



Full wwPDB NMR Structure Validation Report ⓘ

Mar 5, 2026 – 11:27 PM UTC

PDB ID : 2L8B / pdb_00002l8b
BMRB ID : 16971
Title : TraI (381-569)
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Deposited on : 2011-01-07

This is a Full wwPDB NMR Structure Validation 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 : 4-5-2 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

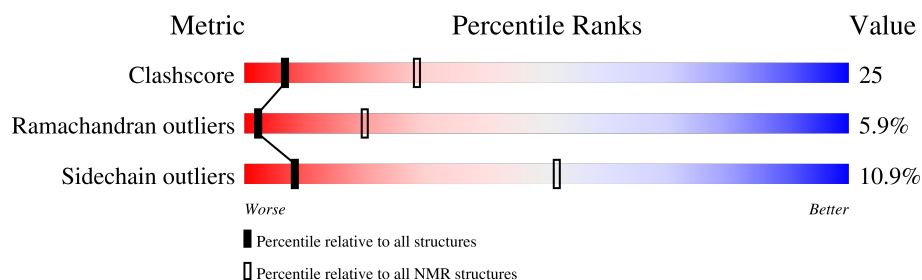
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

SOLUTION NMR

The overall completeness of chemical shifts assignment is 81%.

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	189	

2 Ensemble composition and analysis

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:389-A:555 (167)	1.13	1

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

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

The models can be grouped into 2 clusters. No single-model clusters were found.

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

3 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 2884 atoms, of which 1454 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Protein traI.

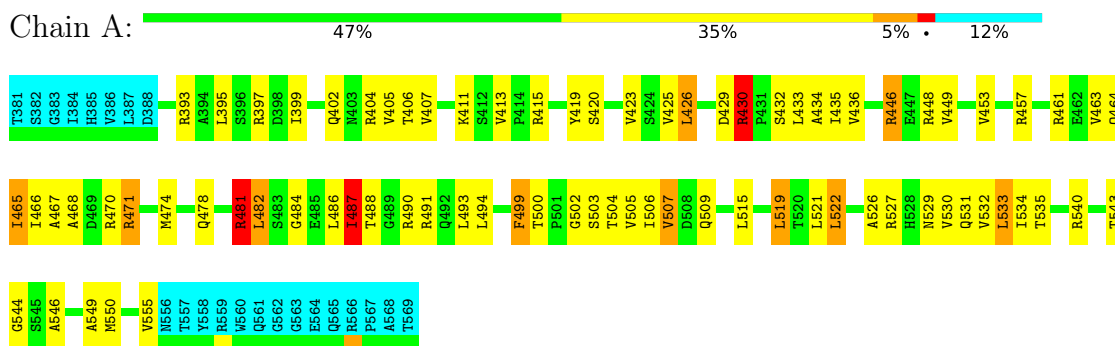
Mol	Chain	Residues	Atoms						Trace
1	A	189	Total	C	H	N	O	S	0
			2884	867	1454	274	281	8	

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: Protein traI

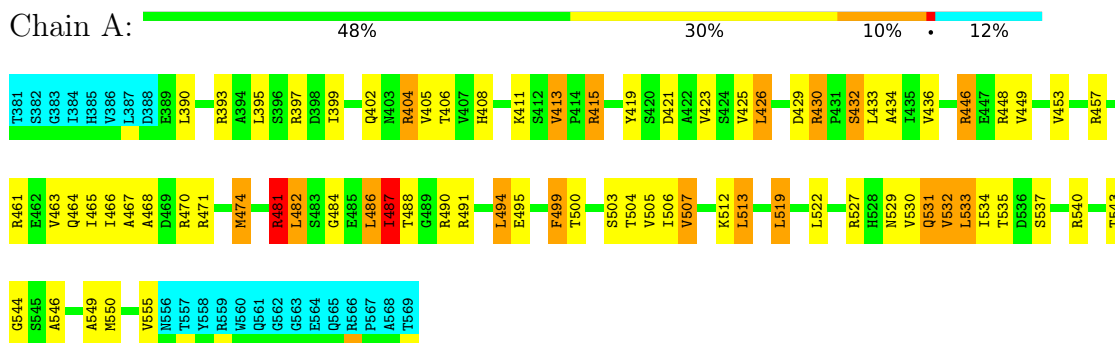


4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

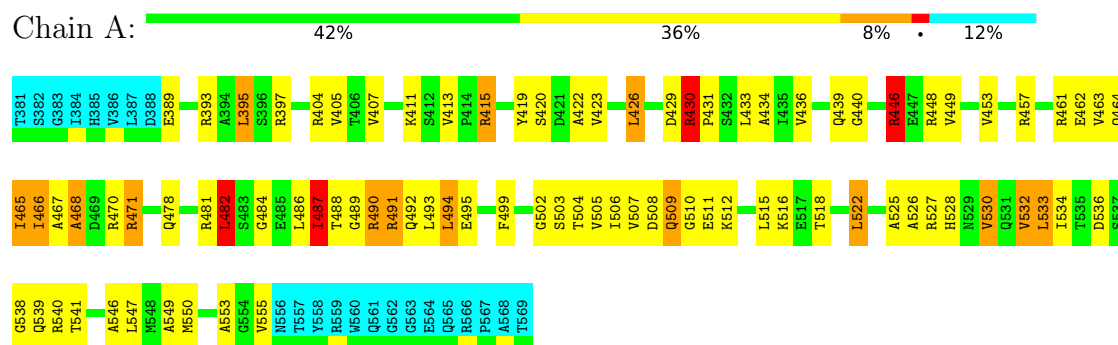
4.2.1 Score per residue for model 1 (medoid)

• Molecule 1: Protein traI



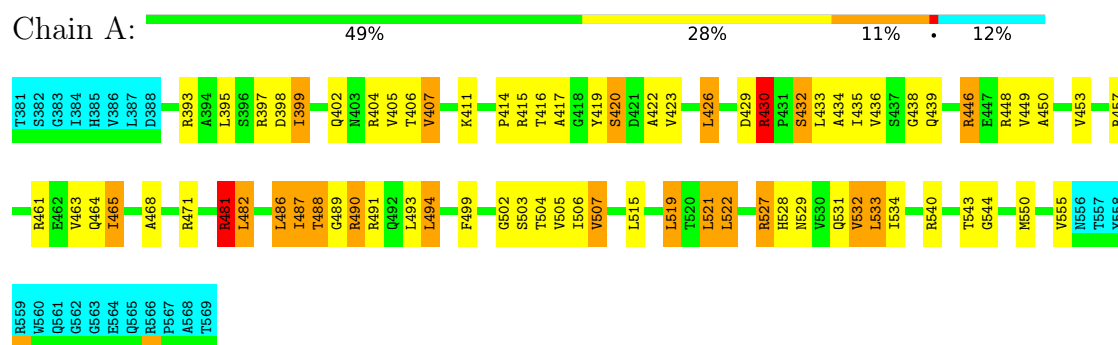
4.2.2 Score per residue for model 2

- Molecule 1: Protein traI



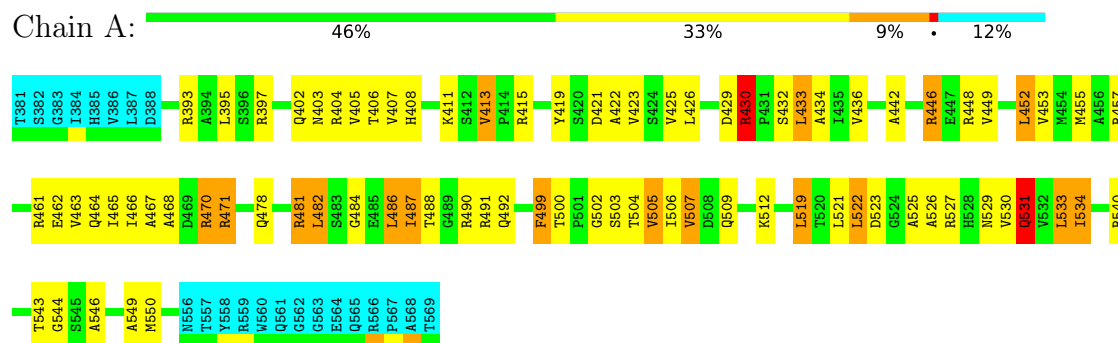
4.2.3 Score per residue for model 3

- Molecule 1: Protein traI



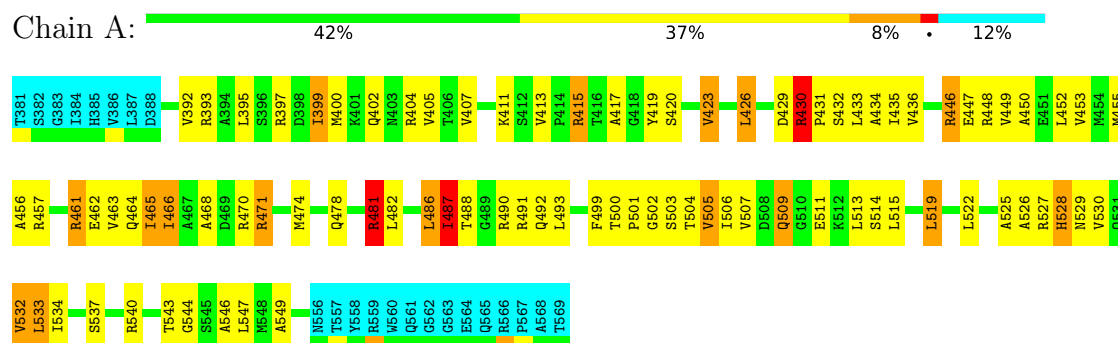
4.2.4 Score per residue for model 4

- Molecule 1: Protein traI



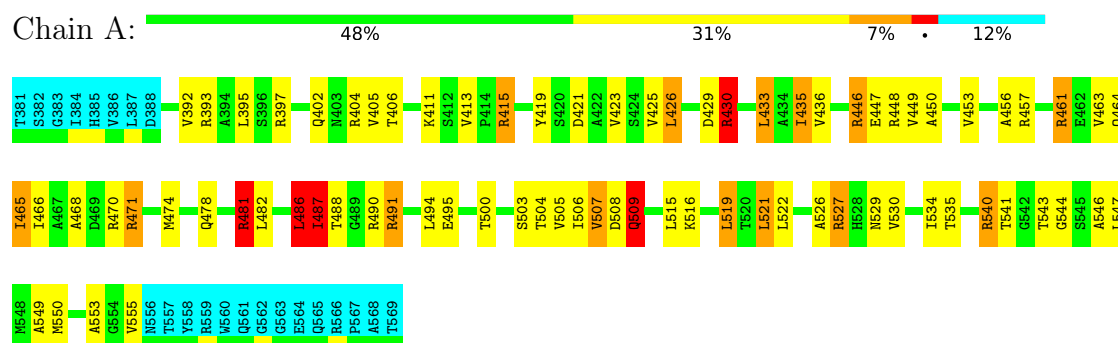
4.2.5 Score per residue for model 5

- Molecule 1: Protein traI



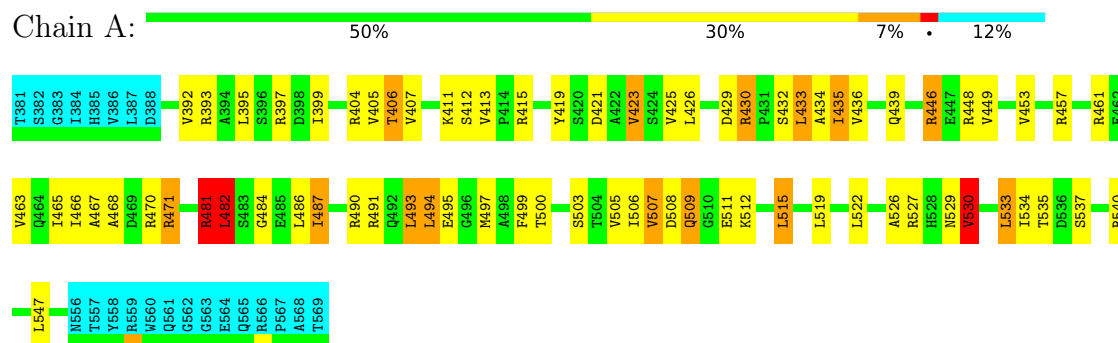
4.2.6 Score per residue for model 6

- Molecule 1: Protein traI



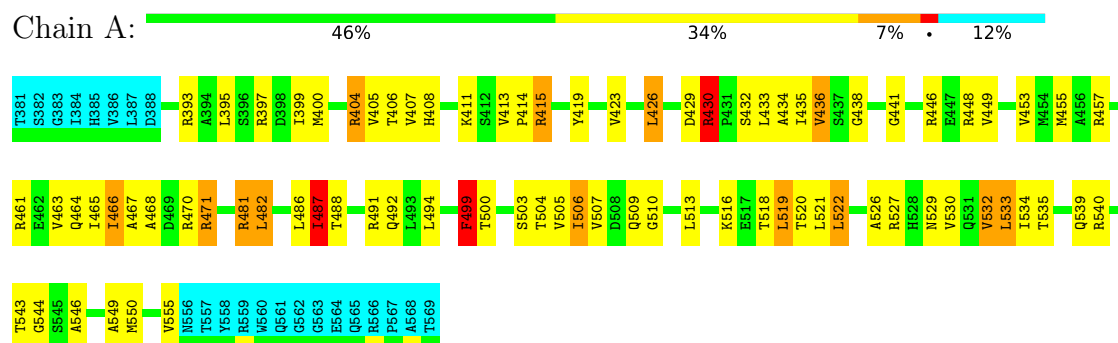
4.2.7 Score per residue for model 7

- Molecule 1: Protein traI



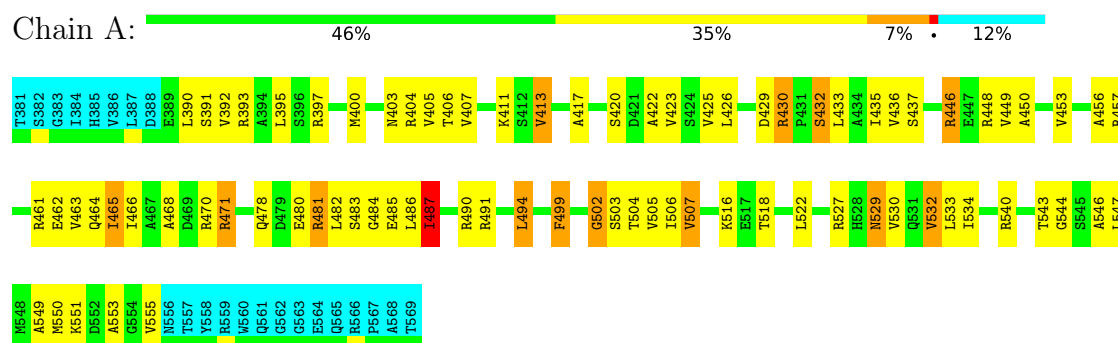
4.2.8 Score per residue for model 8

- Molecule 1: Protein traI



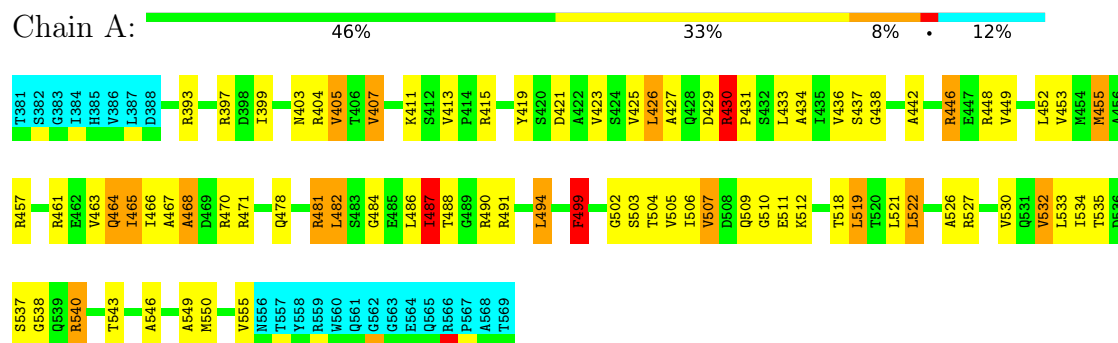
4.2.9 Score per residue for model 9

- Molecule 1: Protein traI



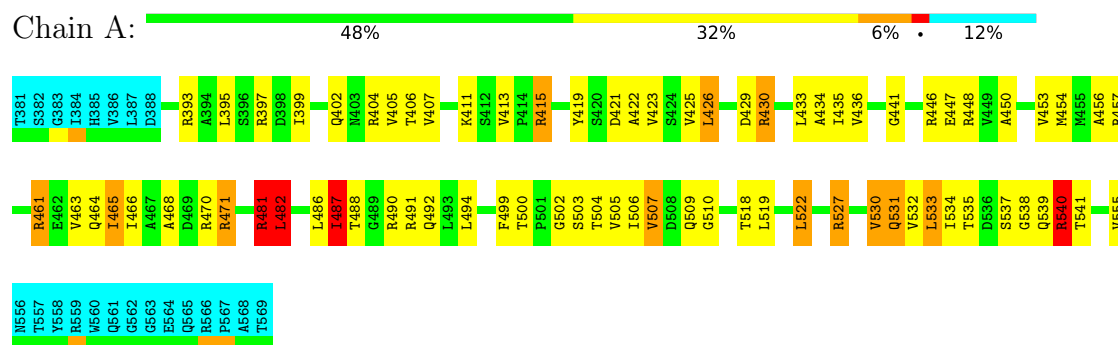
4.2.10 Score per residue for model 10

- Molecule 1: Protein traI



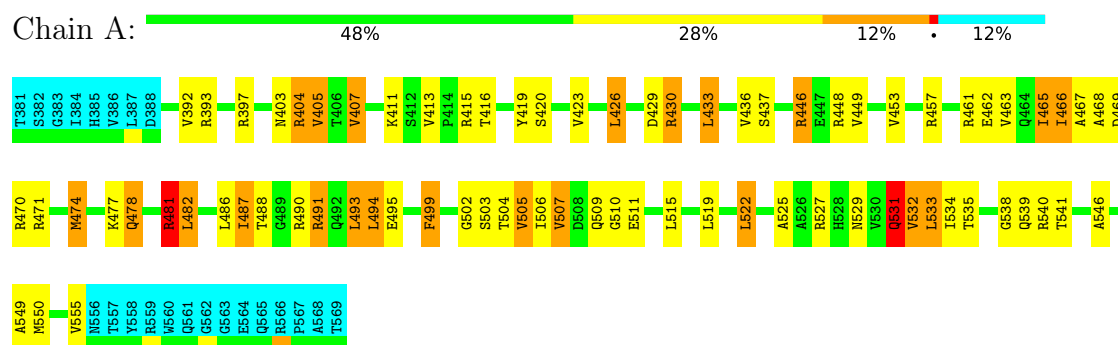
4.2.11 Score per residue for model 11

- Molecule 1: Protein traI



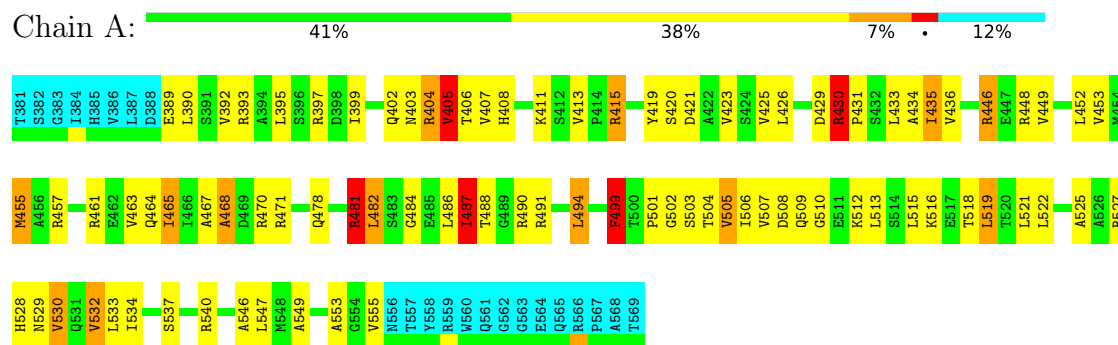
4.2.12 Score per residue for model 12

- Molecule 1: Protein traI



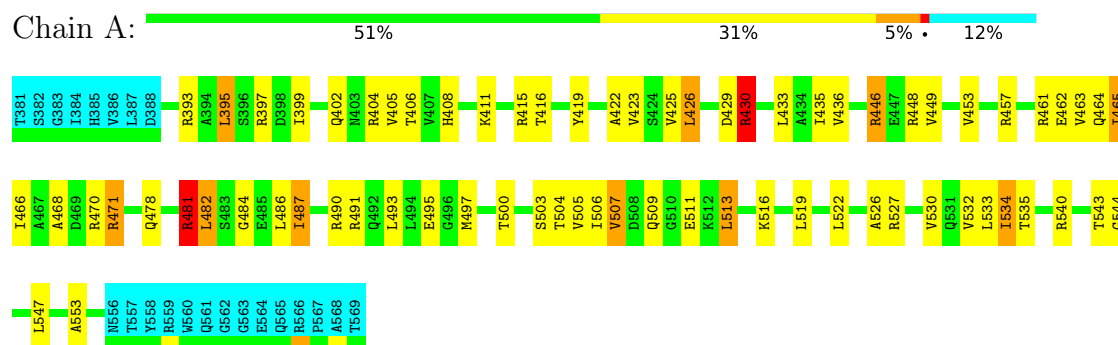
4.2.13 Score per residue for model 13

- Molecule 1: Protein traI



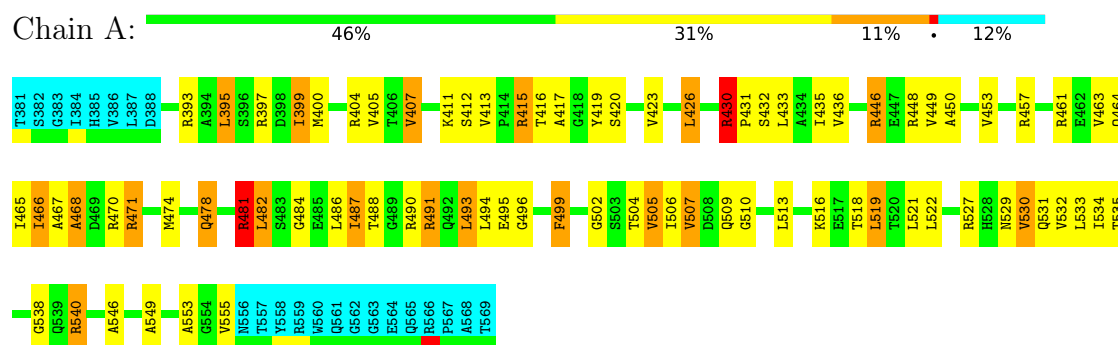
4.2.14 Score per residue for model 14

- Molecule 1: Protein traI



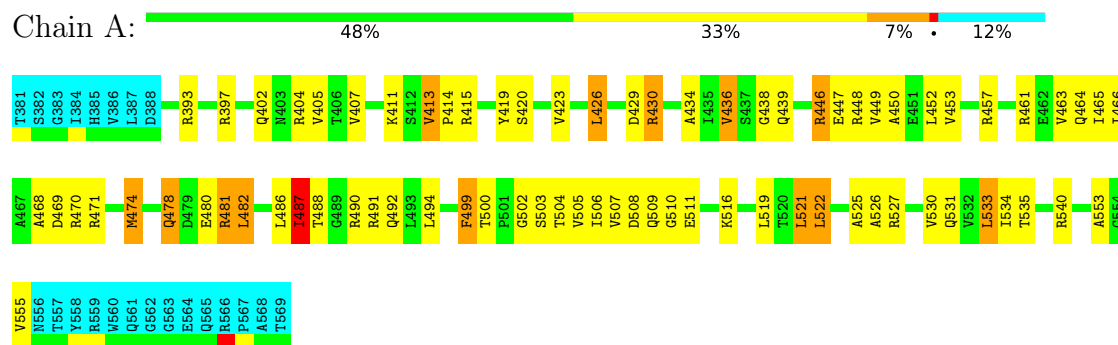
4.2.15 Score per residue for model 15

- Molecule 1: Protein traI



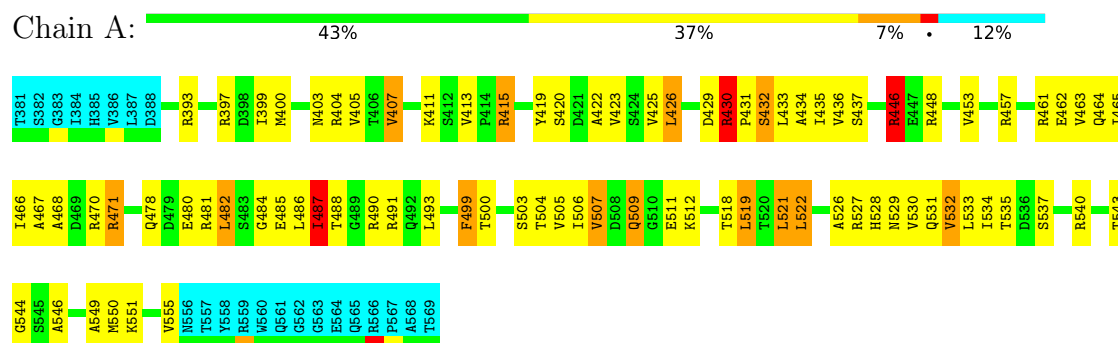
4.2.16 Score per residue for model 16

- Molecule 1: Protein traI



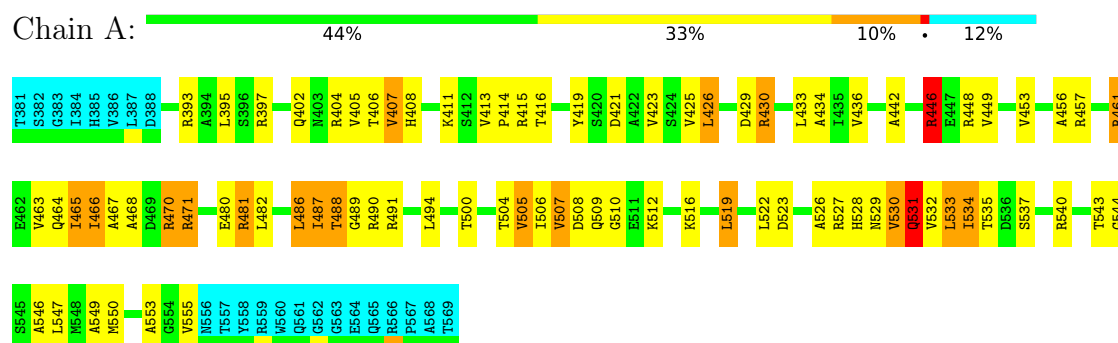
4.2.17 Score per residue for model 17

- Molecule 1: Protein traI



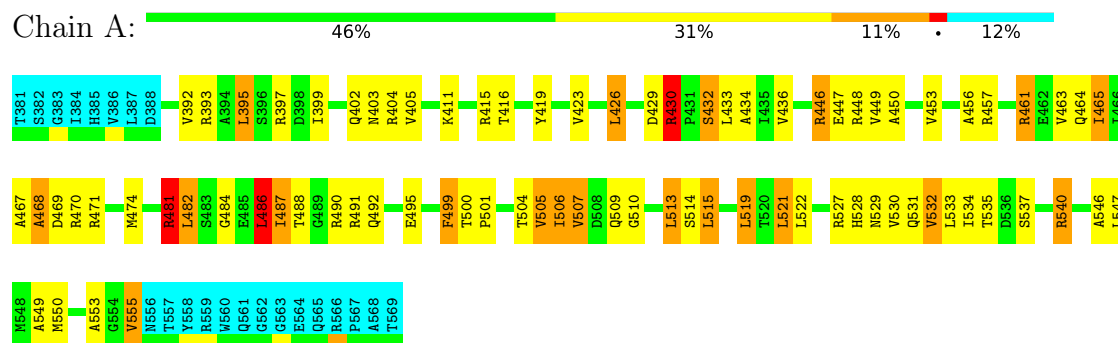
4.2.18 Score per residue for model 18

- Molecule 1: Protein traI



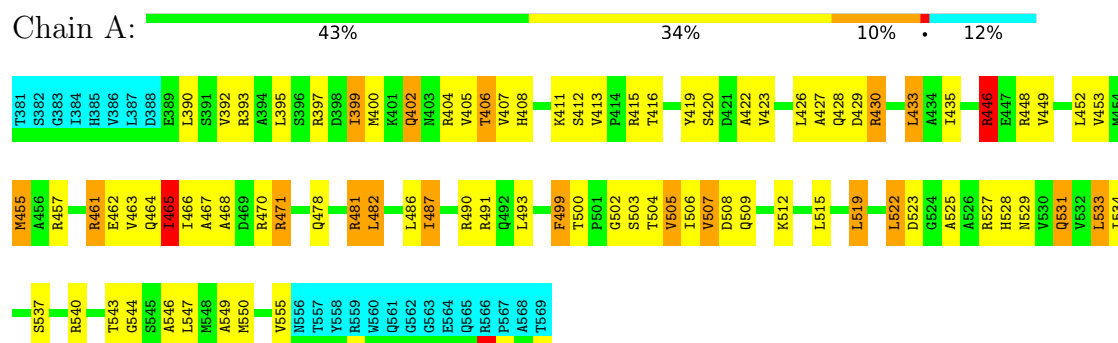
4.2.19 Score per residue for model 19

- Molecule 1: Protein traI



4.2.20 Score per residue for model 20

● Molecule 1: Protein traI



5 Refinement protocol and experimental data overview

The models were refined using the following method: *DGSA-distance geometry 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
X-PLOR NIH	structure solution	
X-PLOR NIH	refinement	

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	1999
Number of shifts mapped to atoms	1999
Number of unparsed shifts	0
Number of shifts with mapping errors	0
Number of shifts with mapping warnings	0
Assignment completeness (well-defined parts)	81%

6 Model quality i

6.1 Standard geometry i

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	1.58±0.01	0±0/1262 (0.0± 0.0%)	1.57±0.02	7±2/1696 (0.4± 0.1%)
All	All	1.58	6/25240 (0.0%)	1.57	132/33920 (0.4%)

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	15.8±0.4
All	All	0	317

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	438	GLY	N-CA	5.30	1.49	1.44	16	4
1	A	405	VAL	N-CA	5.29	1.52	1.46	13	1
1	A	530	VAL	N-CA	5.11	1.52	1.46	7	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	507	VAL	N-CA-CB	-7.49	102.62	111.83	6	14
1	A	532	VAL	N-CA-CB	-7.05	102.79	111.67	10	12
1	A	505	VAL	N-CA-CB	-6.77	102.06	111.41	4	8
1	A	465	ILE	N-CA-CB	-6.54	101.97	111.52	20	1
1	A	499	PHE	CA-CB-CG	-6.52	107.28	113.80	5	9
1	A	407	VAL	N-CA-CB	-6.36	103.78	110.72	10	7
1	A	466	ILE	N-CA-CB	-6.36	104.82	112.07	8	6

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)	Models	
								Worst	Total
1	A	509	GLN	N-CA-CB	-6.21	101.30	110.37	17	13
1	A	555	VAL	N-CA-CB	-6.00	104.82	111.66	12	11
1	A	435	ILE	N-CA-CB	-5.94	103.92	111.64	13	3
1	A	512	LYS	N-CA-CB	-5.88	102.77	110.88	17	6
1	A	436	VAL	N-CA-CB	-5.85	105.38	112.35	16	1
1	A	488	THR	N-CA-CB	-5.76	102.11	110.70	18	1
1	A	529	ASN	N-CA-CB	-5.74	103.53	110.53	3	8
1	A	420	SER	N-CA-C	-5.54	105.25	112.23	13	5
1	A	480	GLU	N-CA-CB	-5.52	103.00	110.95	16	2
1	A	533	LEU	N-CA-CB	-5.50	101.91	110.55	4	1
1	A	481	ARG	N-CA-CB	-5.48	103.74	110.98	16	5
1	A	413	VAL	N-CA-CB	-5.42	103.63	111.21	15	8
1	A	423	VAL	N-CA-CB	-5.40	103.65	110.57	5	2
1	A	509	GLN	N-CA-C	5.28	116.79	107.61	18	1
1	A	530	VAL	N-CA-CB	-5.20	104.60	112.35	11	2
1	A	528	HIS	CA-CB-CG	-5.17	108.63	113.80	5	3
1	A	510	GLY	N-CA-C	-5.15	106.47	113.37	11	2
1	A	531	GLN	N-CA-CB	-5.07	103.70	111.56	1	1

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	393	ARG	Sidechain	20
1	A	397	ARG	Sidechain	20
1	A	404	ARG	Sidechain	20
1	A	430	ARG	Sidechain	20
1	A	446	ARG	Sidechain	20
1	A	448	ARG	Sidechain	20
1	A	457	ARG	Sidechain	20
1	A	461	ARG	Sidechain	20
1	A	471	ARG	Sidechain	20
1	A	481	ARG	Sidechain	20
1	A	491	ARG	Sidechain	20
1	A	527	ARG	Sidechain	20
1	A	540	ARG	Sidechain	20
1	A	415	ARG	Sidechain	19
1	A	470	ARG	Sidechain	19
1	A	490	ARG	Sidechain	19

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	1254	1290	1290	63±8
All	All	25080	25800	25800	1261

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 25.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:505:VAL:HG11	1:A:522:LEU:HD21	0.90	1.41	20	9
1:A:487:ILE:HG22	1:A:488:THR:HG23	0.88	1.44	19	8
1:A:487:ILE:HD13	1:A:503:SER:CB	0.86	2.01	17	12
1:A:507:VAL:HG12	1:A:534:ILE:HG22	0.85	1.49	6	20
1:A:453:VAL:HG13	1:A:463:VAL:CG2	0.84	2.01	9	19
1:A:449:VAL:HG22	1:A:506:ILE:HD12	0.83	1.49	14	5
1:A:423:VAL:HG21	1:A:436:VAL:CG2	0.82	2.05	11	15
1:A:505:VAL:HG21	1:A:522:LEU:HD21	0.82	1.52	14	1
1:A:515:LEU:O	1:A:519:LEU:HD22	0.81	1.75	5	1
1:A:465:ILE:HD11	1:A:482:LEU:HD13	0.81	1.51	6	1
1:A:453:VAL:HG13	1:A:463:VAL:HG22	0.80	1.54	19	15
1:A:426:LEU:CD2	1:A:434:ALA:HB2	0.79	2.07	7	11
1:A:407:VAL:HG21	1:A:415:ARG:CZ	0.79	2.07	13	1
1:A:487:ILE:HG21	1:A:503:SER:OG	0.79	1.78	3	2
1:A:423:VAL:HA	1:A:426:LEU:HD23	0.78	1.55	15	17
1:A:405:VAL:O	1:A:407:VAL:HG23	0.78	1.77	11	6
1:A:423:VAL:HG21	1:A:436:VAL:HG22	0.78	1.54	16	5
1:A:416:THR:HG22	1:A:419:TYR:OH	0.77	1.79	14	4
1:A:488:THR:HG22	1:A:499:PHE:HB3	0.77	1.57	4	2
1:A:463:VAL:HG12	1:A:504:THR:HB	0.76	1.56	15	18
1:A:505:VAL:CG1	1:A:522:LEU:HD21	0.76	2.11	13	7
1:A:433:LEU:HA	1:A:532:VAL:O	0.76	1.81	9	13
1:A:423:VAL:HG13	1:A:533:LEU:HD21	0.75	1.56	8	2
1:A:505:VAL:HG11	1:A:522:LEU:CD1	0.75	2.11	9	6
1:A:426:LEU:HD21	1:A:434:ALA:HB2	0.74	1.58	7	3
1:A:465:ILE:HD11	1:A:482:LEU:HD22	0.74	1.59	8	3
1:A:453:VAL:CG2	1:A:465:ILE:HG21	0.74	2.13	5	10

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:464:GLN:HA	1:A:486:LEU:HD22	0.74	1.60	16	9
1:A:505:VAL:CB	1:A:522:LEU:HD21	0.73	2.12	8	5
1:A:507:VAL:HG22	1:A:509:GLN:HG2	0.73	1.59	19	4
1:A:519:LEU:HD11	1:A:550:MET:CE	0.73	2.13	20	2
1:A:399:ILE:HG21	1:A:435:ILE:O	0.73	1.83	7	5
1:A:474:MET:HE3	1:A:477:LYS:HE2	0.73	1.60	12	1
1:A:453:VAL:HG22	1:A:463:VAL:HG21	0.73	1.60	12	4
1:A:423:VAL:CG2	1:A:436:VAL:HG21	0.73	2.14	9	2
1:A:453:VAL:HG13	1:A:463:VAL:HG21	0.72	1.58	6	8
1:A:407:VAL:HG21	1:A:413:VAL:HG22	0.72	1.61	12	1
1:A:504:THR:HG23	1:A:531:GLN:CB	0.72	2.15	18	1
1:A:487:ILE:HD13	1:A:503:SER:HB2	0.71	1.62	17	5
1:A:449:VAL:HG11	1:A:508:ASP:OD2	0.71	1.86	16	5
1:A:487:ILE:HD12	1:A:503:SER:OG	0.71	1.86	4	1
1:A:509:GLN:CD	1:A:515:LEU:HD23	0.71	2.11	7	1
1:A:419:TYR:CG	1:A:436:VAL:HG13	0.70	2.20	14	7
1:A:487:ILE:CG2	1:A:488:THR:HG23	0.70	2.15	6	2
1:A:546:ALA:O	1:A:549:ALA:HB3	0.70	1.87	2	15
1:A:421:ASP:O	1:A:425:VAL:HG23	0.69	1.87	4	6
1:A:462:GLU:C	1:A:487:ILE:HD11	0.69	2.12	4	6
1:A:432:SER:O	1:A:433:LEU:HD22	0.69	1.86	7	1
1:A:515:LEU:HD21	1:A:550:MET:HG3	0.69	1.61	12	1
1:A:464:GLN:HB3	1:A:505:VAL:HG22	0.69	1.64	14	11
1:A:446:ARG:O	1:A:449:VAL:HG12	0.69	1.87	3	12
1:A:506:ILE:HG23	1:A:533:LEU:HD22	0.68	1.64	9	2
1:A:540:ARG:HG3	1:A:541:THR:HG23	0.68	1.63	6	2
1:A:507:VAL:CG1	1:A:534:ILE:HG22	0.68	2.18	8	14
1:A:395:LEU:HD11	1:A:422:ALA:O	0.68	1.87	9	7
1:A:518:THR:O	1:A:522:LEU:HD12	0.68	1.89	17	2
1:A:522:LEU:HD11	1:A:530:VAL:CG2	0.68	2.19	6	1
1:A:494:LEU:HD13	1:A:494:LEU:O	0.68	1.87	1	8
1:A:454:MET:HE3	1:A:481:ARG:CZ	0.68	2.19	11	1
1:A:419:TYR:CB	1:A:436:VAL:HG13	0.68	2.19	17	6
1:A:456:ALA:HB1	1:A:461:ARG:O	0.68	1.89	11	5
1:A:402:GLN:O	1:A:405:VAL:HG12	0.68	1.90	16	9
1:A:505:VAL:HG11	1:A:522:LEU:HD11	0.68	1.65	11	5
1:A:453:VAL:HG21	1:A:465:ILE:HD13	0.67	1.64	1	1
1:A:463:VAL:CA	1:A:487:ILE:HD11	0.67	2.19	12	3
1:A:432:SER:OG	1:A:533:LEU:HD12	0.67	1.89	9	2
1:A:474:MET:HE3	1:A:478:GLN:HG2	0.67	1.66	15	1
1:A:505:VAL:HG11	1:A:522:LEU:HD12	0.67	1.66	1	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:446:ARG:HG2	1:A:467:ALA:HB1	0.67	1.64	20	2
1:A:446:ARG:HD3	1:A:467:ALA:HB1	0.67	1.66	18	1
1:A:505:VAL:HG21	1:A:522:LEU:CD1	0.67	2.19	9	5
1:A:422:ALA:O	1:A:425:VAL:HG12	0.67	1.90	9	2
1:A:464:GLN:HG3	1:A:486:LEU:HD13	0.66	1.66	13	5
1:A:506:ILE:HG22	1:A:533:LEU:HB2	0.66	1.67	1	4
1:A:407:VAL:HG13	1:A:413:VAL:HG12	0.66	1.67	13	1
1:A:487:ILE:HG21	1:A:503:SER:HB2	0.66	1.66	14	3
1:A:506:ILE:HG22	1:A:533:LEU:CB	0.66	2.21	1	3
1:A:487:ILE:HD13	1:A:503:SER:HB3	0.65	1.66	5	5
1:A:481:ARG:HG2	1:A:482:LEU:HD22	0.65	1.66	1	1
1:A:482:LEU:HD12	1:A:482:LEU:O	0.65	1.92	14	2
1:A:519:LEU:HD11	1:A:550:MET:CG	0.65	2.22	8	4
1:A:423:VAL:CG1	1:A:533:LEU:HD21	0.65	2.22	20	6
1:A:518:THR:HG22	1:A:522:LEU:HD12	0.65	1.67	13	2
1:A:407:VAL:CG2	1:A:413:VAL:HG22	0.65	2.21	12	1
1:A:434:ALA:HB3	1:A:533:LEU:CD1	0.65	2.22	19	2
1:A:423:VAL:HG21	1:A:436:VAL:HG21	0.64	1.68	4	12
1:A:493:LEU:N	1:A:493:LEU:HD23	0.64	2.07	7	5
1:A:525:ALA:HB1	1:A:530:VAL:HG21	0.64	1.69	5	3
1:A:449:VAL:HG22	1:A:506:ILE:CD1	0.64	2.22	2	7
1:A:395:LEU:CD2	1:A:399:ILE:HD11	0.64	2.22	5	4
1:A:395:LEU:CD2	1:A:426:LEU:HD22	0.64	2.22	19	1
1:A:463:VAL:HG13	1:A:504:THR:O	0.63	1.92	20	1
1:A:503:SER:O	1:A:530:VAL:HG22	0.63	1.93	10	2
1:A:463:VAL:N	1:A:487:ILE:HD11	0.63	2.08	12	3
1:A:481:ARG:C	1:A:482:LEU:HD12	0.63	2.18	5	1
1:A:505:VAL:HB	1:A:522:LEU:HD21	0.63	1.68	11	5
1:A:466:ILE:HG23	1:A:471:ARG:HD3	0.63	1.69	9	6
1:A:433:LEU:HD23	1:A:532:VAL:O	0.63	1.94	19	1
1:A:482:LEU:HD22	1:A:482:LEU:N	0.63	2.09	9	1
1:A:506:ILE:HG22	1:A:533:LEU:HB3	0.62	1.69	18	6
1:A:446:ARG:CD	1:A:467:ALA:HB1	0.62	2.24	10	2
1:A:407:VAL:HG13	1:A:412:SER:HA	0.62	1.71	15	1
1:A:519:LEU:HD11	1:A:550:MET:HG3	0.62	1.71	17	6
1:A:464:GLN:HB2	1:A:486:LEU:HD11	0.62	1.72	6	1
1:A:522:LEU:HD11	1:A:530:VAL:HG21	0.62	1.72	6	1
1:A:402:GLN:NE2	1:A:405:VAL:HG11	0.62	2.10	18	1
1:A:486:LEU:HD11	1:A:489:GLY:HA3	0.61	1.71	3	1
1:A:506:ILE:HG23	1:A:533:LEU:HB3	0.61	1.71	9	2
1:A:465:ILE:CD1	1:A:482:LEU:HD13	0.61	2.22	6	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:522:LEU:HD23	1:A:530:VAL:CG1	0.61	2.25	8	1
1:A:526:ALA:CB	1:A:530:VAL:HG11	0.61	2.25	16	1
1:A:464:GLN:OE1	1:A:486:LEU:HD13	0.61	1.95	18	1
1:A:453:VAL:HG13	1:A:463:VAL:HB	0.61	1.72	20	1
1:A:466:ILE:N	1:A:466:ILE:HD12	0.61	2.11	16	7
1:A:507:VAL:HG22	1:A:509:GLN:CG	0.61	2.26	19	2
1:A:516:LYS:HG3	1:A:553:ALA:HB2	0.61	1.70	9	3
1:A:427:ALA:HB2	1:A:533:LEU:CD1	0.61	2.25	20	1
1:A:522:LEU:O	1:A:526:ALA:HB3	0.61	1.96	10	1
1:A:442:ALA:HB3	1:A:470:ARG:NH2	0.61	2.11	18	1
1:A:467:ALA:HB3	1:A:471:ARG:HB2	0.61	1.72	8	4
1:A:505:VAL:HG11	1:A:522:LEU:CD2	0.61	2.21	20	5
1:A:481:ARG:HG2	1:A:482:LEU:HD23	0.61	1.71	11	2
1:A:405:VAL:HG13	1:A:407:VAL:HG23	0.61	1.72	10	2
1:A:453:VAL:HG22	1:A:465:ILE:HG21	0.61	1.73	5	7
1:A:395:LEU:HD23	1:A:399:ILE:HD11	0.61	1.72	5	2
1:A:526:ALA:HB1	1:A:530:VAL:HG11	0.60	1.73	16	1
1:A:513:LEU:HD12	1:A:514:SER:N	0.60	2.10	5	1
1:A:405:VAL:HG11	1:A:415:ARG:CZ	0.60	2.26	6	1
1:A:481:ARG:CG	1:A:482:LEU:HD23	0.60	2.27	15	3
1:A:505:VAL:CG2	1:A:522:LEU:HD21	0.60	2.25	14	2
1:A:519:LEU:HD11	1:A:550:MET:HE3	0.60	1.73	20	1
1:A:446:ARG:HD2	1:A:467:ALA:HB1	0.60	1.73	10	2
1:A:486:LEU:C	1:A:487:ILE:HD12	0.59	2.22	15	3
1:A:395:LEU:HD12	1:A:399:ILE:HD11	0.59	1.72	15	1
1:A:435:ILE:O	1:A:435:ILE:HD12	0.59	1.97	9	2
1:A:465:ILE:HD13	1:A:465:ILE:H	0.59	1.57	9	6
1:A:446:ARG:HB3	1:A:474:MET:HE1	0.59	1.73	1	1
1:A:449:VAL:HG11	1:A:508:ASP:CG	0.59	2.23	2	1
1:A:519:LEU:HD12	1:A:555:VAL:HG21	0.59	1.73	6	1
1:A:466:ILE:HG23	1:A:471:ARG:CD	0.58	2.28	9	5
1:A:419:TYR:HB3	1:A:436:VAL:HG13	0.58	1.74	1	1
1:A:481:ARG:C	1:A:482:LEU:HD23	0.58	2.22	13	3
1:A:505:VAL:CG1	1:A:522:LEU:HD11	0.58	2.28	8	1
1:A:400:MET:HG3	1:A:435:ILE:HD11	0.58	1.75	15	3
1:A:449:VAL:CG2	1:A:506:ILE:HD13	0.58	2.28	16	2
1:A:513:LEU:O	1:A:513:LEU:HD13	0.58	1.98	14	3
1:A:487:ILE:HG21	1:A:503:SER:HB3	0.58	1.75	11	5
1:A:487:ILE:HG22	1:A:488:THR:N	0.58	2.13	6	5
1:A:413:VAL:O	1:A:413:VAL:HG23	0.58	1.99	12	1
1:A:529:ASN:C	1:A:530:VAL:HG22	0.58	2.24	15	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:426:LEU:HD22	1:A:434:ALA:HB2	0.57	1.76	11	10
1:A:395:LEU:HD13	1:A:426:LEU:HB3	0.57	1.76	9	4
1:A:533:LEU:C	1:A:533:LEU:HD12	0.57	2.23	18	4
1:A:505:VAL:HG21	1:A:522:LEU:HD12	0.57	1.75	9	2
1:A:400:MET:HE1	1:A:543:THR:OG1	0.57	1.99	17	1
1:A:466:ILE:HB	1:A:507:VAL:HG23	0.57	1.77	18	9
1:A:488:THR:CG2	1:A:500:THR:HG22	0.57	2.29	18	1
1:A:507:VAL:CG2	1:A:518:THR:HG21	0.57	2.30	2	2
1:A:484:GLY:O	1:A:486:LEU:HD23	0.57	1.99	4	1
1:A:436:VAL:HB	1:A:535:THR:HG22	0.57	1.76	15	10
1:A:474:MET:CE	1:A:482:LEU:HD21	0.57	2.30	15	1
1:A:449:VAL:CG2	1:A:506:ILE:HD12	0.57	2.30	7	8
1:A:519:LEU:HD11	1:A:550:MET:HE1	0.57	1.77	6	1
1:A:518:THR:HG22	1:A:522:LEU:CD1	0.57	2.30	13	3
1:A:465:ILE:HD13	1:A:465:ILE:N	0.56	2.16	9	3
1:A:399:ILE:HG23	1:A:419:TYR:CD1	0.56	2.35	10	3
1:A:516:LYS:O	1:A:520:THR:HG23	0.56	2.00	8	1
1:A:442:ALA:HB3	1:A:470:ARG:NH1	0.56	2.15	4	1
1:A:407:VAL:HG23	1:A:413:VAL:HG12	0.56	1.76	20	4
1:A:465:ILE:HG22	1:A:506:ILE:CG1	0.56	2.30	8	1
1:A:466:ILE:HD13	1:A:518:THR:CG2	0.56	2.29	10	1
1:A:507:VAL:HG12	1:A:534:ILE:CG2	0.56	2.30	11	2
1:A:539:GLN:CD	1:A:546:ALA:HB2	0.56	2.25	12	1
1:A:449:VAL:HG22	1:A:506:ILE:HD13	0.56	1.76	16	1
1:A:435:ILE:HD13	1:A:435:ILE:H	0.56	1.60	6	1
1:A:399:ILE:HG23	1:A:419:TYR:HD1	0.56	1.61	11	3
1:A:399:ILE:HG23	1:A:419:TYR:HB3	0.56	1.76	3	1
1:A:395:LEU:C	1:A:395:LEU:HD13	0.56	2.25	8	1
1:A:500:THR:O	1:A:500:THR:HG23	0.55	2.01	7	10
1:A:507:VAL:CB	1:A:518:THR:HG21	0.55	2.31	2	2
1:A:481:ARG:HB2	1:A:482:LEU:HD23	0.55	1.78	8	2
1:A:426:LEU:HD12	1:A:426:LEU:C	0.55	2.27	6	12
1:A:515:LEU:O	1:A:519:LEU:HD23	0.55	2.02	13	2
1:A:392:VAL:HG11	1:A:433:LEU:HB3	0.55	1.78	7	3
1:A:406:THR:O	1:A:406:THR:HG23	0.55	2.02	1	4
1:A:505:VAL:HG11	1:A:522:LEU:HD13	0.55	1.79	2	3
1:A:492:GLN:HG2	1:A:493:LEU:HD23	0.55	1.77	5	1
1:A:509:GLN:CD	1:A:515:LEU:HD13	0.55	2.26	6	1
1:A:442:ALA:HB1	1:A:446:ARG:HH22	0.55	1.60	10	1
1:A:507:VAL:O	1:A:507:VAL:HG13	0.55	2.02	16	11
1:A:478:GLN:CG	1:A:482:LEU:HD21	0.54	2.31	14	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:407:VAL:HG21	1:A:415:ARG:NH1	0.54	2.17	13	1
1:A:466:ILE:CB	1:A:507:VAL:HG23	0.54	2.32	18	1
1:A:507:VAL:HB	1:A:518:THR:HG21	0.54	1.78	2	3
1:A:494:LEU:C	1:A:494:LEU:HD23	0.54	2.28	15	1
1:A:423:VAL:HG13	1:A:533:LEU:HD11	0.54	1.78	19	1
1:A:413:VAL:O	1:A:413:VAL:HG13	0.54	2.02	9	7
1:A:400:MET:CG	1:A:435:ILE:HD11	0.54	2.32	20	4
1:A:427:ALA:HB2	1:A:533:LEU:HD11	0.54	1.79	20	1
1:A:539:GLN:NE2	1:A:546:ALA:HB2	0.54	2.18	12	1
1:A:392:VAL:HG11	1:A:433:LEU:CB	0.54	2.33	19	2
1:A:464:GLN:CD	1:A:521:LEU:HD23	0.54	2.27	15	1
1:A:434:ALA:HB3	1:A:533:LEU:HD13	0.54	1.78	7	1
1:A:395:LEU:CD2	1:A:399:ILE:HD12	0.54	2.33	11	1
1:A:453:VAL:HG22	1:A:463:VAL:CG2	0.54	2.33	4	2
1:A:436:VAL:HG22	1:A:535:THR:CB	0.54	2.33	8	1
1:A:505:VAL:HG21	1:A:522:LEU:CD2	0.54	2.29	14	1
1:A:465:ILE:HG22	1:A:506:ILE:HG13	0.53	1.80	8	2
1:A:525:ALA:HB1	1:A:529:ASN:HB2	0.53	1.78	20	1
1:A:419:TYR:O	1:A:423:VAL:HG23	0.53	2.03	13	4
1:A:488:THR:HG22	1:A:499:PHE:CB	0.53	2.33	4	1
1:A:465:ILE:HD11	1:A:482:LEU:CD1	0.53	2.29	6	1
1:A:487:ILE:HG22	1:A:488:THR:CG2	0.53	2.27	19	5
1:A:480:GLU:CB	1:A:482:LEU:HD23	0.53	2.34	17	1
1:A:504:THR:HG23	1:A:531:GLN:HB3	0.53	1.78	18	1
1:A:515:LEU:HD21	1:A:550:MET:HB2	0.53	1.80	3	2
1:A:465:ILE:HG22	1:A:506:ILE:HG12	0.53	1.81	6	5
1:A:419:TYR:HB2	1:A:436:VAL:HG22	0.53	1.81	14	1
1:A:446:ARG:NH2	1:A:468:ALA:HB3	0.53	2.19	15	1
1:A:405:VAL:O	1:A:405:VAL:HG13	0.52	2.04	8	6
1:A:521:LEU:HD13	1:A:521:LEU:O	0.52	2.03	6	5
1:A:505:VAL:HG11	1:A:522:LEU:CG	0.52	2.34	8	2
1:A:423:VAL:HG22	1:A:436:VAL:HG21	0.52	1.80	9	1
1:A:551:LYS:HA	1:A:555:VAL:HG23	0.52	1.82	9	1
1:A:467:ALA:HB3	1:A:471:ARG:CB	0.52	2.35	15	5
1:A:522:LEU:HD23	1:A:530:VAL:HG11	0.52	1.81	8	1
1:A:487:ILE:HG21	1:A:503:SER:CB	0.52	2.33	20	1
1:A:482:LEU:HD23	1:A:482:LEU:N	0.52	2.20	13	2
1:A:480:GLU:HB2	1:A:482:LEU:HD23	0.51	1.82	17	1
1:A:433:LEU:C	1:A:433:LEU:HD12	0.51	2.30	6	4
1:A:449:VAL:HG21	1:A:508:ASP:OD1	0.51	2.05	2	1
1:A:505:VAL:HG21	1:A:522:LEU:HD11	0.51	1.81	16	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:405:VAL:HG13	1:A:407:VAL:CG2	0.51	2.35	15	1
1:A:466:ILE:HD12	1:A:518:THR:CG2	0.51	2.35	11	1
1:A:466:ILE:CD1	1:A:507:VAL:HG23	0.51	2.35	12	1
1:A:526:ALA:HA	1:A:530:VAL:HB	0.51	1.81	5	4
1:A:505:VAL:O	1:A:531:GLN:O	0.51	2.29	4	4
1:A:466:ILE:HD12	1:A:507:VAL:HG23	0.51	1.82	12	1
1:A:453:VAL:HA	1:A:463:VAL:HG21	0.51	1.83	20	1
1:A:532:VAL:HG12	1:A:534:ILE:CG2	0.51	2.36	2	1
1:A:400:MET:SD	1:A:435:ILE:HD12	0.51	2.45	8	1
1:A:447:GLU:O	1:A:450:ALA:HB3	0.50	2.06	5	5
1:A:442:ALA:HB1	1:A:446:ARG:NH2	0.50	2.21	10	1
1:A:532:VAL:C	1:A:533:LEU:HD12	0.50	2.32	14	1
1:A:395:LEU:HD12	1:A:399:ILE:CD1	0.50	2.35	1	1
1:A:405:VAL:HG13	1:A:405:VAL:O	0.50	2.05	9	5
1:A:555:VAL:HG23	1:A:555:VAL:O	0.50	2.07	19	2
1:A:423:VAL:HG12	1:A:533:LEU:HD21	0.50	1.84	20	2
1:A:529:ASN:C	1:A:530:VAL:HG13	0.50	2.31	4	1
1:A:511:GLU:OE1	1:A:513:LEU:HD21	0.50	2.07	5	1
1:A:506:ILE:CG2	1:A:533:LEU:HD22	0.50	2.37	9	1
1:A:465:ILE:C	1:A:465:ILE:HD13	0.50	2.32	20	1
1:A:399:ILE:HG22	1:A:403:ASN:ND2	0.49	2.22	13	1
1:A:466:ILE:HD12	1:A:518:THR:OG1	0.49	2.07	15	1
1:A:494:LEU:HD13	1:A:494:LEU:C	0.49	2.32	11	8
1:A:506:ILE:HA	1:A:533:LEU:O	0.49	2.07	11	7
1:A:555:VAL:HG13	1:A:555:VAL:O	0.49	2.06	17	2
1:A:466:ILE:HG23	1:A:471:ARG:HD2	0.49	1.83	14	3
1:A:533:LEU:HD12	1:A:534:ILE:N	0.49	2.22	16	1
1:A:474:MET:HE3	1:A:478:GLN:HG3	0.49	1.85	16	1
1:A:516:LYS:HG2	1:A:553:ALA:HB2	0.49	1.84	14	3
1:A:493:LEU:H	1:A:493:LEU:HD23	0.49	1.68	2	1
1:A:493:LEU:N	1:A:493:LEU:CD2	0.49	2.76	7	1
1:A:390:LEU:HD12	1:A:391:SER:N	0.49	2.23	9	1
1:A:515:LEU:HD11	1:A:550:MET:SD	0.49	2.47	6	1
1:A:522:LEU:O	1:A:526:ALA:HB2	0.49	2.07	7	3
1:A:505:VAL:HB	1:A:522:LEU:HD11	0.49	1.84	5	1
1:A:402:GLN:NE2	1:A:405:VAL:HG21	0.49	2.23	19	1
1:A:446:ARG:HD3	1:A:467:ALA:HB2	0.49	1.83	19	1
1:A:509:GLN:O	1:A:536:ASP:HA	0.48	2.08	2	1
1:A:432:SER:CB	1:A:533:LEU:HD12	0.48	2.38	1	2
1:A:499:PHE:CD1	1:A:499:PHE:N	0.48	2.80	2	2
1:A:493:LEU:HD21	1:A:521:LEU:HD21	0.48	1.84	3	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:506:ILE:HD12	1:A:506:ILE:O	0.48	2.08	16	1
1:A:516:LYS:HA	1:A:553:ALA:HB2	0.48	1.86	13	2
1:A:464:GLN:OE1	1:A:488:THR:HG21	0.48	2.08	11	1
1:A:522:LEU:HD12	1:A:522:LEU:C	0.48	2.33	19	1
1:A:494:LEU:HD23	1:A:494:LEU:O	0.48	2.08	3	2
1:A:465:ILE:HD13	1:A:506:ILE:HG13	0.48	1.84	3	2
1:A:525:ALA:HB1	1:A:529:ASN:OD1	0.48	2.08	12	1
1:A:467:ALA:HB3	1:A:471:ARG:CA	0.48	2.39	15	2
1:A:521:LEU:C	1:A:521:LEU:HD23	0.48	2.34	8	1
1:A:423:VAL:CG1	1:A:533:LEU:HD23	0.48	2.39	14	1
1:A:414:PRO:HB2	1:A:417:ALA:HB2	0.48	1.86	3	1
1:A:525:ALA:HB1	1:A:529:ASN:HB3	0.48	1.85	4	1
1:A:526:ALA:HA	1:A:530:VAL:HG13	0.48	1.86	18	1
1:A:452:LEU:O	1:A:452:LEU:HD13	0.47	2.10	4	1
1:A:474:MET:HE3	1:A:477:LYS:CE	0.47	2.35	12	1
1:A:534:ILE:HD13	1:A:550:MET:HE2	0.47	1.86	19	1
1:A:395:LEU:HD21	1:A:426:LEU:HD22	0.47	1.84	19	1
1:A:449:VAL:HG21	1:A:506:ILE:HD13	0.47	1.86	8	1
1:A:453:VAL:HG11	1:A:482:LEU:HG	0.47	1.86	9	1
1:A:481:ARG:O	1:A:482:LEU:HD12	0.47	2.10	19	1
1:A:486:LEU:O	1:A:487:ILE:HG13	0.47	2.10	15	2
1:A:508:ASP:OD1	1:A:535:THR:HG23	0.47	2.09	7	1
1:A:482:LEU:N	1:A:482:LEU:CD2	0.47	2.76	9	1
1:A:505:VAL:HB	1:A:531:GLN:O	0.47	2.09	20	2
1:A:488:THR:HG21	1:A:500:THR:HG22	0.47	1.84	18	1
1:A:395:LEU:HD22	1:A:426:LEU:CB	0.47	2.40	15	2
1:A:506:ILE:O	1:A:506:ILE:HG13	0.47	2.09	14	2
1:A:547:LEU:HD12	1:A:547:LEU:N	0.47	2.25	6	8
1:A:466:ILE:HG22	1:A:467:ALA:N	0.47	2.24	12	3
1:A:450:ALA:HB1	1:A:481:ARG:HE	0.47	1.69	15	1
1:A:413:VAL:HG13	1:A:414:PRO:HD2	0.47	1.86	16	1
1:A:395:LEU:HD22	1:A:426:LEU:HD22	0.47	1.84	19	1
1:A:523:ASP:O	1:A:526:ALA:HB3	0.47	2.09	18	2
1:A:466:ILE:HG22	1:A:509:GLN:NE2	0.47	2.26	5	1
1:A:463:VAL:HG23	1:A:465:ILE:HG23	0.47	1.86	8	1
1:A:522:LEU:HD23	1:A:526:ALA:CB	0.47	2.40	10	1
1:A:446:ARG:NE	1:A:467:ALA:HB2	0.47	2.25	13	1
1:A:464:GLN:OE1	1:A:521:LEU:HD23	0.47	2.09	15	1
1:A:402:GLN:HE22	1:A:405:VAL:HG21	0.47	1.70	19	1
1:A:450:ALA:HB1	1:A:481:ARG:HA	0.46	1.86	9	1
1:A:466:ILE:HD12	1:A:518:THR:HG21	0.46	1.87	11	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:464:GLN:NE2	1:A:521:LEU:HD23	0.46	2.24	10	1
1:A:407:VAL:CG1	1:A:413:VAL:HG12	0.46	2.39	13	1
1:A:487:ILE:O	1:A:499:PHE:CD2	0.46	2.68	10	3
1:A:430:ARG:HB3	1:A:431:PRO:HD3	0.46	1.88	15	5
1:A:519:LEU:N	1:A:519:LEU:CD2	0.46	2.78	15	1
1:A:526:ALA:CA	1:A:530:VAL:HG11	0.46	2.40	16	1
1:A:492:GLN:NE2	1:A:499:PHE:CD1	0.46	2.83	19	1
1:A:513:LEU:HD12	1:A:513:LEU:C	0.46	2.35	5	1
1:A:504:THR:C	1:A:505:VAL:HG23	0.46	2.35	6	1
1:A:395:LEU:O	1:A:399:ILE:CG1	0.46	2.64	15	1
1:A:493:LEU:CD2	1:A:521:LEU:HD21	0.46	2.40	3	1
1:A:462:GLU:O	1:A:487:ILE:HD11	0.46	2.10	14	3
1:A:415:ARG:O	1:A:419:TYR:CE2	0.46	2.68	17	2
1:A:481:ARG:HG3	1:A:482:LEU:HD23	0.46	1.88	15	2
1:A:464:GLN:HG2	1:A:466:ILE:HD11	0.46	1.87	4	1
1:A:515:LEU:HD21	1:A:550:MET:HG2	0.46	1.86	6	1
1:A:466:ILE:HD13	1:A:518:THR:OG1	0.46	2.11	10	1
1:A:487:ILE:O	1:A:499:PHE:CD1	0.46	2.69	13	1
1:A:449:VAL:HG22	1:A:506:ILE:HD11	0.46	1.88	10	1
1:A:491:ARG:O	1:A:495:GLU:N	0.46	2.48	15	3
1:A:464:GLN:CB	1:A:486:LEU:HD11	0.46	2.39	6	1
1:A:529:ASN:C	1:A:530:VAL:CG2	0.46	2.88	18	2
1:A:488:THR:HG21	1:A:525:ALA:CB	0.45	2.40	2	2
1:A:395:LEU:CD1	1:A:426:LEU:HB3	0.45	2.42	6	2
1:A:495:GLU:HB3	1:A:497:MET:HE3	0.45	1.87	14	1
1:A:415:ARG:O	1:A:417:ALA:N	0.45	2.49	15	1
1:A:464:GLN:HA	1:A:486:LEU:CD1	0.45	2.41	19	1
1:A:395:LEU:HD13	1:A:399:ILE:HD12	0.45	1.87	13	1
1:A:481:ARG:C	1:A:482:LEU:HD13	0.45	2.37	1	1
1:A:423:VAL:HG21	1:A:436:VAL:HG11	0.45	1.86	8	1
1:A:529:ASN:C	1:A:530:VAL:HG23	0.45	2.36	17	1
1:A:435:ILE:HD13	1:A:435:ILE:N	0.45	2.27	6	1
1:A:464:GLN:O	1:A:505:VAL:HG23	0.45	2.11	10	1
1:A:551:LYS:HA	1:A:555:VAL:HG13	0.45	1.88	17	1
1:A:487:ILE:HG23	1:A:503:SER:OG	0.45	2.12	4	1
1:A:513:LEU:N	1:A:513:LEU:HD22	0.45	2.26	13	3
1:A:465:ILE:CG2	1:A:482:LEU:HD22	0.45	2.41	12	1
1:A:432:SER:CB	1:A:531:GLN:HB3	0.45	2.42	3	1
1:A:543:THR:HG23	1:A:544:GLY:N	0.45	2.27	9	11
1:A:486:LEU:O	1:A:487:ILE:HD13	0.45	2.12	4	1
1:A:436:VAL:HG22	1:A:535:THR:CA	0.45	2.42	8	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:478:GLN:NE2	1:A:482:LEU:HD21	0.45	2.27	12	1
1:A:446:ARG:CG	1:A:467:ALA:HB1	0.44	2.42	1	1
1:A:486:LEU:O	1:A:487:ILE:HD12	0.44	2.12	5	3
1:A:421:ASP:O	1:A:425:VAL:HG12	0.44	2.13	11	1
1:A:426:LEU:CD1	1:A:432:SER:HA	0.44	2.43	19	2
1:A:392:VAL:CG1	1:A:433:LEU:O	0.44	2.66	9	4
1:A:502:GLY:HA2	1:A:529:ASN:CB	0.44	2.42	9	1
1:A:506:ILE:CG1	1:A:506:ILE:O	0.44	2.65	13	1
1:A:509:GLN:NE2	1:A:515:LEU:HD22	0.44	2.26	2	1
1:A:487:ILE:HD13	1:A:503:SER:OG	0.44	2.12	6	1
1:A:507:VAL:HG21	1:A:518:THR:HG21	0.44	1.89	2	1
1:A:419:TYR:CD1	1:A:419:TYR:N	0.44	2.85	5	1
1:A:488:THR:HA	1:A:499:PHE:CG	0.44	2.48	12	1
1:A:395:LEU:HD21	1:A:426:LEU:CD2	0.44	2.42	19	1
1:A:501:PRO:CG	1:A:528:HIS:CB	0.44	2.96	19	1
1:A:465:ILE:HG23	1:A:482:LEU:HD22	0.44	1.89	12	1
1:A:419:TYR:CD2	1:A:419:TYR:N	0.44	2.86	13	1
1:A:436:VAL:CB	1:A:535:THR:HG22	0.44	2.43	14	1
1:A:487:ILE:CG2	1:A:488:THR:N	0.44	2.80	6	1
1:A:422:ALA:O	1:A:425:VAL:HG22	0.44	2.12	14	1
1:A:507:VAL:CG1	1:A:534:ILE:CG2	0.44	2.96	11	5
1:A:436:VAL:HG22	1:A:535:THR:HA	0.44	1.89	8	1
1:A:513:LEU:N	1:A:513:LEU:CD2	0.44	2.80	13	3
1:A:465:ILE:N	1:A:465:ILE:CD1	0.44	2.79	9	1
1:A:439:GLN:N	1:A:439:GLN:CD	0.44	2.76	3	1
1:A:404:ARG:O	1:A:405:VAL:C	0.44	2.61	13	2
1:A:532:VAL:CG1	1:A:534:ILE:CG2	0.43	2.96	2	1
1:A:550:MET:O	1:A:555:VAL:HG22	0.43	2.13	19	2
1:A:492:GLN:HB2	1:A:499:PHE:CE2	0.43	2.48	11	1
1:A:423:VAL:HG13	1:A:533:LEU:CD1	0.43	2.43	19	1
1:A:465:ILE:HD13	1:A:466:ILE:N	0.43	2.28	20	1
1:A:488:THR:HA	1:A:499:PHE:CD2	0.43	2.47	11	2
1:A:464:GLN:HG3	1:A:486:LEU:HD12	0.43	1.90	5	1
1:A:407:VAL:HG13	1:A:412:SER:CA	0.43	2.41	15	1
1:A:504:THR:HG23	1:A:531:GLN:HB2	0.43	1.87	18	1
1:A:432:SER:CB	1:A:531:GLN:CB	0.43	2.97	19	1
1:A:446:ARG:CD	1:A:467:ALA:HB2	0.43	2.43	19	1
1:A:395:LEU:HD22	1:A:426:LEU:HB3	0.43	1.90	1	2
1:A:490:ARG:N	1:A:493:LEU:CD2	0.43	2.80	2	1
1:A:519:LEU:N	1:A:519:LEU:HD23	0.43	2.28	15	1
1:A:492:GLN:N	1:A:492:GLN:CD	0.43	2.76	19	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:488:THR:HG21	1:A:500:THR:H	0.43	1.73	6	1
1:A:403:ASN:ND2	1:A:437:SER:CB	0.43	2.82	12	3
1:A:486:LEU:O	1:A:487:ILE:CB	0.43	2.67	2	1
1:A:486:LEU:O	1:A:487:ILE:CG1	0.43	2.67	11	5
1:A:532:VAL:HG12	1:A:534:ILE:HG23	0.43	1.91	2	1
1:A:399:ILE:HG22	1:A:403:ASN:OD1	0.43	2.13	19	1
1:A:419:TYR:CD1	1:A:436:VAL:HG11	0.43	2.49	4	1
1:A:526:ALA:HA	1:A:530:VAL:CG2	0.43	2.43	7	1
1:A:481:ARG:CB	1:A:482:LEU:HD23	0.43	2.43	8	1
1:A:529:ASN:O	1:A:530:VAL:HG22	0.43	2.13	15	1
1:A:487:ILE:O	1:A:499:PHE:CE2	0.43	2.71	19	1
1:A:400:MET:HG2	1:A:435:ILE:HD11	0.43	1.89	20	1
1:A:419:TYR:CD1	1:A:419:TYR:C	0.43	2.97	14	3
1:A:480:GLU:O	1:A:482:LEU:HD22	0.43	2.14	9	1
1:A:405:VAL:O	1:A:407:VAL:N	0.43	2.52	4	1
1:A:501:PRO:HG2	1:A:528:HIS:CG	0.43	2.49	13	1
1:A:463:VAL:HG22	1:A:504:THR:HB	0.43	1.90	20	1
1:A:432:SER:HB3	1:A:533:LEU:HD12	0.43	1.90	8	1
1:A:390:LEU:HD12	1:A:390:LEU:C	0.43	2.38	9	1
1:A:487:ILE:HG23	1:A:500:THR:O	0.43	2.13	11	1
1:A:522:LEU:O	1:A:526:ALA:CB	0.43	2.67	17	1
1:A:491:ARG:O	1:A:495:GLU:CG	0.43	2.67	6	1
1:A:526:ALA:CA	1:A:530:VAL:HG21	0.43	2.44	7	1
1:A:505:VAL:HG21	1:A:522:LEU:HD13	0.43	1.91	18	1
1:A:398:ASP:O	1:A:419:TYR:CE1	0.42	2.72	3	1
1:A:486:LEU:HB2	1:A:487:ILE:HD12	0.42	1.91	18	1
1:A:402:GLN:CG	1:A:415:ARG:NH1	0.42	2.82	1	1
1:A:488:THR:HG21	1:A:525:ALA:HB2	0.42	1.90	2	1
1:A:547:LEU:N	1:A:547:LEU:CD1	0.42	2.83	20	4
1:A:506:ILE:O	1:A:506:ILE:CG1	0.42	2.67	16	5
1:A:474:MET:HE2	1:A:482:LEU:HD21	0.42	1.91	15	1
1:A:449:VAL:CG2	1:A:506:ILE:HD11	0.42	2.43	19	1
1:A:416:THR:O	1:A:420:SER:CB	0.42	2.66	3	3
1:A:426:LEU:HD11	1:A:432:SER:HA	0.42	1.90	15	2
1:A:456:ALA:CB	1:A:463:VAL:HG11	0.42	2.45	9	1
1:A:488:THR:CB	1:A:499:PHE:CD2	0.42	3.03	3	1
1:A:414:PRO:O	1:A:415:ARG:HG3	0.42	2.15	8	1
1:A:446:ARG:NH1	1:A:468:ALA:HB3	0.42	2.30	10	1
1:A:423:VAL:HG12	1:A:533:LEU:HD23	0.42	1.90	14	1
1:A:478:GLN:HG3	1:A:482:LEU:HD21	0.42	1.91	14	1
1:A:402:GLN:HG2	1:A:419:TYR:CD2	0.42	2.49	16	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:395:LEU:HD11	1:A:426:LEU:HB3	0.42	1.91	18	1
1:A:488:THR:HA	1:A:499:PHE:CB	0.42	2.45	15	2
1:A:543:THR:O	1:A:546:ALA:HB3	0.42	2.14	10	1
1:A:413:VAL:O	1:A:413:VAL:CG2	0.42	2.67	12	1
1:A:452:LEU:N	1:A:452:LEU:CD2	0.42	2.83	16	1
1:A:449:VAL:HG21	1:A:506:ILE:HD12	0.42	1.91	5	1
1:A:495:GLU:HB3	1:A:497:MET:HE2	0.42	1.91	7	1
1:A:519:LEU:HD11	1:A:550:MET:HG2	0.42	1.91	8	1
1:A:427:ALA:HB1	1:A:455:MET:HE1	0.42	1.92	10	1
1:A:436:VAL:HB	1:A:535:THR:HA	0.42	1.91	18	2
1:A:419:TYR:N	1:A:419:TYR:CD1	0.42	2.86	15	1
1:A:452:LEU:O	1:A:455:MET:CG	0.42	2.68	10	4
1:A:526:ALA:HA	1:A:530:VAL:CB	0.42	2.45	6	1
1:A:481:ARG:CD	1:A:481:ARG:N	0.42	2.83	14	1
1:A:522:LEU:O	1:A:526:ALA:N	0.42	2.52	4	1
1:A:506:ILE:HG23	1:A:533:LEU:CD2	0.42	2.40	9	1
1:A:426:LEU:HD12	1:A:426:LEU:O	0.42	2.15	11	1
1:A:446:ARG:CD	1:A:467:ALA:CB	0.42	2.98	17	1
1:A:505:VAL:CG2	1:A:522:LEU:HD13	0.42	2.45	18	1
1:A:464:GLN:HA	1:A:486:LEU:HD11	0.42	1.92	19	1
1:A:505:VAL:CG1	1:A:522:LEU:CD1	0.41	2.98	1	1
1:A:463:VAL:HG23	1:A:465:ILE:CG2	0.41	2.45	8	1
1:A:464:GLN:HE22	1:A:521:LEU:HD23	0.41	1.74	10	1
1:A:417:ALA:HA	1:A:420:SER:HB3	0.41	1.92	9	1
1:A:453:VAL:HG21	1:A:465:ILE:HG21	0.41	1.92	19	2
1:A:419:TYR:CG	1:A:436:VAL:CG1	0.41	3.02	12	2
1:A:466:ILE:CG2	1:A:467:ALA:N	0.41	2.84	18	2
1:A:446:ARG:NE	1:A:467:ALA:CB	0.41	2.83	13	1
1:A:467:ALA:HB3	1:A:471:ARG:HA	0.41	1.91	18	1
1:A:395:LEU:O	1:A:399:ILE:HG13	0.41	2.15	20	1
1:A:515:LEU:HD13	1:A:515:LEU:O	0.41	2.15	7	1
1:A:464:GLN:O	1:A:505:VAL:HA	0.41	2.16	9	1
1:A:413:VAL:HG23	1:A:414:PRO:HD2	0.41	1.92	18	1
1:A:421:ASP:O	1:A:425:VAL:HG13	0.41	2.14	18	1
1:A:446:ARG:HG3	1:A:467:ALA:HB1	0.41	1.91	1	1
1:A:450:ALA:O	1:A:453:VAL:HB	0.41	2.15	3	1
1:A:433:LEU:CD1	1:A:532:VAL:O	0.41	2.69	8	1
1:A:480:GLU:O	1:A:482:LEU:CD2	0.41	2.68	9	1
1:A:547:LEU:CD1	1:A:547:LEU:N	0.41	2.84	9	2
1:A:453:VAL:CG1	1:A:463:VAL:CG2	0.41	2.91	4	1
1:A:462:GLU:C	1:A:463:VAL:HG13	0.41	2.40	5	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:464:GLN:HE22	1:A:521:LEU:HD22	0.41	1.75	8	1
1:A:487:ILE:CG2	1:A:503:SER:CB	0.41	2.98	12	1
1:A:423:VAL:CG1	1:A:533:LEU:HD11	0.41	2.44	19	1
1:A:430:ARG:C	1:A:430:ARG:CD	0.41	2.94	13	2
1:A:501:PRO:O	1:A:528:HIS:CD2	0.41	2.74	5	1
1:A:515:LEU:HD13	1:A:515:LEU:C	0.41	2.41	7	1
1:A:430:ARG:HB3	1:A:431:PRO:CD	0.41	2.45	13	1
1:A:467:ALA:O	1:A:468:ALA:O	0.41	2.38	19	1
1:A:402:GLN:OE1	1:A:415:ARG:O	0.41	2.39	5	1
1:A:509:GLN:NE2	1:A:515:LEU:HD13	0.41	2.31	6	1
1:A:465:ILE:HG22	1:A:506:ILE:HB	0.41	1.93	9	1
1:A:466:ILE:CD1	1:A:518:THR:CG2	0.41	2.99	11	1
1:A:491:ARG:O	1:A:496:GLY:N	0.41	2.54	15	1
1:A:521:LEU:HD13	1:A:521:LEU:C	0.41	2.40	3	2
1:A:555:VAL:O	1:A:555:VAL:HG23	0.41	2.15	3	1
1:A:526:ALA:HA	1:A:530:VAL:CG1	0.41	2.46	4	2
1:A:463:VAL:HA	1:A:487:ILE:HD11	0.41	1.93	15	1
1:A:403:ASN:OD1	1:A:437:SER:CB	0.41	2.69	17	1
1:A:519:LEU:HD21	1:A:550:MET:HE1	0.41	1.92	19	1
1:A:513:LEU:HD13	1:A:513:LEU:C	0.40	2.41	1	1
1:A:468:ALA:N	1:A:508:ASP:O	0.40	2.54	2	2
1:A:435:ILE:HD12	1:A:435:ILE:C	0.40	2.41	9	1
1:A:530:VAL:CG1	1:A:531:GLN:N	0.40	2.84	11	1
1:A:432:SER:N	1:A:531:GLN:HG2	0.40	2.31	17	1
1:A:519:LEU:HB3	1:A:553:ALA:HB1	0.40	1.92	19	1
1:A:449:VAL:CG2	1:A:506:ILE:CD1	0.40	2.99	5	1
1:A:465:ILE:HB	1:A:506:ILE:HD11	0.40	1.93	5	1
1:A:466:ILE:HG22	1:A:509:GLN:HE22	0.40	1.76	5	1
1:A:436:VAL:HG22	1:A:535:THR:HB	0.40	1.93	8	1
1:A:522:LEU:CD2	1:A:530:VAL:CG1	0.40	2.99	8	1
1:A:430:ARG:CB	1:A:431:PRO:CD	0.40	3.00	10	1
1:A:402:GLN:O	1:A:405:VAL:CG1	0.40	2.69	13	1
1:A:407:VAL:CG1	1:A:412:SER:CB	0.40	2.99	15	1
1:A:469:ASP:OD1	1:A:469:ASP:N	0.40	2.54	16	1
1:A:509:GLN:HG3	1:A:511:GLU:O	0.40	2.16	17	1
1:A:515:LEU:HD21	1:A:550:MET:SD	0.40	2.56	19	1
1:A:515:LEU:C	1:A:515:LEU:CD1	0.40	2.94	7	1
1:A:505:VAL:HG11	1:A:522:LEU:HD22	0.40	1.94	19	1
1:A:489:GLY:C	1:A:493:LEU:CD2	0.40	2.95	2	1
1:A:392:VAL:HG13	1:A:433:LEU:O	0.40	2.16	5	1
1:A:510:GLY:HA2	1:A:537:SER:N	0.40	2.31	18	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	167/189 (88%)	139±4 (83±2%)	18±3 (11±2%)	10±3 (6±2%)	2	20
All	All	3340/3780 (88%)	2775 (83%)	368 (11%)	197 (6%)	2	20

All 32 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	430	ARG	20
1	A	468	ALA	20
1	A	487	ILE	20
1	A	429	ASP	19
1	A	502	GLY	12
1	A	484	GLY	10
1	A	478	GLN	10
1	A	482	LEU	10
1	A	406	THR	10
1	A	510	GLY	7
1	A	405	VAL	6
1	A	486	LEU	6
1	A	511	GLU	6
1	A	538	GLY	5
1	A	481	ARG	4
1	A	531	GLN	4
1	A	540	ARG	4
1	A	527	ARG	3
1	A	389	GLU	2
1	A	439	GLN	2
1	A	512	LYS	2
1	A	412	SER	2
1	A	441	GLY	2
1	A	485	GLU	2
1	A	469	ASP	2
1	A	440	GLY	1
1	A	539	GLN	1

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Mol	Chain	Res	Type	Models (Total)
1	A	417	ALA	1
1	A	507	VAL	1
1	A	541	THR	1
1	A	416	THR	1
1	A	489	GLY	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	134/152 (88%)	119±3 (89±2%)	15±3 (11±2%)	8	52
All	All	2680/3040 (88%)	2387 (89%)	293 (11%)	8	52

All 58 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	411	LYS	20
1	A	519	LEU	18
1	A	465	ILE	16
1	A	426	LEU	15
1	A	482	LEU	13
1	A	499	PHE	12
1	A	487	ILE	11
1	A	494	LEU	11
1	A	533	LEU	11
1	A	430	ARG	11
1	A	522	LEU	10
1	A	481	ARG	9
1	A	537	SER	9
1	A	530	VAL	8
1	A	408	HIS	7
1	A	521	LEU	7
1	A	433	LEU	7
1	A	432	SER	6
1	A	474	MET	6
1	A	531	GLN	6

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Mol	Chain	Res	Type	Models (Total)
1	A	395	LEU	5
1	A	486	LEU	5
1	A	455	MET	5
1	A	446	ARG	4
1	A	492	GLN	4
1	A	399	ILE	4
1	A	493	LEU	4
1	A	513	LEU	3
1	A	528	HIS	3
1	A	534	ILE	3
1	A	404	ARG	2
1	A	495	GLU	2
1	A	420	SER	2
1	A	435	ILE	2
1	A	402	GLN	2
1	A	452	LEU	2
1	A	478	GLN	2
1	A	509	GLN	2
1	A	515	LEU	2
1	A	506	ILE	2
1	A	539	GLN	2
1	A	390	LEU	2
1	A	462	GLU	1
1	A	541	THR	1
1	A	488	THR	1
1	A	490	ARG	1
1	A	403	ASN	1
1	A	439	GLN	1
1	A	436	VAL	1
1	A	483	SER	1
1	A	529	ASN	1
1	A	464	GLN	1
1	A	415	ARG	1
1	A	512	LYS	1
1	A	514	SER	1
1	A	428	GLN	1
1	A	461	ARG	1
1	A	523	ASP	1

6.3.3 RNA ⓘ

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](#)

There are no chain breaks in this entry.

7 Chemical shift validation

The completeness of assignment taking into account all chemical shift lists is 81% for the well-defined parts and 79% for the entire structure.

7.1 Chemical shift list 1

File name: working_cs.cif

Chemical shift list name: *f20chem.txt*

7.1.1 Bookkeeping

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	1999
Number of shifts mapped to atoms	1999
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

The following table shows the suggested chemical shift referencing corrections.

Nucleus	# values	Correction $\pm$ precision, ppm	Suggested action
$^{13}\text{C}_\alpha$	175	-0.34 ± 0.16	None needed (< 0.5 ppm)
$^{13}\text{C}_\beta$	161	0.13 ± 0.08	None needed (< 0.5 ppm)
$^{13}\text{C}'$	171	-0.15 ± 0.09	None needed (< 0.5 ppm)
^{15}N	162	0.04 ± 0.25	None needed (< 0.5 ppm)

7.1.3 Completeness of resonance assignments

The following table shows the completeness of the chemical shift assignments for the well-defined regions of the structure. The overall completeness is 81%, i.e. 1824 atoms were assigned a chemical shift out of a possible 2240. 0 out of 31 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	^1H	^{13}C	^{15}N
Backbone	788/843 (93%)	327/346 (95%)	314/334 (94%)	147/163 (90%)
Sidechain	1036/1364 (76%)	736/887 (83%)	287/408 (70%)	13/69 (19%)

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	Total	¹H	¹³C	¹⁵N
Aromatic	0/33 (0%)	0/17 (0%)	0/14 (0%)	0/2 (0%)
Overall	1824/2240 (81%)	1063/1250 (85%)	601/756 (79%)	160/234 (68%)

The following table shows the completeness of the chemical shift assignments for the full structure. The overall completeness is 79%, i.e. 1998 atoms were assigned a chemical shift out of a possible 2532. 0 out of 33 assigned methyl groups (LEU and VAL) were assigned stereospecifically.

	Total	¹H	¹³C	¹⁵N
Backbone	872/954 (91%)	364/392 (93%)	346/378 (92%)	162/184 (88%)
Sidechain	1125/1517 (74%)	800/985 (81%)	309/454 (68%)	16/78 (21%)
Aromatic	1/61 (2%)	0/31 (0%)	0/26 (0%)	1/4 (25%)
Overall	1998/2532 (79%)	1164/1408 (83%)	655/858 (76%)	179/266 (67%)

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	504	THR	HG1	3.80	0.08 – 2.19	12.6

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:

