



Full wwPDB NMR Structure Validation Report ⓘ

Feb 12, 2017 – 07:38 pm GMT

PDB ID : 1PUN
Title : Solution Structure of the MutT Pyrophosphohydrolase Complexed with Mg(2+) and 8-oxo-dGMP, a Tightly-bound Product
Authors : Massiah, M.A.; Saraswat, V.; Azurmendi, H.F.; Mildvan, A.S.
Deposited on : 2003-06-25

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 : 1.7.2 (RC1), CSD as538be (2017)
Percentile statistics : 20161228.v01 (using entries in the PDB archive December 28th 2016)
RCI : v_1n_11_5_13_A (Berjanski et al., 2005)
PANAV : Wang et al. (2010)
ShiftChecker : trunk28760
Ideal geometry (proteins) : Engh & Huber (2001)
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP) : recalc28949

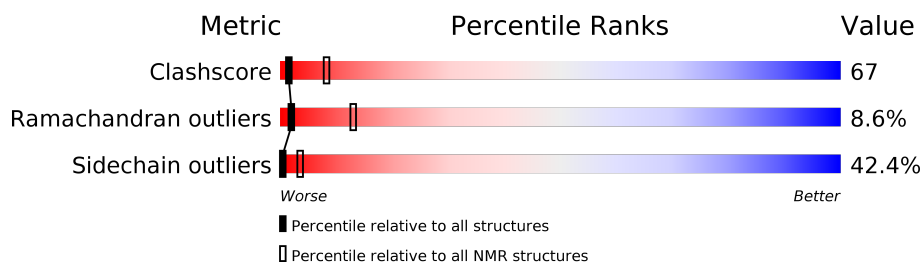
1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

SOLUTION NMR

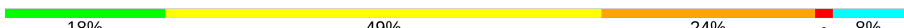
The overall completeness of chemical shifts assignment was not calculated.

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	125131	11601
Ramachandran outliers	121729	10391
Sidechain outliers	121581	10367

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	129	

2 Ensemble composition and analysis

This entry contains 20 models. The atoms present in the NMR models are not consistent. Some calculations may have failed as a result. All residues are included in the validation scores. Model 8 is the overall representative, medoid model (most similar to other models). The authors have identified model 1 as representative, based on the following criterion: *lowest energy*.

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:3-A:22, A:31-A:129 (119)	0.29	8

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 4 clusters and 1 single-model cluster was found.

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

3 Entry composition [i](#)

There are 4 unique types of molecules in this entry. The entry contains 2135 atoms, of which 1054 are hydrogens and 0 are deuteriums.

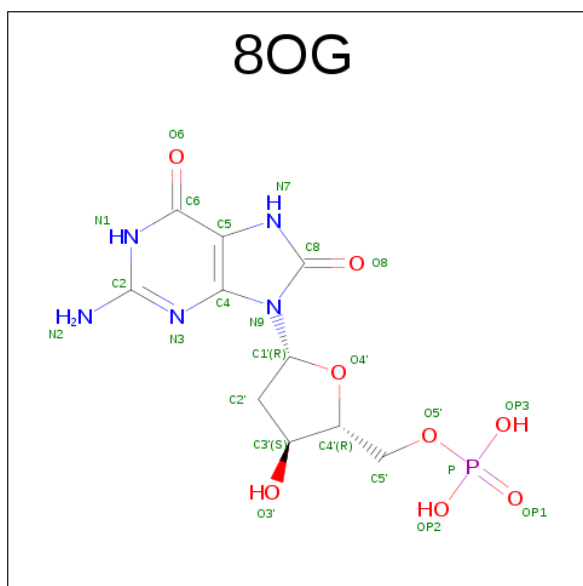
- Molecule 1 is a protein called Mutator mutT protein.

Mol	Chain	Residues	Atoms						Trace
1	A	129	Total	C	H	N	O	S	0
			2092	679	1038	180	191	4	

- Molecule 2 is MAGNESIUM ION (three-letter code: MG) (formula: Mg).

Mol	Chain	Residues	Atoms	
2	A	1	Total	Mg
			1	1

- Molecule 3 is 8-OXO-2'-DEOXY-GUANOSINE-5'-MONOPHOSPHATE (three-letter code: 8OG) (formula: $C_{10}H_{14}N_5O_8P$).



Mol	Chain	Residues	Atoms					
3	A	1	Total	C	H	N	O	P
			36	10	12	5	8	1

- Molecule 4 is water.

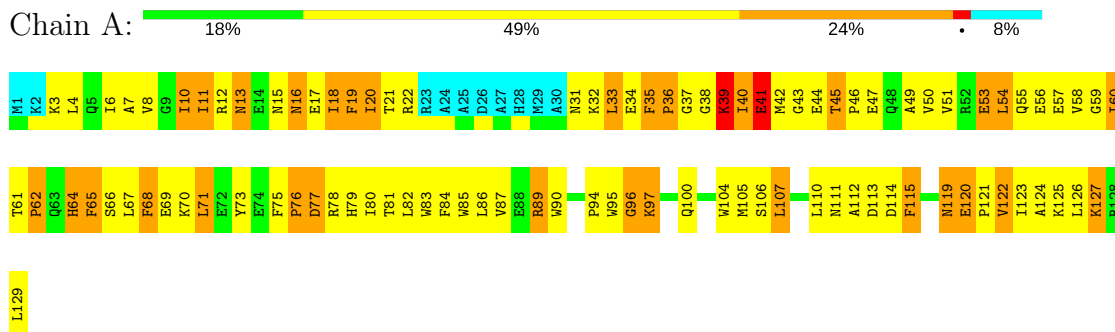
Mol	Chain	Residues	Atoms		
4	A	4	Total	H	O
			6	4	2

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: Mutator mutT protein

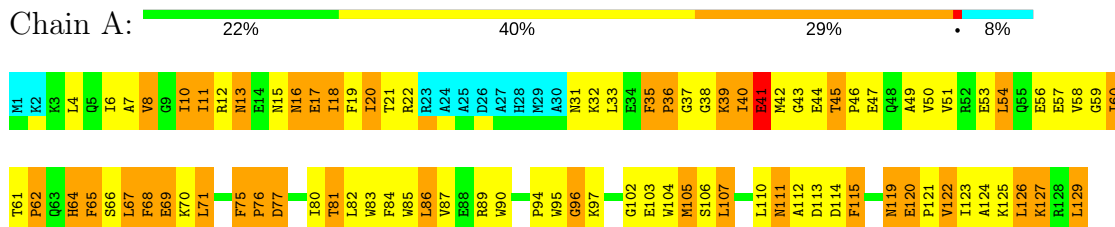


4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

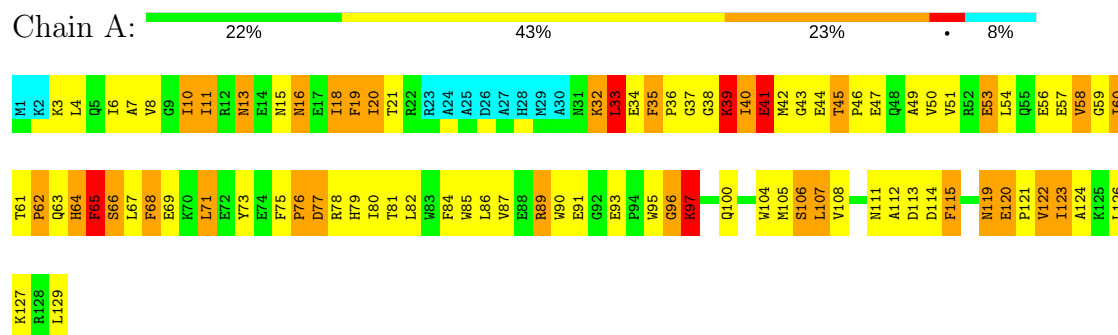
4.2.1 Score per residue for model 1

- Molecule 1: Mutator mutT protein



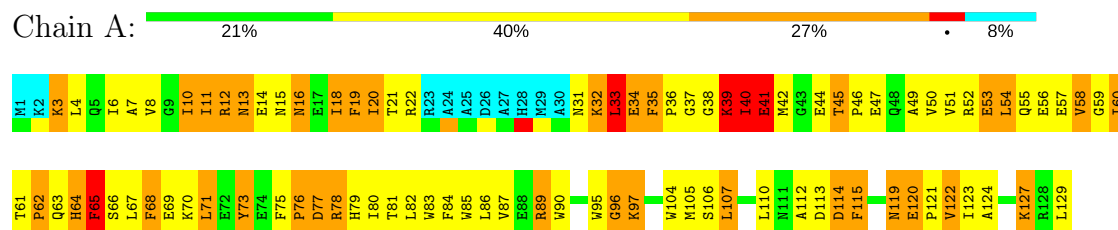
4.2.2 Score per residue for model 2

- Molecule 1: Mutator mutT protein



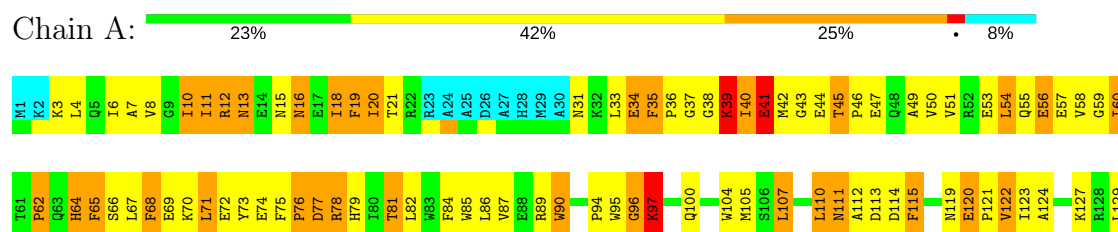
4.2.3 Score per residue for model 3

- Molecule 1: Mutator mutT protein



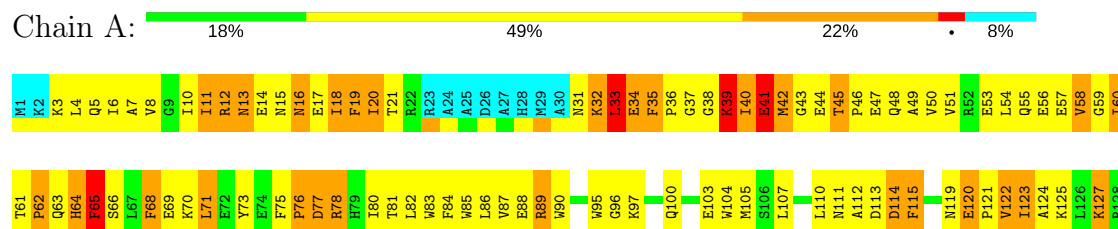
4.2.4 Score per residue for model 4

- Molecule 1: Mutator mutT protein



4.2.5 Score per residue for model 5

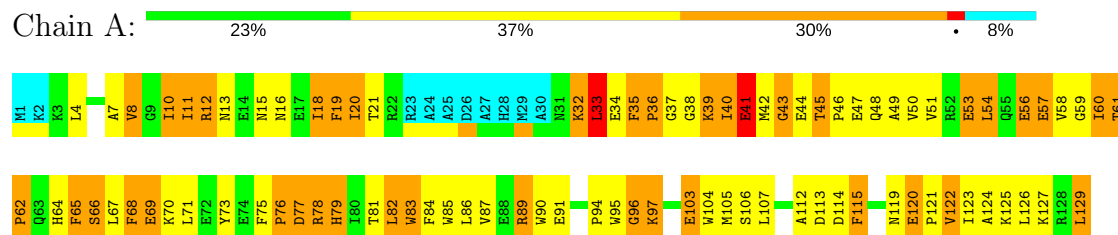
- Molecule 1: Mutator mutT protein



L129

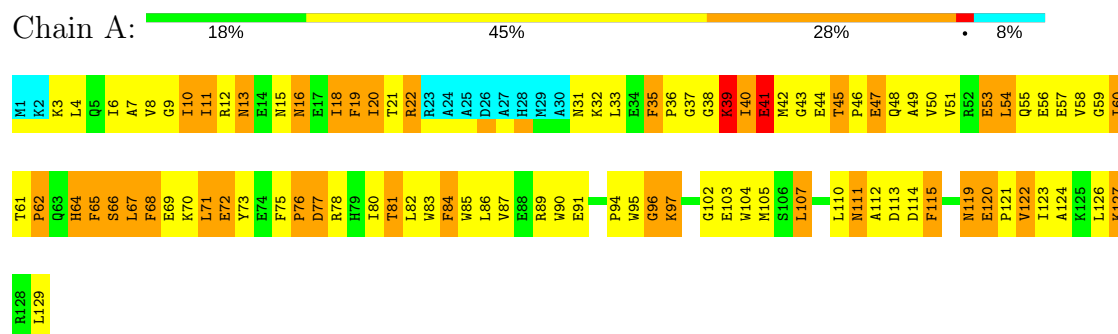
4.2.6 Score per residue for model 6

- Molecule 1: Mutator mutT protein



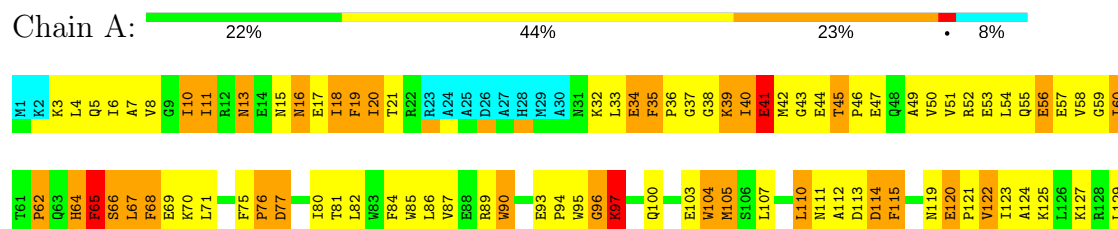
4.2.7 Score per residue for model 7

- Molecule 1: Mutator mutT protein

R128
L129

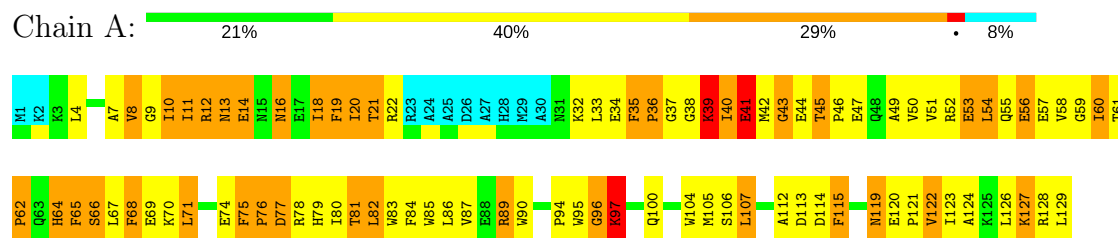
4.2.8 Score per residue for model 8 (medoid)

- Molecule 1: Mutator mutT protein



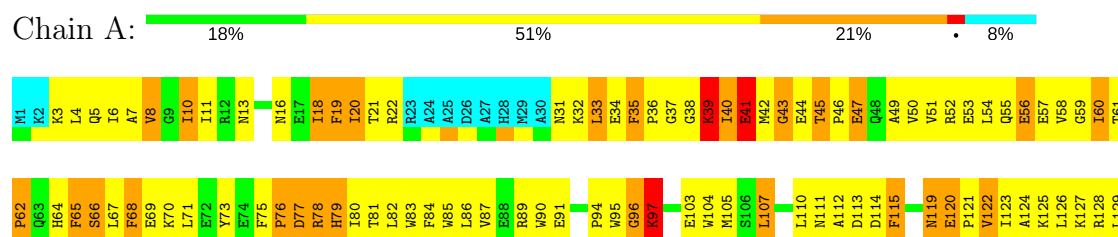
4.2.9 Score per residue for model 9

- Molecule 1: Mutator mutT protein



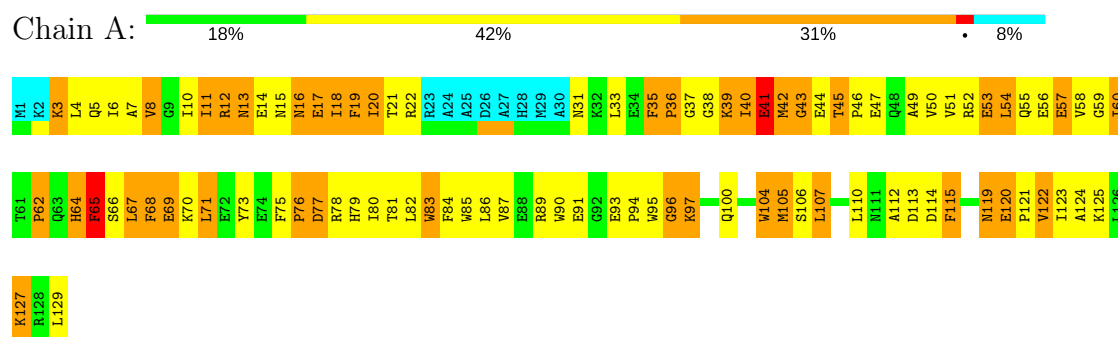
4.2.10 Score per residue for model 10

- Molecule 1: Mutator mutT protein



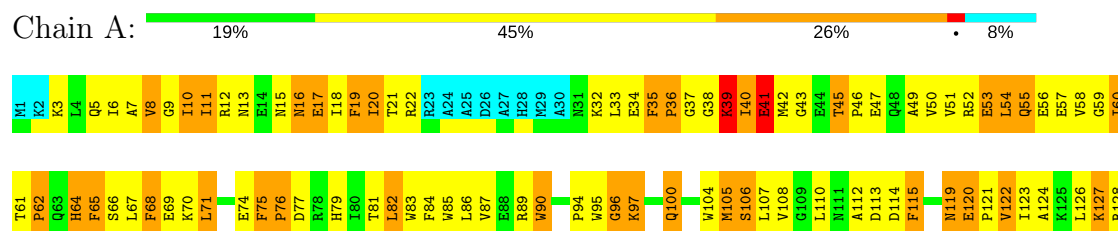
4.2.11 Score per residue for model 11

- Molecule 1: Mutator mutT protein



4.2.12 Score per residue for model 12

- Molecule 1: Mutator mutT protein

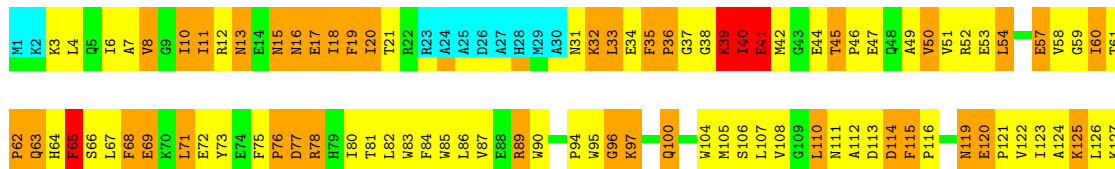


L129

4.2.13 Score per residue for model 13

- Molecule 1: Mutator mutT protein

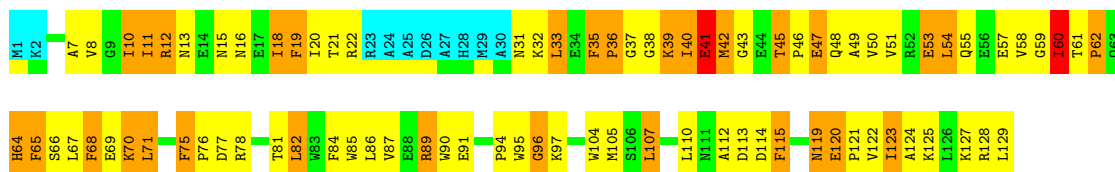
Chain A: 18% 43% 29% 8%

R128
L129

4.2.14 Score per residue for model 14

- Molecule 1: Mutator mutT protein

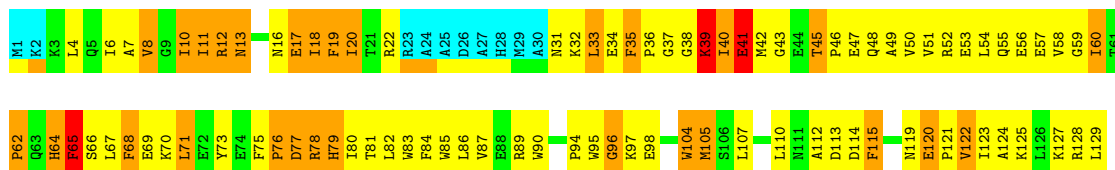
Chain A: 27% 40% 23% 8%



4.2.15 Score per residue for model 15

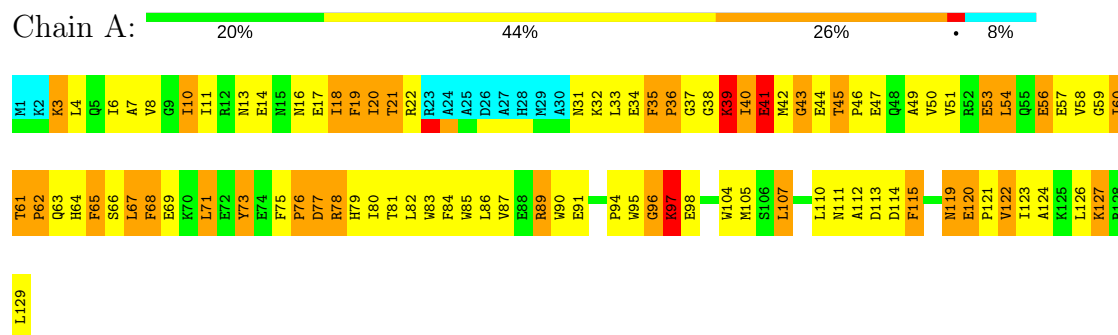
- Molecule 1: Mutator mutT protein

Chain A: 22% 47% 22% 8%



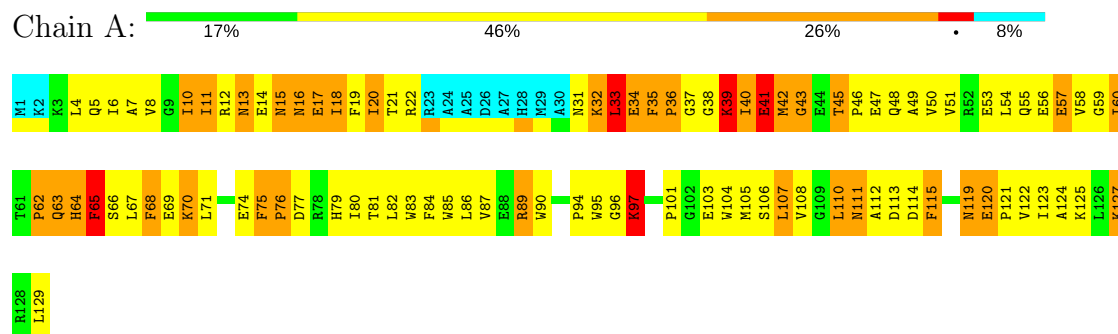
4.2.16 Score per residue for model 16

- Molecule 1: Mutator mutT protein



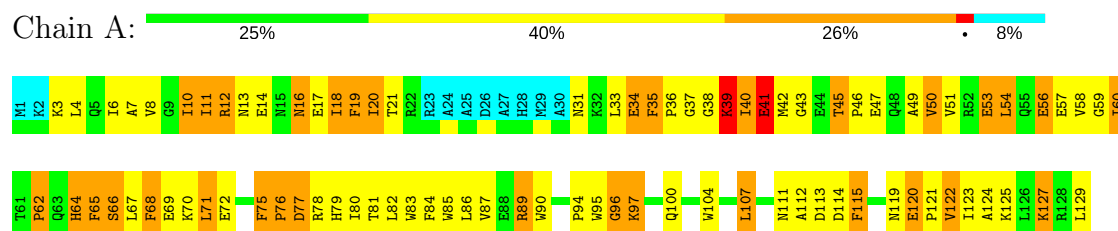
4.2.17 Score per residue for model 17

- Molecule 1: Mutator mutT protein



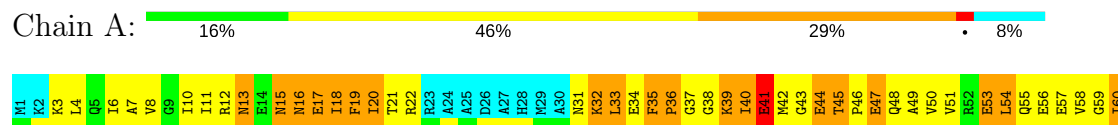
4.2.18 Score per residue for model 18

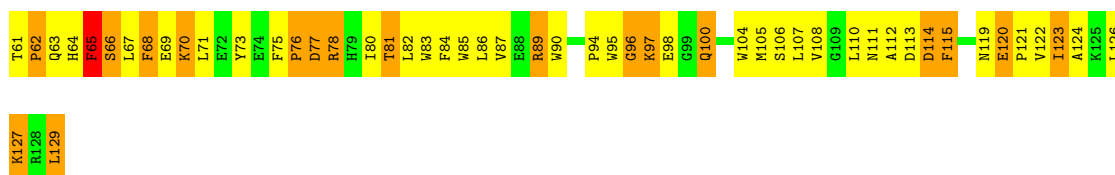
- Molecule 1: Mutator mutT protein



4.2.19 Score per residue for model 19

- Molecule 1: Mutator mutT protein

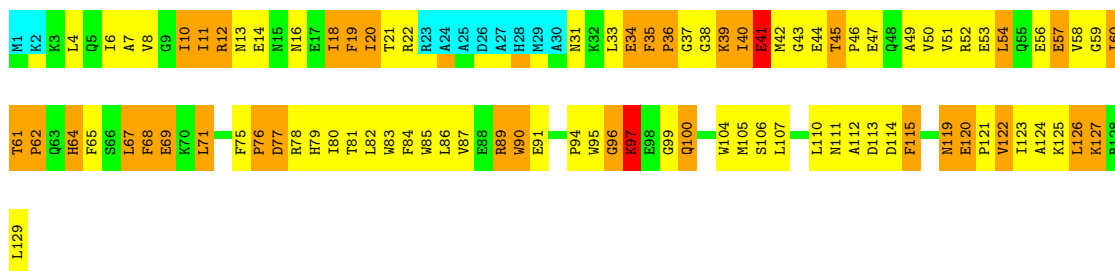




4.2.20 Score per residue for model 20

- Molecule 1: Mutator mutT protein

Chain A: 21% 43% 26% 8%



5 Refinement protocol and experimental data overview

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

Of the 50 calculated structures, 20 were deposited, based on the following criterion: *structures with the least restraint violations*.

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

Software name	Classification	Version
CNS	structure solution	1.1
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 [i](#)

6.1 Standard geometry [i](#)

Bond lengths and bond angles in the following residue types are not validated in this section: 8OG, MG

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	980	960	958	133±7
3	A	24	12	12	2±2
All	All	20140	19520	19400	2656

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 67.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:71:LEU:HD12	1:A:82:LEU:HD12	1.04	1.28	13	4
1:A:7:ALA:HB3	1:A:40:ILE:HG21	1.03	1.30	15	19
1:A:18:ILE:HD11	1:A:20:ILE:HG23	0.95	1.36	3	8
1:A:54:LEU:HD11	1:A:64:HIS:CE1	0.91	2.00	20	8
1:A:64:HIS:ND1	1:A:87:VAL:HG22	0.91	1.81	9	2
1:A:18:ILE:HD13	1:A:18:ILE:O	0.91	1.66	1	5
1:A:64:HIS:CD2	1:A:87:VAL:HG22	0.90	2.01	13	15
1:A:10:ILE:HG22	1:A:18:ILE:HD12	0.90	1.43	13	6
1:A:71:LEU:HD13	1:A:71:LEU:O	0.89	1.66	13	3
1:A:110:LEU:HD22	1:A:111:ASN:N	0.89	1.81	17	3
1:A:54:LEU:HD11	1:A:64:HIS:NE2	0.88	1.84	4	14

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:18:ILE:HG23	1:A:107:LEU:HD23	0.87	1.44	1	2
1:A:47:GLU:O	1:A:51:VAL:HG23	0.87	1.70	7	20
1:A:71:LEU:O	1:A:71:LEU:HD13	0.86	1.70	4	2
1:A:58:VAL:HG12	1:A:60:ILE:HG13	0.85	1.47	10	15
1:A:10:ILE:HG22	1:A:18:ILE:CD1	0.84	2.02	15	6
1:A:10:ILE:HG22	1:A:35:PHE:CE2	0.84	2.08	19	2
1:A:11:ILE:O	1:A:18:ILE:HG12	0.84	1.71	18	10
1:A:54:LEU:HD21	1:A:64:HIS:CG	0.83	2.09	20	4
1:A:50:VAL:HG11	1:A:85:TRP:CE2	0.83	2.09	19	20
1:A:110:LEU:HD23	1:A:110:LEU:O	0.82	1.73	13	1
1:A:4:LEU:HD13	3:A:131:8OG:H3'	0.82	1.51	11	2
1:A:21:THR:HG22	1:A:34:GLU:O	0.82	1.75	13	5
1:A:4:LEU:HD11	1:A:80:ILE:HD12	0.82	1.48	9	10
1:A:64:HIS:CE1	1:A:87:VAL:HG22	0.81	2.10	9	14
1:A:4:LEU:HD12	1:A:6:ILE:HD11	0.81	1.50	15	3
1:A:6:ILE:HD11	3:A:131:8OG:O3'	0.80	1.75	3	3
1:A:82:LEU:HD23	1:A:122:VAL:CG2	0.80	2.06	7	1
1:A:45:THR:HG22	1:A:46:PRO:HD2	0.80	1.53	15	20
1:A:4:LEU:HD13	3:A:131:8OG:C2'	0.80	2.07	3	5
1:A:67:LEU:HA	1:A:85:TRP:HA	0.79	1.53	20	17
1:A:50:VAL:HG11	1:A:85:TRP:NE1	0.78	1.94	11	14
1:A:40:ILE:HD12	1:A:49:ALA:HB3	0.78	1.56	5	14
1:A:20:ILE:HD11	1:A:105:MET:SD	0.77	2.20	3	7
1:A:64:HIS:CG	1:A:87:VAL:HG22	0.77	2.14	18	17
1:A:10:ILE:HD12	1:A:107:LEU:HG	0.77	1.56	10	1
1:A:71:LEU:CD1	1:A:82:LEU:HD12	0.77	2.08	13	3
1:A:4:LEU:CD1	1:A:6:ILE:HD11	0.77	2.09	10	7
1:A:110:LEU:HD23	1:A:111:ASN:N	0.77	1.95	7	3
1:A:7:ALA:CB	1:A:40:ILE:HG21	0.76	2.11	13	9
1:A:18:ILE:HD13	1:A:18:ILE:C	0.75	2.02	18	8
1:A:33:LEU:O	1:A:115:PHE:HB2	0.75	1.81	2	19
1:A:7:ALA:HB2	1:A:40:ILE:HD13	0.75	1.58	1	20
1:A:40:ILE:O	1:A:49:ALA:HB1	0.75	1.82	5	13
1:A:10:ILE:HD13	1:A:35:PHE:CE2	0.75	2.17	20	1
1:A:107:LEU:CD2	1:A:110:LEU:HD13	0.74	2.11	12	4
1:A:50:VAL:HG11	1:A:85:TRP:CZ2	0.74	2.18	16	17
1:A:65:PHE:O	1:A:86:LEU:O	0.74	2.05	5	19
1:A:13:ASN:OD1	1:A:17:GLU:O	0.74	2.05	13	7
1:A:107:LEU:HD13	1:A:107:LEU:O	0.73	1.82	20	5
1:A:64:HIS:CB	1:A:87:VAL:HG13	0.73	2.14	16	20
1:A:82:LEU:HD13	1:A:119:ASN:ND2	0.73	1.98	2	3

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:11:ILE:N	1:A:18:ILE:HD13	0.73	1.99	14	6
1:A:107:LEU:O	1:A:107:LEU:HD13	0.73	1.84	13	6
1:A:10:ILE:HG23	1:A:35:PHE:CD2	0.73	2.19	18	6
1:A:8:VAL:HG23	1:A:35:PHE:CD2	0.72	2.19	20	3
1:A:6:ILE:HB	1:A:82:LEU:HD23	0.72	1.61	16	7
1:A:58:VAL:HG11	1:A:62:PRO:HG3	0.72	1.62	9	15
1:A:58:VAL:HG13	1:A:60:ILE:HD12	0.72	1.61	2	3
1:A:71:LEU:HB2	1:A:122:VAL:HG13	0.71	1.62	20	9
1:A:69:GLU:O	1:A:84:PHE:HB2	0.71	1.85	16	20
1:A:20:ILE:HD12	1:A:33:LEU:HD21	0.71	1.60	3	8
1:A:10:ILE:O	1:A:87:VAL:HB	0.71	1.85	19	19
1:A:112:ALA:HB3	1:A:127:LYS:CD	0.71	2.15	9	15
1:A:71:LEU:HB2	1:A:122:VAL:HG22	0.71	1.63	13	8
1:A:107:LEU:HD23	1:A:110:LEU:HD13	0.71	1.61	12	1
3:A:131:8OG:OP3	3:A:131:8OG:O4'	0.70	2.08	9	1
1:A:11:ILE:HD12	1:A:19:PHE:CE2	0.70	2.21	5	8
1:A:21:THR:HG22	1:A:98:GLU:OE2	0.69	1.87	16	2
1:A:10:ILE:HG22	1:A:35:PHE:CD2	0.69	2.22	5	2
1:A:20:ILE:HG22	1:A:35:PHE:CD1	0.69	2.22	12	4
1:A:11:ILE:N	1:A:18:ILE:HD11	0.69	2.02	15	2
1:A:71:LEU:CB	1:A:122:VAL:HG22	0.69	2.17	5	9
1:A:11:ILE:O	1:A:18:ILE:HB	0.69	1.87	9	6
1:A:21:THR:O	1:A:33:LEU:HA	0.69	1.87	7	16
1:A:11:ILE:HG23	1:A:87:VAL:HG11	0.69	1.64	20	5
1:A:18:ILE:CG2	1:A:107:LEU:HD23	0.69	2.18	1	7
1:A:18:ILE:C	1:A:18:ILE:HD13	0.69	2.08	7	3
1:A:19:PHE:CD1	1:A:19:PHE:O	0.68	2.47	7	2
1:A:8:VAL:O	1:A:84:PHE:HA	0.68	1.88	16	19
1:A:10:ILE:HG22	1:A:18:ILE:HG21	0.68	1.63	12	1
1:A:11:ILE:C	1:A:18:ILE:HG12	0.68	2.09	19	6
1:A:4:LEU:HD23	1:A:78:ARG:CD	0.68	2.19	6	1
1:A:21:THR:HG23	1:A:34:GLU:O	0.68	1.88	19	1
1:A:7:ALA:O	1:A:37:GLY:HA3	0.68	1.88	14	20
1:A:4:LEU:HD13	3:A:131:8OG:H2''	0.68	1.66	3	6
1:A:18:ILE:HG13	1:A:107:LEU:HD23	0.68	1.65	9	3
1:A:40:ILE:HD11	1:A:83:TRP:CZ3	0.68	2.24	19	5
1:A:112:ALA:HB2	1:A:123:ILE:HG22	0.67	1.65	20	7
1:A:126:LEU:O	1:A:129:LEU:HD12	0.67	1.89	20	4
1:A:40:ILE:HD12	1:A:49:ALA:CB	0.67	2.19	19	16
1:A:82:LEU:HD13	1:A:119:ASN:OD1	0.67	1.89	5	3
1:A:71:LEU:HD23	1:A:82:LEU:HD12	0.67	1.65	15	4

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:10:ILE:HG22	1:A:18:ILE:CG2	0.67	2.19	12	1
1:A:20:ILE:HD11	1:A:105:MET:HG2	0.67	1.67	12	3
1:A:68:PHE:HB2	1:A:86:LEU:HD13	0.67	1.67	18	2
1:A:67:LEU:HD23	1:A:67:LEU:O	0.66	1.89	16	1
1:A:10:ILE:HD11	1:A:18:ILE:HG21	0.66	1.67	10	1
1:A:11:ILE:HD13	1:A:19:PHE:CD2	0.66	2.26	20	4
1:A:4:LEU:HD13	3:A:131:8OG:C3'	0.66	2.20	11	3
1:A:33:LEU:O	1:A:33:LEU:HD23	0.66	1.91	20	1
1:A:112:ALA:HB3	1:A:127:LYS:HD2	0.66	1.68	18	12
1:A:54:LEU:HD21	1:A:64:HIS:HB3	0.66	1.67	20	2
1:A:64:HIS:HB2	1:A:87:VAL:HG13	0.66	1.68	19	20
1:A:71:LEU:HD12	1:A:82:LEU:CD1	0.65	2.16	13	3
1:A:11:ILE:HD11	1:A:36:PRO:HG3	0.65	1.68	6	6
1:A:84:PHE:CE1	1:A:122:VAL:HG21	0.65	2.26	11	7
1:A:19:PHE:O	1:A:19:PHE:CG	0.65	2.49	14	7
1:A:10:ILE:HD12	1:A:35:PHE:CE2	0.65	2.27	13	3
1:A:7:ALA:O	1:A:37:GLY:O	0.65	2.15	12	20
1:A:19:PHE:CG	1:A:19:PHE:O	0.65	2.50	18	9
1:A:6:ILE:HD11	3:A:131:8OG:H2''	0.65	1.69	12	3
1:A:18:ILE:CG1	1:A:107:LEU:HD23	0.65	2.22	10	3
1:A:18:ILE:HG21	1:A:107:LEU:HD23	0.64	1.68	5	4
1:A:54:LEU:HD21	1:A:64:HIS:CD2	0.64	2.27	7	5
1:A:11:ILE:HG22	1:A:90:TRP:CE3	0.64	2.28	1	16
1:A:18:ILE:CD1	1:A:20:ILE:HG23	0.64	2.23	4	5
1:A:20:ILE:HD11	1:A:105:MET:CG	0.64	2.23	12	5
1:A:4:LEU:HD13	3:A:131:8OG:C8	0.64	2.23	15	1
1:A:54:LEU:HD21	1:A:64:HIS:CB	0.64	2.23	20	1
1:A:71:LEU:HD22	1:A:121:PRO:HB2	0.64	1.69	5	8
1:A:38:GLY:O	1:A:39:LYS:CB	0.64	2.46	20	20
1:A:67:LEU:HD21	1:A:70:LYS:HD2	0.64	1.67	17	1
1:A:110:LEU:HD22	1:A:110:LEU:C	0.63	2.13	17	2
1:A:10:ILE:CG2	1:A:18:ILE:HG21	0.63	2.23	12	2
1:A:4:LEU:HD13	3:A:131:8OG:O3'	0.63	1.92	20	1
1:A:110:LEU:O	1:A:110:LEU:HD13	0.63	1.94	8	3
1:A:18:ILE:CD1	1:A:107:LEU:HD12	0.63	2.24	12	1
1:A:10:ILE:CB	1:A:18:ILE:HG21	0.63	2.23	12	1
1:A:84:PHE:CD2	1:A:122:VAL:HG11	0.62	2.29	13	1
1:A:11:ILE:O	1:A:18:ILE:HG23	0.62	1.93	12	1
1:A:54:LEU:O	1:A:58:VAL:HG23	0.62	1.94	10	16
1:A:125:LYS:HE2	1:A:126:LEU:HD22	0.62	1.72	13	1
1:A:4:LEU:O	1:A:4:LEU:HD12	0.62	1.94	13	7

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:22:ARG:HG3	1:A:33:LEU:HD13	0.62	1.72	16	2
1:A:54:LEU:HD11	1:A:64:HIS:CD2	0.62	2.29	16	10
1:A:110:LEU:C	1:A:110:LEU:HD22	0.62	2.15	4	1
1:A:7:ALA:O	1:A:37:GLY:CA	0.62	2.48	19	20
1:A:35:PHE:N	1:A:35:PHE:CD1	0.61	2.68	13	9
1:A:67:LEU:HD21	1:A:70:LYS:HD3	0.61	1.71	19	1
1:A:63:GLN:O	1:A:63:GLN:CG	0.61	2.48	13	2
1:A:4:LEU:HD23	1:A:78:ARG:HD2	0.61	1.72	6	1
1:A:7:ALA:N	1:A:40:ILE:HG21	0.61	2.10	3	2
1:A:7:ALA:CB	1:A:40:ILE:HD13	0.61	2.25	18	18
1:A:60:ILE:HG21	1:A:91:GLU:O	0.61	1.96	20	3
1:A:4:LEU:HD22	3:A:131:8OG:H2"	0.61	1.72	2	1
1:A:20:ILE:HG22	1:A:34:GLU:O	0.61	1.96	9	3
1:A:58:VAL:HG22	1:A:60:ILE:HD11	0.60	1.73	3	3
1:A:11:ILE:HG21	1:A:19:PHE:CD2	0.60	2.30	19	1
1:A:62:PRO:CB	1:A:90:TRP:HA	0.60	2.27	16	18
1:A:10:ILE:HB	1:A:18:ILE:HG13	0.60	1.71	13	3
1:A:40:ILE:HG13	1:A:41:GLU:N	0.60	2.12	11	17
1:A:22:ARG:CG	1:A:33:LEU:HD13	0.60	2.26	16	2
1:A:13:ASN:HB3	1:A:90:TRP:CH2	0.60	2.32	19	11
1:A:73:TYR:O	1:A:80:ILE:HG22	0.60	1.97	19	8
1:A:12:ARG:HA	1:A:18:ILE:HG13	0.60	1.74	20	1
1:A:22:ARG:HB2	1:A:33:LEU:HD13	0.60	1.74	10	5
1:A:10:ILE:CG2	1:A:18:ILE:HD12	0.60	2.25	13	1
1:A:35:PHE:CD1	1:A:35:PHE:N	0.59	2.70	20	8
1:A:6:ILE:HB	1:A:82:LEU:HD12	0.59	1.74	7	1
1:A:110:LEU:HD11	1:A:123:ILE:HG23	0.59	1.73	17	3
1:A:20:ILE:HD13	1:A:33:LEU:HD21	0.59	1.73	2	1
1:A:67:LEU:O	1:A:67:LEU:HD23	0.59	1.96	7	1
1:A:4:LEU:HD12	1:A:4:LEU:O	0.59	1.97	5	7
1:A:110:LEU:HD11	1:A:123:ILE:CG2	0.59	2.27	17	3
1:A:120:GLU:N	1:A:121:PRO:CD	0.59	2.66	2	20
1:A:72:GLU:CG	1:A:81:THR:HG22	0.59	2.26	7	1
1:A:41:GLU:O	1:A:43:GLY:N	0.59	2.36	11	18
1:A:18:ILE:HD12	1:A:18:ILE:C	0.58	2.19	8	4
1:A:71:LEU:C	1:A:71:LEU:HD13	0.58	2.19	10	2
1:A:71:LEU:HD21	1:A:73:TYR:CE1	0.58	2.33	11	1
1:A:63:GLN:O	1:A:63:GLN:HG3	0.58	1.98	17	2
1:A:86:LEU:HD13	1:A:86:LEU:O	0.58	1.98	3	1
1:A:10:ILE:HD13	1:A:107:LEU:HD21	0.58	1.74	6	2
1:A:11:ILE:H	1:A:18:ILE:HD13	0.58	1.59	14	5

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:10:ILE:HD13	1:A:10:ILE:N	0.58	2.14	18	1
1:A:75:PHE:O	1:A:77:ASP:N	0.58	2.37	17	20
1:A:4:LEU:CD1	1:A:80:ILE:HD12	0.58	2.28	9	1
1:A:19:PHE:O	1:A:19:PHE:CD1	0.58	2.57	1	1
1:A:68:PHE:HB2	1:A:86:LEU:HD23	0.58	1.76	1	1
1:A:40:ILE:HD12	1:A:50:VAL:CB	0.58	2.28	13	1
1:A:13:ASN:OD1	1:A:90:TRP:CH2	0.58	2.56	13	7
1:A:95:TRP:CE3	1:A:96:GLY:N	0.58	2.72	6	20
1:A:11:ILE:O	1:A:18:ILE:CB	0.58	2.52	16	5
1:A:8:VAL:HG13	1:A:84:PHE:CE1	0.58	2.34	13	2
1:A:58:VAL:N	1:A:96:GLY:HA3	0.57	2.15	19	20
1:A:60:ILE:HD11	1:A:94:PRO:HA	0.57	1.76	6	11
1:A:67:LEU:HD11	1:A:70:LYS:HB3	0.57	1.75	14	4
1:A:107:LEU:HD22	1:A:110:LEU:HD22	0.57	1.76	12	1
1:A:82:LEU:HD22	1:A:119:ASN:OD1	0.57	1.98	4	1
1:A:4:LEU:HD12	1:A:6:ILE:CD1	0.57	2.27	10	3
1:A:58:VAL:HG22	1:A:60:ILE:CD1	0.57	2.28	3	3
1:A:33:LEU:HG	1:A:33:LEU:O	0.57	1.99	1	2
1:A:60:ILE:O	1:A:62:PRO:HD3	0.57	2.00	19	10
1:A:71:LEU:HD13	1:A:71:LEU:C	0.57	2.20	3	3
1:A:107:LEU:HD22	1:A:110:LEU:HD13	0.56	1.77	3	3
1:A:75:PHE:HB2	1:A:78:ARG:O	0.56	1.99	14	2
1:A:76:PRO:O	1:A:77:ASP:CB	0.56	2.53	7	19
1:A:40:ILE:CD1	1:A:83:TRP:CZ3	0.56	2.88	11	4
1:A:90:TRP:CD1	1:A:90:TRP:O	0.56	2.58	20	10
1:A:18:ILE:CD1	1:A:18:ILE:C	0.56	2.72	18	6
1:A:11:ILE:HD13	1:A:19:PHE:CE2	0.56	2.36	11	2
1:A:10:ILE:CD1	1:A:18:ILE:HG21	0.56	2.31	10	1
1:A:6:ILE:CG2	1:A:82:LEU:HD23	0.56	2.30	1	2
1:A:32:LYS:O	1:A:34:GLU:N	0.56	2.38	17	7
1:A:54:LEU:CD1	1:A:64:HIS:CE1	0.56	2.89	17	6
1:A:107:LEU:CD1	1:A:110:LEU:HD13	0.56	2.30	15	1
1:A:36:PRO:HB3	1:A:57:GLU:HB3	0.56	1.76	20	6
1:A:75:PHE:HB2	1:A:78:ARG:HB3	0.55	1.78	2	10
1:A:10:ILE:N	1:A:10:ILE:HD13	0.55	2.15	2	2
1:A:18:ILE:HD11	1:A:20:ILE:CG2	0.55	2.29	14	1
1:A:59:GLY:HA3	1:A:95:TRP:CZ2	0.55	2.36	17	19
1:A:10:ILE:HG23	1:A:18:ILE:CG1	0.55	2.31	17	2
1:A:11:ILE:HG23	1:A:90:TRP:CZ3	0.55	2.36	19	1
1:A:10:ILE:HG23	1:A:35:PHE:HD2	0.55	1.61	15	1
1:A:11:ILE:HG22	1:A:90:TRP:HE3	0.55	1.60	11	16

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:126:LEU:O	1:A:129:LEU:HB3	0.55	2.02	1	1
1:A:7:ALA:HB2	1:A:40:ILE:CD1	0.55	2.32	10	17
1:A:10:ILE:HG23	1:A:18:ILE:HG21	0.55	1.77	9	1
1:A:19:PHE:O	1:A:19:PHE:CD2	0.55	2.60	2	2
1:A:106:SER:HB2	1:A:108:VAL:HG12	0.55	1.79	17	4
1:A:6:ILE:HD11	3:A:131:8OG:C2'	0.55	2.32	12	1
1:A:18:ILE:HD13	1:A:19:PHE:N	0.54	2.17	15	2
1:A:6:ILE:O	1:A:82:LEU:HA	0.54	2.02	20	6
1:A:69:GLU:OE1	1:A:122:VAL:HG12	0.54	2.03	6	1
1:A:107:LEU:HD21	1:A:110:LEU:HD13	0.54	1.79	20	1
1:A:112:ALA:HB3	1:A:127:LYS:CE	0.54	2.33	10	4
1:A:22:ARG:HB3	1:A:33:LEU:HD12	0.54	1.78	20	1
1:A:20:ILE:HG23	1:A:35:PHE:CD2	0.54	2.38	18	3
1:A:112:ALA:HA	1:A:115:PHE:CD1	0.54	2.37	15	17
1:A:125:LYS:CE	1:A:126:LEU:HD22	0.54	2.33	13	1
1:A:18:ILE:HG21	1:A:107:LEU:HD13	0.54	1.80	15	1
1:A:22:ARG:HD3	1:A:33:LEU:HD22	0.54	1.79	9	1
1:A:11:ILE:N	1:A:18:ILE:CG1	0.54	2.71	18	5
1:A:20:ILE:HD12	1:A:33:LEU:HD11	0.54	1.79	12	2
1:A:10:ILE:CD1	1:A:86:LEU:HD22	0.54	2.33	7	1
1:A:112:ALA:HB1	1:A:120:GLU:HG3	0.54	1.80	9	2
1:A:58:VAL:HG12	1:A:60:ILE:HG22	0.54	1.79	19	2
1:A:21:THR:HG22	1:A:100:GLN:O	0.54	2.03	5	1
1:A:18:ILE:C	1:A:18:ILE:HD12	0.53	2.23	14	3
1:A:19:PHE:C	1:A:19:PHE:CD1	0.53	2.82	19	2
1:A:71:LEU:HD21	1:A:73:TYR:CD1	0.53	2.38	11	1
1:A:40:ILE:HD12	1:A:50:VAL:HB	0.53	1.79	13	1
1:A:112:ALA:HB2	1:A:123:ILE:CG2	0.53	2.32	18	4
1:A:62:PRO:CB	1:A:89:ARG:O	0.53	2.56	20	3
1:A:19:PHE:CB	1:A:90:TRP:CH2	0.53	2.91	1	2
1:A:18:ILE:HD13	1:A:20:ILE:HG13	0.53	1.80	2	1
1:A:11:ILE:O	1:A:18:ILE:HA	0.53	2.03	3	10
1:A:11:ILE:O	1:A:18:ILE:CG1	0.53	2.56	4	6
1:A:82:LEU:HD21	1:A:119:ASN:ND2	0.53	2.19	12	1
1:A:8:VAL:HG21	1:A:35:PHE:CD1	0.53	2.39	3	4
1:A:13:ASN:ND2	1:A:90:TRP:CE2	0.53	2.77	4	3
1:A:13:ASN:OD1	1:A:104:TRP:HB3	0.53	2.03	11	1
1:A:10:ILE:HD13	1:A:107:LEU:CD2	0.53	2.33	6	2
1:A:35:PHE:HZ	1:A:123:ILE:HD11	0.53	1.64	20	1
1:A:4:LEU:HD11	1:A:80:ILE:CD1	0.53	2.27	9	1
1:A:18:ILE:HG13	1:A:20:ILE:HD13	0.53	1.80	8	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:64:HIS:NE2	1:A:87:VAL:HG22	0.53	2.18	10	5
1:A:38:GLY:O	1:A:39:LYS:HB3	0.53	2.04	12	18
1:A:10:ILE:HG23	1:A:35:PHE:CE2	0.53	2.39	8	3
1:A:68:PHE:CB	1:A:86:LEU:HD13	0.53	2.33	18	1
1:A:18:ILE:HG23	1:A:18:ILE:O	0.53	2.04	15	2
1:A:5:GLN:C	1:A:6:ILE:HD12	0.53	2.24	12	3
1:A:15:ASN:O	1:A:16:ASN:CB	0.53	2.56	12	14
1:A:10:ILE:HG23	1:A:35:PHE:CG	0.53	2.39	20	1
1:A:22:ARG:HD3	1:A:33:LEU:HD13	0.52	1.81	10	1
1:A:9:GLY:O	1:A:35:PHE:HB2	0.52	2.04	9	3
1:A:115:PHE:CD1	1:A:115:PHE:C	0.52	2.82	5	8
1:A:8:VAL:HG13	1:A:84:PHE:CD1	0.52	2.39	13	3
1:A:115:PHE:C	1:A:115:PHE:CD1	0.52	2.82	3	12
1:A:64:HIS:CA	1:A:87:VAL:HG13	0.52	2.35	14	14
1:A:19:PHE:HB3	1:A:90:TRP:CH2	0.52	2.39	1	4
1:A:64:HIS:CE1	1:A:87:VAL:CG2	0.52	2.93	15	11
1:A:18:ILE:C	1:A:18:ILE:CD1	0.52	2.78	7	5
1:A:126:LEU:O	1:A:129:LEU:HD22	0.52	2.03	1	1
1:A:11:ILE:CG2	1:A:90:TRP:CE3	0.52	2.93	16	4
1:A:40:ILE:O	1:A:41:GLU:C	0.52	2.48	3	2
1:A:18:ILE:HG22	1:A:107:LEU:HB2	0.52	1.80	18	3
1:A:33:LEU:HD12	1:A:114:ASP:HB3	0.52	1.81	5	5
1:A:58:VAL:HG12	1:A:60:ILE:CG1	0.52	2.31	20	2
1:A:68:PHE:CD1	1:A:69:GLU:N	0.52	2.78	7	20
1:A:20:ILE:CG2	1:A:35:PHE:CD2	0.52	2.93	19	8
1:A:12:ARG:O	1:A:89:ARG:HA	0.52	2.05	13	2
1:A:84:PHE:CZ	1:A:122:VAL:HG21	0.52	2.40	9	2
1:A:18:ILE:HD12	1:A:107:LEU:HD23	0.52	1.82	16	2
1:A:10:ILE:HG12	1:A:18:ILE:HG12	0.52	1.80	17	1
1:A:83:TRP:N	1:A:83:TRP:CD1	0.52	2.78	6	3
1:A:59:GLY:HA3	1:A:95:TRP:CE2	0.51	2.41	15	19
1:A:71:LEU:CD2	1:A:82:LEU:HD12	0.51	2.34	16	2
1:A:71:LEU:HD22	1:A:82:LEU:HD12	0.51	1.81	11	2
1:A:4:LEU:HD22	3:A:131:8OG:C2'	0.51	2.34	2	1
1:A:75:PHE:O	1:A:78:ARG:N	0.51	2.43	15	8
1:A:13:ASN:HB3	1:A:90:TRP:CZ3	0.51	2.40	1	11
1:A:84:PHE:CE2	1:A:122:VAL:HG11	0.51	2.40	13	1
1:A:62:PRO:HB2	1:A:89:ARG:O	0.51	2.05	20	4
1:A:71:LEU:CD2	1:A:73:TYR:CE1	0.51	2.94	11	1
1:A:54:LEU:CD1	1:A:64:HIS:NE2	0.51	2.73	2	2
1:A:20:ILE:HB	1:A:33:LEU:HD21	0.51	1.82	14	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:110:LEU:HD11	1:A:127:LYS:HB2	0.51	1.81	8	1
1:A:71:LEU:N	1:A:82:LEU:O	0.51	2.44	9	16
1:A:13:ASN:CG	1:A:90:TRP:CH2	0.51	2.84	10	2
1:A:45:THR:CG2	1:A:46:PRO:HD2	0.51	2.34	12	20
1:A:60:ILE:HG23	1:A:95:TRP:NE1	0.51	2.21	9	5
1:A:66:SER:O	1:A:85:TRP:HA	0.51	2.06	14	15
1:A:18:ILE:CG2	1:A:18:ILE:O	0.51	2.59	20	1
1:A:33:LEU:O	1:A:33:LEU:HG	0.51	2.06	10	2
1:A:119:ASN:C	1:A:121:PRO:HD2	0.51	2.26	10	13
1:A:106:SER:OG	1:A:108:VAL:HG12	0.51	2.06	19	1
1:A:40:ILE:CG1	1:A:41:GLU:N	0.50	2.72	3	2
1:A:64:HIS:HA	1:A:87:VAL:HG13	0.50	1.84	6	11
1:A:53:GLU:O	1:A:57:GLU:N	0.50	2.44	17	20
1:A:10:ILE:HG21	1:A:107:LEU:HD11	0.50	1.82	12	1
1:A:83:TRP:CD1	1:A:83:TRP:N	0.50	2.80	11	3
1:A:71:LEU:HD22	1:A:72:GLU:N	0.50	2.22	4	3
1:A:13:ASN:CB	1:A:90:TRP:CH2	0.50	2.94	5	3
1:A:120:GLU:O	1:A:124:ALA:N	0.50	2.41	2	20
1:A:11:ILE:O	1:A:90:TRP:HZ3	0.50	1.89	15	2
1:A:60:ILE:HG23	1:A:95:TRP:HE1	0.50	1.67	17	8
1:A:60:ILE:HD12	1:A:90:TRP:HB2	0.50	1.83	14	1
1:A:10:ILE:HG23	1:A:18:ILE:HG12	0.50	1.82	17	2
1:A:112:ALA:HB3	1:A:127:LYS:HD3	0.49	1.83	9	4
1:A:40:ILE:HD12	1:A:83:TRP:CZ3	0.49	2.41	11	1
1:A:17:GLU:HG3	1:A:104:TRP:C	0.49	2.28	15	1
1:A:84:PHE:CZ	1:A:119:ASN:ND2	0.49	2.81	9	2
1:A:67:LEU:O	1:A:67:LEU:HD12	0.49	2.07	10	2
1:A:59:GLY:C	1:A:95:TRP:CZ2	0.49	2.86	5	13
1:A:10:ILE:HD11	1:A:107:LEU:HD11	0.49	1.84	16	1
1:A:123:ILE:HG22	1:A:127:LYS:HB2	0.49	1.84	5	6
1:A:64:HIS:C	1:A:64:HIS:CD2	0.49	2.85	12	6
1:A:86:LEU:C	1:A:86:LEU:HD13	0.49	2.28	17	2
1:A:13:ASN:ND2	1:A:90:TRP:CD2	0.49	2.81	3	3
1:A:19:PHE:CE2	1:A:94:PRO:HB2	0.49	2.42	18	10
1:A:13:ASN:CG	1:A:17:GLU:O	0.49	2.51	1	3
1:A:11:ILE:O	1:A:11:ILE:HG23	0.49	2.08	19	1
1:A:18:ILE:O	1:A:18:ILE:HG13	0.49	2.07	11	2
1:A:59:GLY:CA	1:A:95:TRP:CZ2	0.49	2.96	5	18
1:A:64:HIS:CD2	1:A:87:VAL:CG2	0.49	2.95	17	3
1:A:46:PRO:HA	1:A:83:TRP:CH2	0.49	2.43	11	1
1:A:54:LEU:HD11	1:A:64:HIS:ND1	0.49	2.22	14	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:107:LEU:HD12	1:A:110:LEU:HD13	0.49	1.84	15	1
1:A:56:GLU:O	1:A:97:LYS:N	0.48	2.46	10	10
1:A:20:ILE:HG22	1:A:35:PHE:HD1	0.48	1.67	4	2
1:A:10:ILE:HD12	1:A:35:PHE:CD2	0.48	2.43	9	1
1:A:86:LEU:HD13	1:A:86:LEU:C	0.48	2.29	3	3
1:A:115:PHE:CE2	1:A:123:ILE:HG13	0.48	2.43	20	5
1:A:61:THR:O	1:A:61:THR:OG1	0.48	2.31	6	1
1:A:12:ARG:HB2	1:A:87:VAL:O	0.48	2.08	18	6
1:A:60:ILE:HD11	1:A:94:PRO:CA	0.48	2.38	20	3
1:A:21:THR:HG21	1:A:100:GLN:HG2	0.48	1.85	19	1
1:A:11:ILE:H	1:A:18:ILE:HD11	0.48	1.69	15	1
1:A:8:VAL:CG2	1:A:35:PHE:CE2	0.48	2.97	17	5
1:A:71:LEU:HD22	1:A:71:LEU:C	0.48	2.29	18	1
1:A:10:ILE:HG22	1:A:18:ILE:CG1	0.48	2.38	7	2
1:A:72:GLU:HG3	1:A:81:THR:HG22	0.48	1.83	7	1
1:A:8:VAL:CG2	1:A:35:PHE:CD1	0.48	2.97	7	6
1:A:8:VAL:CG2	1:A:35:PHE:CD2	0.48	2.96	13	3
1:A:110:LEU:C	1:A:110:LEU:HD23	0.48	2.28	1	2
1:A:20:ILE:CG2	1:A:35:PHE:CD1	0.48	2.96	13	4
1:A:18:ILE:HG13	1:A:18:ILE:O	0.48	2.07	17	4
1:A:13:ASN:CG	1:A:14:GLU:N	0.48	2.67	20	5
1:A:11:ILE:CD1	1:A:19:PHE:CD2	0.48	2.97	20	2
1:A:10:ILE:CB	1:A:18:ILE:HG13	0.48	2.39	19	2
1:A:40:ILE:HD11	1:A:83:TRP:CE3	0.48	2.44	12	1
1:A:11:ILE:HA	1:A:87:VAL:HB	0.48	1.84	20	2
1:A:71:LEU:C	1:A:71:LEU:HD22	0.48	2.29	4	2
1:A:40:ILE:HG13	1:A:49:ALA:HB1	0.47	1.86	3	2
1:A:89:ARG:HG3	1:A:90:TRP:N	0.47	2.24	12	4
1:A:107:LEU:HD11	1:A:110:LEU:HD22	0.47	1.86	3	2
1:A:66:SER:O	1:A:86:LEU:N	0.47	2.46	8	12
1:A:22:ARG:CB	1:A:33:LEU:HD13	0.47	2.40	12	3
1:A:10:ILE:O	1:A:87:VAL:CB	0.47	2.63	18	7
1:A:86:LEU:O	1:A:86:LEU:HD12	0.47	2.08	12	1
1:A:120:GLU:O	1:A:124:ALA:HB2	0.47	2.08	17	16
1:A:13:ASN:CB	1:A:17:GLU:O	0.47	2.63	16	2
1:A:13:ASN:HB2	1:A:90:TRP:CH2	0.47	2.44	12	3
1:A:58:VAL:CG1	1:A:60:ILE:HG13	0.47	2.40	12	2
1:A:21:THR:O	1:A:21:THR:HG23	0.47	2.09	13	1
1:A:123:ILE:O	1:A:127:LYS:HB3	0.47	2.09	14	10
1:A:19:PHE:CE2	1:A:94:PRO:CB	0.47	2.98	4	4
1:A:4:LEU:HD23	1:A:78:ARG:HD3	0.47	1.87	4	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:73:TYR:CE1	1:A:80:ILE:CG2	0.47	2.98	11	1
1:A:19:PHE:HA	1:A:103:GLU:O	0.47	2.09	10	2
1:A:11:ILE:HD12	1:A:19:PHE:HE2	0.47	1.69	5	5
1:A:74:GLU:CB	1:A:79:HIS:CG	0.47	2.98	17	3
1:A:82:LEU:HD23	1:A:122:VAL:HG21	0.47	1.82	7	1
1:A:18:ILE:HD13	1:A:107:LEU:HD12	0.47	1.84	12	1
1:A:22:ARG:HB2	1:A:33:LEU:CD1	0.47	2.39	1	1
1:A:82:LEU:HD22	1:A:119:ASN:ND2	0.47	2.24	16	1
1:A:79:HIS:CD2	1:A:79:HIS:N	0.47	2.83	4	1
1:A:81:THR:HG22	1:A:83:TRP:CD1	0.47	2.45	6	1
1:A:10:ILE:CG2	1:A:35:PHE:CD2	0.47	2.98	11	2
1:A:35:PHE:CB	1:A:36:PRO:HD2	0.47	2.40	6	14
1:A:123:ILE:O	1:A:127:LYS:CB	0.47	2.63	3	18
1:A:112:ALA:O	1:A:115:PHE:CD1	0.47	2.68	18	9
1:A:11:ILE:HD13	1:A:19:PHE:HD2	0.47	1.69	12	2
1:A:18:ILE:HD12	1:A:20:ILE:HG23	0.47	1.87	7	1
1:A:64:HIS:CD2	1:A:64:HIS:C	0.46	2.87	1	8
1:A:73:TYR:CZ	1:A:80:ILE:HG21	0.46	2.45	11	1
1:A:8:VAL:CG1	1:A:84:PHE:CE1	0.46	2.98	13	2
1:A:5:GLN:O	1:A:41:GLU:HB3	0.46	2.11	17	3
1:A:10:ILE:O	1:A:87:VAL:CG2	0.46	2.63	12	1
1:A:15:ASN:O	1:A:16:ASN:ND2	0.46	2.48	3	1
1:A:54:LEU:CD2	1:A:64:HIS:CD2	0.46	2.98	9	1
1:A:84:PHE:CE2	1:A:122:VAL:CG1	0.46	2.98	13	1
1:A:79:HIS:N	1:A:79:HIS:CD2	0.46	2.82	20	1
1:A:17:GLU:HB3	1:A:105:MET:C	0.46	2.31	11	2
1:A:11:ILE:N	1:A:18:ILE:HG12	0.46	2.25	18	1
1:A:79:HIS:CE1	1:A:81:THR:OG1	0.46	2.68	6	1
1:A:40:ILE:HG13	1:A:49:ALA:CB	0.46	2.40	13	2
1:A:50:VAL:HG22	1:A:54:LEU:HD12	0.46	1.88	20	1
1:A:8:VAL:HG21	1:A:35:PHE:CE1	0.46	2.45	2	3
1:A:66:SER:O	1:A:85:TRP:CA	0.46	2.63	16	12
1:A:10:ILE:CG2	1:A:20:ILE:HG23	0.46	2.41	20	1
1:A:95:TRP:CD2	1:A:96:GLY:N	0.46	2.84	6	12
1:A:46:PRO:O	1:A:83:TRP:CZ3	0.46	2.68	11	2
1:A:71:LEU:O	1:A:71:LEU:HG	0.46	2.11	9	1
1:A:18:ILE:N	1:A:105:MET:O	0.46	2.49	12	10
1:A:64:HIS:CG	1:A:87:VAL:HG13	0.46	2.44	2	8
1:A:6:ILE:CB	1:A:82:LEU:HD23	0.46	2.38	4	1
1:A:12:ARG:O	1:A:90:TRP:CE3	0.45	2.69	20	7
1:A:120:GLU:N	1:A:121:PRO:HD2	0.45	2.26	16	18

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:18:ILE:HD13	1:A:20:ILE:HG12	0.45	1.87	1	2
1:A:112:ALA:HB3	1:A:127:LYS:HE2	0.45	1.87	10	2
1:A:46:PRO:CB	1:A:83:TRP:CH2	0.45	3.00	3	6
1:A:123:ILE:O	1:A:127:LYS:N	0.45	2.43	6	6
1:A:7:ALA:N	1:A:40:ILE:CG2	0.45	2.79	13	2
1:A:10:ILE:CG2	1:A:35:PHE:CE2	0.45	3.00	8	3
1:A:71:LEU:HB3	1:A:122:VAL:HG22	0.45	1.88	2	1
1:A:21:THR:HG22	1:A:98:GLU:CD	0.45	2.32	16	2
1:A:96:GLY:O	1:A:97:LYS:HB2	0.45	2.12	7	2
1:A:110:LEU:HD23	1:A:110:LEU:C	0.45	2.30	7	1
1:A:11:ILE:N	1:A:18:ILE:HG23	0.45	2.27	12	1
1:A:19:PHE:CD1	1:A:19:PHE:C	0.45	2.90	5	1
1:A:71:LEU:HG	1:A:121:PRO:HB2	0.45	1.88	3	1
1:A:90:TRP:O	1:A:90:TRP:CD1	0.45	2.70	11	6
1:A:120:GLU:O	1:A:124:ALA:CB	0.45	2.64	2	12
1:A:59:GLY:HA3	1:A:95:TRP:CH2	0.45	2.47	5	10
1:A:50:VAL:CG1	1:A:85:TRP:CZ2	0.45	2.99	18	5
1:A:82:LEU:HD13	1:A:119:ASN:HD21	0.45	1.72	17	1
1:A:18:ILE:HD12	1:A:107:LEU:CD2	0.45	2.41	16	1
1:A:10:ILE:CD1	1:A:107:LEU:HD11	0.45	2.42	16	1
1:A:71:LEU:CD2	1:A:73:TYR:CD1	0.45	3.00	11	1
1:A:12:ARG:HG3	1:A:87:VAL:O	0.45	2.11	20	1
1:A:40:ILE:CD1	1:A:83:TRP:CE3	0.45	3.00	11	1
1:A:13:ASN:OD1	1:A:14:GLU:N	0.45	2.50	5	1
1:A:10:ILE:HG23	1:A:18:ILE:CB	0.45	2.42	17	2
1:A:8:VAL:HG23	1:A:35:PHE:CE2	0.45	2.46	17	2
1:A:18:ILE:HD13	1:A:19:PHE:C	0.45	2.33	18	1
1:A:3:LYS:HA	1:A:79:HIS:O	0.44	2.12	3	2
1:A:13:ASN:HB2	1:A:90:TRP:CZ3	0.44	2.47	16	4
1:A:79:HIS:NE2	1:A:81:THR:HG23	0.44	2.27	9	1
1:A:89:ARG:CG	1:A:90:TRP:N	0.44	2.80	15	3
1:A:18:ILE:CG1	1:A:18:ILE:O	0.44	2.65	11	2
1:A:10:ILE:CD1	1:A:10:ILE:N	0.44	2.79	18	1
1:A:6:ILE:CD1	3:A:131:8OG:O3'	0.44	2.66	20	1
1:A:33:LEU:CG	1:A:33:LEU:O	0.44	2.65	1	1
1:A:84:PHE:CD1	1:A:84:PHE:N	0.44	2.85	7	2
1:A:110:LEU:HD21	1:A:123:ILE:HD13	0.44	1.89	15	1
1:A:112:ALA:CB	1:A:127:LYS:CD	0.44	2.95	11	4
1:A:115:PHE:CE2	1:A:119:ASN:HB3	0.44	2.47	18	2
1:A:65:PHE:O	1:A:66:SER:HB2	0.44	2.11	12	1
1:A:40:ILE:HD11	1:A:83:TRP:CH2	0.44	2.47	6	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:104:TRP:CD1	1:A:104:TRP:N	0.44	2.85	8	1
1:A:126:LEU:O	1:A:129:LEU:N	0.44	2.46	2	4
1:A:110:LEU:HD13	1:A:110:LEU:C	0.44	2.33	8	1
1:A:64:HIS:CG	1:A:87:VAL:CG2	0.44	2.96	18	1
1:A:62:PRO:HB3	1:A:90:TRP:HA	0.44	1.89	6	2
1:A:34:GLU:OE1	1:A:35:PHE:CE1	0.44	2.70	2	1
1:A:71:LEU:CD1	1:A:71:LEU:O	0.44	2.55	13	1
1:A:10:ILE:HD13	1:A:35:PHE:CD2	0.44	2.45	20	1
1:A:10:ILE:CD1	1:A:35:PHE:CE2	0.44	2.96	20	2
1:A:20:ILE:HD11	1:A:105:MET:HG3	0.44	1.90	1	1
1:A:10:ILE:HD13	1:A:86:LEU:HD22	0.44	1.90	7	1
1:A:40:ILE:HD12	1:A:50:VAL:N	0.44	2.27	13	1
1:A:33:LEU:O	1:A:115:PHE:CB	0.43	2.66	9	2
1:A:7:ALA:HA	1:A:83:TRP:O	0.43	2.13	20	1
1:A:71:LEU:HG	1:A:71:LEU:O	0.43	2.13	2	1
1:A:11:ILE:HD12	1:A:19:PHE:CD2	0.43	2.48	9	1
1:A:11:ILE:O	1:A:11:ILE:CG2	0.43	2.66	19	1
1:A:47:GLU:O	1:A:51:VAL:CG2	0.43	2.63	12	5
1:A:21:THR:CG2	1:A:100:GLN:O	0.43	2.65	2	1
1:A:55:GLN:O	1:A:59:GLY:N	0.43	2.50	3	4
1:A:40:ILE:HG12	1:A:41:GLU:N	0.43	2.27	13	2
1:A:110:LEU:C	1:A:110:LEU:HD13	0.43	2.34	4	2
1:A:54:LEU:CD1	1:A:64:HIS:CD2	0.43	3.01	2	1
1:A:112:ALA:HB1	1:A:120:GLU:OE2	0.43	2.14	15	1
1:A:8:VAL:O	1:A:84:PHE:CG	0.43	2.72	20	1
1:A:34:GLU:CG	1:A:116:PRO:CG	0.43	2.97	13	1
1:A:46:PRO:HB3	1:A:83:TRP:CH2	0.43	2.49	3	7
1:A:112:ALA:O	1:A:115:PHE:HD1	0.43	1.97	12	7
1:A:50:VAL:HG22	1:A:54:LEU:CD1	0.43	2.44	20	1
1:A:59:GLY:O	1:A:95:TRP:CZ2	0.43	2.71	6	2
1:A:10:ILE:O	1:A:10:ILE:CG1	0.43	2.66	19	1
1:A:50:VAL:HG21	1:A:85:TRP:CD1	0.43	2.48	10	1
1:A:63:GLN:O	1:A:89:ARG:N	0.43	2.50	2	2
1:A:63:GLN:N	1:A:89:ARG:O	0.43	2.51	19	2
1:A:10:ILE:CG1	1:A:10:ILE:O	0.43	2.67	5	1
1:A:73:TYR:O	1:A:80:ILE:CG2	0.43	2.67	2	7
1:A:21:THR:CG2	1:A:34:GLU:O	0.43	2.67	9	5
1:A:68:PHE:CE1	1:A:69:GLU:CB	0.43	3.02	6	8
1:A:20:ILE:CD1	1:A:105:MET:HG2	0.43	2.43	1	1
1:A:15:ASN:O	1:A:16:ASN:HB2	0.43	2.13	12	3
1:A:11:ILE:HG21	1:A:19:PHE:HD2	0.43	1.71	19	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:110:LEU:HD21	1:A:123:ILE:CD1	0.43	2.44	11	1
1:A:90:TRP:CE2	1:A:94:PRO:HG3	0.43	2.49	8	4
1:A:11:ILE:O	1:A:18:ILE:CA	0.43	2.67	16	4
1:A:10:ILE:HG23	1:A:18:ILE:CG2	0.43	2.43	9	1
1:A:22:ARG:HG3	1:A:22:ARG:O	0.43	2.13	7	1
1:A:12:ARG:HB3	1:A:88:GLU:O	0.43	2.14	5	1
1:A:53:GLU:O	1:A:57:GLU:HG2	0.43	2.13	10	2
1:A:10:ILE:CD1	1:A:107:LEU:CD2	0.43	2.97	8	2
1:A:22:ARG:CB	1:A:33:LEU:HD12	0.42	2.42	20	1
1:A:62:PRO:CA	1:A:90:TRP:HA	0.42	2.44	16	3
1:A:62:PRO:HB3	1:A:90:TRP:HB2	0.42	1.91	8	7
1:A:20:ILE:CG1	1:A:105:MET:CG	0.42	2.97	8	1
1:A:21:THR:N	1:A:34:GLU:O	0.42	2.53	10	2
1:A:107:LEU:CD2	1:A:110:LEU:HD12	0.42	2.44	19	1
1:A:60:ILE:HD13	1:A:91:GLU:O	0.42	2.14	6	2
1:A:79:HIS:CE1	1:A:80:ILE:O	0.42	2.73	9	1
1:A:18:ILE:O	1:A:18:ILE:HG23	0.42	2.13	19	1
1:A:18:ILE:O	1:A:20:ILE:HG13	0.42	2.14	2	1
1:A:68:PHE:C	1:A:68:PHE:CD1	0.42	2.91	6	1
1:A:13:ASN:CG	1:A:14:GLU:H	0.42	2.18	20	2
1:A:95:TRP:O	1:A:97:LYS:N	0.42	2.51	20	2
1:A:61:THR:HG23	1:A:91:GLU:CB	0.42	2.45	14	2
1:A:18:ILE:HG12	1:A:107:LEU:HD23	0.42	1.91	11	1
1:A:63:GLN:HB2	1:A:89:ARG:CG	0.42	2.45	5	1
1:A:68:PHE:CB	1:A:86:LEU:HD23	0.42	2.45	1	1
1:A:4:LEU:CD1	1:A:6:ILE:CD1	0.42	2.98	16	1
1:A:64:HIS:ND1	1:A:87:VAL:CG2	0.42	2.82	7	3
1:A:22:ARG:HG3	1:A:33:LEU:HD12	0.42	1.91	14	1
1:A:8:VAL:N	1:A:83:TRP:O	0.42	2.50	18	3
1:A:10:ILE:CD1	1:A:35:PHE:CZ	0.42	3.03	17	1
1:A:71:LEU:HD23	1:A:82:LEU:CD1	0.42	2.39	15	2
1:A:4:LEU:HD13	3:A:131:8OG:N9	0.42	2.29	15	1
1:A:39:LYS:CG	1:A:39:LYS:O	0.42	2.68	4	4
1:A:68:PHE:CE1	1:A:69:GLU:HB2	0.42	2.50	11	3
1:A:4:LEU:HD13	3:A:131:8OG:H2'	0.42	1.91	16	1
1:A:58:VAL:CG1	1:A:59:GLY:N	0.42	2.83	5	3
1:A:11:ILE:N	1:A:18:ILE:HG13	0.42	2.30	1	1
1:A:107:LEU:HD13	1:A:110:LEU:HB2	0.42	1.92	16	2
1:A:18:ILE:HD13	1:A:107:LEU:CD1	0.42	2.45	12	1
1:A:11:ILE:O	1:A:90:TRP:CZ3	0.42	2.72	15	1
1:A:18:ILE:HG23	1:A:107:LEU:HB2	0.42	1.92	9	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:54:LEU:HG	1:A:64:HIS:CD2	0.42	2.50	9	1
1:A:62:PRO:O	1:A:64:HIS:N	0.42	2.53	6	2
1:A:58:VAL:C	1:A:96:GLY:N	0.42	2.73	19	1
1:A:8:VAL:HG11	1:A:119:ASN:HD21	0.42	1.75	18	2
1:A:61:THR:O	1:A:61:THR:HG23	0.42	2.15	14	1
1:A:90:TRP:C	1:A:90:TRP:CD1	0.41	2.93	20	1
1:A:19:PHE:CE2	1:A:102:GLY:O	0.41	2.73	7	2
1:A:60:ILE:HG23	1:A:61:THR:N	0.41	2.29	16	1
1:A:50:VAL:O	1:A:54:LEU:N	0.41	2.47	15	4
1:A:19:PHE:CD2	1:A:94:PRO:HG2	0.41	2.51	17	1
1:A:82:LEU:HD21	1:A:119:ASN:HD21	0.41	1.75	12	1
1:A:79:HIS:NE2	1:A:81:THR:OG1	0.41	2.53	6	1
1:A:8:VAL:HG12	1:A:37:GLY:O	0.41	2.15	20	1
1:A:10:ILE:CG2	1:A:10:ILE:O	0.41	2.68	16	1
1:A:11:ILE:N	1:A:18:ILE:CG2	0.41	2.84	12	1
1:A:12:ARG:HG2	1:A:18:ILE:HD11	0.41	1.91	12	1
1:A:68:PHE:CD1	1:A:68:PHE:C	0.41	2.93	10	1
1:A:40:ILE:HD12	1:A:49:ALA:HB1	0.41	1.92	6	1
1:A:34:GLU:OE2	1:A:35:PHE:CE1	0.41	2.73	15	1
1:A:39:LYS:O	1:A:39:LYS:CG	0.41	2.69	8	8
1:A:64:HIS:O	1:A:65:PHE:HB2	0.41	2.15	8	2
1:A:6:ILE:CG2	1:A:82:LEU:HD21	0.41	2.46	17	1
1:A:84:PHE:CZ	1:A:122:VAL:CG2	0.41	3.04	9	1
1:A:4:LEU:HD13	3:A:131:8OG:HO3'	0.41	1.73	20	1
1:A:34:GLU:CG	1:A:35:PHE:N	0.41	2.83	4	1
1:A:8:VAL:CG2	1:A:9:GLY:N	0.41	2.83	12	1
1:A:13:ASN:HD21	1:A:17:GLU:HG2	0.41	1.76	8	1
1:A:4:LEU:CD1	3:A:131:8OG:O3'	0.41	2.64	20	1
1:A:64:HIS:HB2	1:A:87:VAL:CG1	0.41	2.43	18	1
1:A:11:ILE:HA	1:A:87:VAL:CB	0.41	2.46	20	1
1:A:86:LEU:HD12	1:A:86:LEU:O	0.41	2.16	20	1
1:A:18:ILE:CD1	1:A:18:ILE:O	0.41	2.57	16	1
1:A:13:ASN:HB2	1:A:17:GLU:O	0.41	2.15	12	2
1:A:44:GLU:CB	1:A:49:ALA:HA	0.41	2.46	6	2
1:A:20:ILE:HG13	1:A:105:MET:CG	0.41	2.45	11	1
1:A:69:GLU:O	1:A:84:PHE:CB	0.41	2.67	7	1
1:A:84:PHE:CZ	1:A:119:ASN:OD1	0.41	2.74	7	1
3:A:131:8OG:O4'	3:A:131:8OG:OP2	0.41	2.39	3	1
1:A:12:ARG:CG	1:A:87:VAL:O	0.41	2.69	20	1
1:A:18:ILE:CG2	1:A:107:LEU:HB2	0.41	2.46	1	2
1:A:90:TRP:CD2	1:A:94:PRO:HG3	0.41	2.51	19	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:8:VAL:HA	1:A:37:GLY:HA3	0.41	1.92	18	1
1:A:110:LEU:C	1:A:110:LEU:CD2	0.41	2.84	17	1
1:A:71:LEU:CB	1:A:122:VAL:CG2	0.41	2.97	13	1
1:A:67:LEU:C	1:A:86:LEU:HD23	0.41	2.36	12	1
1:A:5:GLN:OE1	1:A:83:TRP:CZ2	0.41	2.74	12	1
1:A:95:TRP:CE3	1:A:96:GLY:CA	0.41	3.04	6	1
1:A:6:ILE:N	1:A:81:THR:O	0.40	2.52	1	3
1:A:3:LYS:HA	1:A:79:HIS:HB2	0.40	1.92	16	1
1:A:19:PHE:CD2	1:A:19:PHE:O	0.40	2.74	16	1
1:A:90:TRP:NE1	1:A:94:PRO:HD3	0.40	2.31	19	1
1:A:7:ALA:CB	1:A:50:VAL:HB	0.40	2.46	2	1
1:A:54:LEU:O	1:A:58:VAL:HB	0.40	2.16	2	1
1:A:40:ILE:HD12	1:A:50:VAL:CA	0.40	2.46	13	1
1:A:61:THR:HG23	1:A:91:GLU:HB3	0.40	1.92	6	1
1:A:20:ILE:HG22	1:A:35:PHE:HD2	0.40	1.77	14	1
1:A:128:ARG:HG2	1:A:128:ARG:O	0.40	2.16	12	1
1:A:11:ILE:C	1:A:18:ILE:CG1	0.40	2.90	20	1
1:A:13:ASN:ND2	1:A:17:GLU:O	0.40	2.55	1	1
1:A:73:TYR:CE2	1:A:75:PHE:CE1	0.40	3.09	4	1
1:A:20:ILE:HB	1:A:33:LEU:CD2	0.40	2.46	19	1
1:A:54:LEU:HD11	1:A:64:HIS:CG	0.40	2.52	19	1
1:A:7:ALA:O	1:A:37:GLY:C	0.40	2.59	13	1
1:A:20:ILE:HG12	1:A:105:MET:CG	0.40	2.46	8	1
1:A:60:ILE:HG23	1:A:95:TRP:CD1	0.40	2.51	9	1
1:A:60:ILE:HG12	1:A:93:GLU:O	0.40	2.16	2	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	118/129 (91%)	91±2 (77±1%)	17±2 (14±2%)	10±1 (9±1%)	2	13
All	All	2360/2580 (91%)	1822 (77%)	335 (14%)	203 (9%)	2	13

All 17 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	97	LYS	20
1	A	41	GLU	20
1	A	42	MET	20
1	A	62	PRO	20
1	A	76	PRO	20
1	A	39	LYS	20
1	A	96	GLY	18
1	A	77	ASP	17
1	A	36	PRO	13
1	A	65	PHE	9
1	A	33	LEU	8
1	A	16	ASN	6
1	A	43	GLY	6
1	A	40	ILE	2
1	A	66	SER	2
1	A	60	ILE	1
1	A	99	GLY	1

6.3.2 Protein sidechains [i](#)

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

Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	A	104/110 (95%)	60±4 (58±3%)	44±4 (42±3%)	0	3
All	All	2080/2200 (95%)	1199 (58%)	881 (42%)	0	3

All 84 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	115	PHE	20
1	A	60	ILE	20
1	A	35	PHE	20
1	A	40	ILE	20
1	A	114	ASP	20
1	A	45	THR	20
1	A	104	TRP	20
1	A	41	GLU	20
1	A	68	PHE	20

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Mol	Chain	Res	Type	Models (Total)
1	A	65	PHE	20
1	A	113	ASP	20
1	A	120	GLU	19
1	A	18	ILE	19
1	A	20	ILE	19
1	A	81	THR	19
1	A	19	PHE	18
1	A	122	VAL	18
1	A	11	ILE	17
1	A	89	ARG	17
1	A	10	ILE	17
1	A	129	LEU	16
1	A	32	LYS	16
1	A	71	LEU	15
1	A	56	GLU	15
1	A	31	ASN	15
1	A	64	HIS	15
1	A	119	ASN	14
1	A	54	LEU	14
1	A	70	LYS	14
1	A	16	ASN	14
1	A	44	GLU	14
1	A	12	ARG	13
1	A	13	ASN	13
1	A	61	THR	13
1	A	3	LYS	13
1	A	39	LYS	13
1	A	107	LEU	12
1	A	97	LYS	12
1	A	127	LYS	12
1	A	125	LYS	12
1	A	78	ARG	11
1	A	53	GLU	11
1	A	111	ASN	11
1	A	55	GLN	10
1	A	17	GLU	9
1	A	52	ARG	9
1	A	106	SER	8
1	A	8	VAL	8
1	A	34	GLU	7
1	A	48	GLN	7
1	A	33	LEU	7

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Mol	Chain	Res	Type	Models (Total)
1	A	66	SER	7
1	A	105	MET	7
1	A	103	GLU	6
1	A	75	PHE	6
1	A	67	LEU	6
1	A	22	ARG	6
1	A	91	GLU	5
1	A	128	ARG	5
1	A	79	HIS	5
1	A	57	GLU	5
1	A	100	GLN	5
1	A	69	GLU	5
1	A	126	LEU	5
1	A	14	GLU	4
1	A	47	GLU	4
1	A	110	LEU	4
1	A	90	TRP	4
1	A	42	MET	4
1	A	82	LEU	4
1	A	123	ILE	4
1	A	73	TYR	3
1	A	15	ASN	3
1	A	58	VAL	3
1	A	50	VAL	2
1	A	21	THR	2
1	A	83	TRP	2
1	A	63	GLN	2
1	A	93	GLU	2
1	A	84	PHE	1
1	A	98	GLU	1
1	A	74	GLU	1
1	A	72	GLU	1
1	A	86	LEU	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 [i](#)

There are no carbohydrates in this entry.

6.6 Ligand geometry [i](#)

Of 2 ligands modelled in this entry, 1 is monoatomic - leaving 1 for Mogul analysis.

In the following table, the Counts columns list the number of bonds for which Mogul statistics could be retrieved, the number of bonds that are observed in the model and the number of bonds that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond length is the number of standard deviations the observed value is removed from the expected value. A bond length with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the average root-mean-square of all Z scores of the bond lengths.

Mol	Type	Chain	Res	Link	Bond lengths		
					Counts	RMSZ	#Z>2
3	8OG	A	131	-	22,26,26	1.86±0.01	1±0 (4±0%)

In the following table, the Counts columns list the number of angles for which Mogul statistics could be retrieved, the number of angles that are observed in the model and the number of angles that are defined in the chemical component dictionary. The Link column lists molecule types, if any, to which the group is linked. The Z score for a bond angle is the number of standard deviations the observed value is removed from the expected value. A bond angle with $|Z| > 2$ is considered an outlier worth inspection. RMSZ is the average root-mean-square of all Z scores of the bond angles.

Mol	Type	Chain	Res	Link	Bond angles		
					Counts	RMSZ	#Z>2
3	8OG	A	131	-	25,40,40	4.10±0.01	1±0 (4±0%)

In the following table, the Chirals column lists the number of chiral outliers, the number of chiral centers analysed, the number of these observed in the model and the number defined in the chemical component dictionary. Similar counts are reported in the Torsion and Rings columns. '-' means no outliers of that kind were identified.

Mol	Type	Chain	Res	Link	Chirals	Torsions	Rings
3	8OG	A	131	-	-	0±0,6,22,22	0±0,3,3,3

All unique bond outliers are listed below.

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)	Models	
								Worst	Total
3	A	131	8OG	C2-N3	5.80	1.40	1.33	7	20

All unique angle outliers are listed below.

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)	Models	
								Worst	Total
3	A	131	8OG	O4'-C1'-N9	19.13	126.00	108.15	8	20

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

6.7 Other polymers [i](#)

There are no such molecules in this entry.

6.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

7 Chemical shift validation

No chemical shift data were provided