



Full wwPDB NMR Structure Validation Report ⓘ

Apr 26, 2016 – 06:40 PM BST

PDB ID : 1ZO0
Title : NMR structure of antizyme isoform 1 from rat
Authors : Hoffman, D.W.; Hackert, M.L.
Deposited on : 2005-05-12

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
<http://wwpdb.org/validation/2016/NMRValidationReportHelp>
with specific help available everywhere you see the ⓘ symbol.

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

Cyrange : Kirchner and Güntert (2011)
NmrClust : Kelley et al. (1996)
MolProbity : 4.02b-467
Mogul : unknown
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)
RCI : v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV : Wang et al. (2010)
ShiftChecker : rb-20027457
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : rb-20027457

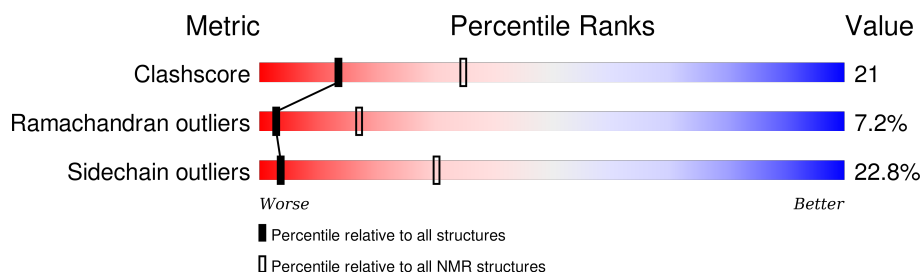
1 Overall quality at a glance

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	114402	11133
Ramachandran outliers	111179	9975
Sidechain outliers	111093	9958

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	126	

2 Ensemble composition and analysis

This entry contains 12 models. Model 11 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:94-A:108, A:113-A:200, A:208-A:219 (115)	1.09	11

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	2, 3, 4, 5, 6, 7, 8, 10, 11
2	1, 9, 12

3 Entry composition [i](#)

There is only 1 type of molecule in this entry. The entry contains 2003 atoms, of which 997 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called Ornithine decarboxylase antizyme.

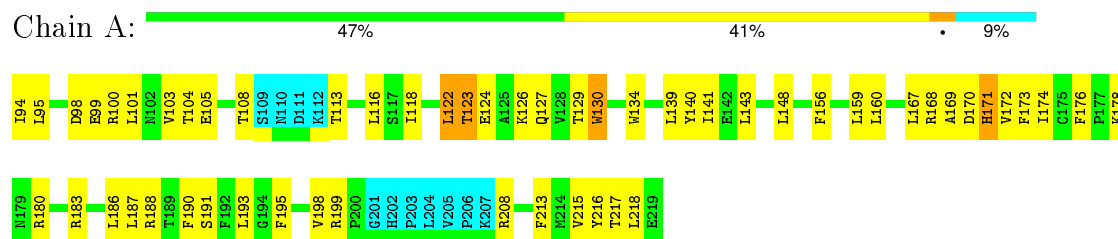
Mol	Chain	Residues	Atoms						Trace
1	A	126	Total	C	H	N	O	S	0
			2003	645	997	171	186	4	

4 Residue-property plots

4.1 Average score per residue in the NMR ensemble

These plots are provided for all protein, RNA and DNA 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: Ornithine decarboxylase antizyme

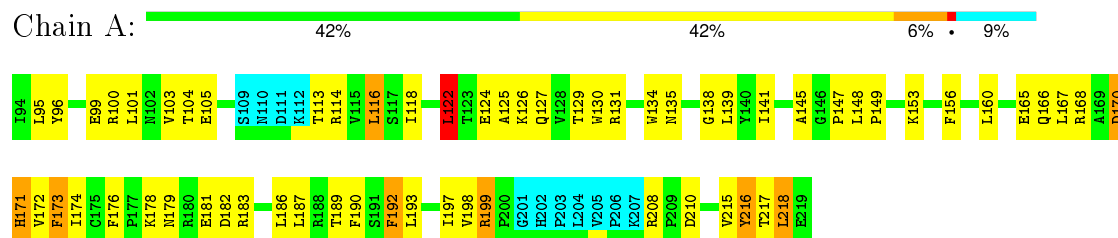


4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

4.2.1 Score per residue for model 1

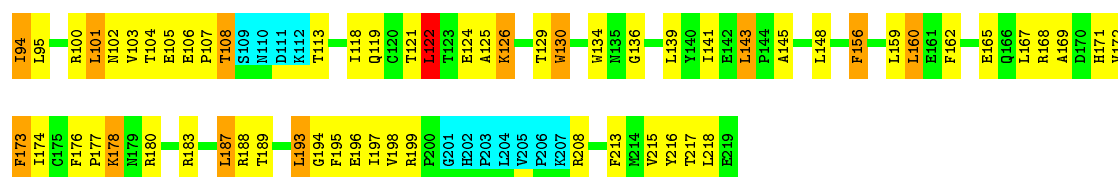
- Molecule 1: Ornithine decarboxylase antizyme



4.2.2 Score per residue for model 2

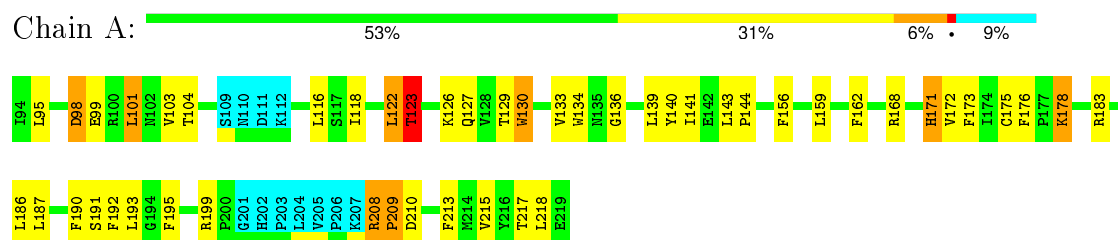
- Molecule 1: Ornithine decarboxylase antizyme





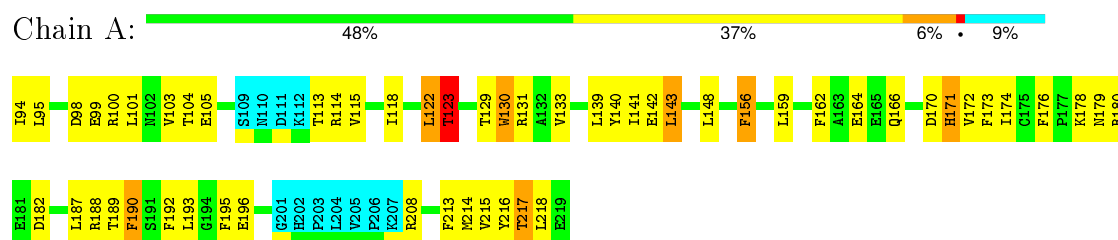
4.2.3 Score per residue for model 3

- Molecule 1: Ornithine decarboxylase antizyme



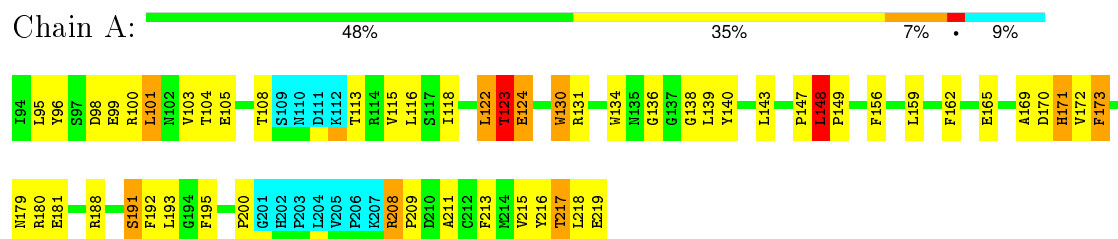
4.2.4 Score per residue for model 4

- Molecule 1: Ornithine decarboxylase antizyme



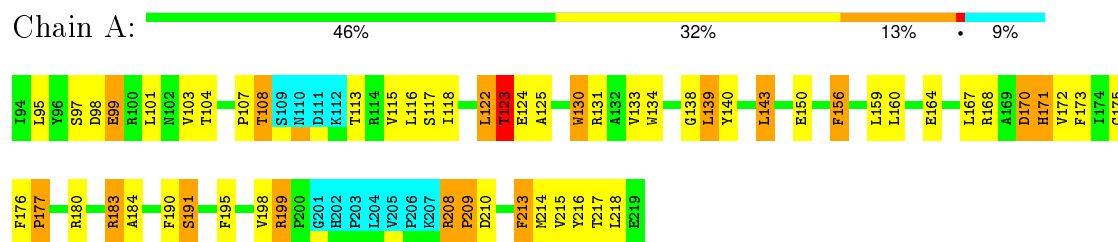
4.2.5 Score per residue for model 5

- Molecule 1: Ornithine decarboxylase antizyme



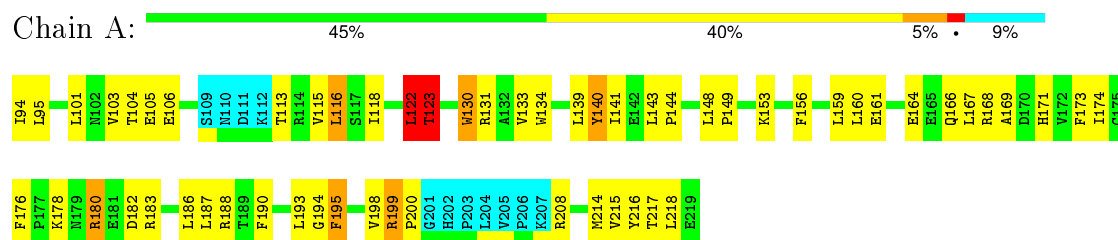
4.2.6 Score per residue for model 6

- Molecule 1: Ornithine decarboxylase antizyme



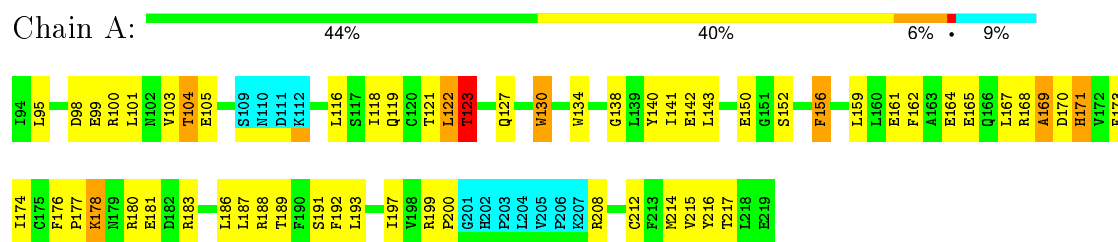
4.2.7 Score per residue for model 7

- Molecule 1: Ornithine decarboxylase antizyme



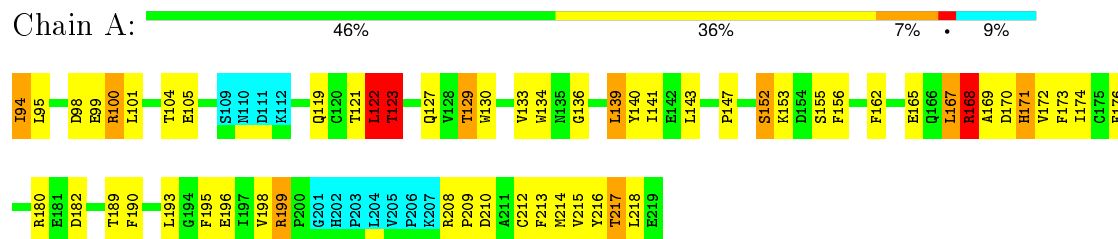
4.2.8 Score per residue for model 8

- Molecule 1: Ornithine decarboxylase antizyme



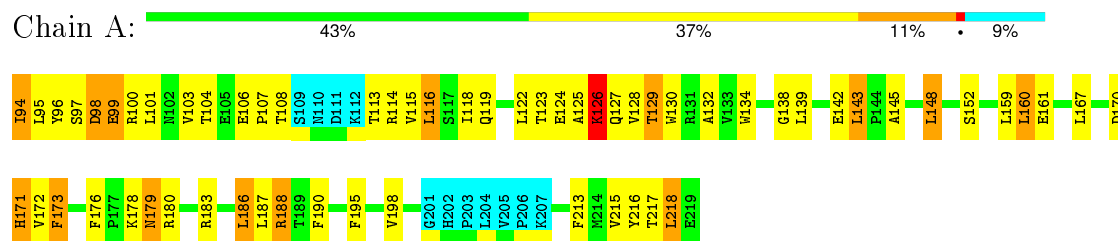
4.2.9 Score per residue for model 9

- Molecule 1: Ornithine decarboxylase antizyme



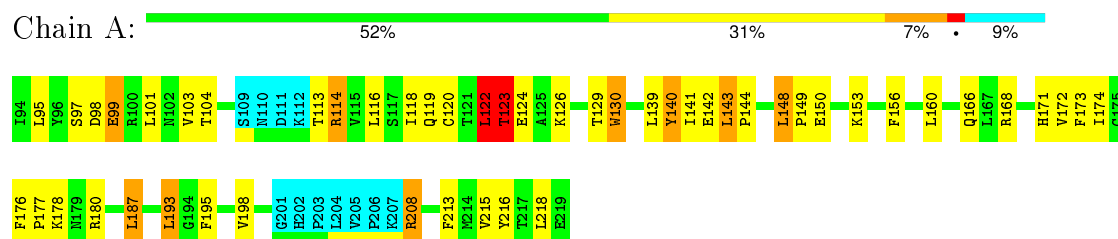
4.2.10 Score per residue for model 10

- Molecule 1: Ornithine decarboxylase antizyme



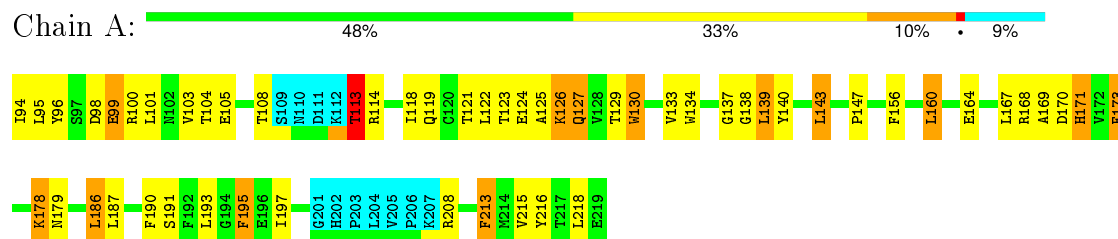
4.2.11 Score per residue for model 11 (medoid)

- Molecule 1: Ornithine decarboxylase antizyme



4.2.12 Score per residue for model 12

- Molecule 1: Ornithine decarboxylase antizyme



5 Refinement protocol and experimental data overview ⓘ

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

Of the 12 calculated structures, 12 were deposited, based on the following criterion: *all calculated structures submitted*.

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

Software name	Classification	Version
CNS	refinement	1.1

No chemical shift data was provided. No validations of the models with respect to experimental NMR restraints is performed at this time.

6 Model quality ⓘ

6.1 Standard geometry ⓘ

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 ⓘ

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	923	911	909	38±6
All	All	11076	10932	10908	462

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 21.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:139:LEU:HD11	1:A:172:VAL:HG13	1.07	1.18	11	2
1:A:173:PHE:CD1	1:A:215:VAL:HG23	0.88	2.04	10	3
1:A:118:ILE:HG21	1:A:159:LEU:HD11	0.87	1.46	4	3
1:A:173:PHE:CE1	1:A:215:VAL:HG23	0.83	2.08	10	2
1:A:143:LEU:HD22	1:A:176:PHE:CD2	0.81	2.10	7	2
1:A:103:VAL:HG22	1:A:118:ILE:HG23	0.80	1.53	10	4
1:A:122:LEU:HA	1:A:126:LYS:O	0.80	1.77	1	2
1:A:103:VAL:HG12	1:A:118:ILE:HG22	0.79	1.55	1	2
1:A:134:TRP:CZ3	1:A:167:LEU:HD21	0.79	2.13	7	1
1:A:134:TRP:CH2	1:A:167:LEU:HD13	0.78	2.13	12	2
1:A:187:LEU:HD11	1:A:197:ILE:HG21	0.78	1.55	2	2
1:A:134:TRP:CZ3	1:A:167:LEU:HD13	0.77	2.14	1	3
1:A:143:LEU:HD13	1:A:176:PHE:CE2	0.77	2.14	7	3
1:A:134:TRP:CZ2	1:A:167:LEU:HD22	0.77	2.15	6	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:148:LEU:HD23	1:A:186:LEU:HD11	0.76	1.56	10	1
1:A:95:LEU:HB2	1:A:104:THR:HG22	0.76	1.58	1	4
1:A:122:LEU:HB3	1:A:125:ALA:HB3	0.76	1.57	12	2
1:A:108:THR:HG22	1:A:113:THR:O	0.75	1.80	10	2
1:A:101:LEU:HD23	1:A:119:GLN:O	0.74	1.82	2	1
1:A:119:GLN:OE1	1:A:129:THR:HG22	0.73	1.83	10	1
1:A:95:LEU:CB	1:A:104:THR:HG22	0.71	2.15	1	2
1:A:139:LEU:HD11	1:A:172:VAL:HG23	0.71	1.62	3	1
1:A:95:LEU:HD13	1:A:104:THR:OG1	0.70	1.86	12	2
1:A:141:ILE:HD12	1:A:174:ILE:CG1	0.70	2.15	4	1
1:A:133:VAL:HG23	1:A:140:TYR:HB3	0.70	1.61	4	1
1:A:116:LEU:HD23	1:A:117:SER:N	0.69	2.03	6	1
1:A:99:GLU:O	1:A:101:LEU:HD12	0.69	1.86	1	2
1:A:141:ILE:HD11	1:A:174:ILE:HG12	0.69	1.63	2	1
1:A:103:VAL:CG1	1:A:118:ILE:HG22	0.69	2.18	1	2
1:A:187:LEU:CG	1:A:197:ILE:HG21	0.69	2.17	8	1
1:A:171:HIS:CD2	1:A:217:THR:HG23	0.69	2.23	3	4
1:A:108:THR:HG23	1:A:113:THR:O	0.69	1.88	6	1
1:A:139:LEU:CD1	1:A:172:VAL:HG13	0.69	2.14	10	1
1:A:103:VAL:HG12	1:A:118:ILE:HG23	0.68	1.63	4	1
1:A:141:ILE:HD12	1:A:174:ILE:HG13	0.68	1.64	4	1
1:A:101:LEU:HD12	1:A:119:GLN:O	0.68	1.89	12	2
1:A:171:HIS:NE2	1:A:217:THR:HG23	0.68	2.04	7	3
1:A:173:PHE:HB3	1:A:215:VAL:HG12	0.68	1.66	5	2
1:A:103:VAL:CG1	1:A:118:ILE:HG23	0.68	2.19	4	1
1:A:139:LEU:HD21	1:A:172:VAL:HG22	0.67	1.67	10	2
1:A:173:PHE:CD2	1:A:215:VAL:HG23	0.67	2.23	2	1
1:A:173:PHE:CE2	1:A:215:VAL:HG23	0.67	2.24	2	1
1:A:95:LEU:HA	1:A:104:THR:HG22	0.67	1.65	4	1
1:A:208:ARG:CG	1:A:211:ALA:HB3	0.66	2.21	5	1
1:A:141:ILE:HD11	1:A:174:ILE:CG1	0.66	2.19	2	1
1:A:160:LEU:HD11	1:A:216:TYR:OH	0.66	1.91	12	1
1:A:133:VAL:HG13	1:A:140:TYR:HB2	0.66	1.68	3	2
1:A:141:ILE:HB	1:A:174:ILE:HG22	0.65	1.67	8	1
1:A:143:LEU:HD22	1:A:177:PRO:HD3	0.65	1.68	6	1
1:A:116:LEU:HD22	1:A:132:ALA:O	0.65	1.91	10	1
1:A:139:LEU:O	1:A:172:VAL:HG13	0.65	1.92	9	1
1:A:187:LEU:HG	1:A:197:ILE:HG21	0.65	1.69	8	1
1:A:101:LEU:HD11	1:A:118:ILE:HG13	0.65	1.69	12	1
1:A:170:ASP:C	1:A:217:THR:HG23	0.64	2.12	8	2
1:A:130:TRP:CZ3	1:A:159:LEU:HD22	0.64	2.28	5	3

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:137:GLY:O	1:A:169:ALA:HB1	0.64	1.93	12	1
1:A:187:LEU:CD1	1:A:197:ILE:HG21	0.64	2.23	8	1
1:A:170:ASP:O	1:A:172:VAL:HG23	0.64	1.93	1	2
1:A:116:LEU:N	1:A:116:LEU:HD22	0.63	2.08	7	2
1:A:116:LEU:HD13	1:A:116:LEU:N	0.63	2.09	10	1
1:A:187:LEU:HD23	1:A:214:MET:SD	0.63	2.33	7	1
1:A:103:VAL:CG1	1:A:116:LEU:HD21	0.62	2.24	6	1
1:A:173:PHE:CZ	1:A:215:VAL:HG21	0.62	2.29	11	2
1:A:187:LEU:HD11	1:A:197:ILE:HD11	0.62	1.71	12	1
1:A:160:LEU:CD1	1:A:172:VAL:HG11	0.62	2.24	1	1
1:A:104:THR:O	1:A:116:LEU:HD13	0.62	1.94	5	1
1:A:164:GLU:HB3	1:A:218:LEU:HD22	0.62	1.72	12	1
1:A:106:GLU:HB3	1:A:115:VAL:HG23	0.61	1.73	7	1
1:A:94:ILE:HD13	1:A:94:ILE:N	0.60	2.11	9	1
1:A:133:VAL:HG13	1:A:140:TYR:CB	0.60	2.26	3	1
1:A:139:LEU:HD12	1:A:139:LEU:O	0.60	1.96	11	1
1:A:159:LEU:HD12	1:A:160:LEU:N	0.60	2.11	10	1
1:A:187:LEU:HD11	1:A:197:ILE:CG2	0.59	2.27	2	2
1:A:141:ILE:HD12	1:A:174:ILE:HG12	0.59	1.75	9	1
1:A:143:LEU:HD13	1:A:144:PRO:HD2	0.59	1.75	11	1
1:A:139:LEU:CD2	1:A:172:VAL:HG22	0.59	2.28	10	1
1:A:218:LEU:HD13	1:A:218:LEU:O	0.58	1.98	2	1
1:A:122:LEU:HA	1:A:126:LYS:C	0.58	2.18	1	2
1:A:170:ASP:CG	1:A:218:LEU:HD13	0.58	2.19	10	1
1:A:94:ILE:HG22	1:A:105:GLU:HB2	0.58	1.75	4	1
1:A:101:LEU:HD11	1:A:118:ILE:CG1	0.58	2.29	12	1
1:A:218:LEU:HD23	1:A:218:LEU:O	0.58	1.99	5	1
1:A:103:VAL:HG11	1:A:118:ILE:HD12	0.58	1.75	12	1
1:A:98:ASP:HB3	1:A:101:LEU:HD21	0.57	1.74	10	1
1:A:134:TRP:CH2	1:A:167:LEU:HD22	0.57	2.33	6	1
1:A:122:LEU:CB	1:A:125:ALA:HB3	0.57	2.29	10	2
1:A:173:PHE:CD1	1:A:215:VAL:HG12	0.57	2.34	7	1
1:A:123:THR:HG22	1:A:124:GLU:HG3	0.57	1.75	10	1
1:A:171:HIS:CD2	1:A:217:THR:HG22	0.57	2.35	1	1
1:A:171:HIS:CE1	1:A:217:THR:HG23	0.56	2.34	4	2
1:A:94:ILE:HD12	1:A:96:TYR:OH	0.56	2.00	10	1
1:A:134:TRP:CE3	1:A:167:LEU:HD13	0.56	2.35	10	1
1:A:101:LEU:HD21	1:A:118:ILE:HD11	0.56	1.76	12	1
1:A:183:ARG:NH1	1:A:184:ALA:HB2	0.56	2.16	6	1
1:A:95:LEU:HB2	1:A:104:THR:HG23	0.56	1.76	2	2
1:A:130:TRP:HE1	1:A:143:LEU:HD22	0.55	1.61	11	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:115:VAL:O	1:A:116:LEU:HD22	0.55	2.00	5	1
1:A:103:VAL:HG13	1:A:116:LEU:HD21	0.55	1.78	6	1
1:A:141:ILE:HD12	1:A:174:ILE:HG22	0.55	1.79	7	2
1:A:94:ILE:O	1:A:104:THR:HG23	0.55	2.01	7	1
1:A:105:GLU:HA	1:A:116:LEU:HD12	0.54	1.78	1	2
1:A:141:ILE:CB	1:A:174:ILE:HG22	0.54	2.32	8	1
1:A:103:VAL:HG22	1:A:118:ILE:HG22	0.54	1.77	5	1
1:A:208:ARG:N	1:A:209:PRO:CD	0.54	2.70	3	4
1:A:116:LEU:HD22	1:A:116:LEU:H	0.54	1.63	10	1
1:A:121:THR:HG23	1:A:127:GLN:HB3	0.54	1.80	9	2
1:A:134:TRP:CE3	1:A:167:LEU:HD21	0.53	2.38	7	1
1:A:139:LEU:HD12	1:A:167:LEU:HD12	0.53	1.80	12	1
1:A:94:ILE:HD11	1:A:107:PRO:HD3	0.53	1.79	2	1
1:A:113:THR:HG22	1:A:135:ASN:HA	0.53	1.79	1	1
1:A:141:ILE:HB	1:A:174:ILE:HG23	0.53	1.79	9	1
1:A:183:ARG:O	1:A:187:LEU:HD12	0.53	2.03	7	1
1:A:122:LEU:HA	1:A:126:LYS:H	0.53	1.63	2	2
1:A:140:TYR:O	1:A:141:ILE:HD13	0.52	2.03	11	2
1:A:216:TYR:N	1:A:216:TYR:CD1	0.52	2.76	1	2
1:A:143:LEU:HD13	1:A:144:PRO:CD	0.52	2.34	11	1
1:A:100:ARG:O	1:A:101:LEU:HD12	0.52	2.05	2	1
1:A:139:LEU:HD12	1:A:167:LEU:HD13	0.52	1.81	6	1
1:A:187:LEU:CD1	1:A:197:ILE:HD11	0.52	2.34	12	1
1:A:167:LEU:HD12	1:A:167:LEU:O	0.52	2.04	7	1
1:A:173:PHE:CZ	1:A:215:VAL:HG23	0.52	2.39	3	1
1:A:95:LEU:N	1:A:95:LEU:HD23	0.52	2.20	7	1
1:A:115:VAL:C	1:A:116:LEU:HD13	0.52	2.24	10	1
1:A:103:VAL:CG1	1:A:118:ILE:HD12	0.52	2.35	12	1
1:A:130:TRP:CH2	1:A:156:PHE:CD1	0.52	2.98	4	2
1:A:95:LEU:HD23	1:A:95:LEU:H	0.52	1.65	1	4
1:A:143:LEU:HD23	1:A:147:PRO:CB	0.52	2.35	9	1
1:A:124:GLU:O	1:A:125:ALA:HB3	0.51	2.06	1	3
1:A:140:TYR:CD1	1:A:173:PHE:CD2	0.51	2.99	8	1
1:A:121:THR:HG22	1:A:127:GLN:HB3	0.51	1.82	8	1
1:A:122:LEU:CA	1:A:126:LYS:O	0.51	2.57	1	1
1:A:140:TYR:CE1	1:A:213:PHE:CZ	0.51	2.99	5	1
1:A:173:PHE:CD1	1:A:213:PHE:CE1	0.51	2.99	12	1
1:A:95:LEU:HB3	1:A:104:THR:HG23	0.51	1.83	6	1
1:A:100:ARG:C	1:A:101:LEU:HD12	0.50	2.26	9	1
1:A:103:VAL:HG23	1:A:118:ILE:HG13	0.50	1.81	7	1
1:A:130:TRP:CH2	1:A:156:PHE:CE2	0.50	3.00	6	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:148:LEU:CD2	1:A:186:LEU:HD11	0.50	2.37	7	1
1:A:195:PHE:CE1	1:A:216:TYR:CD2	0.50	2.99	10	1
1:A:103:VAL:HG13	1:A:118:ILE:HG12	0.50	1.83	11	1
1:A:174:ILE:HG23	1:A:216:TYR:OH	0.50	2.06	1	1
1:A:190:PHE:CE1	1:A:195:PHE:CE2	0.50	3.00	9	1
1:A:98:ASP:O	1:A:99:GLU:C	0.50	2.49	6	4
1:A:195:PHE:CE1	1:A:216:TYR:CE1	0.50	2.99	9	1
1:A:122:LEU:HD23	1:A:123:THR:N	0.50	2.21	6	1
1:A:122:LEU:HD23	1:A:127:GLN:CD	0.50	2.27	1	1
1:A:195:PHE:CD1	1:A:216:TYR:CD1	0.50	3.00	10	2
1:A:118:ILE:CG2	1:A:159:LEU:HD11	0.50	2.33	7	1
1:A:164:GLU:CG	1:A:169:ALA:HB3	0.50	2.37	8	1
1:A:103:VAL:HG23	1:A:118:ILE:HG22	0.50	1.83	3	1
1:A:140:TYR:CZ	1:A:173:PHE:CD1	0.50	3.00	6	1
1:A:213:PHE:N	1:A:213:PHE:CD1	0.50	2.79	6	1
1:A:173:PHE:CD1	1:A:213:PHE:CD1	0.50	2.99	12	1
1:A:196:GLU:HB2	1:A:215:VAL:HG23	0.50	1.83	9	1
1:A:119:GLN:OE1	1:A:129:THR:HG23	0.49	2.06	11	1
1:A:147:PRO:O	1:A:148:LEU:HD12	0.49	2.07	5	1
1:A:167:LEU:O	1:A:168:ARG:CB	0.49	2.60	8	2
1:A:190:PHE:CD2	1:A:214:MET:HE3	0.49	2.43	7	1
1:A:171:HIS:HA	1:A:216:TYR:O	0.49	2.07	1	2
1:A:186:LEU:HD13	1:A:190:PHE:CD1	0.49	2.42	12	1
1:A:187:LEU:HD12	1:A:188:ARG:N	0.49	2.21	10	1
1:A:103:VAL:HG23	1:A:118:ILE:CG2	0.49	2.38	3	1
1:A:139:LEU:HD23	1:A:140:TYR:N	0.49	2.22	4	1
1:A:171:HIS:CG	1:A:217:THR:HG22	0.49	2.43	1	1
1:A:208:ARG:N	1:A:209:PRO:HD3	0.49	2.22	9	1
1:A:187:LEU:C	1:A:187:LEU:HD23	0.49	2.28	3	1
1:A:195:PHE:CZ	1:A:216:TYR:CD2	0.49	3.00	10	1
1:A:121:THR:HG22	1:A:127:GLN:CB	0.48	2.38	8	1
1:A:130:TRP:CH2	1:A:156:PHE:CE1	0.48	3.01	8	2
1:A:190:PHE:CD2	1:A:216:TYR:CE2	0.48	3.01	4	1
1:A:139:LEU:HD12	1:A:167:LEU:CD1	0.48	2.39	6	1
1:A:170:ASP:O	1:A:172:VAL:N	0.48	2.47	4	3
1:A:138:GLY:HA3	1:A:171:HIS:CD2	0.48	2.43	5	1
1:A:208:ARG:CG	1:A:209:PRO:HD3	0.48	2.39	3	1
1:A:101:LEU:HD23	1:A:101:LEU:N	0.48	2.23	10	2
1:A:139:LEU:HD12	1:A:139:LEU:C	0.48	2.29	11	1
1:A:173:PHE:CE2	1:A:215:VAL:HG21	0.48	2.44	11	1
1:A:148:LEU:HD23	1:A:148:LEU:O	0.48	2.09	4	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:140:TYR:CE1	1:A:173:PHE:CD1	0.47	3.01	6	1
1:A:190:PHE:CD1	1:A:195:PHE:CE2	0.47	3.02	10	1
1:A:197:ILE:O	1:A:197:ILE:HD12	0.47	2.09	8	1
1:A:130:TRP:CZ2	1:A:143:LEU:HD21	0.47	2.45	12	1
1:A:148:LEU:HD11	1:A:176:PHE:CD2	0.47	2.45	1	1
1:A:198:VAL:CG1	1:A:213:PHE:CE2	0.47	2.98	6	1
1:A:173:PHE:CE2	1:A:215:VAL:HG12	0.47	2.45	9	1
1:A:148:LEU:HD22	1:A:186:LEU:HD11	0.47	1.85	7	1
1:A:182:ASP:O	1:A:186:LEU:HD12	0.47	2.10	7	1
1:A:171:HIS:CD2	1:A:171:HIS:N	0.47	2.82	10	1
1:A:122:LEU:CA	1:A:126:LYS:H	0.46	2.23	1	2
1:A:100:ARG:HB3	1:A:101:LEU:HD23	0.46	1.87	5	1
1:A:172:VAL:HG22	1:A:216:TYR:O	0.46	2.10	6	1
1:A:143:LEU:CD1	1:A:176:PHE:CZ	0.46	2.99	3	1
1:A:170:ASP:OD1	1:A:218:LEU:HD13	0.46	2.09	10	1
1:A:171:HIS:HB3	1:A:217:THR:HG23	0.46	1.87	5	1
1:A:187:LEU:HD11	1:A:197:ILE:CB	0.46	2.40	8	1
1:A:103:VAL:CG2	1:A:118:ILE:HG22	0.46	2.40	3	1
1:A:196:GLU:HB2	1:A:215:VAL:HG13	0.46	1.87	4	1
1:A:174:ILE:CG2	1:A:176:PHE:CE2	0.46	2.99	2	1
1:A:187:LEU:HD22	1:A:214:MET:CB	0.46	2.41	4	1
1:A:134:TRP:CZ3	1:A:138:GLY:C	0.46	2.89	10	4
1:A:95:LEU:HD23	1:A:95:LEU:N	0.46	2.25	1	1
1:A:188:ARG:O	1:A:192:PHE:HA	0.46	2.10	5	1
1:A:167:LEU:HG	1:A:169:ALA:HB2	0.46	1.87	7	1
1:A:195:PHE:CD1	1:A:196:GLU:N	0.46	2.84	2	1
1:A:96:TYR:CZ	1:A:103:VAL:CG2	0.46	2.99	1	1
1:A:134:TRP:CZ3	1:A:167:LEU:CD1	0.46	2.99	12	2
1:A:173:PHE:CZ	1:A:215:VAL:CG2	0.46	2.98	3	3
1:A:143:LEU:HD13	1:A:176:PHE:CD1	0.45	2.46	6	2
1:A:164:GLU:CB	1:A:218:LEU:HD22	0.45	2.39	12	1
1:A:116:LEU:CD1	1:A:116:LEU:N	0.45	2.78	10	1
1:A:171:HIS:CG	1:A:217:THR:HG23	0.45	2.46	4	1
1:A:95:LEU:CB	1:A:104:THR:HG23	0.45	2.41	8	2
1:A:123:THR:HG22	1:A:124:GLU:N	0.45	2.26	12	1
1:A:133:VAL:CG2	1:A:140:TYR:CD1	0.45	2.99	4	1
1:A:171:HIS:CD2	1:A:217:THR:CG2	0.45	2.99	1	3
1:A:170:ASP:O	1:A:217:THR:HG23	0.45	2.11	6	1
1:A:133:VAL:HG13	1:A:140:TYR:HB3	0.45	1.87	7	1
1:A:173:PHE:N	1:A:173:PHE:CD1	0.45	2.82	10	3
1:A:195:PHE:CD1	1:A:216:TYR:CB	0.45	2.99	5	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:130:TRP:CZ3	1:A:159:LEU:HD13	0.45	2.46	2	1
1:A:173:PHE:CD1	1:A:215:VAL:CG1	0.45	2.99	7	1
1:A:164:GLU:OE2	1:A:218:LEU:HD22	0.45	2.12	7	1
1:A:143:LEU:HD22	1:A:176:PHE:HD2	0.45	1.70	9	2
1:A:172:VAL:HG13	1:A:172:VAL:O	0.45	2.12	3	1
1:A:173:PHE:CE2	1:A:215:VAL:CG2	0.45	2.99	3	2
1:A:94:ILE:CG2	1:A:96:TYR:CE2	0.45	3.00	12	1
1:A:176:PHE:N	1:A:176:PHE:CD1	0.45	2.84	11	1
1:A:148:LEU:CB	1:A:149:PRO:CD	0.45	2.95	5	3
1:A:134:TRP:CH2	1:A:169:ALA:HB2	0.45	2.47	2	2
1:A:170:ASP:O	1:A:171:HIS:HB2	0.45	2.12	8	2
1:A:195:PHE:CE1	1:A:216:TYR:CG	0.45	3.05	10	1
1:A:171:HIS:CD2	1:A:215:VAL:HG22	0.45	2.47	11	1
1:A:148:LEU:HD21	1:A:176:PHE:CD2	0.45	2.47	11	1
1:A:141:ILE:HD12	1:A:174:ILE:CG2	0.45	2.41	1	1
1:A:103:VAL:HG13	1:A:118:ILE:HG13	0.45	1.88	10	1
1:A:116:LEU:N	1:A:116:LEU:CD2	0.45	2.80	7	1
1:A:198:VAL:CG1	1:A:213:PHE:CZ	0.45	3.00	10	2
1:A:139:LEU:HD13	1:A:167:LEU:HD12	0.45	1.88	2	1
1:A:96:TYR:CE2	1:A:103:VAL:CG2	0.44	2.99	1	1
1:A:186:LEU:HD13	1:A:190:PHE:CE1	0.44	2.47	12	1
1:A:176:PHE:CD1	1:A:176:PHE:N	0.44	2.84	4	1
1:A:187:LEU:CD2	1:A:197:ILE:HG21	0.44	2.42	1	1
1:A:215:VAL:O	1:A:215:VAL:HG23	0.44	2.11	5	1
1:A:95:LEU:HD12	1:A:96:TYR:N	0.44	2.28	12	1
1:A:190:PHE:CD2	1:A:214:MET:CE	0.44	3.00	7	1
1:A:122:LEU:O	1:A:123:THR:C	0.44	2.55	6	8
1:A:140:TYR:CD1	1:A:173:PHE:CE2	0.44	3.05	8	1
1:A:171:HIS:CD2	1:A:215:VAL:CG2	0.44	3.00	8	1
1:A:101:LEU:HD23	1:A:101:LEU:H	0.44	1.73	10	1
1:A:215:VAL:O	1:A:215:VAL:HG13	0.44	2.12	8	2
1:A:133:VAL:HG23	1:A:140:TYR:HB2	0.44	1.87	6	2
1:A:195:PHE:N	1:A:195:PHE:CD1	0.44	2.85	7	1
1:A:130:TRP:CZ3	1:A:159:LEU:CD2	0.44	3.00	5	1
1:A:191:SER:O	1:A:195:PHE:CD1	0.44	2.71	6	1
1:A:173:PHE:HD1	1:A:215:VAL:HG23	0.44	1.73	4	2
1:A:94:ILE:O	1:A:105:GLU:N	0.44	2.50	2	2
1:A:170:ASP:O	1:A:171:HIS:CG	0.44	2.70	9	1
1:A:187:LEU:HD12	1:A:195:PHE:CZ	0.44	2.48	12	1
1:A:191:SER:O	1:A:192:PHE:CB	0.43	2.66	5	2
1:A:188:ARG:HA	1:A:192:PHE:HA	0.43	1.88	5	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:139:LEU:CD1	1:A:167:LEU:HD12	0.43	2.43	2	1
1:A:215:VAL:HG13	1:A:215:VAL:O	0.43	2.13	6	1
1:A:174:ILE:HG23	1:A:174:ILE:O	0.43	2.12	11	1
1:A:98:ASP:O	1:A:101:LEU:HD23	0.43	2.13	3	1
1:A:98:ASP:HB2	1:A:101:LEU:HD21	0.43	1.90	11	1
1:A:122:LEU:CB	1:A:126:LYS:N	0.43	2.81	1	1
1:A:170:ASP:O	1:A:171:HIS:CB	0.43	2.66	8	1
1:A:125:ALA:O	1:A:126:LYS:CB	0.43	2.67	10	1
1:A:143:LEU:CD1	1:A:176:PHE:CE2	0.43	3.00	10	1
1:A:183:ARG:CD	1:A:187:LEU:HD23	0.43	2.44	10	1
1:A:159:LEU:HD23	1:A:159:LEU:C	0.43	2.35	8	1
1:A:94:ILE:CD1	1:A:94:ILE:N	0.43	2.81	9	1
1:A:164:GLU:OE2	1:A:218:LEU:HD13	0.43	2.14	6	1
1:A:120:CYS:SG	1:A:122:LEU:HD21	0.43	2.53	11	1
1:A:95:LEU:H	1:A:95:LEU:HD23	0.42	1.74	6	1
1:A:187:LEU:HD12	1:A:195:PHE:HZ	0.42	1.74	12	1
1:A:183:ARG:HD3	1:A:187:LEU:HD23	0.42	1.89	10	1
1:A:98:ASP:N	1:A:101:LEU:O	0.42	2.49	4	1
1:A:164:GLU:CD	1:A:218:LEU:HD22	0.42	2.34	7	1
1:A:160:LEU:HD13	1:A:160:LEU:O	0.42	2.14	2	1
1:A:171:HIS:HB3	1:A:217:THR:HA	0.42	1.92	5	1
1:A:122:LEU:O	1:A:124:GLU:N	0.42	2.53	5	1
1:A:134:TRP:CZ3	1:A:138:GLY:O	0.42	2.73	6	2
1:A:95:LEU:CA	1:A:104:THR:HG23	0.42	2.45	8	1
1:A:193:LEU:HD23	1:A:216:TYR:CE2	0.42	2.49	8	1
1:A:208:ARG:H	1:A:209:PRO:CD	0.42	2.27	3	1
1:A:139:LEU:HD11	1:A:172:VAL:CG1	0.42	2.12	11	1
1:A:187:LEU:HD23	1:A:195:PHE:CE1	0.42	2.50	11	1
1:A:198:VAL:HG12	1:A:199:ARG:N	0.42	2.29	9	4
1:A:130:TRP:CH2	1:A:156:PHE:CZ	0.42	3.08	11	1
1:A:122:LEU:HD13	1:A:126:LYS:O	0.42	2.15	10	1
1:A:140:TYR:CZ	1:A:142:GLU:CG	0.42	3.03	8	1
1:A:130:TRP:HZ3	1:A:159:LEU:HD22	0.41	1.74	5	2
1:A:143:LEU:HD23	1:A:177:PRO:HD2	0.41	1.91	8	1
1:A:105:GLU:HG3	1:A:116:LEU:HD23	0.41	1.91	8	1
1:A:191:SER:O	1:A:195:PHE:CG	0.41	2.72	6	1
1:A:190:PHE:O	1:A:195:PHE:CD2	0.41	2.73	7	1
1:A:193:LEU:O	1:A:193:LEU:HD23	0.41	2.15	11	1
1:A:94:ILE:HD11	1:A:105:GLU:O	0.41	2.16	2	1
1:A:130:TRP:HZ3	1:A:159:LEU:HD13	0.41	1.75	2	1
1:A:134:TRP:HE3	1:A:139:LEU:HD12	0.41	1.75	1	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:171:HIS:CE1	1:A:173:PHE:CE1	0.41	3.09	8	1
1:A:139:LEU:O	1:A:173:PHE:CZ	0.41	2.73	4	1
1:A:190:PHE:CD1	1:A:195:PHE:CD2	0.41	3.08	9	1
1:A:216:TYR:CG	1:A:217:THR:N	0.41	2.88	9	1
1:A:139:LEU:O	1:A:173:PHE:CD2	0.41	2.73	7	1
1:A:198:VAL:O	1:A:213:PHE:CD1	0.41	2.73	11	1
1:A:195:PHE:CD1	1:A:216:TYR:HB2	0.41	2.51	5	1
1:A:138:GLY:HA3	1:A:171:HIS:O	0.41	2.16	12	1
1:A:119:GLN:NE2	1:A:129:THR:HG22	0.41	2.31	9	1
1:A:170:ASP:CA	1:A:217:THR:HG23	0.41	2.45	6	1
1:A:96:TYR:CD1	1:A:96:TYR:N	0.41	2.89	1	1
1:A:143:LEU:HD23	1:A:147:PRO:HB2	0.41	1.92	9	1
1:A:173:PHE:CD1	1:A:173:PHE:N	0.41	2.89	6	1
1:A:199:ARG:O	1:A:213:PHE:CE1	0.41	2.74	6	1
1:A:171:HIS:CG	1:A:217:THR:OG1	0.41	2.74	10	1
1:A:171:HIS:CE1	1:A:217:THR:CG2	0.41	3.03	4	1
1:A:171:HIS:O	1:A:173:PHE:CD1	0.41	2.73	4	1
1:A:134:TRP:CE2	1:A:136:GLY:O	0.41	2.74	9	4
1:A:191:SER:HB2	1:A:195:PHE:CZ	0.41	2.51	5	1
1:A:104:THR:HG22	1:A:105:GLU:N	0.41	2.31	9	1
1:A:171:HIS:CD2	1:A:217:THR:OG1	0.41	2.73	3	3
1:A:118:ILE:HG23	1:A:118:ILE:O	0.41	2.16	12	1
1:A:98:ASP:O	1:A:100:ARG:N	0.41	2.53	12	1
1:A:218:LEU:C	1:A:218:LEU:HD13	0.41	2.36	2	1
1:A:130:TRP:CZ2	1:A:156:PHE:CE2	0.41	3.09	2	1
1:A:194:GLY:O	1:A:216:TYR:CD1	0.41	2.74	2	1
1:A:195:PHE:CD1	1:A:195:PHE:O	0.41	2.74	12	1
1:A:115:VAL:HA	1:A:133:VAL:HG12	0.41	1.91	4	1
1:A:216:TYR:CE2	1:A:217:THR:O	0.41	2.74	2	1
1:A:94:ILE:O	1:A:104:THR:HA	0.40	2.15	9	1
1:A:190:PHE:O	1:A:216:TYR:CD2	0.40	2.74	6	1
1:A:194:GLY:O	1:A:216:TYR:CE1	0.40	2.74	2	1
1:A:103:VAL:HG13	1:A:118:ILE:HG22	0.40	1.94	5	1
1:A:133:VAL:CG1	1:A:140:TYR:CB	0.40	2.99	3	1
1:A:191:SER:CB	1:A:195:PHE:CB	0.40	3.00	6	1
1:A:189:THR:O	1:A:192:PHE:CD2	0.40	2.75	4	1
1:A:189:THR:O	1:A:192:PHE:CD1	0.40	2.75	1	1
1:A:172:VAL:O	1:A:216:TYR:CE1	0.40	2.74	5	1
1:A:114:ARG:CD	1:A:116:LEU:HD11	0.40	2.46	11	1
1:A:171:HIS:NE2	1:A:217:THR:CG2	0.40	2.85	4	1
1:A:134:TRP:CZ2	1:A:136:GLY:O	0.40	2.75	3	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:216:TYR:CD1	1:A:216:TYR:O	0.40	2.74	11	1
1:A:195:PHE:O	1:A:195:PHE:CD1	0.40	2.74	4	1

6.3 Torsion angles [i](#)

6.3.1 Protein backbone [i](#)

In the following table, the Percentiles column shows the percent Ramachandran outliers of the chain as a percentile score with respect to all PDB entries followed by that with respect to all NMR entries. The Analysed column shows the number of residues for which the backbone conformation was analysed and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	113/126 (90%)	90±4 (79±3%)	15±4 (13±3%)	8±1 (7±1%)	3	17
All	All	1356/1512 (90%)	1078 (79%)	181 (13%)	97 (7%)	3	17

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	122	LEU	10
1	A	171	HIS	9
1	A	123	THR	8
1	A	99	GLU	5
1	A	178	LYS	5
1	A	179	ASN	5
1	A	208	ARG	4
1	A	180	ARG	4
1	A	113	THR	4
1	A	193	LEU	4
1	A	200	PRO	3
1	A	145	ALA	3
1	A	177	PRO	3
1	A	209	PRO	2
1	A	182	ASP	2
1	A	152	SER	2
1	A	210	ASP	2
1	A	107	PRO	2
1	A	147	PRO	2
1	A	144	PRO	2

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Mol	Chain	Res	Type	Models (Total)
1	A	218	LEU	2
1	A	181	GLU	2
1	A	126	LYS	2
1	A	169	ALA	2
1	A	168	ARG	1
1	A	148	LEU	1
1	A	108	THR	1
1	A	194	GLY	1
1	A	191	SER	1
1	A	149	PRO	1
1	A	100	ARG	1
1	A	150	GLU	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	99/109 (91%)	76±3 (77±3%)	23±3 (23±3%)	3	30
All	All	1188/1308 (91%)	917 (77%)	271 (23%)	3	30

All 74 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	130	TRP	12
1	A	156	PHE	10
1	A	178	LYS	8
1	A	168	ARG	8
1	A	123	THR	8
1	A	208	ARG	7
1	A	129	THR	7
1	A	143	LEU	7
1	A	213	PHE	6
1	A	180	ARG	6
1	A	199	ARG	6
1	A	162	PHE	6
1	A	160	LEU	6

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Mol	Chain	Res	Type	Models (Total)
1	A	193	LEU	6
1	A	183	ARG	5
1	A	101	LEU	5
1	A	122	LEU	5
1	A	131	ARG	5
1	A	114	ARG	5
1	A	98	ASP	5
1	A	218	LEU	5
1	A	188	ARG	5
1	A	165	GLU	5
1	A	173	PHE	5
1	A	126	LYS	5
1	A	186	LEU	5
1	A	166	GLN	4
1	A	116	LEU	4
1	A	148	LEU	4
1	A	153	LYS	4
1	A	100	ARG	4
1	A	139	LEU	4
1	A	94	ILE	3
1	A	142	GLU	3
1	A	99	GLU	3
1	A	170	ASP	3
1	A	127	GLN	3
1	A	191	SER	3
1	A	189	THR	3
1	A	108	THR	3
1	A	190	PHE	3
1	A	217	THR	3
1	A	97	SER	3
1	A	214	MET	3
1	A	161	GLU	3
1	A	195	PHE	3
1	A	104	THR	2
1	A	187	LEU	2
1	A	150	GLU	2
1	A	105	GLU	2
1	A	171	HIS	2
1	A	212	CYS	2
1	A	95	LEU	2
1	A	210	ASP	2
1	A	175	CYS	2

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Mol	Chain	Res	Type	Models (Total)
1	A	106	GLU	2
1	A	124	GLU	2
1	A	140	TYR	2
1	A	192	PHE	2
1	A	152	SER	2
1	A	113	THR	1
1	A	128	VAL	1
1	A	216	TYR	1
1	A	179	ASN	1
1	A	96	TYR	1
1	A	121	THR	1
1	A	181	GLU	1
1	A	182	ASP	1
1	A	219	GLU	1
1	A	164	GLU	1
1	A	155	SER	1
1	A	167	LEU	1
1	A	172	VAL	1
1	A	102	ASN	1

6.3.3 RNA ⓘ

There are no RNA molecules in this entry.

6.4 Non-standard residues in protein, DNA, RNA chains ⓘ

There are no non-standard protein/DNA/RNA residues in this entry.

6.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

6.6 Ligand geometry ⓘ

There are no ligands in this entry.

6.7 Other polymers ⓘ

There are no such molecules in this entry.

6.8 Polymer linkage issues ⓘ

There are no chain breaks in this entry.

7 Chemical shift validation

No chemical shift data were provided