wwPDB NMR Structure Validation Summary Report ⓘ

Jun 27, 2024 – 10:26 am BST

PDB ID	:	6YW8
BMRB ID	:	34515
Title	:	NMR solution structure of unbound recombinant human Nerve Growth Factor (rhNGF)
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Deposited on	:	2020-04-29

This is a wwPDB NMR Structure Validation Summary Report for a publicly released PDB entry.

We welcome your comments at *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.

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

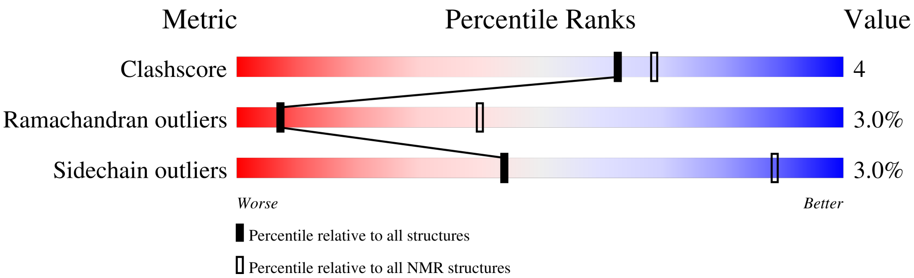
MolProbity	:	4.02b-467
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
wwPDB-RCI	:	v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV	:	Wang et al. (2010)
wwPDB-ShiftChecker	:	v1.2
BMRB Restraints Analysis	:	v1.2
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

1 Overall quality at a glance (i)

The following experimental techniques were used to determine the structure:
SOLUTION NMR

The overall completeness of chemical shifts assignment is 39%.

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 >=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 <=5%

Mol	Chain	Length	Quality of chain
1	A	118	84% 5% 11%
1	B	118	85% • 11%

2 Ensemble composition and analysis (i)

This entry contains 20 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:10-A:114, B:10-B:114 (210)	1.91	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 3 clusters and 2 single-model clusters were found.

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

3 Entry composition (i)

There is only 1 type of molecule in this entry. The entry contains 3680 atoms, of which 1820 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Beta-nerve growth factor.

Mol	Chain	Residues	Atoms						Trace
1	A	118	Total 1840	C 583	H 910	N 166	O 173	S 8	0
1	B	118	Total 1840	C 583	H 910	N 166	O 173	S 8	0

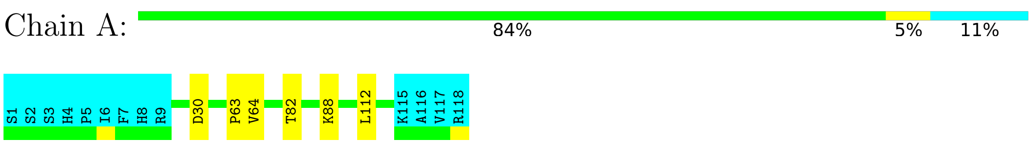
4 Residue-property plots (i)

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.

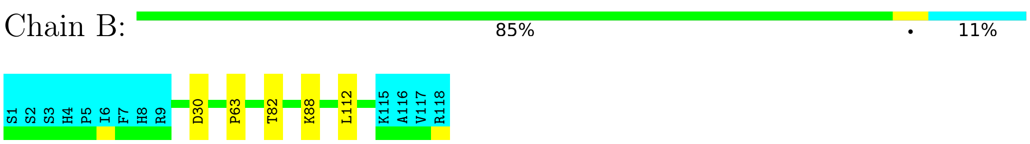
- Molecule 1: Beta-nerve growth factor

Chain A:



- Molecule 1: Beta-nerve growth factor

Chain B:

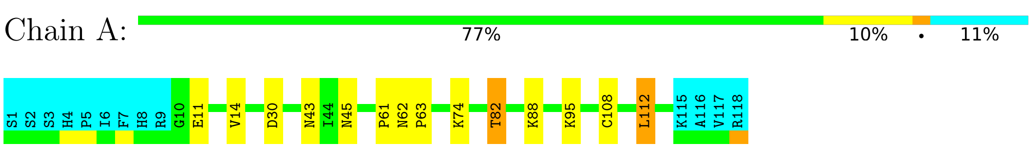


4.2 Residue scores for the representative (medoid) model from the NMR ensemble

The representative model is number 1. Colouring as in section 4.1 above.

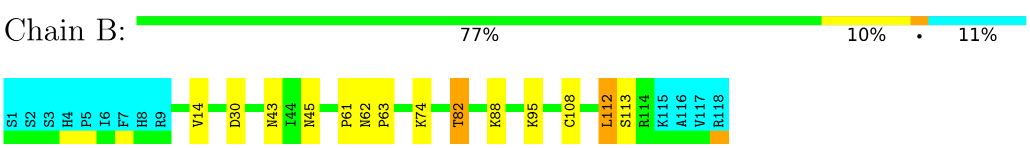
- Molecule 1: Beta-nerve growth factor

Chain A:



- Molecule 1: Beta-nerve growth factor

Chain B:



5 Refinement protocol and experimental data overview (i)

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

Of the 200 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
ARIA	refinement	2.3.2
ARIA	structure calculation	2.3.2

The following table shows chemical shift validation statistics as aggregates over all chemical shift files. Detailed validation can be found in section 7 of this report.

Chemical shift file(s)	working_cs.cif
Number of chemical shift lists	1
Total number of shifts	1208
Number of shifts mapped to atoms	1208
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Assignment completeness (well-defined parts)	39%

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	822	797	795	7±2
1	B	822	797	795	7±2
All	All	32880	31880	31800	283

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 4.

5 of 141 unique clashes are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:77:ASN:O	1:A:78:SER:HB2	0.62	1.95	10	1
1:B:77:ASN:O	1:B:78:SER:HB2	0.61	1.95	10	1
1:B:68:CYS:SG	1:B:78:SER:HB3	0.59	2.36	5	2
1:A:88:LYS:N	1:A:88:LYS:HD2	0.59	2.12	18	10
1:B:88:LYS:N	1:B:88:LYS:HD2	0.59	2.12	2	9

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	105/118 (89%)	89±3 (85±3%)	13±3 (13±3%)	3±1 (3±1%)	7	41
1	B	105/118 (89%)	89±3 (85±3%)	13±3 (12±3%)	3±1 (3±1%)	7	40
All	All	4200/4720 (89%)	3553 (85%)	523 (12%)	124 (3%)	7	40

5 of 48 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	64	VAL	6
1	B	64	VAL	6
1	A	14	VAL	5
1	B	14	VAL	5
1	A	65	ASP	5

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	93/105 (89%)	90±1 (97±1%)	3±1 (3±1%)	43	88
1	B	93/105 (89%)	90±1 (97±1%)	3±1 (3±1%)	44	89
All	All	3720/4200 (89%)	3607 (97%)	113 (3%)	44	89

5 of 36 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	30	ASP	8
1	A	74	LYS	8
1	A	112	LEU	8
1	B	30	ASP	8
1	B	74	LYS	8

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 (i)

The completeness of assignment taking into account all chemical shift lists is 39% for the well-defined parts and 38% for the entire structure.

7.1 Chemical shift list 1

File name: working_cs.cif

Chemical shift list name: *starch_ output*

7.1.1 Bookkeeping (i)

The following table shows the results of parsing the chemical shift list and reports the number of nuclei with statistically unusual chemical shifts.

Total number of shifts	1208
Number of shifts mapped to atoms	1208
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Number of shift outliers (ShiftChecker)	1

7.1.2 Chemical shift referencing (i)

The following table shows the suggested chemical shift referencing corrections.

Nucleus	# values	Correction ± precision, *ppm*	Suggested action
$^{13}C_{\alpha}$	108	0.18 ± 0.11	None needed (< 0.5 ppm)
$^{13}C_{\beta}$	104	0.11 ± 0.16	None needed (< 0.5 ppm)
$^{13}C'$	0	—	None (insufficient data)
^{15}N	105	0.56 ± 0.72	None needed (imprecise)

7.1.3 Completeness of resonance assignments (i)

The following table shows the completeness of the chemical shift assignments for the well-defined regions of the structure. The overall completeness is 39%, i.e. 1095 atoms were assigned a chemical shift out of a possible 2780. 0 out of 30 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^{1}H	^{13}C	^{15}N
Backbone	409/1056 (39%)	212/430 (49%)	100/420 (24%)	97/206 (47%)
Sidechain	649/1464 (44%)	445/948 (47%)	198/456 (43%)	6/60 (10%)

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	Total	^{1}H	^{13}C	^{15}N
Aromatic	37/260 (14%)	34/128 (27%)	0/118 (0%)	3/14 (21%)
Overall	1095/2780 (39%)	691/1506 (46%)	298/994 (30%)	106/280 (38%)

7.1.4 Statistically unusual chemical shifts (i)

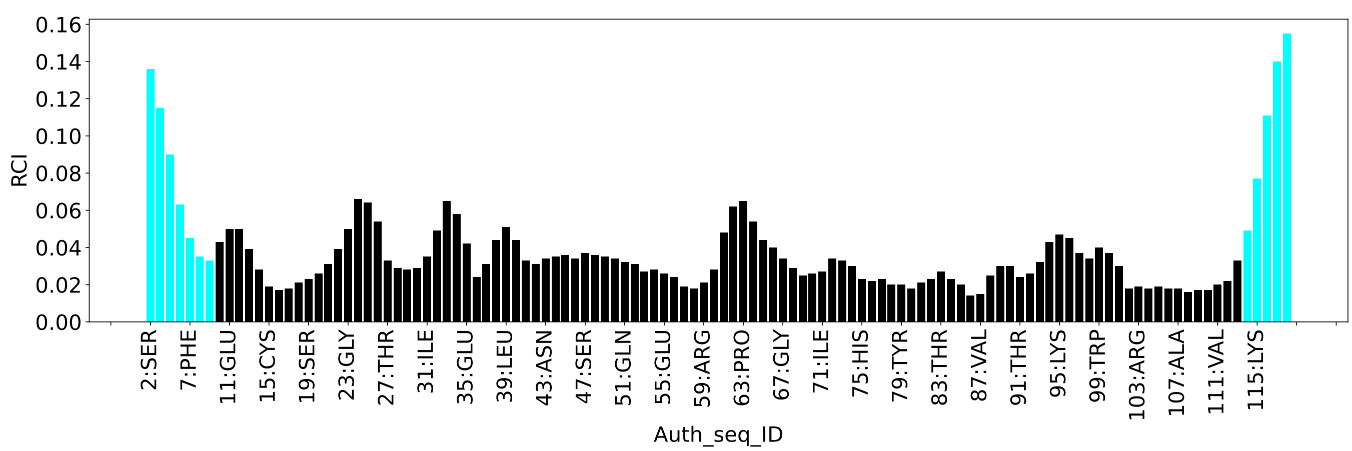
The following table lists the statistically unusual chemical shifts. These are statistical measures, and large deviations from the mean do not necessarily imply incorrect assignments. Molecules containing paramagnetic centres or hemes are expected to give rise to anomalous chemical shifts.

List Id	Chain	Res	Type	Atom	Shift, *ppm*	Expected range, *ppm*	Z-score
1	A	85	THR	HG1	6.42	0.08 – 2.19	25.0

7.1.5 Random Coil Index (RCI) plots (i)

The image below reports *random coil index* values for the protein chains in the structure. The height of each bar gives a probability of a given residue to be disordered, as predicted from the available chemical shifts and the amino acid sequence. A value above 0.2 is an indication of significant predicted disorder. The colour of the bar shows whether the residue is in the well-defined core (black) or in the ill-defined residue ranges (cyan), as described in section 2 on ensemble composition.If well-defined core and ill-defined regions are not identified then it is shown as gray bars.

Random coil index (RCI) for chain A:



8 NMR restraints analysis (i)

8.1 Conformationally restricting restraints (i)

The following table provides the summary of experimentally observed NMR restraints in different categories. Restraints are classified into different categories based on the sequence separation of the atoms involved.

Description	Value
Total distance restraints	3128
Intra-residue (|i-j|=0)	1826
Sequential (|i-j|=1)	602
Medium range (|i-j|>1 and |i-j|<5)	152
Long range (|i-j|≥5)	492
Inter-chain	56
Hydrogen bond restraints	0
Disulfide bond restraints	0
Total dihedral-angle restraints	0
Number of unmapped restraints	0
Number of restraints per residue	13.3
Number of long range restraints per residue[1]	2.1

[1]Long range hydrogen bonds and disulfide bonds are counted as long range restraints while calculating the number of long range restraints per residue

8.2 Residual restraint violations (i)

This section provides the overview of the restraint violations analysis. The violations are binned as small, medium and large violations based on its absolute value. Average number of violations per model is calculated by dividing the total number of violations in each bin by the size of the ensemble.

8.2.1 Average number of distance violations per model (i)

Distance violations less than 0.1 Å
are not included in the calculation.

Bins (Å)	Average number of violations per model	Max (Å)
0.1-0.2 (Small)	54.8	0.2
0.2-0.5 (Medium)	122.8	0.5
>0.5 (Large)	151.5	6.35

8.2.2 Average number of dihedral-angle violations per model (i)

Dihedral-angle violations less than 1° are not included in the calculation.There are no dihedral-angle violations

9 Distance violation analysis (i)

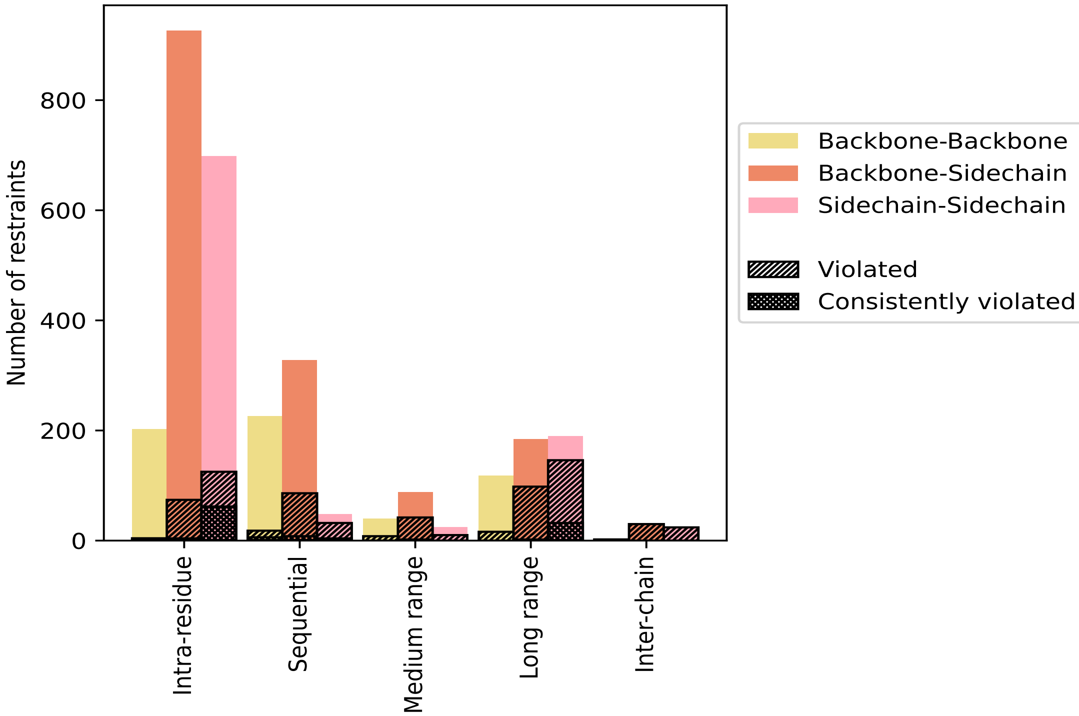
9.1 Summary of distance violations (i)

The following table shows the summary of distance violations in different restraint categories based on the sequence separation of the atoms involved. Each category is further sub-divided into three sub-categories based on the atoms involved. Violations less than 0.1 Å are not included in the statistics.

Restraints type	Count	%[1]	Violated[3]			Consistently Violated[4]		
			Count	%[2]	%[1]	Count	%[2]	%[1]
Intra-residue (|i-j|=0)	1826	58.4	203	11.1	6.5	70	3.8	2.2
Backbone-Backbone	202	6.5	4	2.0	0.1	4	2.0	0.1
Backbone-Sidechain	926	29.6	74	8.0	2.4	4	0.4	0.1
Sidechain-Sidechain	698	22.3	125	17.9	4.0	62	8.9	2.0
Sequential (|i-j|=1)	602	19.2	136	22.6	4.3	18	3.0	0.6
Backbone-Backbone	226	7.2	18	8.0	0.6	6	2.7	0.2
Backbone-Sidechain	328	10.5	86	26.2	2.7	8	2.4	0.3
Sidechain-Sidechain	48	1.5	32	66.7	1.0	4	8.3	0.1
Medium range (|i-j|>1 & |i-j|<5)	152	4.9	60	39.5	1.9	2	1.3	0.1
Backbone-Backbone	40	1.3	8	20.0	0.3	0	0.0	0.0
Backbone-Sidechain	88	2.8	42	47.7	1.3	2	2.3	0.1
Sidechain-Sidechain	24	0.8	10	41.7	0.3	0	0.0	0.0
Long range (|i-j|≥5)	492	15.7	260	52.8	8.3	34	6.9	1.1
Backbone-Backbone	118	3.8	16	13.6	0.5	0	0.0	0.0
Backbone-Sidechain	184	5.9	98	53.3	3.1	2	1.1	0.1
Sidechain-Sidechain	190	6.1	146	76.8	4.7	32	16.8	1.0
Inter-chain	56	1.8	56	100.0	1.8	2	3.6	0.1
Backbone-Backbone	2	0.1	2	100.0	0.1	2	100.0	0.1
Backbone-Sidechain	30	1.0	30	100.0	1.0	0	0.0	0.0
Sidechain-Sidechain	24	0.8	24	100.0	0.8	0	0.0	0.0
Hydrogen bond	0	0.0	0	0.0	0.0	0	0.0	0.0
Disulfide bond	0	0.0	0	0.0	0.0	0	0.0	0.0
Total	3128	100.0	715	22.9	22.9	126	4.0	4.0
Backbone-Backbone	588	18.8	48	8.2	1.5	12	2.0	0.4
Backbone-Sidechain	1556	49.7	330	21.2	10.5	16	1.0	0.5
Sidechain-Sidechain	984	31.5	337	34.2	10.8	98	10.0	3.1

[1] percentage calculated with respect to the total number of distance restraints, [2] percentage calculated with respect to the number of restraints in a particular restraint category, [3] violated in at least one model, [4] violated in all the models

9.1.1 Bar chart : Distribution of distance restraints and violations (i)



Violated and consistently violated restraints are shown using different hatch patterns in their respective categories. The hydrogen bonds and disulfied bonds are counted in their appropriate category on the x-axis

9.2 Distance violation statistics for each model (i)

The following table provides the distance violation statistics for each model in the ensemble. Violations less than 0.1 Å
are not included in the statistics.

Model ID	Number of violations						Mean (Å)	Max (Å)	SD[6] (Å)	Median (Å)
	IR[1]	SQ[2]	MR[3]	LR[4]	IC[5]	Total				
1	117	58	22	112	24	333	0.66	4.14	0.62	0.46
2	120	62	10	96	30	318	0.64	3.57	0.58	0.45
3	108	60	12	114	28	322	0.62	2.47	0.5	0.46
4	114	70	26	112	20	342	0.59	3.66	0.58	0.39
5	104	62	18	124	32	340	0.76	3.67	0.68	0.5
6	117	56	16	126	22	337	0.66	4.92	0.69	0.45
7	118	74	20	122	29	363	0.73	3.41	0.68	0.48
8	114	49	15	122	26	326	0.82	5.13	0.85	0.56
9	118	62	14	122	28	344	0.72	5.57	0.76	0.49
10	110	64	20	113	28	335	0.72	6.35	0.75	0.48

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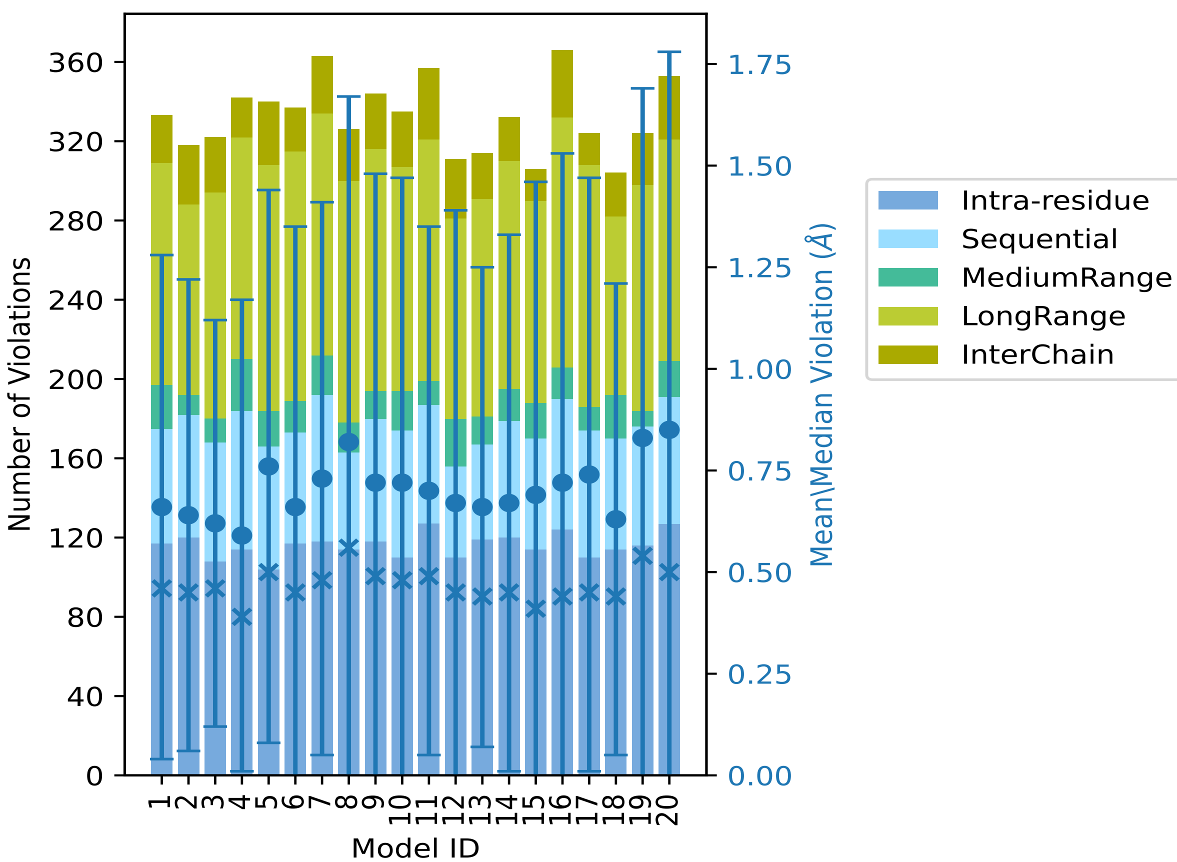
Model ID	Number of violations						Mean (Å)	Max (Å)	SD[6] (Å)	Median (Å)
	IR[1]	SQ[2]	MR[3]	LR[4]	IC[5]	Total				
11	127	60	12	122	36	357	0.7	3.74	0.65	0.49
12	110	46	24	101	30	311	0.67	5.48	0.72	0.45
13	119	48	14	110	23	314	0.66	3.45	0.59	0.44
14	120	59	16	115	22	332	0.67	3.39	0.66	0.45
15	114	56	18	102	16	306	0.69	5.25	0.77	0.41
16	124	66	16	126	34	366	0.72	5.53	0.81	0.44
17	110	64	12	122	16	324	0.74	3.78	0.73	0.45
18	114	56	22	90	22	304	0.63	3.28	0.58	0.44
19	116	60	8	114	26	324	0.83	4.81	0.86	0.54
20	127	64	18	112	32	353	0.85	4.95	0.93	0.5

[1]Intra-residue restraints, [2]Sequential restraints, [3]Medium range restraints, [4]Long range restraints, [5]Inter-chain restraints, [6]Standard deviation

9.2.1 Bar graph : Distance Violation statistics for each model (i)



The mean(dot),median(x) and the standard deviation are shown in blue with respect to the y axis on the right

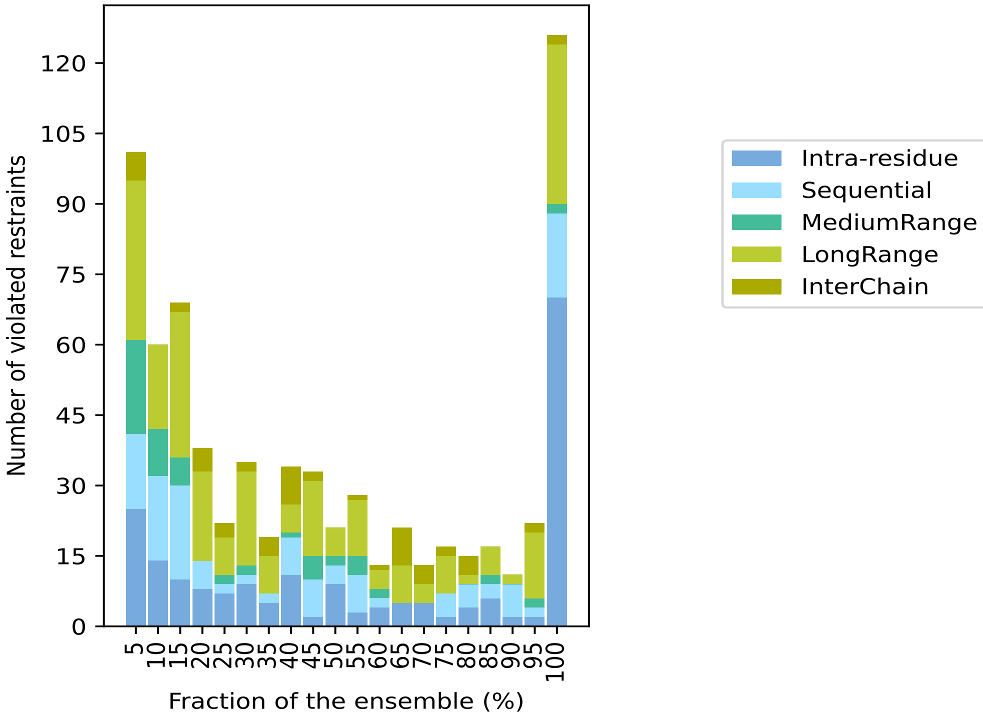
9.3 Distance violation statistics for the ensemble (i)

Violation analysis may find that some restraints are violated in few models and some are violated in most of models. The following table provides this information as number of violated restraints for a given fraction of the ensemble. In total, 2413(IR:1623, SQ:466, MR:92, LR:232, IC:0) restraints are not violated in the ensemble.

Number of violated restraints						Fraction of the ensemble	
IR[1]	SQ[2]	MR[3]	LR[4]	IC[5]	Total	Count[6]	%
25	16	20	34	6	101	1	5.0
14	18	10	18	0	60	2	10.0
10	20	6	31	2	69	3	15.0
8	6	0	19	5	38	4	20.0
7	2	2	8	3	22	5	25.0
9	2	2	20	2	35	6	30.0
5	2	0	8	4	19	7	35.0
11	8	1	6	8	34	8	40.0
2	8	5	16	2	33	9	45.0
9	4	2	6	0	21	10	50.0
3	8	4	12	1	28	11	55.0
4	2	2	4	1	13	12	60.0
5	0	0	8	8	21	13	65.0
5	0	0	4	4	13	14	70.0
2	5	0	8	2	17	15	75.0
4	5	0	2	4	15	16	80.0
6	3	2	6	0	17	17	85.0
2	7	0	2	0	11	18	90.0
2	2	2	14	2	22	19	95.0
70	18	2	34	2	126	20	100.0

[1]Intra-residue restraints, [2]Sequential restraints, [3]Medium range restraints, [4]Long range restraints, [5]Inter-chain restraints, [6] Number of models with violations

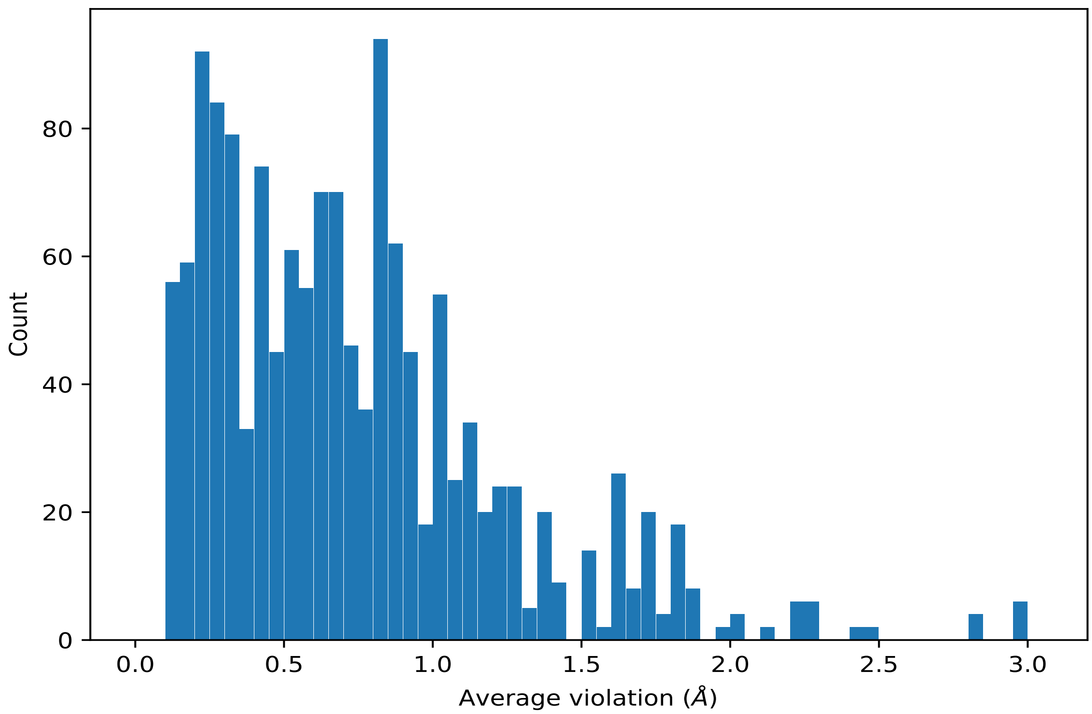
9.3.1 Bar graph : Distance violation statistics for the ensemble (i)



9.4 Most violated distance restraints in the ensemble (i)

9.4.1 Histogram : Distribution of mean distance violations (i)

The following histogram shows the distribution of the average value of the violation. The average is calculated for each restraint that is violated in more than one model over all the violated models in the ensemble



9.4.2 Table: Most violated distance restraints (i)

The following table provides the mean and the standard deviation of the violations for the 10 worst performing restraints, sorted by number of violated models and the mean violation value. The Key (restraint list ID, restraint ID) is the unique identifier for a given restraint. Rows with same key represent combinatorial or ambiguous restraints and are counted as a single restraint.

Key	Atom-1	Atom-2	Models[1]	Mean (Å)	SD[1] (Å)	Median (Å)
(1,1389)	1:57:A:LYS:HE2	1:18:A:VAL:HG13	20	2.97	1.31	2.98
(1,1389)	1:57:A:LYS:HE2	1:18:A:VAL:HG12	20	2.97	1.31	2.98
(1,1389)	1:57:A:LYS:HE2	1:18:A:VAL:HG11	20	2.97	1.31	2.98
(1,1390)	1:57:B:LYS:HE2	1:18:B:VAL:HG13	20	2.97	1.31	2.96
(1,1390)	1:57:B:LYS:HE2	1:18:B:VAL:HG12	20	2.97	1.31	2.96
(1,1390)	1:57:B:LYS:HE2	1:18:B:VAL:HG11	20	2.97	1.31	2.96
(1,886)	1:22:B:VAL:HB	1:53:B:PHE:HB3	20	1.99	0.47	1.84
(1,885)	1:22:A:VAL:HB	1:53:A:PHE:HB3	20	1.99	0.47	1.85
(1,3084)	1:13:B:SER:H	1:111:A:VAL:HA	20	1.87	1.32	1.34
(1,3083)	1:13:A:SER:H	1:111:B:VAL:HA	20	1.87	1.32	1.34
(1,225)	1:63:A:PRO:HB3	1:64:A:VAL:HG22	20	1.87	0.72	1.59
(1,225)	1:63:A:PRO:HB3	1:64:A:VAL:HG23	20	1.87	0.72	1.59
(1,225)	1:63:A:PRO:HB3	1:64:A:VAL:HG21	20	1.87	0.72	1.59
(1,226)	1:63:B:PRO:HB3	1:64:B:VAL:HG22	20	1.87	0.72	1.59
(1,226)	1:63:B:PRO:HB3	1:64:B:VAL:HG23	20	1.87	0.72	1.59
(1,226)	1:63:B:PRO:HB3	1:64:B:VAL:HG21	20	1.87	0.72	1.59

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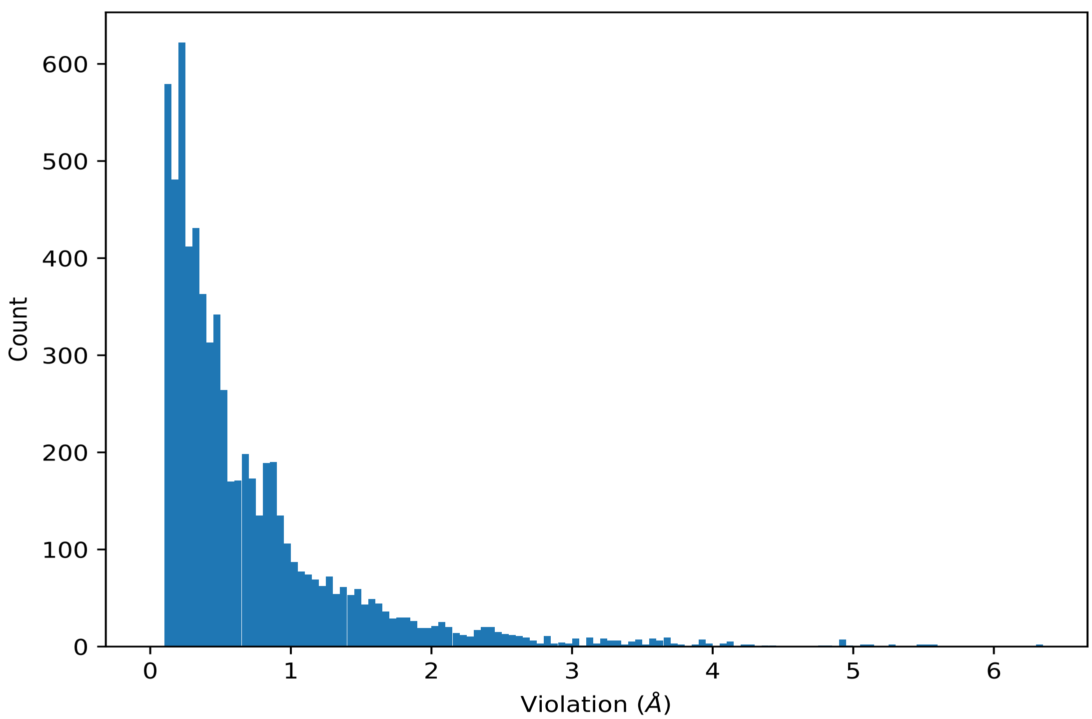
Key	Atom-1	Atom-2	Models[1]	Mean (Å)	SD[1] (Å)	Median (Å)
(1,549)	1:92:A:MET:HE3	1:97:A:ALA:HB3	20	1.72	1.13	1.48
(1,549)	1:92:A:MET:HE1	1:97:A:ALA:HB3	20	1.72	1.13	1.48
(1,549)	1:92:A:MET:HE2	1:97:A:ALA:HB2	20	1.72	1.13	1.48
(1,549)	1:92:A:MET:HE2	1:97:A:ALA:HB3	20	1.72	1.13	1.48
(1,549)	1:92:A:MET:HE2	1:97:A:ALA:HB1	20	1.72	1.13	1.48
(1,549)	1:92:A:MET:HE1	1:97:A:ALA:HB2	20	1.72	1.13	1.48
(1,549)	1:92:A:MET:HE1	1:97:A:ALA:HB1	20	1.72	1.13	1.48
(1,549)	1:92:A:MET:HE3	1:97:A:ALA:HB1	20	1.72	1.13	1.48
(1,550)	1:92:B:MET:HE3	1:97:B:ALA:HB3	20	1.72	1.13	1.48

[1]Number of violated models, [2]Standard deviation

9.5 All violated distance restraints (i)

9.5.1 Histogram : Distribution of distance violations (i)

The following histogram shows the distribution of the absolute value of the violation for all violated restraints in the ensemble.



9.5.2 Table : All distance violations (i)

The following table provides the 10 worst performing restraints, sorted by the violation value. The Key (restraint list ID, restraint ID) is the unique identifier for a given restraint. Rows with same key represent combinatorial or ambiguous restraints and are counted as a single restraint.

Key	Atom-1	Atom-2	Model ID	Violation (Å)
(1,3100)	1:9:B:ARG:HB3	1:117:A:VAL:HG21	10	6.35
(1,3099)	1:9:A:ARG:HB3	1:117:B:VAL:HG21	10	6.33
(1,912)	1:9:B:ARG:HB2	1:6:B:ILE:HG13	9	5.57
(1,911)	1:9:A:ARG:HB2	1:6:A:ILE:HG13	9	5.57
(1,3102)	1:9:B:ARG:HB3	1:115:A:LYS:HA	16	5.53
(1,3101)	1:9:A:ARG:HB3	1:115:B:LYS:HA	16	5.5
(1,1389)	1:57:A:LYS:HE2	1:18:A:VAL:HG11	12	5.48
(1,1390)	1:57:B:LYS:HE2	1:18:B:VAL:HG11	12	5.47
(1,550)	1:92:B:MET:HE1	1:97:B:ALA:HB1	15	5.25
(1,549)	1:92:A:MET:HE1	1:97:A:ALA:HB1	15	5.25

10 Dihedral-angle violation analysis (i)

No dihedral-angle restraints found