8	PHE	9
1	A	9	ARG	9
1	A	7	PHE	8
1	A	17	GLN	7
1	A	5	SER	6
1	A	15	PHE	6
1	A	11	PHE	5
1	A	16	THR	4
1	A	14	SER	3
1	A	12	ASN	3

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 oligosaccharides 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](#)

The following chains have linkage breaks:

Mol	Chain	Number of breaks
1	1-A	5

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	A	17:GLN	C	18:ALA	N	0.94
1	A	2:GLY	C	3:THR	N	0.63
1	A	3:THR	C	4:LEU	N	0.52
1	A	1:SER	C	2:GLY	N	0.44
1	A	18:ALA	C	19:NH2	N	0.17

7 Chemical shift validation

No chemical shift data were provided