



# Full wwPDB NMR Structure Validation Report ⓘ

Feb 18, 2018 – 09:20 am GMT

PDB ID : 1FHR  
Title : SOLUTION STRUCTURE OF THE FHA2 DOMAIN OF RAD53 COM-  
PLEXED WITH A PHOSPHOTYROSYL PEPTIDE  
Authors : Byeon, I.-J.L.; Liao, H.; Yongkiettrakul, S.; Tsai, M.-D.  
Deposited on : 2000-08-02

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We welcome your comments at [validation@mail.wwpdb.org](mailto: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.

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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 : 1.7.3 (157068), CSD as539be (2018)  
Percentile statistics : 20171227.v01 (using entries in the PDB archive December 27th 2017)  
RCI : v\_1n\_11\_5\_13\_A (Berjanski et al., 2005)  
PANAV : Wang et al. (2010)  
ShiftChecker : trunk30686  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : trunk30686

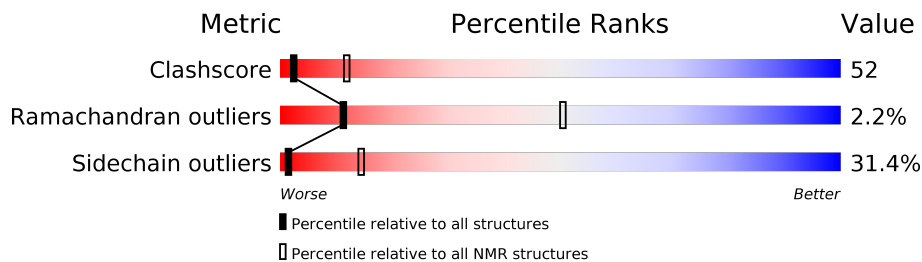
# 1 Overall quality at a glance

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	136279	12091
Ramachandran outliers	132675	10835
Sidechain outliers	132484	10811

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  $\geq 3$ , 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	158	
2	P	7	

## 2 Ensemble composition and analysis

This entry contains 20 models. Model 20 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:575-A:630, A:644-A:702, A:714-A:728 (130)	0.24	20

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

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

The models can be grouped into 3 clusters and 4 single-model clusters were found.

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

### 3 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 2676 atoms, of which 1332 are hydrogens and 0 are deuteriums.

- Molecule 1 is a protein called PROTEIN KINASE SPK1.

Mol	Chain	Residues	Atoms					Trace	
			Total	C	H	N	O		S
1	A	158	2551	806	1277	222	239	7	0

- Molecule 2 is a protein called DNA REPAIR PROTEIN RAD9.

Mol	Chain	Residues	Atoms					Trace	
			Total	C	H	N	O		P
2	P	7	125	43	55	7	19	1	0

There is a discrepancy between the modelled and reference sequences:

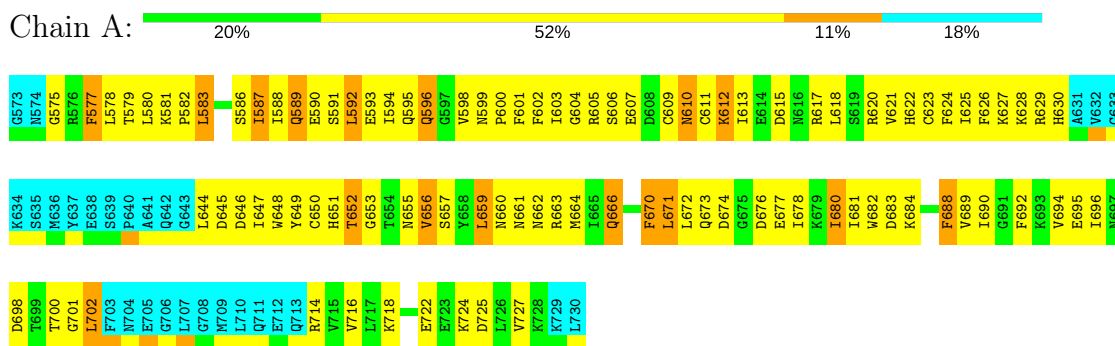
Chain	Residue	Modelled	Actual	Comment	Reference
P	829	PTR	TYR	MODIFIED RESIDUE	UNP P14737

## 4 Residue-property plots [i](#)

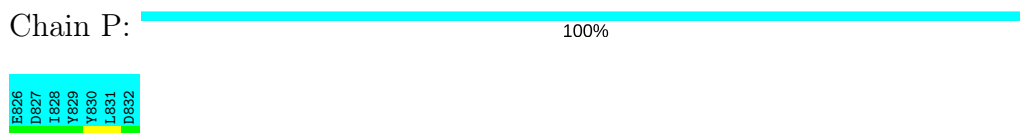
### 4.1 Average score per residue in the NMR ensemble

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: PROTEIN KINASE SPK1



- Molecule 2: DNA REPAIR PROTEIN RAD9

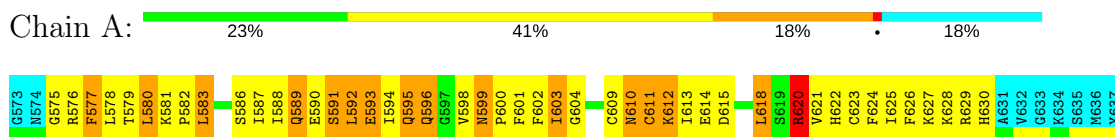


### 4.2 Scores per residue for each member of the ensemble

Colouring as in section 4.1 above.

#### 4.2.1 Score per residue for model 1

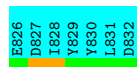
- Molecule 1: PROTEIN KINASE SPK1






- Molecule 2: DNA REPAIR PROTEIN RAD9

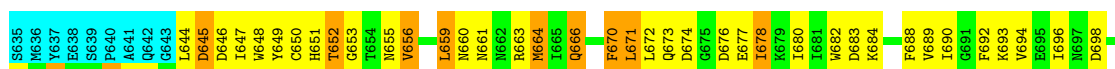
Chain P:  100%



#### 4.2.2 Score per residue for model 2

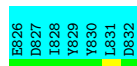
- Molecule 1: PROTEIN KINASE SPK1

Chain A:  25% 39% 18% 18%



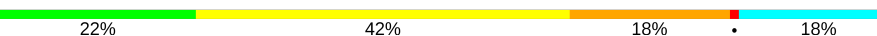
- Molecule 2: DNA REPAIR PROTEIN RAD9

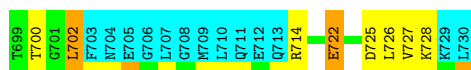
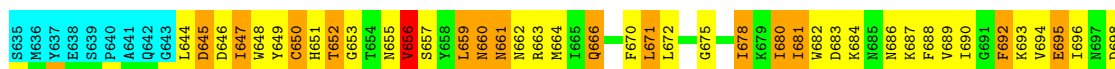
Chain P:  100%



#### 4.2.3 Score per residue for model 3

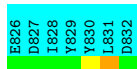
- Molecule 1: PROTEIN KINASE SPK1

Chain A:  22% 42% 18% 18%



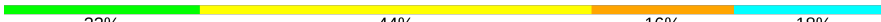
- Molecule 2: DNA REPAIR PROTEIN RAD9

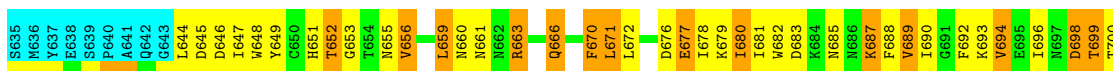
Chain P:  100%



#### 4.2.4 Score per residue for model 4

- Molecule 1: PROTEIN KINASE SPK1

Chain A:  22% 44% 16% 18%



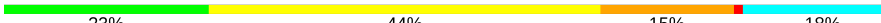
- Molecule 2: DNA REPAIR PROTEIN RAD9

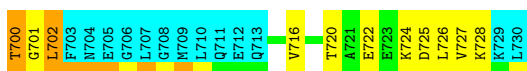
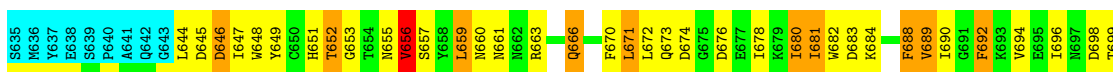
Chain P:  100%



#### 4.2.5 Score per residue for model 5

- Molecule 1: PROTEIN KINASE SPK1

Chain A:  23% 44% 15% 18%



- Molecule 2: DNA REPAIR PROTEIN RAD9

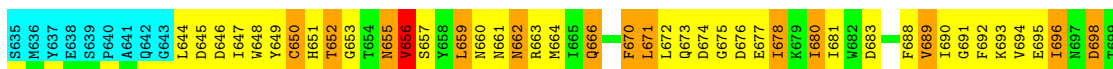
Chain P:  100%



#### 4.2.6 Score per residue for model 6

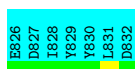
- Molecule 1: PROTEIN KINASE SPK1

Chain A: 22% 43% 16% 18%



- Molecule 2: DNA REPAIR PROTEIN RAD9

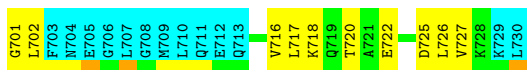
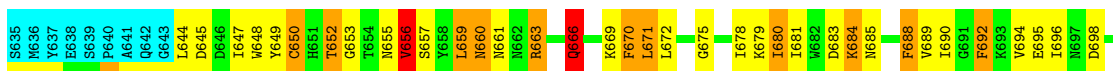
Chain P: 100%



#### 4.2.7 Score per residue for model 7

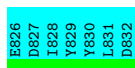
- Molecule 1: PROTEIN KINASE SPK1

Chain A: 25% 41% 16% 18%



- Molecule 2: DNA REPAIR PROTEIN RAD9

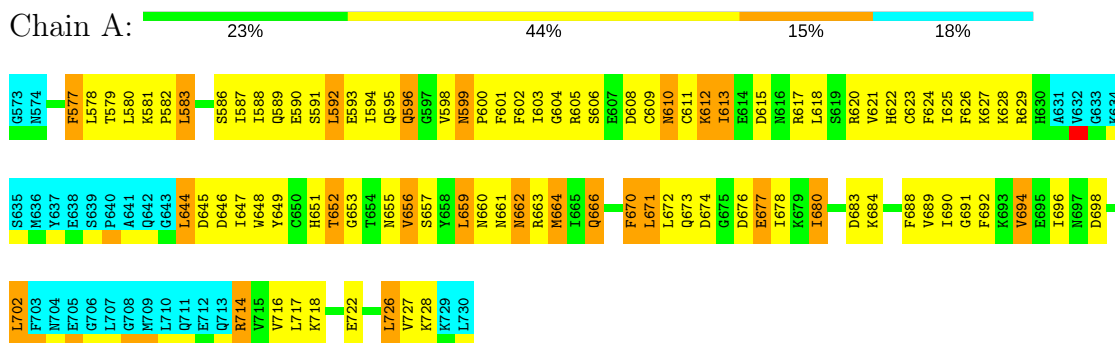
Chain P: 100%



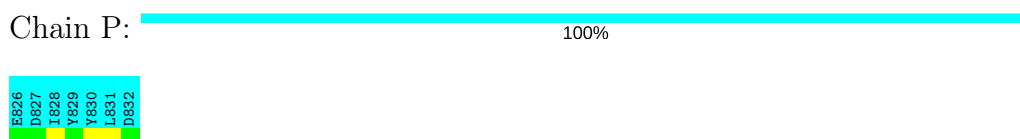


### 4.2.8 Score per residue for model 8

- Molecule 1: PROTEIN KINASE SPK1

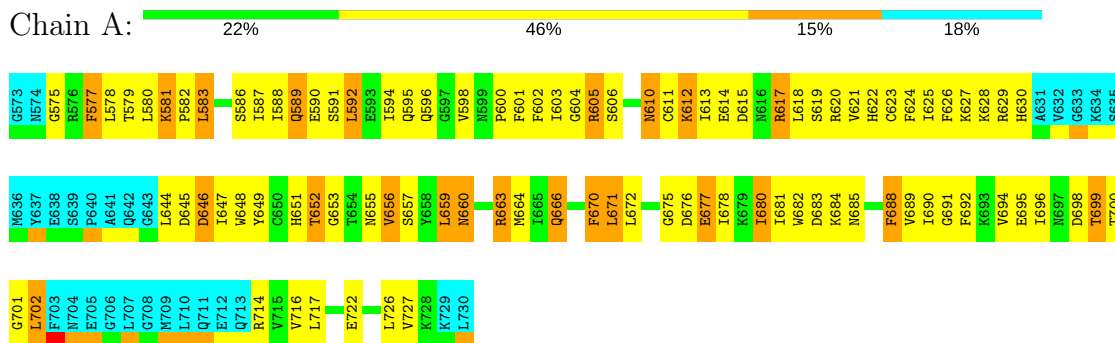


- Molecule 2: DNA REPAIR PROTEIN RAD9

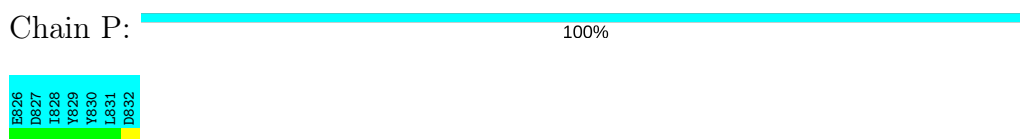


### 4.2.9 Score per residue for model 9

- Molecule 1: PROTEIN KINASE SPK1

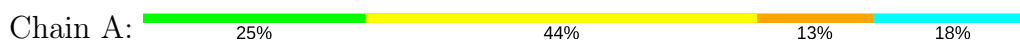


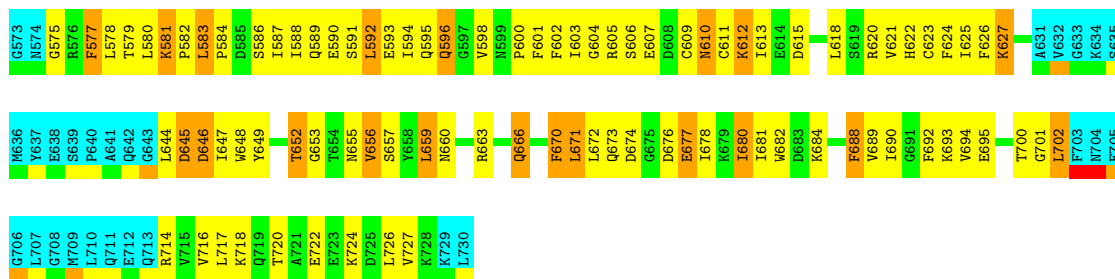
- Molecule 2: DNA REPAIR PROTEIN RAD9



### 4.2.10 Score per residue for model 10

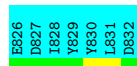
- Molecule 1: PROTEIN KINASE SPK1





- Molecule 2: DNA REPAIR PROTEIN RAD9

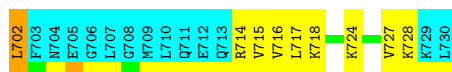
Chain P: 100%



#### 4.2.11 Score per residue for model 11

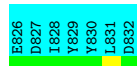
- Molecule 1: PROTEIN KINASE SPK1

Chain A: 23% 44% 16% 18%



- Molecule 2: DNA REPAIR PROTEIN RAD9

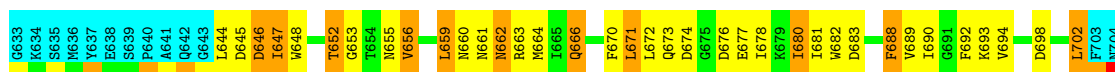
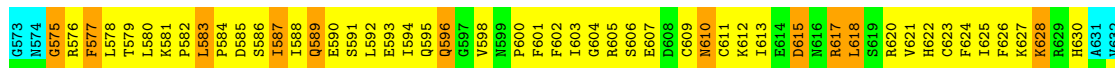
Chain P: 100%



#### 4.2.12 Score per residue for model 12

- Molecule 1: PROTEIN KINASE SPK1

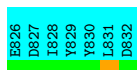
Chain A: 24% 44% 15% 18%





- Molecule 2: DNA REPAIR PROTEIN RAD9

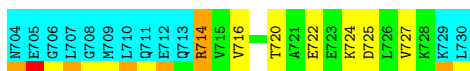
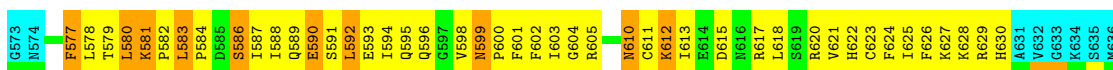
Chain P: 100%



#### 4.2.13 Score per residue for model 13

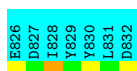
- Molecule 1: PROTEIN KINASE SPK1

Chain A: 25% 43% 14% 18%



- Molecule 2: DNA REPAIR PROTEIN RAD9

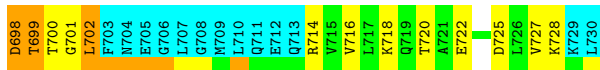
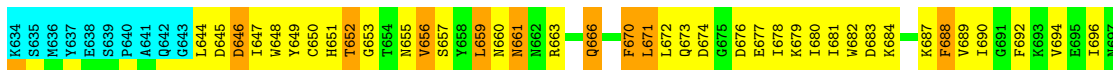
Chain P: 100%



#### 4.2.14 Score per residue for model 14

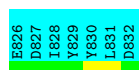
- Molecule 1: PROTEIN KINASE SPK1

Chain A: 20% 47% 15% 18%




- Molecule 2: DNA REPAIR PROTEIN RAD9

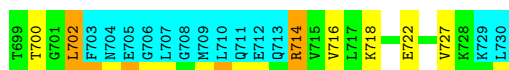
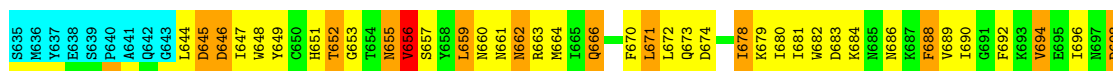
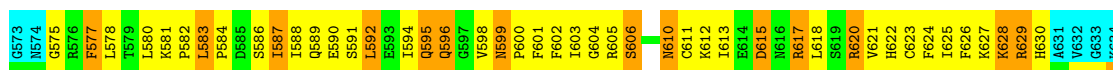
Chain P:  100%



#### 4.2.15 Score per residue for model 15

- Molecule 1: PROTEIN KINASE SPK1

Chain A:  25% 39% 18% 18%




- Molecule 2: DNA REPAIR PROTEIN RAD9

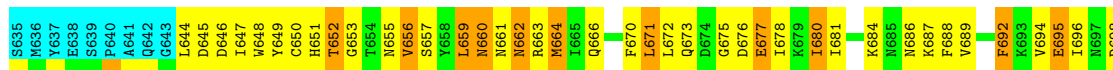
Chain P:  100%



#### 4.2.16 Score per residue for model 16

- Molecule 1: PROTEIN KINASE SPK1

Chain A:  23% 44% 15% 18%



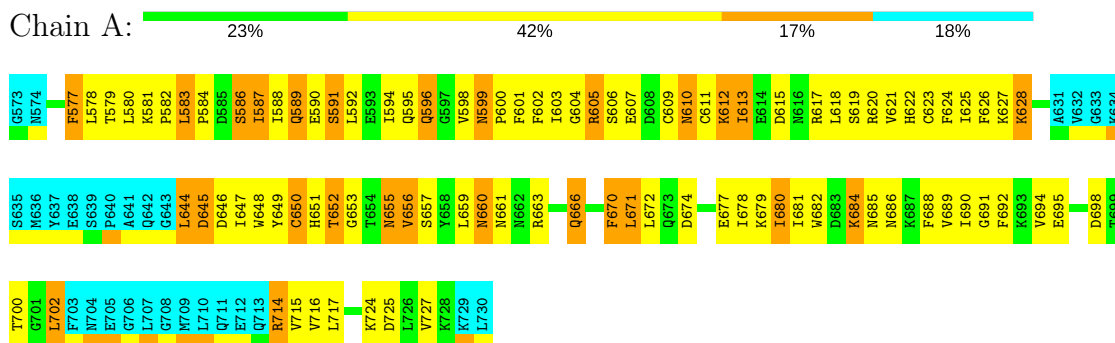
- Molecule 2: DNA REPAIR PROTEIN RAD9

Chain P:  100%

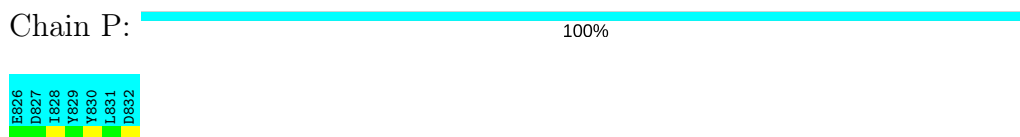


## 4.2.17 Score per residue for model 17

- Molecule 1: PROTEIN KINASE SPK1



- Molecule 2: DNA REPAIR PROTEIN RAD9

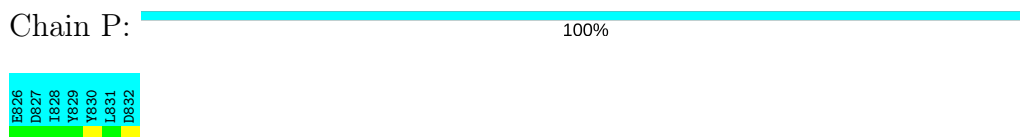


## 4.2.18 Score per residue for model 18

- Molecule 1: PROTEIN KINASE SPK1

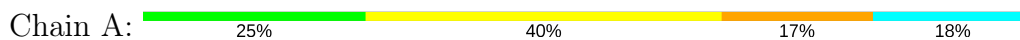


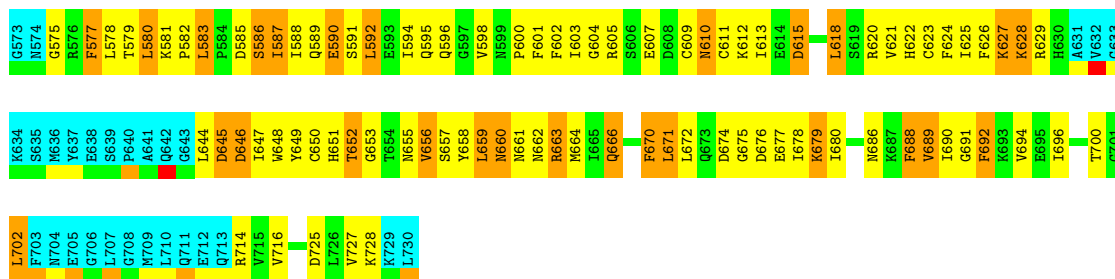
- Molecule 2: DNA REPAIR PROTEIN RAD9



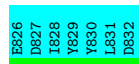
## 4.2.19 Score per residue for model 19

- Molecule 1: PROTEIN KINASE SPK1



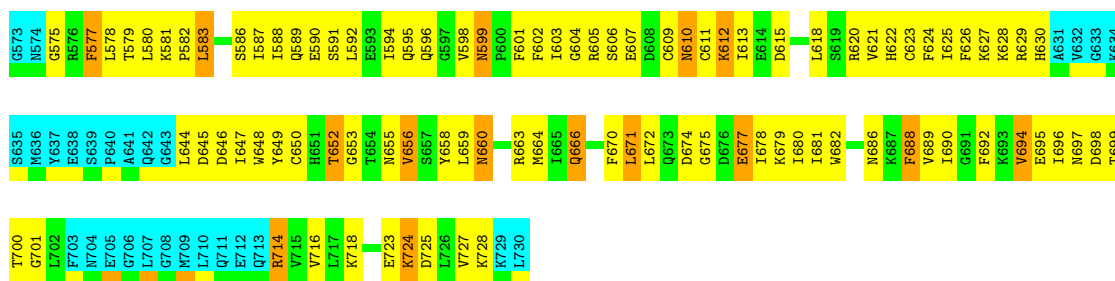


• Molecule 2: DNA REPAIR PROTEIN RAD9

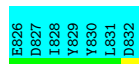


4.2.20 Score per residue for model 20 (medoid)

• Molecule 1: PROTEIN KINASE SPK1



• Molecule 2: DNA REPAIR PROTEIN RAD9



## 5 Refinement protocol and experimental data overview

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

Of the 60 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	structure solution	3.851
X-PLOR	refinement	3.851

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: PTR

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	1066	1077	1074	112±6
2	P	0	0	0	0±0
All	All	21320	21540	21480	2237

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 52.

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

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:578:LEU:HD22	1:A:594:ILE:HD12	1.09	1.23	11	16
1:A:582:PRO:HD2	1:A:590:GLU:O	1.09	1.44	12	20
1:A:578:LEU:HD22	1:A:647:ILE:HD13	1.00	1.30	14	3
1:A:588:ILE:HD11	1:A:613:ILE:HG23	0.99	1.34	6	7
1:A:578:LEU:HD12	1:A:647:ILE:HD13	0.98	1.33	18	15
1:A:578:LEU:HD12	1:A:696:ILE:HG23	0.97	1.34	6	2
1:A:621:VAL:HG11	1:A:727:VAL:HG23	0.96	1.37	10	19
1:A:659:LEU:HD13	1:A:678:ILE:HG22	0.95	1.35	20	4
1:A:580:LEU:HD11	1:A:594:ILE:HD11	0.94	1.35	15	6
1:A:578:LEU:HD21	1:A:694:VAL:HG22	0.92	1.37	4	16
1:A:603:ILE:HG23	1:A:611:CYS:HB3	0.90	1.43	16	20

*Continued on next page...*



*Continued from previous page...*

Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:577:PHE:CZ	1:A:647:ILE:HG21	0.90	2.02	4	16
1:A:648:TRP:CH2	1:A:671:LEU:HD22	0.90	2.02	17	11
1:A:613:ILE:HD12	1:A:692:PHE:CZ	0.90	2.02	17	12
1:A:618:LEU:HD11	1:A:680:ILE:CG2	0.87	1.99	16	7
1:A:615:ASP:CB	1:A:618:LEU:HD13	0.87	2.00	20	16
1:A:587:ILE:HD11	1:A:690:ILE:HD11	0.86	1.45	18	7
1:A:648:TRP:CZ3	1:A:671:LEU:HD22	0.85	2.05	20	11
1:A:618:LEU:HD12	1:A:622:HIS:CD2	0.85	2.05	11	1
1:A:582:PRO:CD	1:A:590:GLU:O	0.84	2.26	14	20
1:A:663:ARG:O	1:A:716:VAL:HG21	0.84	1.72	7	19
1:A:578:LEU:HD22	1:A:594:ILE:CD1	0.83	2.04	8	9
1:A:612:LYS:O	1:A:613:ILE:HD13	0.82	1.74	9	11
1:A:659:LEU:HD22	1:A:714:ARG:NH2	0.82	1.90	19	6
1:A:578:LEU:HD13	1:A:647:ILE:HD13	0.82	1.50	4	2
1:A:578:LEU:CD1	1:A:696:ILE:HG23	0.82	2.05	6	1
1:A:649:TYR:CE2	1:A:678:ILE:HG21	0.81	2.10	6	7
1:A:621:VAL:HG11	1:A:727:VAL:HG13	0.81	1.51	5	1
1:A:592:LEU:HD13	1:A:611:CYS:SG	0.80	2.16	13	6
1:A:602:PHE:C	1:A:603:ILE:HD13	0.80	1.96	1	1
1:A:681:ILE:HG22	1:A:690:ILE:CG2	0.80	2.06	7	1
1:A:578:LEU:HD11	1:A:694:VAL:HG13	0.79	1.51	15	3
1:A:615:ASP:OD2	1:A:681:ILE:HG21	0.79	1.77	17	10
1:A:580:LEU:HD22	1:A:694:VAL:HG22	0.79	1.54	6	1
1:A:618:LEU:O	1:A:618:LEU:HD23	0.78	1.79	11	1
1:A:645:ASP:O	1:A:702:LEU:HD13	0.78	1.78	1	7
1:A:578:LEU:CD2	1:A:594:ILE:HD12	0.77	2.07	4	9
1:A:592:LEU:HD12	1:A:611:CYS:SG	0.77	2.19	18	6
1:A:682:TRP:CD1	1:A:689:VAL:HG12	0.77	2.15	18	12
1:A:621:VAL:HG11	1:A:727:VAL:CG2	0.76	2.10	16	19
1:A:578:LEU:HD13	1:A:696:ILE:HG12	0.76	1.56	15	1
1:A:672:LEU:HD13	1:A:694:VAL:HG21	0.76	1.56	16	8
1:A:645:ASP:O	1:A:702:LEU:HD23	0.76	1.81	12	3
1:A:659:LEU:HD12	1:A:670:PHE:CE1	0.76	2.16	15	2
1:A:588:ILE:CD1	1:A:613:ILE:HG23	0.75	2.11	18	9
1:A:615:ASP:HB2	1:A:618:LEU:HD13	0.75	1.57	2	5
1:A:659:LEU:HD21	1:A:672:LEU:CD2	0.75	2.11	16	7
1:A:612:LYS:C	1:A:613:ILE:HD13	0.75	2.02	17	10
1:A:578:LEU:CD1	1:A:647:ILE:HD13	0.74	2.12	9	15
1:A:615:ASP:HB3	1:A:618:LEU:HD13	0.74	1.58	18	15
1:A:583:LEU:N	1:A:583:LEU:HD23	0.74	1.98	16	4
1:A:681:ILE:HG22	1:A:690:ILE:HG22	0.74	1.59	7	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:580:LEU:HD11	1:A:625:ILE:CD1	0.74	2.13	8	15
1:A:586:SER:O	1:A:589:GLN:NE2	0.74	2.20	14	17
1:A:659:LEU:HD11	1:A:672:LEU:CD2	0.74	2.13	19	8
1:A:587:ILE:CD1	1:A:690:ILE:HD11	0.73	2.13	1	4
1:A:580:LEU:CD1	1:A:594:ILE:HD11	0.73	2.13	15	6
1:A:659:LEU:HD21	1:A:678:ILE:HG22	0.73	1.59	19	5
1:A:603:ILE:N	1:A:603:ILE:HD13	0.73	1.98	1	1
1:A:644:LEU:HD22	1:A:701:GLY:O	0.73	1.83	18	6
1:A:578:LEU:HD23	1:A:579:THR:N	0.72	1.99	10	15
1:A:595:GLN:HB2	1:A:598:VAL:HG23	0.72	1.60	10	17
1:A:577:PHE:CE2	1:A:702:LEU:HD13	0.72	2.19	14	1
1:A:594:ILE:HD13	1:A:625:ILE:HD13	0.72	1.62	6	1
1:A:578:LEU:HD13	1:A:696:ILE:CG1	0.72	2.15	15	2
1:A:615:ASP:CG	1:A:618:LEU:HD13	0.71	2.05	8	4
1:A:622:HIS:CD2	1:A:680:ILE:HD12	0.71	2.21	15	2
1:A:659:LEU:CD2	1:A:678:ILE:HG22	0.71	2.15	19	5
1:A:587:ILE:HG21	1:A:688:PHE:CE1	0.71	2.21	9	2
1:A:603:ILE:HG23	1:A:611:CYS:SG	0.70	2.26	15	6
1:A:591:SER:C	1:A:592:LEU:HD13	0.70	2.06	5	1
1:A:621:VAL:HG11	1:A:727:VAL:CG1	0.70	2.15	5	1
1:A:578:LEU:HD12	1:A:647:ILE:CD1	0.70	2.17	10	14
1:A:581:LYS:O	1:A:583:LEU:HD23	0.69	1.87	11	13
1:A:581:LYS:O	1:A:583:LEU:HD13	0.69	1.87	8	6
1:A:580:LEU:HD23	1:A:694:VAL:HG23	0.69	1.63	15	3
1:A:662:ASN:OD1	1:A:716:VAL:HG23	0.69	1.87	1	4
1:A:580:LEU:HD22	1:A:694:VAL:CG2	0.69	2.17	6	1
1:A:659:LEU:HG	1:A:678:ILE:HG22	0.69	1.65	17	3
1:A:588:ILE:HG13	1:A:613:ILE:HG23	0.69	1.63	15	3
1:A:615:ASP:OD2	1:A:690:ILE:HD12	0.68	1.88	20	1
1:A:714:ARG:HA	1:A:714:ARG:NE	0.68	2.04	15	2
1:A:583:LEU:HD23	1:A:583:LEU:N	0.68	2.04	4	9
1:A:644:LEU:HD12	1:A:702:LEU:C	0.68	2.09	11	1
1:A:659:LEU:HD23	1:A:670:PHE:CD2	0.68	2.23	20	6
1:A:592:LEU:N	1:A:592:LEU:HD13	0.68	2.04	5	1
1:A:580:LEU:CD2	1:A:694:VAL:HG22	0.68	2.18	6	1
1:A:605:ARG:N	1:A:618:LEU:HD21	0.67	2.04	11	1
1:A:603:ILE:HD12	1:A:624:PHE:HA	0.67	1.64	8	3
1:A:582:PRO:CB	1:A:588:ILE:HG23	0.67	2.19	5	1
1:A:591:SER:C	1:A:592:LEU:HD23	0.67	2.10	6	3
1:A:592:LEU:HD22	1:A:611:CYS:SG	0.67	2.30	15	4
1:A:580:LEU:CD2	1:A:694:VAL:HG23	0.67	2.19	20	11

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:580:LEU:HD11	1:A:625:ILE:HD12	0.67	1.65	18	9
1:A:680:ILE:HD12	1:A:692:PHE:CE2	0.67	2.25	16	1
1:A:578:LEU:CD2	1:A:647:ILE:HD13	0.67	2.16	15	1
1:A:577:PHE:HZ	1:A:647:ILE:HG21	0.66	1.50	8	8
1:A:594:ILE:HD11	1:A:625:ILE:HD12	0.66	1.68	13	3
1:A:578:LEU:HD13	1:A:647:ILE:CD1	0.65	2.20	4	2
1:A:615:ASP:OD2	1:A:618:LEU:HD13	0.65	1.91	14	4
1:A:659:LEU:HD13	1:A:678:ILE:CG2	0.65	2.19	20	3
1:A:587:ILE:HG22	1:A:690:ILE:HD11	0.65	1.68	5	3
1:A:578:LEU:HD22	1:A:647:ILE:CD1	0.65	2.16	14	3
1:A:714:ARG:CZ	1:A:714:ARG:HA	0.65	2.22	3	1
1:A:621:VAL:CG1	1:A:727:VAL:HG23	0.65	2.19	10	4
1:A:582:PRO:HB2	1:A:588:ILE:HG23	0.65	1.69	5	2
1:A:618:LEU:HG	1:A:622:HIS:CD2	0.65	2.27	8	19
1:A:618:LEU:HD11	1:A:680:ILE:HG23	0.65	1.69	12	6
1:A:603:ILE:HG23	1:A:611:CYS:CB	0.64	2.22	13	19
1:A:588:ILE:HD12	1:A:613:ILE:HD13	0.64	1.67	2	1
1:A:587:ILE:HD13	1:A:688:PHE:CD2	0.64	2.28	3	1
1:A:613:ILE:HD11	1:A:692:PHE:CZ	0.64	2.28	12	4
1:A:648:TRP:CZ3	1:A:671:LEU:HG	0.64	2.28	14	9
1:A:592:LEU:N	1:A:592:LEU:HD22	0.63	2.08	10	4
1:A:613:ILE:HG21	1:A:680:ILE:HD12	0.63	1.70	1	2
1:A:577:PHE:CE1	1:A:702:LEU:HD11	0.63	2.29	12	2
1:A:578:LEU:HD23	1:A:594:ILE:HD12	0.63	1.68	6	3
1:A:577:PHE:CE2	1:A:700:THR:HG22	0.63	2.29	15	1
1:A:580:LEU:HD11	1:A:594:ILE:CD1	0.63	2.23	13	2
1:A:659:LEU:CD1	1:A:678:ILE:HG22	0.63	2.19	20	2
1:A:592:LEU:HD22	1:A:592:LEU:N	0.63	2.09	9	3
1:A:583:LEU:HD11	1:A:677:GLU:CD	0.63	2.14	1	4
1:A:580:LEU:HD21	1:A:694:VAL:HG23	0.62	1.69	8	9
1:A:583:LEU:HD11	1:A:677:GLU:OE2	0.62	1.94	18	2
1:A:659:LEU:HD13	1:A:660:ASN:N	0.62	2.10	3	1
1:A:659:LEU:HD21	1:A:672:LEU:HD22	0.62	1.71	7	1
1:A:680:ILE:HD11	1:A:692:PHE:CZ	0.62	2.30	5	1
1:A:659:LEU:HD12	1:A:670:PHE:HE1	0.61	1.55	15	2
1:A:594:ILE:HG23	1:A:601:PHE:CD1	0.61	2.31	16	13
1:A:582:PRO:HD2	1:A:590:GLU:C	0.61	2.15	12	12
1:A:588:ILE:HD12	1:A:690:ILE:HD12	0.61	1.73	12	1
1:A:588:ILE:HG13	1:A:613:ILE:HD12	0.61	1.73	4	1
1:A:613:ILE:HG21	1:A:680:ILE:CD1	0.60	2.26	1	1
1:A:600:PRO:HG2	1:A:602:PHE:CZ	0.60	2.30	10	18

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:644:LEU:CD2	1:A:644:LEU:N	0.60	2.63	8	2
1:A:644:LEU:HD23	1:A:701:GLY:O	0.60	1.96	2	2
1:A:603:ILE:HG12	1:A:623:CYS:O	0.60	1.96	1	1
1:A:617:ARG:HB2	1:A:681:ILE:HD11	0.60	1.73	11	1
1:A:648:TRP:CH2	1:A:671:LEU:CD1	0.60	2.84	3	3
1:A:649:TYR:N	1:A:670:PHE:O	0.60	2.34	10	19
1:A:618:LEU:HD11	1:A:680:ILE:HG21	0.60	1.71	16	2
1:A:603:ILE:N	1:A:623:CYS:O	0.60	2.31	1	20
1:A:714:ARG:NE	1:A:714:ARG:HA	0.60	2.12	3	1
1:A:652:THR:O	1:A:666:GLN:NE2	0.60	2.35	16	20
1:A:659:LEU:HD13	1:A:678:ILE:HG12	0.60	1.72	11	6
1:A:659:LEU:HG	1:A:678:ILE:HG23	0.60	1.72	8	3
1:A:587:ILE:HG22	1:A:690:ILE:CD1	0.60	2.26	5	4
1:A:611:CYS:SG	1:A:613:ILE:HD11	0.60	2.37	7	1
1:A:681:ILE:HG22	1:A:690:ILE:CG1	0.59	2.27	11	2
1:A:577:PHE:HB2	1:A:596:GLN:HB3	0.59	1.75	15	3
1:A:622:HIS:CD2	1:A:680:ILE:HG21	0.59	2.33	5	6
1:A:622:HIS:O	1:A:653:GLY:N	0.59	2.36	9	20
1:A:588:ILE:HD11	1:A:613:ILE:CG2	0.58	2.21	6	5
1:A:681:ILE:HG21	1:A:688:PHE:CZ	0.58	2.34	14	2
1:A:577:PHE:CE2	1:A:647:ILE:HG21	0.58	2.33	2	9
1:A:649:TYR:CB	1:A:672:LEU:HD21	0.58	2.28	16	14
1:A:659:LEU:HD22	1:A:714:ARG:HH21	0.58	1.59	13	4
1:A:580:LEU:HD21	1:A:625:ILE:CD1	0.58	2.29	13	3
1:A:583:LEU:HD13	1:A:583:LEU:N	0.58	2.13	17	3
1:A:613:ILE:HD11	1:A:692:PHE:CE1	0.58	2.34	6	1
1:A:583:LEU:O	1:A:588:ILE:O	0.57	2.22	16	11
1:A:577:PHE:CE1	1:A:647:ILE:HG21	0.57	2.33	14	1
1:A:626:PHE:O	1:A:648:TRP:N	0.57	2.37	2	19
1:A:726:LEU:N	1:A:726:LEU:HD13	0.57	2.15	8	1
1:A:648:TRP:CH2	1:A:671:LEU:HD12	0.57	2.35	19	3
1:A:655:ASN:O	1:A:656:VAL:O	0.57	2.22	12	19
1:A:621:VAL:HG21	1:A:727:VAL:CG2	0.57	2.30	20	7
1:A:618:LEU:C	1:A:618:LEU:HD23	0.57	2.20	11	1
1:A:578:LEU:HD13	1:A:696:ILE:HG13	0.57	1.77	14	1
1:A:621:VAL:HG21	1:A:727:VAL:HG23	0.57	1.77	18	6
1:A:583:LEU:HD22	1:A:583:LEU:H	0.57	1.60	5	4
1:A:681:ILE:HG22	1:A:690:ILE:HB	0.57	1.74	5	2
1:A:583:LEU:H	1:A:583:LEU:HD22	0.57	1.60	17	2
1:A:602:PHE:HA	1:A:624:PHE:HB3	0.56	1.76	11	19
1:A:580:LEU:N	1:A:592:LEU:O	0.56	2.39	11	20

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:582:PRO:HB2	1:A:588:ILE:HG22	0.56	1.76	7	5
1:A:722:GLU:O	1:A:726:LEU:HD22	0.56	2.00	8	1
1:A:587:ILE:HG23	1:A:588:ILE:HD13	0.56	1.77	3	3
1:A:644:LEU:HD12	1:A:644:LEU:N	0.56	2.15	12	2
1:A:580:LEU:HB3	1:A:592:LEU:HD12	0.56	1.77	19	1
1:A:600:PRO:HG3	1:A:726:LEU:HD23	0.56	1.76	9	4
1:A:580:LEU:HG	1:A:694:VAL:HG22	0.56	1.78	13	4
1:A:659:LEU:O	1:A:661:ASN:N	0.56	2.38	3	13
1:A:588:ILE:HD12	1:A:692:PHE:CE1	0.56	2.36	14	2
1:A:613:ILE:CD1	1:A:692:PHE:CZ	0.55	2.89	1	12
1:A:618:LEU:HG	1:A:622:HIS:CG	0.55	2.36	12	18
1:A:603:ILE:CG2	1:A:611:CYS:HB3	0.55	2.28	18	13
1:A:648:TRP:CH2	1:A:671:LEU:CD2	0.55	2.89	11	7
1:A:613:ILE:HG22	1:A:618:LEU:HD22	0.55	1.77	12	2
1:A:577:PHE:O	1:A:696:ILE:HG23	0.55	2.01	14	3
1:A:662:ASN:ND2	1:A:716:VAL:HG23	0.55	2.17	16	1
1:A:582:PRO:HB3	1:A:692:PHE:CZ	0.55	2.36	17	9
1:A:644:LEU:HD22	1:A:702:LEU:C	0.55	2.23	13	2
1:A:613:ILE:HD12	1:A:692:PHE:HZ	0.55	1.55	8	1
1:A:603:ILE:HG22	1:A:613:ILE:HG12	0.54	1.78	1	1
1:A:615:ASP:CG	1:A:690:ILE:HD11	0.54	2.22	19	1
1:A:603:ILE:HG22	1:A:613:ILE:CG1	0.54	2.32	1	5
1:A:582:PRO:HD3	1:A:592:LEU:HD22	0.54	1.79	5	1
1:A:583:LEU:H	1:A:583:LEU:HD13	0.54	1.61	6	3
1:A:578:LEU:HD12	1:A:696:ILE:HG12	0.54	1.79	4	1
1:A:587:ILE:HG22	1:A:690:ILE:HG12	0.54	1.78	19	2
1:A:659:LEU:HD13	1:A:678:ILE:HG23	0.54	1.79	2	1
1:A:580:LEU:HB2	1:A:592:LEU:HD12	0.54	1.78	15	2
1:A:592:LEU:HD23	1:A:592:LEU:N	0.54	2.17	6	1
1:A:578:LEU:C	1:A:578:LEU:HD23	0.54	2.23	17	13
1:A:688:PHE:O	1:A:688:PHE:CG	0.54	2.61	4	4
1:A:615:ASP:O	1:A:618:LEU:N	0.54	2.41	4	18
1:A:588:ILE:HD12	1:A:692:PHE:HE1	0.54	1.63	14	2
1:A:618:LEU:CD1	1:A:622:HIS:CD2	0.54	2.89	11	1
1:A:617:ARG:HB2	1:A:681:ILE:HD13	0.54	1.78	5	1
1:A:647:ILE:HD12	1:A:672:LEU:HB2	0.54	1.80	12	4
1:A:682:TRP:CB	1:A:689:VAL:HG23	0.53	2.33	4	1
1:A:677:GLU:HA	1:A:692:PHE:O	0.53	2.02	9	8
1:A:700:THR:O	1:A:700:THR:HG23	0.53	2.04	1	4
1:A:577:PHE:HE1	1:A:647:ILE:HG21	0.53	1.64	14	1
1:A:617:ARG:CB	1:A:681:ILE:HD13	0.53	2.32	5	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:680:ILE:HD11	1:A:690:ILE:HG21	0.53	1.80	2	1
1:A:579:THR:HG22	1:A:581:LYS:HG2	0.53	1.79	17	3
1:A:651:HIS:CG	1:A:657:SER:HG	0.53	2.22	18	2
1:A:648:TRP:CE3	1:A:671:LEU:HG	0.53	2.38	14	3
1:A:621:VAL:HG11	1:A:727:VAL:HG21	0.53	1.82	19	2
1:A:659:LEU:HD23	1:A:670:PHE:CD1	0.52	2.39	11	1
1:A:659:LEU:HD11	1:A:672:LEU:HD21	0.52	1.79	8	1
1:A:578:LEU:HD23	1:A:578:LEU:C	0.52	2.24	10	2
1:A:594:ILE:CD1	1:A:625:ILE:HD13	0.52	2.34	6	1
1:A:615:ASP:HB3	1:A:618:LEU:HD22	0.52	1.82	7	5
1:A:598:VAL:O	1:A:598:VAL:HG13	0.52	2.05	11	2
1:A:649:TYR:CZ	1:A:678:ILE:HD12	0.52	2.40	17	1
1:A:580:LEU:HD22	1:A:692:PHE:HB3	0.52	1.81	2	2
1:A:688:PHE:CG	1:A:688:PHE:O	0.52	2.63	13	4
1:A:682:TRP:HD1	1:A:689:VAL:HG12	0.52	1.65	3	8
1:A:596:GLN:HB2	1:A:700:THR:HG21	0.52	1.82	17	2
1:A:584:PRO:HA	1:A:589:GLN:HB3	0.52	1.81	12	2
1:A:659:LEU:HD11	1:A:672:LEU:HD22	0.51	1.81	19	2
1:A:581:LYS:O	1:A:583:LEU:CD2	0.51	2.58	11	13
1:A:659:LEU:HD22	1:A:678:ILE:CG2	0.51	2.35	16	1
1:A:666:GLN:O	1:A:666:GLN:CG	0.51	2.59	7	2
1:A:582:PRO:HG3	1:A:692:PHE:CE2	0.51	2.40	20	11
1:A:586:SER:HA	1:A:689:VAL:O	0.51	2.06	10	4
1:A:618:LEU:HD11	1:A:680:ILE:HG22	0.51	1.82	14	1
1:A:618:LEU:HG	1:A:622:HIS:CE1	0.51	2.40	1	6
1:A:681:ILE:HG21	1:A:688:PHE:CE1	0.51	2.41	14	1
1:A:592:LEU:HD23	1:A:692:PHE:HE2	0.51	1.66	4	1
1:A:655:ASN:O	1:A:656:VAL:CG1	0.51	2.59	14	15
1:A:613:ILE:CD1	1:A:692:PHE:CE1	0.51	2.93	6	1
1:A:629:ARG:HA	1:A:644:LEU:O	0.51	2.06	20	12
1:A:699:THR:O	1:A:701:GLY:N	0.51	2.44	9	4
1:A:659:LEU:CG	1:A:678:ILE:HG22	0.51	2.36	13	4
1:A:659:LEU:HD23	1:A:670:PHE:HD2	0.50	1.66	20	3
1:A:649:TYR:HB2	1:A:672:LEU:HD11	0.50	1.83	17	5
1:A:680:ILE:HD11	1:A:692:PHE:CE2	0.50	2.42	19	3
1:A:607:GLU:CB	1:A:612:LYS:HD2	0.50	2.36	2	2
1:A:658:TYR:O	1:A:679:LYS:N	0.50	2.44	20	2
1:A:662:ASN:CG	1:A:716:VAL:HG23	0.50	2.26	16	1
1:A:648:TRP:CZ3	1:A:671:LEU:CG	0.50	2.95	19	3
1:A:662:ASN:HB3	1:A:716:VAL:HG23	0.50	1.82	15	1
1:A:630:HIS:N	1:A:644:LEU:O	0.50	2.45	9	14

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:618:LEU:CD1	1:A:622:HIS:NE2	0.50	2.74	6	3
1:A:655:ASN:O	1:A:656:VAL:HG13	0.50	2.07	15	4
1:A:622:HIS:NE2	1:A:680:ILE:HG23	0.50	2.22	16	2
1:A:583:LEU:HD12	1:A:693:LYS:HB2	0.50	1.84	6	1
1:A:649:TYR:CD2	1:A:659:LEU:HD12	0.50	2.42	10	3
1:A:579:THR:HG23	1:A:593:GLU:HG3	0.50	1.83	5	2
1:A:580:LEU:HD21	1:A:625:ILE:HD11	0.50	1.83	16	2
1:A:672:LEU:CD1	1:A:694:VAL:HG21	0.50	2.33	16	1
1:A:587:ILE:CD1	1:A:688:PHE:CZ	0.49	2.95	20	3
1:A:680:ILE:CG2	1:A:690:ILE:HG21	0.49	2.37	11	1
1:A:601:PHE:CE1	1:A:610:ASN:HB3	0.49	2.42	16	14
1:A:586:SER:HB2	1:A:690:ILE:HA	0.49	1.85	8	3
1:A:692:PHE:N	1:A:692:PHE:CD1	0.49	2.80	5	3
1:A:623:CYS:SG	1:A:680:ILE:HD11	0.49	2.47	18	2
1:A:651:HIS:ND1	1:A:657:SER:CB	0.49	2.75	5	3
1:A:582:PRO:HB3	1:A:692:PHE:CD1	0.49	2.42	19	4
1:A:666:GLN:CG	1:A:666:GLN:O	0.49	2.61	18	12
1:A:577:PHE:CZ	1:A:578:LEU:HB2	0.49	2.42	8	7
1:A:683:ASP:CB	1:A:688:PHE:CE1	0.49	2.96	18	2
1:A:587:ILE:HD13	1:A:688:PHE:CZ	0.49	2.42	20	1
1:A:578:LEU:CD1	1:A:647:ILE:CD1	0.49	2.91	2	13
1:A:659:LEU:CB	1:A:678:ILE:HG23	0.49	2.37	2	1
1:A:722:GLU:O	1:A:726:LEU:HD13	0.49	2.08	3	5
1:A:575:GLY:O	1:A:595:GLN:HA	0.49	2.08	20	9
1:A:700:THR:HG23	1:A:700:THR:O	0.49	2.07	4	3
1:A:604:GLY:HA2	1:A:622:HIS:CB	0.49	2.38	20	20
1:A:675:GLY:N	1:A:694:VAL:O	0.49	2.46	3	10
1:A:692:PHE:CD1	1:A:692:PHE:N	0.49	2.80	16	4
1:A:579:THR:HG23	1:A:593:GLU:CG	0.49	2.37	5	1
1:A:724:LYS:O	1:A:727:VAL:HG12	0.48	2.07	6	5
1:A:659:LEU:CD2	1:A:672:LEU:CD2	0.48	2.89	16	4
1:A:626:PHE:N	1:A:648:TRP:O	0.48	2.46	6	17
1:A:583:LEU:N	1:A:583:LEU:CD2	0.48	2.73	4	5
1:A:587:ILE:CG2	1:A:690:ILE:HD11	0.48	2.38	11	3
1:A:588:ILE:HD12	1:A:690:ILE:CD1	0.48	2.37	12	1
1:A:671:LEU:CB	1:A:714:ARG:NH1	0.48	2.76	3	1
1:A:648:TRP:CH2	1:A:671:LEU:HG	0.48	2.43	10	6
1:A:599:ASN:O	1:A:599:ASN:OD1	0.48	2.31	6	5
1:A:577:PHE:HE2	1:A:702:LEU:HD13	0.48	1.63	14	1
1:A:583:LEU:HD13	1:A:583:LEU:H	0.48	1.67	17	3
1:A:577:PHE:CD2	1:A:698:ASP:O	0.48	2.67	14	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:587:ILE:HD13	1:A:688:PHE:CG	0.48	2.43	3	1
1:A:598:VAL:HG13	1:A:598:VAL:O	0.48	2.07	18	1
1:A:622:HIS:CD2	1:A:680:ILE:CG2	0.48	2.97	19	4
1:A:624:PHE:N	1:A:624:PHE:CD1	0.48	2.79	1	1
1:A:655:ASN:C	1:A:656:VAL:HG23	0.48	2.29	5	1
1:A:580:LEU:CB	1:A:592:LEU:HD12	0.48	2.38	15	2
1:A:578:LEU:HD12	1:A:696:ILE:CG1	0.48	2.39	4	1
1:A:624:PHE:O	1:A:650:CYS:N	0.48	2.42	3	6
1:A:580:LEU:HD11	1:A:625:ILE:HD11	0.47	1.86	8	5
1:A:601:PHE:CE1	1:A:610:ASN:ND2	0.47	2.82	15	5
1:A:577:PHE:CG	1:A:578:LEU:N	0.47	2.82	8	13
1:A:659:LEU:CD2	1:A:678:ILE:CG2	0.47	2.92	3	2
1:A:651:HIS:NE2	1:A:653:GLY:O	0.47	2.47	15	13
1:A:599:ASN:OD1	1:A:599:ASN:O	0.47	2.32	11	9
1:A:682:TRP:HA	1:A:689:VAL:HG23	0.47	1.85	4	2
1:A:613:ILE:HB	1:A:618:LEU:HD23	0.47	1.84	14	3
1:A:605:ARG:HA	1:A:613:ILE:O	0.47	2.10	11	5
1:A:605:ARG:CA	1:A:618:LEU:HD21	0.47	2.39	11	1
1:A:575:GLY:O	1:A:595:GLN:HG3	0.47	2.10	6	3
1:A:578:LEU:HD23	1:A:580:LEU:HD21	0.47	1.85	6	1
1:A:628:LYS:O	1:A:646:ASP:N	0.47	2.41	4	7
1:A:649:TYR:CD2	1:A:664:MET:CE	0.47	2.98	11	5
1:A:659:LEU:C	1:A:659:LEU:HD12	0.47	2.30	18	2
1:A:617:ARG:NE	1:A:617:ARG:HA	0.47	2.24	17	2
1:A:583:LEU:N	1:A:583:LEU:HD22	0.47	2.24	5	4
1:A:602:PHE:O	1:A:609:CYS:HB3	0.47	2.08	1	4
1:A:613:ILE:HB	1:A:618:LEU:HD22	0.47	1.87	1	1
1:A:592:LEU:HD23	1:A:692:PHE:CE2	0.47	2.44	4	1
1:A:578:LEU:HD12	1:A:696:ILE:CG2	0.47	2.24	6	1
1:A:587:ILE:HD12	1:A:688:PHE:CE1	0.47	2.45	7	1
1:A:601:PHE:CE1	1:A:610:ASN:OD1	0.47	2.68	11	11
1:A:584:PRO:HA	1:A:589:GLN:CG	0.47	2.40	14	4
1:A:595:GLN:N	1:A:598:VAL:HG12	0.47	2.25	11	2
1:A:613:ILE:HB	1:A:618:LEU:CD2	0.47	2.40	18	6
1:A:587:ILE:N	1:A:587:ILE:HD13	0.47	2.25	16	1
1:A:648:TRP:CZ3	1:A:671:LEU:HD12	0.47	2.45	3	1
1:A:577:PHE:CE2	1:A:578:LEU:HB2	0.46	2.45	20	9
1:A:681:ILE:CG2	1:A:688:PHE:CZ	0.46	2.98	14	2
1:A:594:ILE:HG12	1:A:601:PHE:CG	0.46	2.45	14	9
1:A:615:ASP:HB3	1:A:618:LEU:CD1	0.46	2.40	1	4
1:A:714:ARG:HA	1:A:714:ARG:CZ	0.46	2.40	16	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:582:PRO:CB	1:A:588:ILE:CG2	0.46	2.93	19	8
1:A:601:PHE:CD1	1:A:610:ASN:HB3	0.46	2.44	18	11
1:A:598:VAL:HG21	1:A:610:ASN:OD1	0.46	2.09	18	1
1:A:727:VAL:O	1:A:727:VAL:HG22	0.46	2.10	17	1
1:A:617:ARG:O	1:A:655:ASN:ND2	0.46	2.48	17	2
1:A:659:LEU:HD12	1:A:660:ASN:N	0.46	2.25	7	2
1:A:582:PRO:CG	1:A:692:PHE:CE2	0.46	2.99	17	8
1:A:649:TYR:HB2	1:A:672:LEU:HD21	0.46	1.87	7	4
1:A:580:LEU:HD23	1:A:694:VAL:CG2	0.46	2.41	13	2
1:A:592:LEU:N	1:A:592:LEU:HD23	0.46	2.26	18	1
1:A:592:LEU:CD2	1:A:592:LEU:N	0.46	2.79	10	4
1:A:582:PRO:CB	1:A:588:ILE:HG22	0.46	2.41	7	3
1:A:592:LEU:N	1:A:592:LEU:CD1	0.46	2.76	5	1
1:A:582:PRO:HG3	1:A:692:PHE:CZ	0.46	2.46	12	2
1:A:579:THR:O	1:A:695:GLU:N	0.46	2.46	13	3
1:A:578:LEU:O	1:A:594:ILE:N	0.46	2.48	15	5
1:A:681:ILE:CG2	1:A:690:ILE:CG1	0.46	2.94	5	3
1:A:587:ILE:HD13	1:A:688:PHE:CE1	0.46	2.46	19	2
1:A:659:LEU:HD12	1:A:659:LEU:C	0.46	2.32	7	1
1:A:582:PRO:HD3	1:A:692:PHE:CE2	0.45	2.46	2	4
1:A:622:HIS:CD2	1:A:680:ILE:HB	0.45	2.47	2	1
1:A:649:TYR:CD2	1:A:664:MET:HE1	0.45	2.46	8	2
1:A:627:LYS:NZ	1:A:700:THR:HG21	0.45	2.26	3	2
1:A:587:ILE:HD13	1:A:688:PHE:CD1	0.45	2.46	17	1
1:A:680:ILE:HG13	1:A:692:PHE:CZ	0.45	2.45	19	1
1:A:656:VAL:CG2	1:A:657:SER:N	0.45	2.79	16	10
1:A:627:LYS:HB2	1:A:647:ILE:HG22	0.45	1.88	4	1
1:A:680:ILE:HG22	1:A:681:ILE:HG22	0.45	1.87	12	1
1:A:586:SER:HB2	1:A:691:GLY:N	0.45	2.27	19	1
1:A:584:PRO:HA	1:A:589:GLN:HG3	0.45	1.87	14	2
1:A:671:LEU:HD12	1:A:672:LEU:N	0.45	2.26	17	1
1:A:577:PHE:CD1	1:A:696:ILE:HG23	0.45	2.46	11	2
1:A:598:VAL:CG1	1:A:598:VAL:O	0.45	2.65	18	3
1:A:582:PRO:CG	1:A:590:GLU:O	0.45	2.64	8	10
1:A:688:PHE:CD1	1:A:688:PHE:O	0.45	2.69	1	1
1:A:592:LEU:CD1	1:A:692:PHE:CD2	0.45	2.99	19	1
1:A:592:LEU:HD11	1:A:692:PHE:CD2	0.45	2.46	19	1
1:A:681:ILE:CG2	1:A:688:PHE:CE1	0.45	3.00	10	2
1:A:615:ASP:HB2	1:A:618:LEU:HB2	0.45	1.88	20	1
1:A:663:ARG:C	1:A:716:VAL:HG21	0.45	2.31	15	1
1:A:587:ILE:CD1	1:A:688:PHE:CE2	0.45	3.00	3	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:626:PHE:CE1	1:A:627:LYS:O	0.45	2.69	6	18
1:A:575:GLY:O	1:A:595:GLN:CA	0.45	2.65	20	2
1:A:604:GLY:HA3	1:A:620:ARG:O	0.45	2.10	11	2
1:A:584:PRO:HA	1:A:589:GLN:CB	0.45	2.41	12	1
1:A:577:PHE:CD1	1:A:700:THR:HG22	0.45	2.47	6	1
1:A:727:VAL:HG22	1:A:727:VAL:O	0.45	2.11	11	3
1:A:577:PHE:CE1	1:A:696:ILE:HG23	0.45	2.47	13	1
1:A:613:ILE:CG2	1:A:618:LEU:HD22	0.45	2.42	12	1
1:A:615:ASP:HB2	1:A:618:LEU:HD22	0.45	1.89	20	2
1:A:613:ILE:HB	1:A:618:LEU:HD11	0.45	1.88	11	1
1:A:580:LEU:HD11	1:A:594:ILE:HG13	0.45	1.87	13	1
1:A:587:ILE:CD1	1:A:688:PHE:CE1	0.45	3.00	7	2
1:A:684:LYS:HG2	1:A:685:ASN:N	0.45	2.27	7	2
1:A:592:LEU:N	1:A:592:LEU:CD2	0.45	2.80	9	2
1:A:625:ILE:HD11	1:A:647:ILE:HB	0.45	1.89	6	1
1:A:602:PHE:HB2	1:A:609:CYS:HA	0.44	1.89	2	5
1:A:580:LEU:HD11	1:A:594:ILE:CG1	0.44	2.41	13	1
1:A:582:PRO:HB3	1:A:692:PHE:CE1	0.44	2.47	6	1
1:A:583:LEU:HD22	1:A:583:LEU:N	0.44	2.27	3	2
1:A:656:VAL:HG23	1:A:664:MET:O	0.44	2.11	12	4
1:A:594:ILE:CG2	1:A:598:VAL:CG1	0.44	2.95	18	3
1:A:651:HIS:CE1	1:A:657:SER:N	0.44	2.85	18	1
1:A:580:LEU:O	1:A:592:LEU:N	0.44	2.43	2	4
1:A:588:ILE:HD13	1:A:613:ILE:HD12	0.44	1.88	12	1
1:A:630:HIS:C	1:A:630:HIS:CD2	0.44	2.90	9	1
1:A:587:ILE:HD13	1:A:688:PHE:CE2	0.44	2.47	3	1
1:A:595:GLN:O	1:A:598:VAL:N	0.44	2.51	2	12
1:A:583:LEU:O	1:A:586:SER:OG	0.44	2.35	12	1
1:A:630:HIS:ND1	1:A:646:ASP:OD2	0.44	2.51	12	1
1:A:577:PHE:CE1	1:A:702:LEU:CD1	0.44	3.00	10	1
1:A:651:HIS:CE1	1:A:657:SER:HG	0.44	2.29	19	2
1:A:659:LEU:HB3	1:A:670:PHE:CE1	0.44	2.47	3	2
1:A:622:HIS:NE2	1:A:680:ILE:HG22	0.44	2.28	19	1
1:A:618:LEU:HD21	1:A:680:ILE:HD12	0.44	1.88	2	1
1:A:682:TRP:HB2	1:A:689:VAL:HG23	0.44	1.90	4	1
1:A:622:HIS:CD2	1:A:680:ILE:CG1	0.44	3.00	10	1
1:A:651:HIS:CE1	1:A:657:SER:OG	0.44	2.71	1	3
1:A:673:GLN:O	1:A:674:ASP:C	0.44	2.56	6	1
1:A:587:ILE:HD11	1:A:615:ASP:OD1	0.44	2.13	2	1
1:A:603:ILE:CG1	1:A:611:CYS:HB3	0.44	2.43	11	2
1:A:583:LEU:N	1:A:583:LEU:HD13	0.44	2.28	5	3

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:622:HIS:NE2	1:A:680:ILE:CG2	0.44	2.80	8	5
1:A:645:ASP:O	1:A:702:LEU:HA	0.44	2.12	17	1
1:A:582:PRO:O	1:A:589:GLN:HA	0.44	2.13	12	1
1:A:587:ILE:HD12	1:A:688:PHE:CD1	0.44	2.48	7	1
1:A:699:THR:O	1:A:699:THR:OG1	0.44	2.35	4	2
1:A:649:TYR:CE2	1:A:678:ILE:CG2	0.43	3.01	10	1
1:A:606:SER:HB2	1:A:620:ARG:HA	0.43	1.89	5	3
1:A:662:ASN:HB2	1:A:670:PHE:CZ	0.43	2.48	16	1
1:A:588:ILE:C	1:A:589:GLN:HG2	0.43	2.33	7	3
1:A:690:ILE:HG22	1:A:691:GLY:N	0.43	2.28	19	2
1:A:659:LEU:HG	1:A:670:PHE:CD1	0.43	2.48	15	1
1:A:580:LEU:HD12	1:A:594:ILE:HD11	0.43	1.90	19	1
1:A:584:PRO:HA	1:A:589:GLN:CD	0.43	2.34	2	1
1:A:651:HIS:ND1	1:A:657:SER:HB3	0.43	2.29	5	1
1:A:575:GLY:O	1:A:595:GLN:CG	0.43	2.66	6	3
1:A:678:ILE:CG1	1:A:678:ILE:O	0.43	2.66	3	1
1:A:621:VAL:HG12	1:A:621:VAL:O	0.43	2.12	13	4
1:A:678:ILE:O	1:A:678:ILE:CG1	0.43	2.66	19	3
1:A:683:ASP:O	1:A:687:LYS:N	0.43	2.51	4	1
1:A:656:VAL:HG22	1:A:657:SER:N	0.43	2.28	13	5
1:A:582:PRO:HB3	1:A:588:ILE:HG23	0.43	1.89	5	1
1:A:577:PHE:HB3	1:A:596:GLN:HB3	0.43	1.90	17	3
1:A:587:ILE:CG2	1:A:588:ILE:HD13	0.43	2.44	3	2
1:A:603:ILE:HA	1:A:609:CYS:HB3	0.43	1.91	10	14
1:A:615:ASP:OD2	1:A:688:PHE:CE1	0.43	2.72	1	4
1:A:588:ILE:CD1	1:A:613:ILE:CG2	0.43	2.95	14	2
1:A:683:ASP:CB	1:A:688:PHE:CE2	0.43	3.02	4	1
1:A:579:THR:HG22	1:A:581:LYS:CG	0.43	2.44	12	1
1:A:655:ASN:C	1:A:656:VAL:CG1	0.43	2.87	15	3
1:A:580:LEU:N	1:A:580:LEU:HD23	0.43	2.28	6	1
1:A:648:TRP:CZ3	1:A:671:LEU:CD1	0.43	3.01	3	1
1:A:605:ARG:CG	1:A:618:LEU:HB3	0.43	2.44	2	1
1:A:622:HIS:HD2	1:A:680:ILE:HD12	0.43	1.73	2	2
1:A:580:LEU:CD2	1:A:694:VAL:CG2	0.43	2.97	16	3
1:A:618:LEU:HD12	1:A:622:HIS:CE1	0.43	2.48	7	2
1:A:608:ASP:OD1	1:A:609:CYS:N	0.43	2.52	8	1
1:A:587:ILE:HG12	1:A:690:ILE:HD11	0.43	1.90	12	1
1:A:682:TRP:CD1	1:A:689:VAL:CG1	0.43	2.98	1	1
1:A:627:LYS:HA	1:A:646:ASP:O	0.43	2.14	10	1
1:A:592:LEU:HD21	1:A:613:ILE:HD11	0.43	1.89	5	1
1:A:575:GLY:CA	1:A:596:GLN:OE1	0.43	2.67	15	2

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:655:ASN:O	1:A:656:VAL:HG12	0.42	2.14	14	2
1:A:580:LEU:HD12	1:A:594:ILE:CD1	0.42	2.44	19	1
1:A:645:ASP:O	1:A:702:LEU:CD2	0.42	2.68	2	1
1:A:603:ILE:CG1	1:A:611:CYS:CB	0.42	2.97	11	3
1:A:690:ILE:CG2	1:A:691:GLY:N	0.42	2.81	8	4
1:A:694:VAL:O	1:A:694:VAL:HG12	0.42	2.14	8	1
1:A:615:ASP:OD2	1:A:688:PHE:CE2	0.42	2.71	12	1
1:A:577:PHE:CD1	1:A:578:LEU:HB2	0.42	2.49	14	2
1:A:577:PHE:CD2	1:A:700:THR:HG22	0.42	2.49	15	1
1:A:583:LEU:CD2	1:A:583:LEU:N	0.42	2.73	1	3
1:A:613:ILE:HD12	1:A:692:PHE:CE1	0.42	2.49	5	1
1:A:627:LYS:NZ	1:A:700:THR:CG2	0.42	2.82	4	1
1:A:587:ILE:CD1	1:A:688:PHE:CD2	0.42	3.02	3	1
1:A:603:ILE:HG12	1:A:611:CYS:CB	0.42	2.44	11	2
1:A:683:ASP:HB3	1:A:688:PHE:CE1	0.42	2.50	18	1
1:A:682:TRP:CA	1:A:689:VAL:HG23	0.42	2.44	4	1
1:A:714:ARG:CA	1:A:714:ARG:NE	0.42	2.75	15	2
1:A:615:ASP:O	1:A:618:LEU:HB2	0.42	2.15	7	1
1:A:584:PRO:O	1:A:589:GLN:NE2	0.42	2.53	16	4
1:A:659:LEU:CG	1:A:678:ILE:HG23	0.42	2.44	5	1
1:A:649:TYR:CD2	1:A:664:MET:SD	0.42	3.13	6	1
1:A:659:LEU:HD21	1:A:678:ILE:CG2	0.42	2.39	15	1
1:A:600:PRO:CG	1:A:726:LEU:HD23	0.42	2.45	9	1
1:A:587:ILE:CD1	1:A:688:PHE:CD1	0.42	3.03	7	1
1:A:609:CYS:O	1:A:610:ASN:C	0.42	2.58	1	6
1:A:575:GLY:C	1:A:596:GLN:NE2	0.42	2.73	11	4
1:A:579:THR:HG23	1:A:593:GLU:HG2	0.42	1.92	16	1
1:A:596:GLN:CB	1:A:700:THR:HG21	0.42	2.45	10	1
1:A:689:VAL:O	1:A:689:VAL:HG23	0.42	2.15	20	1
1:A:587:ILE:HG13	1:A:588:ILE:HD13	0.42	1.91	13	1
1:A:613:ILE:HD12	1:A:692:PHE:CE2	0.42	2.48	8	1
1:A:726:LEU:N	1:A:726:LEU:CD1	0.42	2.83	9	1
1:A:615:ASP:OD1	1:A:688:PHE:CZ	0.42	2.73	5	1
1:A:582:PRO:HD2	1:A:591:SER:HA	0.42	1.92	3	4
1:A:617:ARG:HA	1:A:617:ARG:NE	0.42	2.29	3	1
1:A:602:PHE:HA	1:A:624:PHE:CB	0.42	2.43	11	2
1:A:625:ILE:HD13	1:A:672:LEU:HD12	0.42	1.92	13	1
1:A:699:THR:OG1	1:A:699:THR:O	0.42	2.36	13	1
1:A:617:ARG:CB	1:A:681:ILE:CD1	0.42	2.98	5	1
1:A:626:PHE:CZ	1:A:628:LYS:CG	0.42	3.03	6	3
1:A:575:GLY:O	1:A:595:GLN:CB	0.42	2.68	1	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:646:ASP:OD2	1:A:671:LEU:HD11	0.42	2.14	6	1
1:A:659:LEU:HD22	1:A:678:ILE:HG12	0.42	1.91	7	1
1:A:615:ASP:OD1	1:A:688:PHE:CE2	0.41	2.73	11	1
1:A:624:PHE:CD1	1:A:624:PHE:N	0.41	2.88	16	1
1:A:649:TYR:CB	1:A:672:LEU:CD2	0.41	2.97	16	1
1:A:601:PHE:HB3	1:A:625:ILE:CG2	0.41	2.46	6	1
1:A:690:ILE:O	1:A:690:ILE:CG2	0.41	2.69	7	1
1:A:586:SER:C	1:A:588:ILE:N	0.41	2.74	2	3
1:A:582:PRO:HG2	1:A:590:GLU:O	0.41	2.15	8	2
1:A:575:GLY:HA2	1:A:596:GLN:OE1	0.41	2.15	1	1
1:A:617:ARG:HB3	1:A:681:ILE:CD1	0.41	2.46	15	1
1:A:685:ASN:ND2	1:A:686:ASN:N	0.41	2.68	13	1
1:A:659:LEU:HD22	1:A:678:ILE:HG22	0.41	1.92	16	1
1:A:683:ASP:HB2	1:A:688:PHE:CE2	0.41	2.50	4	1
1:A:688:PHE:O	1:A:688:PHE:CD1	0.41	2.74	4	1
1:A:683:ASP:HB2	1:A:688:PHE:CE1	0.41	2.50	2	1
1:A:622:HIS:CD2	1:A:680:ILE:HG12	0.41	2.50	10	1
1:A:580:LEU:O	1:A:592:LEU:O	0.41	2.37	20	1
1:A:689:VAL:O	1:A:689:VAL:CG1	0.41	2.69	19	2
1:A:582:PRO:HB2	1:A:588:ILE:CG2	0.41	2.45	8	2
1:A:588:ILE:CG1	1:A:690:ILE:HD11	0.41	2.45	7	1
1:A:681:ILE:HG22	1:A:690:ILE:HG12	0.41	1.89	11	1
1:A:698:ASP:N	1:A:698:ASP:OD1	0.41	2.54	4	1
1:A:576:ARG:CG	1:A:593:GLU:CB	0.41	2.98	12	1
1:A:577:PHE:CD1	1:A:698:ASP:O	0.41	2.73	6	1
1:A:617:ARG:NE	1:A:617:ARG:CA	0.41	2.83	9	1
1:A:648:TRP:HB3	1:A:669:LYS:CG	0.41	2.46	7	1
1:A:680:ILE:CD1	1:A:692:PHE:CE2	0.41	3.02	16	1
1:A:583:LEU:N	1:A:583:LEU:CD1	0.41	2.83	17	1
1:A:604:GLY:HA2	1:A:622:HIS:HB3	0.41	1.93	8	2
1:A:624:PHE:CE1	1:A:650:CYS:HB3	0.41	2.51	17	1
1:A:576:ARG:HG3	1:A:593:GLU:CB	0.41	2.46	1	1
1:A:601:PHE:CD2	1:A:610:ASN:HB3	0.41	2.51	1	1
1:A:671:LEU:HA	1:A:671:LEU:HD23	0.41	1.79	12	1
1:A:600:PRO:HB3	1:A:626:PHE:HB2	0.41	1.93	2	1
1:A:603:ILE:CG2	1:A:613:ILE:CG1	0.41	2.99	11	1
1:A:615:ASP:CB	1:A:618:LEU:HB3	0.41	2.46	11	1
1:A:680:ILE:HG22	1:A:690:ILE:CG2	0.41	2.46	18	1
1:A:601:PHE:CE2	1:A:611:CYS:HB2	0.41	2.51	12	2
1:A:724:LYS:O	1:A:727:VAL:CG1	0.41	2.69	13	1
1:A:689:VAL:HG23	1:A:689:VAL:O	0.41	2.16	16	1

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Atom-1	Atom-2	Clash(Å)	Distance(Å)	Models	
				Worst	Total
1:A:649:TYR:CE2	1:A:664:MET:CE	0.41	3.04	8	1
1:A:615:ASP:OD1	1:A:688:PHE:CE1	0.41	2.74	14	1
1:A:688:PHE:CD1	1:A:688:PHE:C	0.41	2.94	1	1
1:A:601:PHE:HB3	1:A:625:ILE:HG23	0.41	1.92	6	1
1:A:588:ILE:HG12	1:A:690:ILE:HD11	0.41	1.93	7	1
1:A:694:VAL:HG12	1:A:694:VAL:O	0.41	2.16	4	1
1:A:617:ARG:CA	1:A:617:ARG:NE	0.41	2.84	12	1
1:A:655:ASN:C	1:A:656:VAL:CG2	0.40	2.90	18	1
1:A:651:HIS:CD2	1:A:653:GLY:O	0.40	2.75	17	1
1:A:577:PHE:CZ	1:A:647:ILE:CG2	0.40	2.99	13	2
1:A:603:ILE:CD1	1:A:603:ILE:N	0.40	2.70	1	1
1:A:585:ASP:O	1:A:689:VAL:CG1	0.40	2.69	6	1
1:A:622:HIS:CD2	1:A:680:ILE:HG23	0.40	2.51	20	1
1:A:644:LEU:HD23	1:A:644:LEU:N	0.40	2.30	8	1
1:A:587:ILE:HG21	1:A:688:PHE:CD1	0.40	2.51	12	1
1:A:626:PHE:CE2	1:A:628:LYS:HB2	0.40	2.51	6	1
1:A:680:ILE:HG12	1:A:690:ILE:HG21	0.40	1.93	15	1
1:A:600:PRO:HG3	1:A:726:LEU:HB3	0.40	1.93	9	1
1:A:626:PHE:CZ	1:A:628:LYS:HG3	0.40	2.52	19	1
1:A:698:ASP:OD1	1:A:698:ASP:N	0.40	2.53	20	1
1:A:576:ARG:HD3	1:A:593:GLU:CB	0.40	2.47	11	1
1:A:658:TYR:N	1:A:658:TYR:CD1	0.40	2.89	18	1
1:A:630:HIS:CE1	1:A:646:ASP:OD2	0.40	2.73	16	1
1:A:603:ILE:HG22	1:A:613:ILE:HG13	0.40	1.93	17	1
1:A:626:PHE:CD2	1:A:723:GLU:OE2	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	130/158 (82%)	112±2 (86±1%)	15±2 (11±2%)	3±1 (2±1%)	11	50
2	P	0	-	-	-	-	-
All	All	2600/3300 (79%)	2246 (86%)	297 (11%)	57 (2%)	11	50

All 8 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	656	VAL	20
1	A	660	ASN	19
1	A	714	ARG	8
1	A	700	THR	3
1	A	666	GLN	3
1	A	620	ARG	2
1	A	575	GLY	1
1	A	582	PRO	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	121/142 (85%)	83±4 (69±3%)	38±4 (31±3%)	<b>1</b> <b>14</b>
2	P	0	-	-	-
All	All	2420/2960 (82%)	1661 (69%)	759 (31%)	<b>1</b> <b>14</b>

All 89 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	620	ARG	20
1	A	591	SER	20
1	A	652	THR	20
1	A	583	LEU	20
1	A	671	LEU	20
1	A	612	LYS	20
1	A	596	GLN	20
1	A	610	ASN	20
1	A	577	PHE	20
1	A	702	LEU	19
1	A	659	LEU	18
1	A	628	LYS	18
1	A	605	ARG	18
1	A	666	GLN	17
1	A	698	ASP	16

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Mol	Chain	Res	Type	Models (Total)
1	A	606	SER	15
1	A	684	LYS	15
1	A	680	ILE	15
1	A	670	PHE	14
1	A	645	ASP	14
1	A	599	ASN	14
1	A	676	ASP	13
1	A	592	LEU	12
1	A	688	PHE	12
1	A	589	GLN	12
1	A	677	GLU	12
1	A	587	ILE	11
1	A	725	ASP	11
1	A	718	LYS	11
1	A	728	LYS	10
1	A	607	GLU	10
1	A	695	GLU	10
1	A	593	GLU	10
1	A	629	ARG	9
1	A	717	LEU	9
1	A	650	CYS	9
1	A	646	ASP	8
1	A	662	ASN	8
1	A	664	MET	8
1	A	581	LYS	8
1	A	679	LYS	7
1	A	686	ASN	7
1	A	586	SER	7
1	A	618	LEU	7
1	A	693	LYS	7
1	A	720	THR	7
1	A	724	LYS	7
1	A	689	VAL	7
1	A	663	ARG	7
1	A	590	GLU	6
1	A	656	VAL	6
1	A	692	PHE	6
1	A	660	ASN	6
1	A	619	SER	6
1	A	580	LEU	6
1	A	627	LYS	5
1	A	687	LYS	5

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Mol	Chain	Res	Type	Models (Total)
1	A	617	ARG	5
1	A	683	ASP	5
1	A	722	GLU	5
1	A	661	ASN	4
1	A	615	ASP	4
1	A	723	GLU	4
1	A	655	ASN	4
1	A	614	GLU	4
1	A	694	VAL	4
1	A	678	ILE	4
1	A	608	ASP	3
1	A	595	GLN	3
1	A	714	ARG	3
1	A	699	THR	3
1	A	644	LEU	3
1	A	585	ASP	2
1	A	613	ILE	2
1	A	647	ILE	2
1	A	696	ILE	2
1	A	582	PRO	2
1	A	616	ASN	2
1	A	674	ASP	2
1	A	685	ASN	2
1	A	681	ILE	2
1	A	588	ILE	1
1	A	697	ASN	1
1	A	625	ILE	1
1	A	630	HIS	1
1	A	726	LEU	1
1	A	603	ILE	1
1	A	715	VAL	1
1	A	611	CYS	1

### 6.3.3 RNA [i](#)

There are no RNA molecules in this entry.

## 6.4 Non-standard residues in protein, DNA, RNA chains [i](#)

1 non-standard protein/DNA/RNA residue is modelled in this entry.

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
2	PTR	P	829	2	16,16,17	0.85±0.01	0±0 (0±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
2	PTR	P	829	2	21,22,24	0.81±0.01	0±0 (0±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
2	PTR	P	829	2	-	0±0,9,11,13	0±0,1,1,1

There are no bond-length outliers.

There are no bond-angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

## 6.5 Carbohydrates

There are no carbohydrates 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

No chemical shift data were provided