



# Full wwPDB X-ray Structure Validation Report ⓘ

Jan 31, 2016 – 08:31 PM GMT

PDB ID : 1KN0  
Title : Crystal Structure of the human Rad52 protein  
Authors : Kagawa, W.; Kurumizaka, H.; Ishitani, R.; Fukai, S.; Nureki, O.; Shibata, T.;  
Yokoyama, S.; RIKEN Structural Genomics/Proteomics Initiative (RSGI)  
Deposited on : 2001-12-18  
Resolution : 2.85 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.  
We welcome your comments at [validation@mail.wwpdb.org](mailto:validation@mail.wwpdb.org)  
A user guide is available at  
<http://wwpdb.org/validation/2016/XrayValidationReportHelp>  
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:

MolProbity : 4.02b-467  
Mogul : 1.7 (RC4), CSD as536be (2015)  
Xtriage (Phenix) : 1.9-1692  
EDS : rb-20026688  
Percentile statistics : 20151230.v01 (using entries in the PDB archive December 30th 2015)  
Refmac : 5.8.0135  
CCP4 : 6.5.0  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : trunk26865

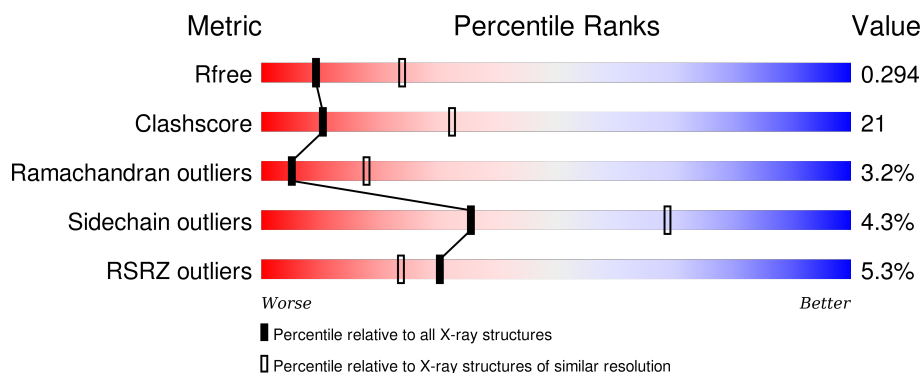
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.85 Å.

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)	Similar resolution (#Entries, resolution range(Å))
$R_{free}$	91344	2228 (2.90-2.82)
Clashscore	102246	2499 (2.90-2.82)
Ramachandran outliers	100387	2439 (2.90-2.82)
Sidechain outliers	100360	2442 (2.90-2.82)
RSRZ outliers	91569	2236 (2.90-2.82)

The table below summarises the geometric issues observed across the polymeric chains and their fit to the electron density. The red, orange, yellow and green segments on the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 2, 1 and 0 types of geometric quality criteria. 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  $\leq 5\%$ . The upper red bar (where present) indicates the fraction of residues that have poor fit to the electron density. The numeric value is given above the bar.

Mol	Chain	Length	Quality of chain
1	A	212	<div> <div> <div>0%</div> <div>49%</div> <div>34%</div> <div>•</div> <div>13%</div> </div> </div>
1	B	212	<div> <div>3%</div> <div>52%</div> <div>31%</div> <div>•</div> <div>13%</div> </div>
1	C	212	<div> <div>3%</div> <div>52%</div> <div>31%</div> <div>• •</div> <div>13%</div> </div>
1	D	212	<div> <div>5%</div> <div>50%</div> <div>33%</div> <div>• •</div> <div>13%</div> </div>
1	E	212	<div> <div>11%</div> <div>48%</div> <div>33%</div> <div>6%</div> <div>13%</div> </div>

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Mol	Chain	Length	Quality of chain
1	F	212	
1	G	212	
1	H	212	
1	I	212	
1	J	212	
1	K	212	

## 2 Entry composition [i](#)

There are 2 unique types of molecules in this entry. The entry contains 16032 atoms, of which 0 are hydrogens and 0 are deuteriums.

In the tables below, the ZeroOcc column contains the number of atoms modelled with zero occupancy, the AltConf column contains the number of residues with at least one atom in alternate conformation and the Trace column contains the number of residues modelled with at most 2 atoms.

- Molecule 1 is a protein called Rad52.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	184	Total	C	N	O	S	0	0	0
			1450	907	261	274	8			
1	B	184	Total	C	N	O	S	0	0	0
			1450	907	261	274	8			
1	C	184	Total	C	N	O	S	0	0	0
			1450	907	261	274	8			
1	D	184	Total	C	N	O	S	0	0	0
			1450	907	261	274	8			
1	E	184	Total	C	N	O	S	0	0	0
			1450	907	261	274	8			
1	F	184	Total	C	N	O	S	0	0	0
			1450	907	261	274	8			
1	G	184	Total	C	N	O	S	0	0	0
			1450	907	261	274	8			
1	H	184	Total	C	N	O	S	0	0	0
			1450	907	261	274	8			
1	I	184	Total	C	N	O	S	0	0	0
			1450	907	261	274	8			
1	J	184	Total	C	N	O	S	0	0	0
			1450	907	261	274	8			
1	K	184	Total	C	N	O	S	0	0	0
			1450	907	261	274	8			

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	9	Total	O	0	0
			9	9		
2	B	12	Total	O	0	0
			12	12		
2	C	9	Total	O	0	0
			9	9		

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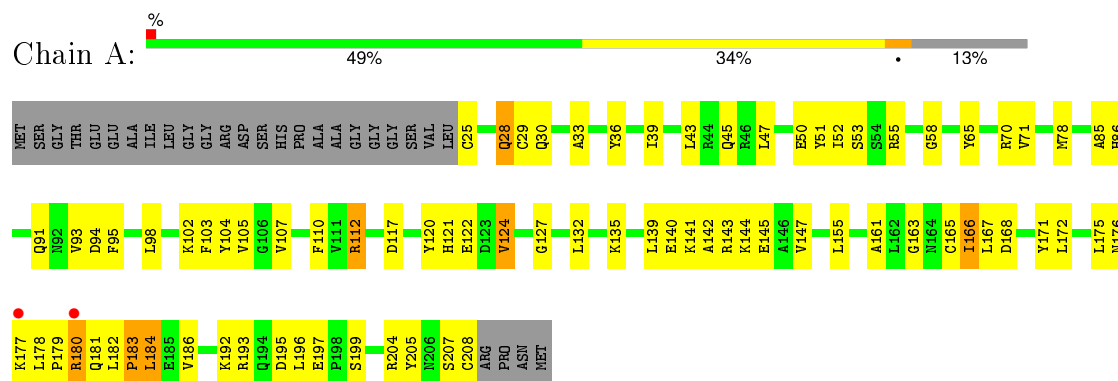
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	D	6	Total 6	O 6	0	0
2	E	3	Total 3	O 3	0	0
2	F	2	Total 2	O 2	0	0
2	G	8	Total 8	O 8	0	0
2	H	10	Total 10	O 10	0	0
2	I	7	Total 7	O 7	0	0
2	J	9	Total 9	O 9	0	0
2	K	7	Total 7	O 7	0	0

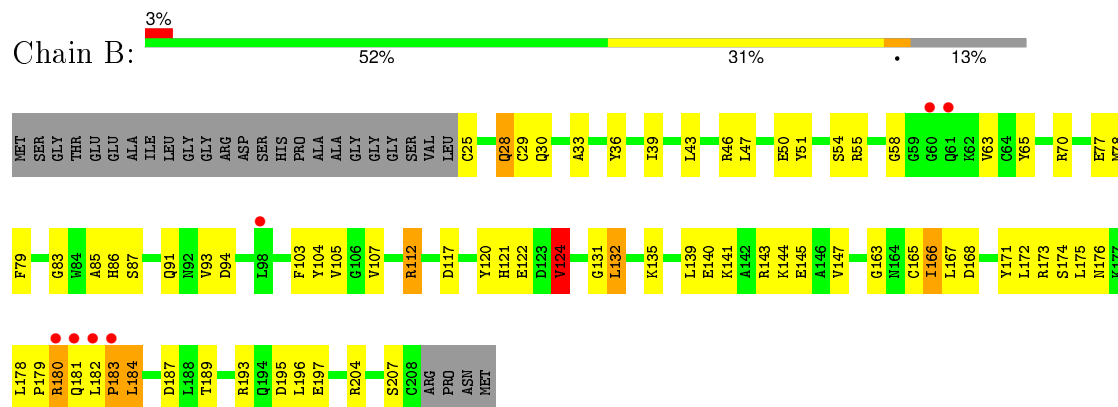
### 3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of errors displayed in the second graphic. The second graphic shows the sequence view annotated by issues in geometry and electron density. Residues are color-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. A red dot above a residue indicates a poor fit to the electron density ( $RSRZ > 2$ ). Stretches of 2 or more consecutive residues without any outlier are shown as a green connector. Residues present in the sample, but not in the model, are shown in grey.

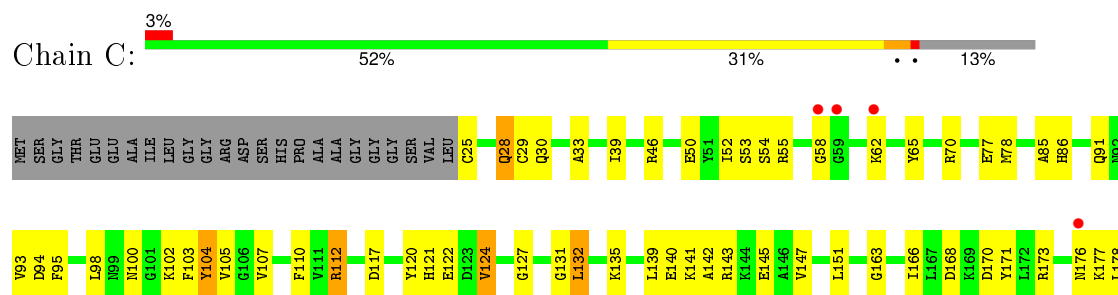
#### • Molecule 1: Rad52



#### • Molecule 1: Rad52

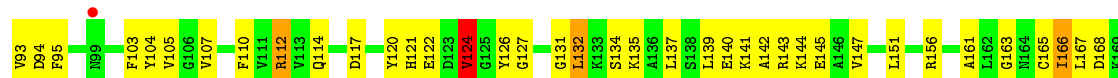
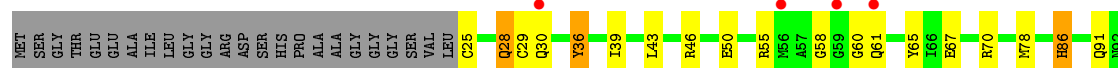


#### • Molecule 1: Rad52





• Molecule 1: Rad52



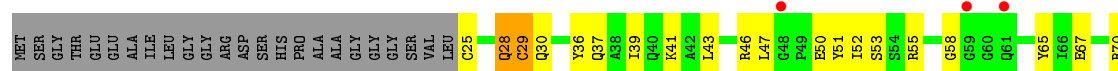
• Molecule 1: Rad52

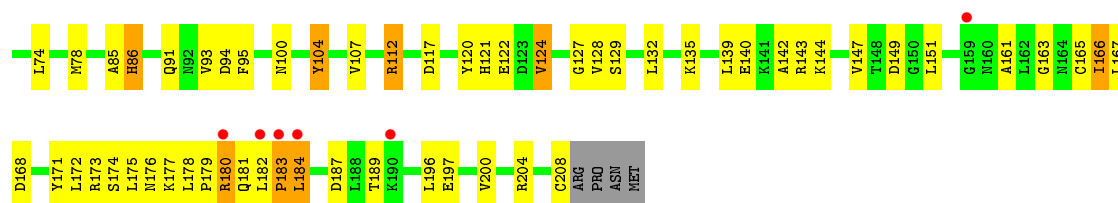


• Molecule 1: Rad52

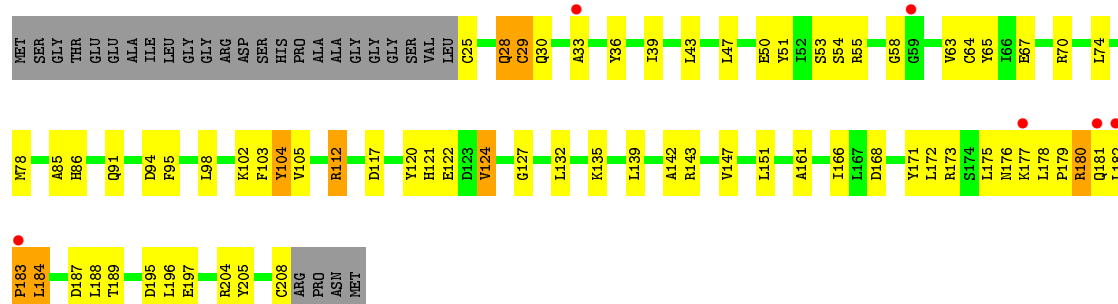


• Molecule 1: Rad52

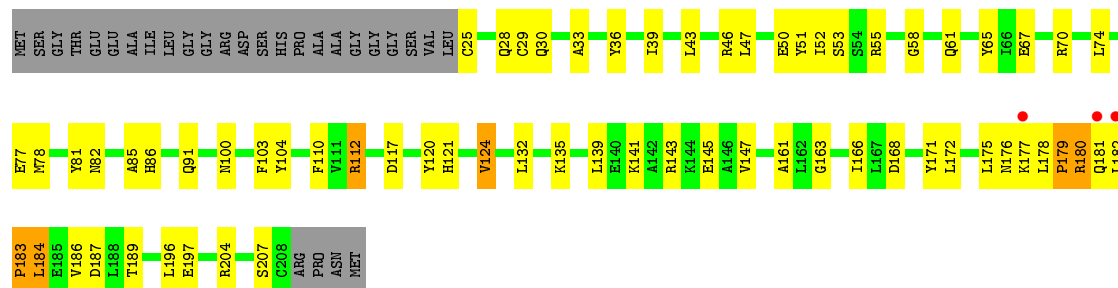




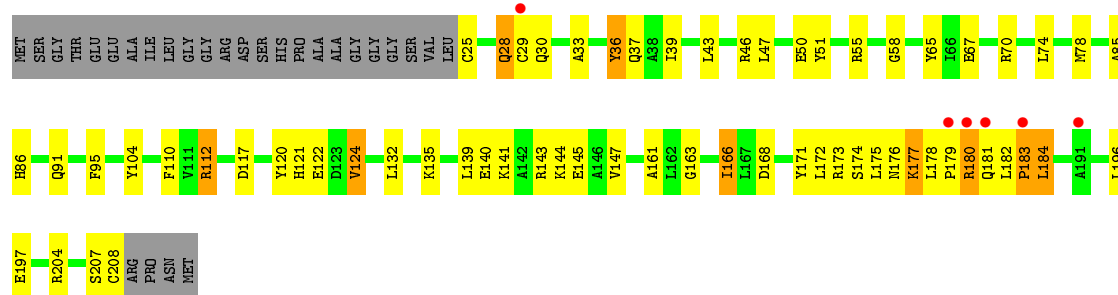
- Molecule 1: Rad52



- Molecule 1: Rad52



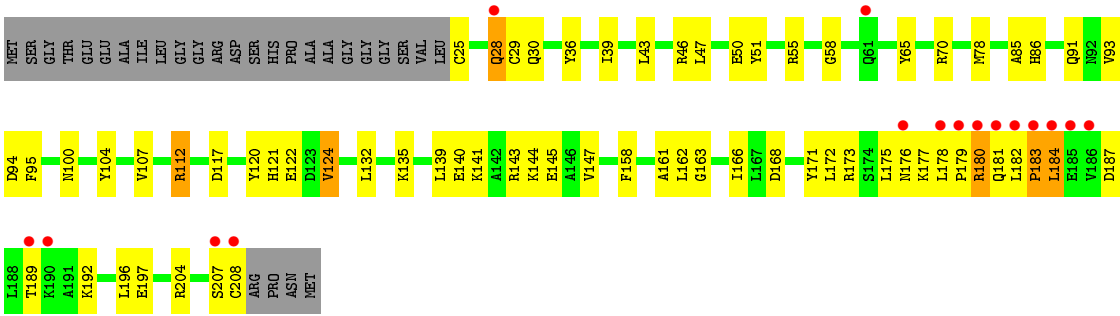
- Molecule 1: Rad52



- Molecule 1: Rad52







## 4 Data and refinement statistics

Property	Value	Source
Space group	P 43 21 2	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	145.61Å 145.61Å 247.53Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	50.00 – 2.85 45.27 – 2.85	Depositor EDS
% Data completeness (in resolution range)	(Not available) (50.00-2.85) 99.3 (45.27-2.85)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	13.17 (at 2.86Å)	Xtriage
Refinement program	CNS	Depositor
R, $R_{free}$	0.231 , 0.297 0.270 , 0.294	Depositor DCC
$R_{free}$ test set	6300 reflections (10.11%)	DCC
Wilson B-factor (Å <sup>2</sup> )	32.4	Xtriage
Anisotropy	0.084	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.30 , 76.6	EDS
Estimated twinning fraction	No twinning to report.	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.28$ , $\langle L^2 \rangle = 0.12$	Xtriage
Outliers	0 of 62321 reflections	Xtriage
$F_o, F_c$ correlation	0.84	EDS
Total number of atoms	16032	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	81.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.31% of the height of the origin peak. No significant pseudotranslation is detected.*

<sup>1</sup>Intensities estimated from amplitudes.

<sup>2</sup>Theoretical values of  $\langle |L| \rangle$ ,  $\langle L^2 \rangle$  for acentric reflections are 0.5, 0.375 respectively for untwinned datasets, and 0.333, 0.2 for perfectly twinned datasets.

## 5 Model quality

### 5.1 Standard geometry

The Z score for a bond length (or angle) is the number of standard deviations the observed value is removed from the expected value. A bond length (or angle) with  $|Z| > 5$  is considered an outlier worth inspection. RMSZ is the root-mean-square of all Z scores of the bond lengths (or angles).

Mol	Chain	Bond lengths		Bond angles	
		RMSZ	# Z  >5	RMSZ	# Z  >5
1	A	0.45	0/1474	0.63	0/1981
1	B	0.46	0/1474	0.63	1/1981 (0.1%)
1	C	0.42	0/1474	0.61	0/1981
1	D	0.42	0/1474	0.61	1/1981 (0.1%)
1	E	0.40	0/1474	0.60	0/1981
1	F	0.40	0/1474	0.59	0/1981
1	G	0.42	0/1474	0.62	0/1981
1	H	0.41	0/1474	0.61	0/1981
1	I	0.41	0/1474	0.62	0/1981
1	J	0.41	0/1474	0.62	0/1981
1	K	0.43	0/1474	0.61	0/1981
All	All	0.42	0/16214	0.61	2/21791 (0.0%)

Chiral center outliers are detected by calculating the chiral volume of a chiral center and verifying if the center is modelled as a planar moiety or with the opposite hand. A planarity outlier is detected by checking planarity of atoms in a peptide group, atoms in a mainchain group or atoms of a sidechain that are expected to be planar.

Mol	Chain	#Chirality outliers	#Planarity outliers
1	D	0	1
1	E	0	1
1	F	0	1
1	J	0	1
All	All	0	4

There are no bond length outliers.

All (2) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	B	124	VAL	CB-CA-C	-5.46	101.03	111.40
1	D	124	VAL	CB-CA-C	-5.03	101.85	111.40

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	D	36	TYR	Sidechain
1	E	36	TYR	Sidechain
1	F	36	TYR	Sidechain
1	J	36	TYR	Sidechain

## 5.2 Too-close contacts

In the following table, the Non-H and H(model) columns list the number of non-hydrogen atoms and hydrogen atoms in the 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 within the asymmetric unit, whereas Symm-Clashes lists symmetry related clashes.

Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
1	A	1450	0	1433	74	0
1	B	1450	0	1433	74	0
1	C	1450	0	1433	76	0
1	D	1450	0	1433	83	1
1	E	1450	0	1433	87	1
1	F	1450	0	1433	81	0
1	G	1450	0	1433	87	1
1	H	1450	0	1433	71	0
1	I	1450	0	1433	72	0
1	J	1450	0	1433	77	0
1	K	1450	0	1433	69	0
2	A	9	0	0	2	0
2	B	12	0	0	0	0
2	C	9	0	0	0	0
2	D	6	0	0	0	0
2	E	3	0	0	0	0
2	F	2	0	0	0	0
2	G	8	0	0	0	0
2	H	10	0	0	0	0
2	I	7	0	0	0	0
2	J	9	0	0	0	0
2	K	7	0	0	0	0
All	All	16032	0	15763	681	2

The all-atom clashscore is defined as the number of clashes found per 1000 atoms (including hydrogen atoms). The all-atom clashscore for this structure is 21.

All (681) close contacts within the same asymmetric unit are listed below, sorted by their clash magnitude.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:G:182:LEU:HD12	1:G:183:PRO:HD2	1.43	0.99
1:A:86:HIS:HD2	1:B:121:HIS:HD2	1.09	0.98
1:G:182:LEU:CD1	1:G:183:PRO:HD2	1.96	0.95
1:B:86:HIS:HD2	1:C:121:HIS:HD2	1.14	0.93
1:A:121:HIS:HD2	1:K:86:HIS:HD2	1.14	0.93
1:J:86:HIS:HD2	1:K:121:HIS:HD2	1.15	0.89
1:B:147:VAL:HG21	1:C:124:VAL:CG2	2.04	0.88
1:G:182:LEU:HD12	1:G:183:PRO:CD	2.04	0.87
1:H:86:HIS:HD2	1:I:121:HIS:HD2	1.23	0.85
1:K:91:GLN:NE2	1:K:143:ARG:HE	1.75	0.85
1:I:86:HIS:HD2	1:J:121:HIS:HD2	1.23	0.85
1:J:147:VAL:HG21	1:K:124:VAL:CG2	2.09	0.82
1:F:86:HIS:CD2	1:G:121:HIS:HD2	1.97	0.82
1:A:39:ILE:HG23	1:A:78:MET:CE	2.10	0.82
1:A:86:HIS:CD2	1:B:121:HIS:HD2	1.96	0.82
1:E:39:ILE:HG23	1:E:78:MET:CE	2.09	0.81
1:F:86:HIS:HD2	1:G:121:HIS:HD2	1.24	0.81
1:A:86:HIS:HD2	1:B:121:HIS:CD2	1.97	0.80
1:B:86:HIS:HD2	1:C:121:HIS:CD2	2.00	0.79
1:G:86:HIS:CD2	1:H:121:HIS:HD2	2.00	0.79
1:E:141:LYS:HE2	1:E:145:GLU:OE2	1.83	0.78
1:C:39:ILE:HG23	1:C:78:MET:CE	2.13	0.78
1:D:147:VAL:HG21	1:E:124:VAL:CG2	2.13	0.78
1:D:91:GLN:NE2	1:D:143:ARG:HE	1.80	0.78
1:H:39:ILE:HG23	1:H:78:MET:CE	2.14	0.78
1:J:86:HIS:HD2	1:K:121:HIS:CD2	2.03	0.77
1:I:39:ILE:HG23	1:I:78:MET:CE	2.15	0.77
1:G:50:GLU:HG3	1:G:181:GLN:HE22	1.49	0.77
1:H:91:GLN:NE2	1:H:143:ARG:HE	1.83	0.76
1:K:39:ILE:HG23	1:K:78:MET:CE	2.15	0.76
1:F:39:ILE:HG23	1:F:78:MET:CE	2.16	0.75
1:C:86:HIS:HD2	1:D:121:HIS:HD2	1.33	0.75
1:A:121:HIS:CD2	1:K:86:HIS:HD2	2.02	0.75
1:I:147:VAL:HG21	1:J:124:VAL:CG2	2.17	0.75
1:F:50:GLU:HG3	1:F:181:GLN:HE22	1.52	0.74
1:D:86:HIS:CD2	1:E:121:HIS:HD2	2.05	0.74
1:F:86:HIS:HD2	1:G:121:HIS:CD2	2.05	0.74
1:C:86:HIS:CD2	1:D:121:HIS:HD2	2.05	0.74
1:I:182:LEU:HG	1:I:183:PRO:HD2	1.69	0.73
1:J:50:GLU:HG3	1:J:181:GLN:HE22	1.51	0.73
1:H:147:VAL:HG21	1:I:124:VAL:CG2	2.18	0.73
1:I:50:GLU:HG3	1:I:181:GLN:HE22	1.54	0.73

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:86:HIS:CD2	1:K:121:HIS:HD2	2.04	0.73
1:C:91:GLN:NE2	1:C:143:ARG:HE	1.87	0.73
1:G:147:VAL:HG21	1:H:124:VAL:CG2	2.17	0.73
1:D:39:ILE:HG23	1:D:78:MET:CE	2.19	0.73
1:H:86:HIS:CD2	1:I:121:HIS:HD2	2.07	0.72
1:H:28:GLN:HE21	1:H:28:GLN:HA	1.54	0.72
1:K:50:GLU:HG3	1:K:181:GLN:HE22	1.54	0.72
1:G:39:ILE:HG23	1:G:78:MET:CE	2.19	0.72
1:H:50:GLU:HG3	1:H:181:GLN:HE22	1.54	0.72
1:J:39:ILE:HG23	1:J:78:MET:CE	2.20	0.72
1:J:50:GLU:HG3	1:J:181:GLN:NE2	2.05	0.72
1:B:50:GLU:HG3	1:B:181:GLN:HE22	1.54	0.71
1:I:85:ALA:HB1	1:J:120:TYR:O	1.91	0.71
1:I:91:GLN:NE2	1:I:143:ARG:HE	1.88	0.70
1:B:182:LEU:HG	1:B:183:PRO:HD2	1.72	0.70
1:A:124:VAL:CG2	1:K:147:VAL:HG21	2.22	0.70
1:K:28:GLN:HE21	1:K:28:GLN:HA	1.54	0.70
1:I:86:HIS:HD2	1:J:121:HIS:CD2	2.08	0.70
1:G:50:GLU:HG3	1:G:181:GLN:NE2	2.07	0.70
1:F:204:ARG:HD2	1:H:36:TYR:OH	1.91	0.70
1:E:50:GLU:HG3	1:E:181:GLN:HE22	1.55	0.70
1:F:50:GLU:HG3	1:F:181:GLN:NE2	2.06	0.70
1:B:86:HIS:CD2	1:C:121:HIS:HD2	2.04	0.70
1:G:184:LEU:HD22	1:G:184:LEU:H	1.57	0.70
1:H:184:LEU:H	1:H:184:LEU:HD22	1.56	0.70
1:H:50:GLU:HG3	1:H:181:GLN:NE2	2.06	0.70
1:H:112:ARG:HG3	1:H:122:GLU:HB2	1.74	0.69
1:A:50:GLU:HG3	1:A:181:GLN:HE22	1.58	0.69
1:A:39:ILE:HG23	1:A:78:MET:HE1	1.75	0.69
1:J:28:GLN:HA	1:J:28:GLN:HE21	1.58	0.69
1:B:39:ILE:HG23	1:B:78:MET:CE	2.22	0.69
1:F:147:VAL:HG21	1:G:124:VAL:CG2	2.23	0.69
1:G:86:HIS:HD2	1:H:121:HIS:HD2	1.39	0.69
1:I:50:GLU:HG3	1:I:181:GLN:NE2	2.08	0.69
1:J:91:GLN:NE2	1:J:143:ARG:HE	1.91	0.69
1:E:28:GLN:HA	1:E:28:GLN:HE21	1.58	0.69
1:A:147:VAL:HG21	1:B:124:VAL:CG2	2.23	0.68
1:G:28:GLN:HA	1:G:28:GLN:HE21	1.58	0.68
1:J:184:LEU:H	1:J:184:LEU:HD22	1.58	0.68
1:I:184:LEU:H	1:I:184:LEU:HD22	1.58	0.68
1:C:86:HIS:HD2	1:D:121:HIS:CD2	2.11	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:50:GLU:HG3	1:E:181:GLN:NE2	2.08	0.68
1:D:70:ARG:HG3	1:D:70:ARG:HH11	1.57	0.68
1:F:184:LEU:HD22	1:F:184:LEU:H	1.57	0.68
1:F:25:CYS:HA	1:G:30:GLN:HG2	1.76	0.68
1:K:50:GLU:HG3	1:K:181:GLN:NE2	2.08	0.68
1:B:50:GLU:HG3	1:B:181:GLN:NE2	2.09	0.67
1:A:28:GLN:HE21	1:A:28:GLN:HA	1.59	0.67
1:D:25:CYS:HA	1:E:30:GLN:HG2	1.76	0.67
1:H:182:LEU:HG	1:H:183:PRO:HD2	1.76	0.67
1:A:121:HIS:HD2	1:K:86:HIS:CD2	2.05	0.67
1:K:184:LEU:H	1:K:184:LEU:HD22	1.60	0.67
1:G:86:HIS:CD2	1:H:121:HIS:CD2	2.83	0.67
1:A:184:LEU:HD22	1:A:184:LEU:H	1.59	0.67
1:C:147:VAL:HG21	1:D:124:VAL:CG2	2.24	0.66
1:E:204:ARG:HD2	1:G:36:TYR:OH	1.95	0.66
1:A:50:GLU:HG3	1:A:181:GLN:NE2	2.10	0.66
1:E:147:VAL:HG21	1:F:124:VAL:CG2	2.25	0.66
1:F:28:GLN:HE21	1:F:28:GLN:HA	1.58	0.66
1:E:25:CYS:HA	1:F:30:GLN:HG2	1.75	0.66
1:G:86:HIS:HD2	1:H:121:HIS:CD2	2.14	0.66
1:G:70:ARG:HH11	1:G:70:ARG:HG3	1.60	0.66
1:A:78:MET:O	1:K:204:ARG:NH2	2.29	0.66
1:E:112:ARG:HG3	1:E:122:GLU:HB2	1.78	0.66
1:H:208:CYS:HB2	1:J:33:ALA:HB2	1.78	0.66
1:C:184:LEU:H	1:C:184:LEU:HD22	1.60	0.66
1:B:28:GLN:HA	1:B:28:GLN:HE21	1.60	0.66
1:I:70:ARG:HG3	1:I:70:ARG:HH11	1.61	0.66
1:A:91:GLN:NE2	1:A:143:ARG:HE	1.93	0.66
2:A:213:HOH:O	1:B:121:HIS:HE1	1.79	0.65
1:F:182:LEU:HG	1:F:183:PRO:HD2	1.78	0.65
1:D:184:LEU:HD22	1:D:184:LEU:H	1.61	0.65
1:A:204:ARG:NH2	1:B:78:MET:O	2.29	0.65
1:D:50:GLU:HG3	1:D:181:GLN:HE22	1.59	0.65
1:F:91:GLN:NE2	1:F:143:ARG:HE	1.94	0.65
1:D:86:HIS:CD2	1:E:121:HIS:CD2	2.85	0.65
1:B:91:GLN:NE2	1:B:143:ARG:HE	1.94	0.65
1:A:93:VAL:HA	1:A:107:VAL:HG22	1.79	0.65
1:C:50:GLU:HG3	1:C:181:GLN:HE22	1.61	0.65
1:K:196:LEU:HD12	1:K:197:GLU:H	1.61	0.65
1:E:196:LEU:HD12	1:E:197:GLU:H	1.62	0.64
1:D:141:LYS:HE2	1:D:145:GLU:OE2	1.98	0.64

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:86:HIS:CD2	1:F:121:HIS:HD2	2.15	0.64
1:I:28:GLN:HE21	1:I:28:GLN:HA	1.63	0.64
1:B:70:ARG:HH11	1:B:70:ARG:HG3	1.63	0.64
1:E:91:GLN:NE2	1:E:143:ARG:HE	1.96	0.64
1:D:182:LEU:HG	1:D:183:PRO:HD2	1.80	0.64
1:B:184:LEU:H	1:B:184:LEU:HD22	1.63	0.63
1:K:182:LEU:HG	1:K:183:PRO:HD2	1.80	0.63
1:D:28:GLN:HA	1:D:28:GLN:HE21	1.64	0.63
1:J:182:LEU:HG	1:J:183:PRO:HD2	1.81	0.63
1:E:184:LEU:H	1:E:184:LEU:HD22	1.63	0.63
1:D:50:GLU:HG3	1:D:181:GLN:NE2	2.14	0.63
1:B:141:LYS:HE2	1:B:145:GLU:OE2	1.99	0.63
1:C:50:GLU:HG3	1:C:181:GLN:NE2	2.14	0.63
1:E:182:LEU:HG	1:E:183:PRO:HD2	1.81	0.63
1:H:85:ALA:HB1	1:I:120:TYR:O	1.99	0.62
1:G:85:ALA:HB1	1:H:120:TYR:O	1.97	0.62
1:D:147:VAL:HG21	1:E:124:VAL:HG22	1.81	0.62
1:J:70:ARG:HG3	1:J:70:ARG:HH11	1.64	0.62
1:H:70:ARG:HH11	1:H:70:ARG:HG3	1.63	0.62
1:B:204:ARG:HD2	1:D:36:TYR:OH	1.98	0.62
1:B:135:LYS:HG2	1:C:95:PHE:CE2	2.35	0.62
1:C:29:CYS:O	1:C:117:ASP:HA	2.00	0.62
1:I:29:CYS:O	1:I:117:ASP:HA	1.99	0.62
1:D:135:LYS:HG2	1:E:95:PHE:CE2	2.34	0.61
1:F:208:CYS:HB2	1:H:33:ALA:HB2	1.80	0.61
1:H:86:HIS:HD2	1:I:121:HIS:CD2	2.10	0.61
1:J:29:CYS:O	1:J:117:ASP:HA	2.00	0.61
1:I:86:HIS:CD2	1:J:121:HIS:HD2	2.11	0.61
1:J:86:HIS:CD2	1:K:121:HIS:CD2	2.86	0.61
1:F:86:HIS:CD2	1:G:121:HIS:CD2	2.83	0.61
1:A:124:VAL:HG22	1:K:147:VAL:HG21	1.80	0.61
1:G:25:CYS:HA	1:H:30:GLN:HG2	1.82	0.61
1:E:29:CYS:O	1:E:117:ASP:HA	2.00	0.61
1:J:112:ARG:HG3	1:J:122:GLU:HB2	1.82	0.61
1:G:29:CYS:O	1:G:117:ASP:HA	2.00	0.61
1:A:192:LYS:NZ	1:A:197:GLU:OE2	2.30	0.60
1:F:196:LEU:HD12	1:F:197:GLU:H	1.65	0.60
1:G:55:ARG:HD3	1:G:65:TYR:CE2	2.37	0.60
1:C:105:VAL:HG11	1:C:139:LEU:HD23	1.83	0.60
1:J:25:CYS:HA	1:K:30:GLN:HG2	1.84	0.60
1:C:182:LEU:HG	1:C:183:PRO:HD2	1.82	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:86:HIS:CD2	1:B:121:HIS:CD2	2.81	0.60
1:G:112:ARG:HG3	1:G:122:GLU:HB2	1.82	0.60
1:B:29:CYS:O	1:B:117:ASP:HA	2.01	0.60
1:A:30:GLN:HG2	1:K:25:CYS:HA	1.84	0.60
1:H:39:ILE:HG23	1:H:78:MET:HE3	1.84	0.60
1:A:196:LEU:HD12	1:A:197:GLU:H	1.66	0.60
1:B:36:TYR:OH	1:K:204:ARG:HD2	2.02	0.60
1:E:39:ILE:HG23	1:E:78:MET:HE3	1.84	0.59
1:G:43:LEU:HG	1:G:78:MET:CE	2.31	0.59
1:F:147:VAL:HG21	1:G:124:VAL:HG22	1.84	0.59
1:E:55:ARG:HD3	1:E:65:TYR:CE2	2.37	0.59
1:E:110:PHE:CE2	1:E:124:VAL:HG13	2.37	0.59
1:I:39:ILE:HG23	1:I:78:MET:HE1	1.84	0.59
1:A:29:CYS:O	1:A:117:ASP:HA	2.03	0.59
1:G:208:CYS:HB2	1:I:33:ALA:HB2	1.85	0.59
1:F:204:ARG:NH2	1:G:78:MET:O	2.36	0.59
1:F:112:ARG:HG3	1:F:122:GLU:HB2	1.83	0.59
1:G:204:ARG:HD2	1:I:36:TYR:OH	2.02	0.59
1:A:182:LEU:HG	1:A:183:PRO:HD2	1.83	0.59
1:F:135:LYS:HG2	1:G:95:PHE:CE2	2.38	0.59
1:B:147:VAL:HG21	1:C:124:VAL:HG22	1.86	0.58
1:J:147:VAL:HG21	1:K:124:VAL:HG22	1.83	0.58
1:G:182:LEU:CG	1:G:183:PRO:HD2	2.33	0.58
1:A:47:LEU:HD12	1:A:51:TYR:CD1	2.38	0.58
1:I:196:LEU:HD12	1:I:197:GLU:H	1.67	0.58
1:J:196:LEU:HD12	1:J:197:GLU:H	1.68	0.58
1:H:184:LEU:N	1:H:184:LEU:HD22	2.18	0.58
1:B:168:ASP:HB3	1:B:171:TYR:HB3	1.86	0.58
1:I:25:CYS:HA	1:J:30:GLN:HG2	1.84	0.58
1:D:55:ARG:HD3	1:D:65:TYR:CE2	2.39	0.58
1:K:70:ARG:HH11	1:K:70:ARG:HG3	1.67	0.58
1:F:39:ILE:HG23	1:F:78:MET:HE3	1.85	0.57
1:E:70:ARG:HG3	1:E:70:ARG:HH11	1.67	0.57
1:H:29:CYS:O	1:H:117:ASP:HA	2.04	0.57
1:G:91:GLN:NE2	1:G:143:ARG:HE	2.01	0.57
1:F:55:ARG:HD3	1:F:65:TYR:CE2	2.39	0.57
1:A:70:ARG:HH11	1:A:70:ARG:HG3	1.68	0.57
1:C:86:HIS:CD2	1:D:121:HIS:CD2	2.89	0.57
1:D:50:GLU:N	1:D:50:GLU:OE1	2.36	0.57
1:F:70:ARG:HG3	1:F:70:ARG:HH11	1.68	0.57
1:J:55:ARG:HD3	1:J:65:TYR:CE2	2.39	0.57

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:39:ILE:HG23	1:C:78:MET:HE1	1.87	0.57
1:D:112:ARG:HG3	1:D:122:GLU:HB2	1.87	0.57
1:G:39:ILE:HG23	1:G:78:MET:HE3	1.87	0.57
1:F:29:CYS:O	1:F:117:ASP:HA	2.05	0.57
1:C:208:CYS:HB2	1:E:33:ALA:HB2	1.87	0.57
1:C:28:GLN:HA	1:C:28:GLN:HE21	1.70	0.56
1:H:103:PHE:CE1	1:H:135:LYS:HB2	2.40	0.56
1:A:121:HIS:CD2	1:K:86:HIS:CD2	2.87	0.56
1:D:204:ARG:HD2	1:F:36:TYR:OH	2.04	0.56
1:H:168:ASP:HB3	1:H:171:TYR:HB3	1.87	0.56
1:H:196:LEU:HD12	1:H:197:GLU:H	1.69	0.56
1:B:86:HIS:CD2	1:C:121:HIS:CD2	2.85	0.56
1:C:184:LEU:HD22	1:C:184:LEU:N	2.21	0.56
1:D:196:LEU:HD12	1:D:197:GLU:H	1.71	0.56
1:H:43:LEU:HG	1:H:78:MET:HE1	1.88	0.56
1:G:37:GLN:HG2	1:G:41:LYS:HE2	1.87	0.56
1:G:196:LEU:HD12	1:G:197:GLU:H	1.71	0.56
1:C:93:VAL:HA	1:C:107:VAL:HG22	1.88	0.56
1:I:182:LEU:CG	1:I:183:PRO:HD2	2.36	0.56
1:A:147:VAL:HG21	1:B:124:VAL:HG22	1.86	0.56
1:I:184:LEU:N	1:I:184:LEU:HD22	2.21	0.56
1:C:147:VAL:HG21	1:D:124:VAL:HG22	1.88	0.56
1:E:85:ALA:HB1	1:F:120:TYR:O	2.06	0.56
1:H:43:LEU:HG	1:H:78:MET:CE	2.36	0.55
1:B:196:LEU:HD12	1:B:197:GLU:H	1.69	0.55
1:A:55:ARG:HD3	1:A:65:TYR:CE2	2.41	0.55
1:F:184:LEU:HD22	1:F:184:LEU:N	2.20	0.55
1:H:205:TYR:CE1	1:J:37:GLN:NE2	2.75	0.55
1:A:85:ALA:HB1	1:B:120:TYR:O	2.05	0.55
1:I:55:ARG:HD3	1:I:65:TYR:CE2	2.42	0.55
1:B:182:LEU:CG	1:B:183:PRO:HD2	2.37	0.55
1:J:184:LEU:N	1:J:184:LEU:HD22	2.21	0.55
1:A:143:ARG:NH1	1:B:94:ASP:OD1	2.40	0.55
1:G:135:LYS:HG2	1:H:95:PHE:CE2	2.42	0.55
1:A:112:ARG:HG3	1:A:122:GLU:HB2	1.88	0.55
1:H:25:CYS:HA	1:I:30:GLN:HG2	1.88	0.55
1:H:86:HIS:CD2	1:I:121:HIS:CD2	2.91	0.54
1:K:140:GLU:HG3	1:K:144:LYS:HE3	1.88	0.54
1:F:141:LYS:HE2	1:F:145:GLU:OE2	2.07	0.54
1:B:33:ALA:HB2	1:K:208:CYS:HB2	1.87	0.54
1:B:87:SER:HA	1:C:122:GLU:HB3	1.89	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:39:ILE:HG23	1:E:78:MET:HE1	1.89	0.54
1:A:184:LEU:N	1:A:184:LEU:HD22	2.21	0.54
1:J:143:ARG:NH1	1:K:94:ASP:OD1	2.41	0.54
1:K:112:ARG:HG3	1:K:122:GLU:HB2	1.90	0.54
1:E:86:HIS:HD2	1:F:121:HIS:HD2	1.56	0.54
1:F:187:ASP:OD1	1:F:189:THR:HG23	2.08	0.54
1:E:140:GLU:HB2	1:F:126:TYR:CD2	2.42	0.54
1:F:85:ALA:HB1	1:G:120:TYR:O	2.08	0.54
1:E:86:HIS:CD2	1:F:121:HIS:CD2	2.97	0.53
1:F:168:ASP:HB3	1:F:171:TYR:HB3	1.90	0.53
1:E:135:LYS:HG2	1:F:95:PHE:CE2	2.43	0.53
1:J:139:LEU:O	1:J:143:ARG:HG3	2.08	0.53
1:C:182:LEU:CG	1:C:183:PRO:HD2	2.39	0.53
1:G:184:LEU:HD22	1:G:184:LEU:N	2.21	0.53
1:D:184:LEU:HD22	1:D:184:LEU:N	2.23	0.53
1:E:86:HIS:HD2	1:F:121:HIS:CD2	2.27	0.53
1:H:28:GLN:HA	1:H:28:GLN:NE2	2.24	0.53
1:C:182:LEU:CD1	1:C:183:PRO:HD2	2.38	0.53
1:C:85:ALA:HB1	1:D:120:TYR:O	2.08	0.53
1:C:187:ASP:OD1	1:C:189:THR:HG23	2.08	0.53
1:A:91:GLN:HE22	1:A:143:ARG:HB3	1.75	0.52
1:A:91:GLN:HE21	1:A:143:ARG:HE	1.58	0.52
1:D:29:CYS:O	1:D:117:ASP:HA	2.09	0.52
1:D:86:HIS:HD2	1:E:121:HIS:CD2	2.25	0.52
1:F:67:GLU:O	1:F:70:ARG:HB2	2.10	0.52
1:B:184:LEU:N	1:B:184:LEU:HD22	2.23	0.52
1:G:143:ARG:NH1	1:H:94:ASP:OD1	2.42	0.52
1:K:141:LYS:HE2	1:K:145:GLU:OE2	2.10	0.52
1:D:103:PHE:CE1	1:D:135:LYS:HB2	2.44	0.52
1:D:86:HIS:CE1	1:D:151:LEU:HD22	2.44	0.52
1:G:43:LEU:HG	1:G:78:MET:HE1	1.91	0.52
1:I:86:HIS:CD2	1:J:121:HIS:CD2	2.92	0.52
1:C:112:ARG:HG3	1:C:122:GLU:HB2	1.90	0.52
1:G:168:ASP:HB3	1:G:171:TYR:HB3	1.92	0.52
1:A:94:ASP:OD1	1:K:143:ARG:NH1	2.43	0.52
1:I:43:LEU:HG	1:I:78:MET:CE	2.39	0.52
1:D:179:PRO:O	1:D:181:GLN:N	2.43	0.52
1:E:67:GLU:O	1:E:70:ARG:HB2	2.10	0.52
1:C:70:ARG:HH11	1:C:70:ARG:HG3	1.75	0.52
1:E:43:LEU:HG	1:E:78:MET:HE1	1.92	0.51
1:F:135:LYS:HE3	1:G:95:PHE:CG	2.45	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:105:VAL:HG11	1:D:139:LEU:HD23	1.92	0.51
1:B:93:VAL:HA	1:B:107:VAL:HG22	1.92	0.51
1:K:55:ARG:HD3	1:K:65:TYR:CE2	2.46	0.51
1:A:172:LEU:O	1:A:175:LEU:HB2	2.10	0.51
1:A:208:CYS:HB2	1:C:33:ALA:HB2	1.92	0.51
1:G:50:GLU:CG	1:G:181:GLN:HE22	2.22	0.51
1:J:140:GLU:HG3	1:J:144:LYS:HE3	1.91	0.51
1:B:187:ASP:OD1	1:B:189:THR:HG23	2.10	0.51
1:J:135:LYS:HG2	1:K:95:PHE:CE2	2.44	0.51
1:C:204:ARG:O	1:C:207:SER:HB3	2.10	0.51
1:D:39:ILE:HG23	1:D:78:MET:HE1	1.90	0.51
1:E:103:PHE:CE1	1:E:135:LYS:HB2	2.45	0.51
1:H:54:SER:HA	1:H:63:VAL:O	2.10	0.51
1:B:85:ALA:HB1	1:C:120:TYR:O	2.10	0.51
1:E:204:ARG:CD	1:G:36:TYR:OH	2.58	0.51
1:G:187:ASP:OD1	1:G:189:THR:HG23	2.10	0.51
1:I:172:LEU:O	1:I:175:LEU:HB2	2.11	0.51
1:D:176:ASN:C	1:D:178:LEU:H	2.14	0.51
1:B:105:VAL:HG11	1:B:139:LEU:HD23	1.92	0.51
1:E:184:LEU:N	1:E:184:LEU:HD22	2.25	0.51
1:E:182:LEU:CG	1:E:183:PRO:HD2	2.41	0.51
1:E:204:ARG:NH2	1:F:78:MET:O	2.43	0.51
1:B:143:ARG:NH1	1:C:94:ASP:OD1	2.43	0.51
1:F:46:ARG:HD3	1:F:171:TYR:CD1	2.47	0.50
1:D:140:GLU:HG3	1:D:144:LYS:HE3	1.93	0.50
1:C:55:ARG:HD3	1:C:65:TYR:CE2	2.46	0.50
1:K:93:VAL:HA	1:K:107:VAL:HG22	1.93	0.50
1:G:52:ILE:HG22	1:G:53:SER:N	2.27	0.50
1:H:182:LEU:CG	1:H:183:PRO:HD2	2.39	0.50
1:K:29:CYS:O	1:K:117:ASP:HA	2.11	0.50
1:E:43:LEU:HG	1:E:78:MET:CE	2.42	0.50
1:A:36:TYR:OH	1:J:204:ARG:HD2	2.12	0.50
1:D:182:LEU:CG	1:D:183:PRO:HD2	2.41	0.50
1:C:141:LYS:HE2	1:C:145:GLU:OE2	2.10	0.50
1:D:43:LEU:HA	1:D:161:ALA:HB3	1.94	0.50
1:H:55:ARG:HD3	1:H:65:TYR:CE2	2.47	0.50
1:I:176:ASN:C	1:I:178:LEU:H	2.15	0.50
1:K:28:GLN:NE2	1:K:28:GLN:HA	2.24	0.50
1:E:135:LYS:HE3	1:F:95:PHE:CG	2.46	0.50
1:H:47:LEU:HD12	1:H:51:TYR:CD1	2.47	0.50
1:J:204:ARG:NH2	1:K:78:MET:O	2.45	0.50

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:179:PRO:O	1:E:181:GLN:N	2.45	0.50
1:A:163:GLY:O	1:A:166:ILE:HG22	2.12	0.50
1:I:135:LYS:HG2	1:J:95:PHE:CE2	2.46	0.50
1:K:163:GLY:O	1:K:166:ILE:HG22	2.12	0.50
1:D:163:GLY:O	1:D:166:ILE:HG22	2.12	0.50
1:G:47:LEU:HD12	1:G:51:TYR:CD1	2.46	0.49
1:K:104:TYR:CD1	1:K:104:TYR:N	2.80	0.49
1:K:182:LEU:CG	1:K:183:PRO:HD2	2.42	0.49
1:D:135:LYS:HE3	1:E:95:PHE:CD2	2.47	0.49
1:B:140:GLU:O	1:B:144:LYS:HG3	2.12	0.49
1:H:53:SER:O	1:H:64:CYS:HA	2.12	0.49
1:G:173:ARG:HB3	1:G:173:ARG:HH11	1.77	0.49
1:D:187:ASP:OD1	1:D:189:THR:HG23	2.12	0.49
1:J:176:ASN:C	1:J:178:LEU:H	2.15	0.49
1:J:141:LYS:HE2	1:J:145:GLU:OE2	2.13	0.49
1:D:156:ARG:NH1	1:D:167:LEU:HD21	2.27	0.49
1:I:47:LEU:HD12	1:I:51:TYR:CD1	2.47	0.49
1:G:176:ASN:C	1:G:178:LEU:H	2.15	0.49
1:B:195:ASP:HB3	1:C:77:GLU:HG3	1.94	0.49
1:G:86:HIS:HA	1:G:112:ARG:O	2.12	0.49
1:D:110:PHE:CE2	1:D:124:VAL:HG13	2.47	0.49
1:G:28:GLN:HA	1:G:28:GLN:NE2	2.27	0.49
1:E:143:ARG:NH1	1:F:94:ASP:OD1	2.45	0.49
1:I:179:PRO:O	1:I:181:GLN:N	2.46	0.49
1:A:176:ASN:C	1:A:178:LEU:H	2.16	0.49
1:H:172:LEU:O	1:H:175:LEU:HB2	2.13	0.49
1:C:140:GLU:HB2	1:D:126:TYR:CD2	2.48	0.49
1:E:168:ASP:HB3	1:E:171:TYR:HB3	1.94	0.49
1:G:179:PRO:O	1:G:181:GLN:N	2.46	0.49
1:H:139:LEU:O	1:H:143:ARG:HG3	2.12	0.49
1:A:139:LEU:O	1:A:143:ARG:HG3	2.12	0.49
1:F:143:ARG:NH1	1:G:94:ASP:OD1	2.46	0.49
1:A:25:CYS:HA	1:B:30:GLN:HG2	1.94	0.49
1:E:163:GLY:O	1:E:166:ILE:HG22	2.13	0.49
1:J:173:ARG:HH11	1:J:173:ARG:HB3	1.78	0.49
1:I:91:GLN:HE21	1:I:143:ARG:HE	1.61	0.48
1:C:131:GLY:O	1:C:132:LEU:O	2.31	0.48
1:A:168:ASP:HB3	1:A:171:TYR:HB3	1.94	0.48
1:K:184:LEU:N	1:K:184:LEU:HD22	2.25	0.48
1:J:85:ALA:HB1	1:K:120:TYR:O	2.13	0.48
1:H:204:ARG:HD2	1:J:36:TYR:OH	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:187:ASP:OD1	1:E:189:THR:HG23	2.12	0.48
1:K:43:LEU:HA	1:K:161:ALA:HB3	1.95	0.48
1:E:112:ARG:NH2	1:E:114:GLN:HE21	2.12	0.48
1:J:163:GLY:O	1:J:166:ILE:HG22	2.14	0.48
1:F:176:ASN:C	1:F:178:LEU:H	2.17	0.48
1:C:168:ASP:HB3	1:C:171:TYR:HB3	1.96	0.48
1:B:112:ARG:HG3	1:B:122:GLU:HB2	1.96	0.48
1:H:187:ASP:OD1	1:H:189:THR:HG23	2.14	0.48
1:K:46:ARG:HD3	1:K:171:TYR:CD1	2.49	0.48
1:G:104:TYR:CD1	1:G:104:TYR:N	2.81	0.48
1:H:147:VAL:HG21	1:I:124:VAL:HG22	1.95	0.48
1:F:182:LEU:CG	1:F:183:PRO:HD2	2.41	0.48
1:C:193:ARG:HD3	1:D:50:GLU:OE2	2.13	0.48
1:C:104:TYR:CD1	1:C:104:TYR:N	2.82	0.48
1:B:39:ILE:HG23	1:B:78:MET:HE1	1.96	0.48
1:F:173:ARG:HB3	1:F:173:ARG:HH11	1.78	0.48
1:C:179:PRO:O	1:C:181:GLN:N	2.47	0.48
1:F:163:GLY:O	1:F:166:ILE:HG22	2.13	0.48
1:J:182:LEU:CG	1:J:183:PRO:HD2	2.43	0.48
1:B:46:ARG:HD3	1:B:171:TYR:CD1	2.48	0.48
1:B:204:ARG:NH2	1:C:78:MET:O	2.47	0.47
1:D:70:ARG:HG3	1:D:70:ARG:NH1	2.28	0.47
1:G:67:GLU:O	1:G:70:ARG:HB2	2.13	0.47
1:B:25:CYS:HA	1:C:30:GLN:HG2	1.96	0.47
1:C:176:ASN:C	1:C:178:LEU:H	2.17	0.47
1:F:179:PRO:O	1:F:181:GLN:N	2.47	0.47
1:H:179:PRO:O	1:H:181:GLN:N	2.47	0.47
1:A:110:PHE:CE2	1:A:124:VAL:HG13	2.49	0.47
1:A:50:GLU:CG	1:A:181:GLN:HE22	2.27	0.47
1:C:163:GLY:O	1:C:166:ILE:HG22	2.14	0.47
1:G:127:GLY:HA3	1:G:142:ALA:O	2.13	0.47
1:G:43:LEU:HG	1:G:78:MET:HE2	1.95	0.47
1:C:25:CYS:HA	1:D:30:GLN:HG2	1.96	0.47
1:H:104:TYR:CD1	1:H:104:TYR:N	2.80	0.47
1:F:28:GLN:NE2	1:F:28:GLN:HA	2.27	0.47
1:D:183:PRO:HB3	1:E:170:ASP:OD1	2.15	0.47
1:D:135:LYS:HE3	1:E:95:PHE:CG	2.48	0.47
1:D:140:GLU:HB2	1:E:126:TYR:CD2	2.50	0.47
1:D:168:ASP:HB3	1:D:171:TYR:HB3	1.95	0.47
1:D:208:CYS:HB2	1:F:33:ALA:HB2	1.95	0.47
1:G:151:LEU:O	1:G:151:LEU:HD12	2.14	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:104:TYR:CD1	1:E:104:TYR:N	2.83	0.47
1:I:74:LEU:HD13	1:I:161:ALA:O	2.14	0.47
1:K:91:GLN:HE21	1:K:143:ARG:HE	1.58	0.47
1:K:47:LEU:HD12	1:K:51:TYR:CD1	2.49	0.47
1:I:186:VAL:HB	1:J:174:SER:OG	2.15	0.47
1:F:104:TYR:N	1:F:104:TYR:CD1	2.83	0.47
1:H:176:ASN:C	1:H:178:LEU:H	2.18	0.47
1:E:131:GLY:O	1:E:132:LEU:O	2.33	0.47
1:K:39:ILE:HG23	1:K:78:MET:HE1	1.95	0.47
1:E:28:GLN:HA	1:E:28:GLN:NE2	2.26	0.47
1:D:50:GLU:CG	1:D:181:GLN:HE22	2.28	0.47
1:K:192:LYS:NZ	1:K:197:GLU:OE2	2.35	0.47
1:A:71:VAL:HG12	1:A:155:LEU:HD13	1.97	0.47
1:C:204:ARG:HD2	1:E:36:TYR:OH	2.15	0.47
1:C:182:LEU:HD12	1:C:183:PRO:HD2	1.96	0.47
1:K:172:LEU:O	1:K:175:LEU:HB2	2.15	0.47
1:D:204:ARG:O	1:D:207:SER:HB3	2.14	0.47
1:D:204:ARG:NH2	1:E:78:MET:O	2.48	0.47
1:D:134:SER:HB3	1:D:137:LEU:HB2	1.96	0.47
1:A:186:VAL:HB	1:B:174:SER:OG	2.15	0.46
1:H:127:GLY:HA3	1:H:142:ALA:O	2.15	0.46
1:H:195:ASP:HB3	1:I:77:GLU:HG3	1.96	0.46
1:E:127:GLY:HA3	1:E:142:ALA:O	2.15	0.46
1:G:140:GLU:HG3	1:G:144:LYS:HE3	1.97	0.46
1:A:204:ARG:O	1:A:207:SER:HB3	2.16	0.46
1:G:139:LEU:O	1:G:143:ARG:HG3	2.15	0.46
1:B:172:LEU:O	1:B:175:LEU:HB2	2.15	0.46
1:B:204:ARG:O	1:B:207:SER:HB3	2.16	0.46
1:E:105:VAL:HG11	1:E:139:LEU:HD23	1.96	0.46
1:H:86:HIS:HA	1:H:112:ARG:O	2.15	0.46
1:J:204:ARG:O	1:J:207:SER:HB3	2.16	0.46
1:H:50:GLU:CG	1:H:181:GLN:HE22	2.25	0.46
1:A:50:GLU:N	1:A:50:GLU:OE1	2.40	0.46
1:C:182:LEU:HD12	1:C:183:PRO:CD	2.46	0.46
1:G:171:TYR:CE2	1:G:175:LEU:HD11	2.50	0.46
1:J:43:LEU:HG	1:J:78:MET:CE	2.46	0.46
1:A:120:TYR:O	1:K:85:ALA:HB1	2.15	0.46
1:E:176:ASN:C	1:E:178:LEU:H	2.18	0.46
1:I:46:ARG:HD3	1:I:171:TYR:CD1	2.51	0.46
1:H:39:ILE:HG23	1:H:78:MET:HE1	1.96	0.46
1:E:115:LEU:HD11	1:E:158:PHE:CE2	2.51	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:K:43:LEU:HG	1:K:78:MET:CE	2.45	0.46
1:C:143:ARG:NH1	1:D:94:ASP:OD1	2.49	0.46
1:G:147:VAL:HG21	1:H:124:VAL:HG22	1.97	0.46
1:K:179:PRO:O	1:K:181:GLN:N	2.48	0.46
1:E:151:LEU:HD12	1:E:151:LEU:O	2.15	0.46
1:K:187:ASP:OD1	1:K:189:THR:HG23	2.16	0.46
1:B:50:GLU:CG	1:B:181:GLN:HE22	2.27	0.46
1:I:135:LYS:HE3	1:J:95:PHE:CG	2.51	0.46
1:D:165:CYS:O	1:D:167:LEU:N	2.49	0.46
1:A:165:CYS:O	1:A:167:LEU:N	2.49	0.46
1:F:156:ARG:NH1	1:F:167:LEU:HD21	2.30	0.46
1:J:173:ARG:NH1	1:J:173:ARG:CB	2.79	0.46
1:C:46:ARG:HD3	1:C:171:TYR:CD1	2.51	0.46
1:D:131:GLY:O	1:D:132:LEU:O	2.34	0.46
1:D:91:GLN:NE2	1:E:110:PHE:HZ	2.13	0.45
1:I:147:VAL:HG21	1:J:124:VAL:HG22	1.93	0.45
1:B:163:GLY:O	1:B:166:ILE:HG22	2.16	0.45
1:J:172:LEU:O	1:J:175:LEU:HB2	2.17	0.45
1:J:104:TYR:CD1	1:J:104:TYR:N	2.84	0.45
1:E:43:LEU:HA	1:E:161:ALA:HB3	1.98	0.45
1:B:183:PRO:HB3	1:C:170:ASP:OD1	2.16	0.45
1:C:183:PRO:HB3	1:D:170:ASP:OD1	2.16	0.45
1:E:140:GLU:HG3	1:E:144:LYS:HE3	1.98	0.45
1:J:173:ARG:O	1:J:177:LYS:HG3	2.16	0.45
1:A:33:ALA:HB2	1:J:208:CYS:HB2	1.98	0.45
1:I:104:TYR:CD1	1:I:104:TYR:N	2.84	0.45
1:F:43:LEU:HG	1:F:78:MET:CE	2.47	0.45
1:K:50:GLU:CG	1:K:181:GLN:HE22	2.26	0.45
1:C:173:ARG:HH11	1:C:173:ARG:HB3	1.82	0.45
1:A:140:GLU:HG3	1:A:144:LYS:HE3	1.99	0.45
1:I:70:ARG:HG3	1:I:70:ARG:NH1	2.30	0.45
1:D:112:ARG:NH2	1:D:114:GLN:HE21	2.14	0.45
1:D:46:ARG:HD3	1:D:171:TYR:CD1	2.51	0.45
1:G:93:VAL:HA	1:G:107:VAL:HG22	1.97	0.45
1:B:179:PRO:O	1:B:181:GLN:N	2.49	0.45
1:G:172:LEU:O	1:G:175:LEU:HB2	2.17	0.45
1:G:173:ARG:NH1	1:G:173:ARG:CB	2.80	0.45
1:F:173:ARG:CB	1:F:173:ARG:NH1	2.80	0.45
1:A:141:LYS:HE2	1:A:145:GLU:OE2	2.17	0.45
1:F:43:LEU:HA	1:F:161:ALA:HB3	1.97	0.45
1:H:70:ARG:NH1	1:H:70:ARG:HG3	2.31	0.45

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:179:PRO:O	1:J:181:GLN:N	2.49	0.45
1:J:173:ARG:HH11	1:J:173:ARG:CB	2.29	0.45
1:K:168:ASP:HB3	1:K:171:TYR:HB3	1.99	0.45
1:C:196:LEU:HD12	1:C:197:GLU:H	1.81	0.45
1:I:43:LEU:HG	1:I:78:MET:HE2	1.99	0.45
1:E:28:GLN:CA	1:E:28:GLN:HE21	2.23	0.45
1:F:184:LEU:CD2	1:F:184:LEU:H	2.28	0.45
1:B:135:LYS:HE3	1:C:95:PHE:CG	2.52	0.45
1:A:104:TYR:CD1	1:A:104:TYR:N	2.85	0.45
1:D:182:LEU:CD1	1:D:183:PRO:HD2	2.46	0.45
1:A:98:LEU:HD12	1:A:102:LYS:O	2.17	0.45
1:B:173:ARG:HB3	1:B:173:ARG:HH11	1.82	0.45
1:A:179:PRO:O	1:A:181:GLN:N	2.50	0.45
1:E:147:VAL:HG21	1:F:124:VAL:HG22	1.97	0.45
1:E:182:LEU:CD1	1:E:183:PRO:HD2	2.47	0.45
1:I:168:ASP:HB3	1:I:171:TYR:HB3	1.99	0.45
1:D:112:ARG:HH21	1:D:114:GLN:NE2	2.14	0.44
1:J:39:ILE:HG23	1:J:78:MET:HE1	1.97	0.44
1:C:25:CYS:O	1:C:29:CYS:SG	2.67	0.44
1:B:55:ARG:HD3	1:B:65:TYR:CE2	2.52	0.44
1:D:172:LEU:O	1:D:175:LEU:HB2	2.17	0.44
1:G:182:LEU:HD12	1:G:183:PRO:HD3	1.93	0.44
1:J:86:HIS:HA	1:J:112:ARG:O	2.17	0.44
1:H:105:VAL:HG11	1:H:139:LEU:HD23	1.99	0.44
1:C:204:ARG:NH2	1:D:78:MET:O	2.51	0.44
1:G:70:ARG:HG3	1:G:70:ARG:NH1	2.31	0.44
1:A:199:SER:HB3	2:A:218:HOH:O	2.16	0.44
1:D:104:TYR:N	1:D:104:TYR:CD1	2.86	0.44
1:I:139:LEU:O	1:I:143:ARG:HG3	2.16	0.44
1:E:135:LYS:HE3	1:F:95:PHE:CD2	2.53	0.44
1:D:173:ARG:HB3	1:D:173:ARG:HH11	1.82	0.44
1:H:67:GLU:O	1:H:70:ARG:HB2	2.18	0.44
1:I:28:GLN:NE2	1:I:28:GLN:HA	2.30	0.44
1:E:172:LEU:O	1:E:175:LEU:HB2	2.17	0.44
1:J:46:ARG:HD3	1:J:171:TYR:CD1	2.53	0.44
1:B:104:TYR:N	1:B:104:TYR:CD1	2.85	0.44
1:J:47:LEU:HD12	1:J:51:TYR:CD1	2.52	0.44
1:G:184:LEU:H	1:G:184:LEU:CD2	2.28	0.44
1:B:43:LEU:HG	1:B:78:MET:CE	2.48	0.44
1:A:182:LEU:CG	1:A:183:PRO:HD2	2.45	0.44
1:A:43:LEU:HA	1:A:161:ALA:HB3	2.00	0.44

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:74:LEU:HD13	1:J:161:ALA:O	2.18	0.44
1:G:163:GLY:O	1:G:166:ILE:HG22	2.17	0.44
1:I:141:LYS:HE2	1:I:145:GLU:OE2	2.18	0.44
1:H:182:LEU:CD1	1:H:183:PRO:HD2	2.48	0.43
1:I:81:TYR:CE1	1:I:82:ASN:HB3	2.53	0.43
1:D:112:ARG:NH2	1:D:114:GLN:NE2	2.66	0.43
1:F:186:VAL:HB	1:G:174:SER:OG	2.18	0.43
1:G:182:LEU:HG	1:G:183:PRO:HD2	1.98	0.43
1:C:50:GLU:CG	1:C:181:GLN:HE22	2.31	0.43
1:I:135:LYS:HE3	1:J:95:PHE:CD2	2.53	0.43
1:I:187:ASP:OD1	1:I:189:THR:HG23	2.18	0.43
1:I:50:GLU:CG	1:I:181:GLN:HE22	2.26	0.43
1:H:184:LEU:H	1:H:184:LEU:CD2	2.27	0.43
1:C:184:LEU:CD2	1:C:184:LEU:H	2.30	0.43
1:J:168:ASP:HB3	1:J:171:TYR:HB3	2.00	0.43
1:F:53:SER:O	1:F:64:CYS:HA	2.19	0.43
1:E:173:ARG:HH11	1:E:173:ARG:HB3	1.84	0.43
1:I:39:ILE:HG23	1:I:78:MET:HE3	1.98	0.43
1:J:43:LEU:HA	1:J:161:ALA:HB3	2.01	0.43
1:J:184:LEU:H	1:J:184:LEU:CD2	2.30	0.43
1:A:205:TYR:CE1	1:C:33:ALA:HB1	2.53	0.43
1:E:46:ARG:HD3	1:E:171:TYR:CD1	2.54	0.43
1:F:140:GLU:O	1:F:144:LYS:HG3	2.18	0.43
1:E:193:ARG:HB3	1:F:50:GLU:OE2	2.18	0.43
1:J:50:GLU:CG	1:J:181:GLN:HE22	2.23	0.43
1:I:171:TYR:CE2	1:I:175:LEU:HD11	2.53	0.43
1:K:158:PHE:HB2	1:K:162:LEU:HD12	2.00	0.43
1:B:131:GLY:O	1:B:132:LEU:O	2.36	0.43
1:J:67:GLU:O	1:J:70:ARG:HB2	2.19	0.43
1:K:176:ASN:C	1:K:178:LEU:H	2.21	0.43
1:H:43:LEU:HA	1:H:161:ALA:HB3	2.00	0.43
1:I:204:ARG:NH2	1:J:78:MET:O	2.51	0.43
1:A:193:ARG:HD3	1:B:50:GLU:OE2	2.19	0.43
1:E:86:HIS:CE1	1:E:151:LEU:HD22	2.53	0.43
1:E:98:LEU:HD12	1:E:102:LYS:O	2.19	0.43
1:H:151:LEU:HD12	1:H:151:LEU:O	2.18	0.43
1:I:184:LEU:CD2	1:I:184:LEU:H	2.29	0.43
1:D:55:ARG:HD3	1:D:65:TYR:CD2	2.54	0.43
1:G:46:ARG:HD3	1:G:171:TYR:CD1	2.53	0.43
1:I:103:PHE:CE1	1:I:135:LYS:HB2	2.54	0.43
1:K:173:ARG:HH11	1:K:173:ARG:HB3	1.83	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:61:GLN:N	1:I:61:GLN:OE1	2.52	0.43
1:G:168:ASP:HB3	1:G:171:TYR:CB	2.48	0.43
1:C:173:ARG:CB	1:C:173:ARG:NH1	2.82	0.43
1:D:93:VAL:HA	1:D:107:VAL:HG22	2.01	0.43
1:F:127:GLY:HA3	1:F:142:ALA:O	2.19	0.43
1:J:147:VAL:CG2	1:K:124:VAL:CG2	2.90	0.42
1:I:50:GLU:N	1:I:50:GLU:OE1	2.42	0.42
1:J:28:GLN:HA	1:J:28:GLN:NE2	2.30	0.42
1:E:112:ARG:HH21	1:E:114:GLN:NE2	2.17	0.42
1:F:55:ARG:HD3	1:F:65:TYR:CD2	2.54	0.42
1:B:165:CYS:O	1:B:167:LEU:N	2.52	0.42
1:G:86:HIS:CE1	1:G:151:LEU:HD22	2.55	0.42
1:F:72:ILE:HG22	1:F:76:ASN:ND2	2.35	0.42
1:D:195:ASP:HB3	1:E:77:GLU:HG3	2.01	0.42
1:B:47:LEU:HD12	1:B:51:TYR:CD1	2.54	0.42
1:F:172:LEU:O	1:F:175:LEU:HB2	2.19	0.42
1:C:52:ILE:HG22	1:C:53:SER:N	2.34	0.42
1:F:50:GLU:CG	1:F:181:GLN:HE22	2.26	0.42
1:J:182:LEU:CD1	1:J:183:PRO:HD2	2.50	0.42
1:E:171:TYR:CE2	1:E:175:LEU:HD11	2.55	0.42
1:D:173:ARG:NH1	1:D:173:ARG:CB	2.82	0.42
1:F:131:GLY:O	1:F:132:LEU:O	2.37	0.42
1:E:87:SER:HA	1:F:122:GLU:HB3	2.02	0.42
1:G:173:ARG:HH11	1:G:173:ARG:CB	2.32	0.42
1:J:110:PHE:CE2	1:J:124:VAL:HG13	2.55	0.42
1:A:105:VAL:HG11	1:A:139:LEU:HD23	2.01	0.42
1:J:47:LEU:N	1:J:47:LEU:HD22	2.35	0.42
1:G:128:VAL:HG12	1:G:129:SER:N	2.35	0.42
1:B:193:ARG:HG3	1:B:193:ARG:HH11	1.84	0.42
1:J:147:VAL:HG21	1:K:124:VAL:HG23	1.96	0.42
1:J:173:ARG:NH1	1:J:173:ARG:HB2	2.34	0.42
1:B:103:PHE:CE1	1:B:135:LYS:HB2	2.54	0.42
1:E:128:VAL:HG12	1:E:129:SER:N	2.35	0.42
1:F:86:HIS:CE1	1:F:151:LEU:HD22	2.55	0.41
1:K:182:LEU:CD1	1:K:183:PRO:HD2	2.49	0.41
1:J:70:ARG:HG3	1:J:70:ARG:NH1	2.32	0.41
1:A:95:PHE:CE2	1:K:135:LYS:HG2	2.55	0.41
1:F:43:LEU:HG	1:F:78:MET:HE1	2.02	0.41
1:A:184:LEU:H	1:A:184:LEU:CD2	2.31	0.41
1:G:175:LEU:O	1:G:178:LEU:HB2	2.20	0.41
1:I:47:LEU:HD22	1:I:47:LEU:N	2.35	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:127:GLY:HA3	1:A:142:ALA:O	2.20	0.41
1:G:165:CYS:O	1:G:168:ASP:N	2.52	0.41
1:H:98:LEU:HD12	1:H:102:LYS:O	2.20	0.41
1:C:98:LEU:HD12	1:C:102:LYS:O	2.20	0.41
1:G:140:GLU:O	1:G:144:LYS:HG3	2.20	0.41
1:G:74:LEU:HD13	1:G:161:ALA:O	2.20	0.41
1:D:67:GLU:O	1:D:70:ARG:HB2	2.21	0.41
1:H:168:ASP:HB3	1:H:171:TYR:CB	2.50	0.41
1:A:52:ILE:HG22	1:A:53:SER:N	2.35	0.41
1:H:74:LEU:HD13	1:H:161:ALA:O	2.21	0.41
1:E:186:VAL:HB	1:F:174:SER:OG	2.21	0.41
1:B:176:ASN:C	1:B:178:LEU:H	2.24	0.41
1:A:103:PHE:CE1	1:A:135:LYS:HB2	2.56	0.41
1:F:105:VAL:HG11	1:F:139:LEU:HD23	2.03	0.41
1:I:86:HIS:HA	1:I:112:ARG:O	2.20	0.41
1:E:204:ARG:O	1:E:207:SER:HB3	2.21	0.41
1:D:165:CYS:O	1:D:168:ASP:N	2.52	0.41
1:A:195:ASP:HB3	1:B:77:GLU:HG3	2.02	0.41
1:C:110:PHE:CE2	1:C:124:VAL:HG13	2.55	0.41
1:I:67:GLU:O	1:I:70:ARG:HB2	2.20	0.41
1:G:85:ALA:CB	1:H:120:TYR:O	2.68	0.41
1:G:55:ARG:HD3	1:G:65:TYR:CD2	2.56	0.41
1:D:140:GLU:O	1:D:144:LYS:HG3	2.21	0.41
1:J:171:TYR:CE2	1:J:175:LEU:HD11	2.56	0.41
1:F:140:GLU:HG3	1:F:144:LYS:HE3	2.02	0.41
1:E:53:SER:O	1:E:64:CYS:HA	2.21	0.41
1:D:127:GLY:HA3	1:D:142:ALA:O	2.21	0.41
1:C:54:SER:CB	1:C:62:LYS:HE3	2.51	0.41
1:K:43:LEU:HA	1:K:161:ALA:CB	2.51	0.41
1:I:204:ARG:HD2	1:K:36:TYR:OH	2.21	0.41
1:A:193:ARG:HH11	1:A:193:ARG:HG3	1.86	0.41
1:B:79:PHE:O	1:B:83:GLY:HA3	2.20	0.41
1:I:163:GLY:O	1:I:166:ILE:HG22	2.21	0.41
1:D:61:GLN:N	1:D:61:GLN:OE1	2.52	0.41
1:H:173:ARG:HH11	1:H:173:ARG:HB3	1.85	0.41
1:F:204:ARG:O	1:F:207:SER:HB3	2.21	0.41
1:I:70:ARG:CG	1:I:70:ARG:HH11	2.31	0.41
1:C:103:PHE:CE1	1:C:135:LYS:HB2	2.56	0.41
1:D:143:ARG:NH1	1:E:94:ASP:OD1	2.53	0.40
1:G:200:VAL:HG13	1:H:39:ILE:HG13	2.03	0.40
1:I:204:ARG:O	1:I:207:SER:HB3	2.20	0.40

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:25:CYS:SG	1:J:28:GLN:HG3	2.62	0.40
1:K:184:LEU:CD2	1:K:184:LEU:H	2.31	0.40
1:B:28:GLN:HA	1:B:28:GLN:NE2	2.30	0.40
1:C:86:HIS:CE1	1:C:151:LEU:HD22	2.56	0.40
1:B:33:ALA:HB2	1:K:208:CYS:CB	2.51	0.40
1:F:47:LEU:HD12	1:F:51:TYR:CD1	2.56	0.40
1:I:52:ILE:HG22	1:I:53:SER:N	2.36	0.40
1:K:139:LEU:O	1:K:143:ARG:HG3	2.20	0.40
1:B:182:LEU:CD1	1:B:183:PRO:HD2	2.51	0.40
1:E:55:ARG:HD3	1:E:65:TYR:CD2	2.56	0.40
1:G:165:CYS:O	1:G:167:LEU:N	2.54	0.40
1:B:54:SER:HA	1:B:63:VAL:O	2.20	0.40
1:F:182:LEU:CD1	1:F:183:PRO:HD2	2.51	0.40
1:A:186:VAL:HG21	1:B:171:TYR:HA	2.02	0.40
1:H:188:LEU:HD12	1:I:178:LEU:HD11	2.02	0.40
1:F:144:LYS:NZ	1:G:149:ASP:OD2	2.38	0.40
1:K:204:ARG:O	1:K:207:SER:HB3	2.21	0.40
1:I:110:PHE:CE2	1:I:124:VAL:HG13	2.57	0.40
1:C:180:ARG:CZ	1:C:181:GLN:O	2.69	0.40
1:A:182:LEU:CD1	1:A:183:PRO:HD2	2.52	0.40
1:E:70:ARG:NH1	1:E:70:ARG:HG3	2.35	0.40
1:K:173:ARG:NH1	1:K:173:ARG:CB	2.84	0.40
1:C:135:LYS:HG2	1:D:95:PHE:CE2	2.56	0.40
1:C:127:GLY:HA3	1:C:142:ALA:O	2.22	0.40

All (2) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:60:GLY:O	1:G:37:GLN:OE1[6_456]	2.14	0.06
1:E:185:GLU:OE2	1:E:185:GLU:OE2[8_666]	2.17	0.03

## 5.3 Torsion angles ⓘ

### 5.3.1 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 X-ray entries followed by that with respect to entries of similar resolution.

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	182/212 (86%)	165 (91%)	11 (6%)	6 (3%)	5	17
1	B	182/212 (86%)	166 (91%)	12 (7%)	4 (2%)	8	27
1	C	182/212 (86%)	165 (91%)	11 (6%)	6 (3%)	5	17
1	D	182/212 (86%)	166 (91%)	10 (6%)	6 (3%)	5	17
1	E	182/212 (86%)	163 (90%)	12 (7%)	7 (4%)	4	14
1	F	182/212 (86%)	158 (87%)	18 (10%)	6 (3%)	5	17
1	G	182/212 (86%)	162 (89%)	13 (7%)	7 (4%)	4	14
1	H	182/212 (86%)	162 (89%)	14 (8%)	6 (3%)	5	17
1	I	182/212 (86%)	165 (91%)	11 (6%)	6 (3%)	5	17
1	J	182/212 (86%)	167 (92%)	10 (6%)	5 (3%)	6	22
1	K	182/212 (86%)	164 (90%)	13 (7%)	5 (3%)	6	22
All	All	2002/2332 (86%)	1803 (90%)	135 (7%)	64 (3%)	5	18

All (64) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	132	LEU
1	B	132	LEU
1	C	132	LEU
1	D	132	LEU
1	E	132	LEU
1	F	132	LEU
1	G	132	LEU
1	H	132	LEU
1	I	132	LEU
1	J	132	LEU
1	K	132	LEU
1	A	180	ARG
1	D	166	ILE
1	D	180	ARG
1	E	180	ARG
1	I	180	ARG
1	A	166	ILE
1	A	177	LYS
1	C	180	ARG
1	D	177	LYS

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Mol	Chain	Res	Type
1	F	180	ARG
1	G	180	ARG
1	H	58	GLY
1	H	180	ARG
1	I	177	LYS
1	J	177	LYS
1	J	180	ARG
1	K	58	GLY
1	K	180	ARG
1	B	180	ARG
1	C	58	GLY
1	C	177	LYS
1	E	177	LYS
1	F	177	LYS
1	F	196	LEU
1	G	29	CYS
1	G	58	GLY
1	G	100	ASN
1	H	177	LYS
1	J	58	GLY
1	A	45	GLN
1	A	58	GLY
1	B	58	GLY
1	B	166	ILE
1	C	100	ASN
1	E	100	ASN
1	E	196	LEU
1	F	58	GLY
1	G	177	LYS
1	H	29	CYS
1	I	58	GLY
1	I	100	ASN
1	K	177	LYS
1	D	58	GLY
1	E	58	GLY
1	E	166	ILE
1	F	166	ILE
1	G	166	ILE
1	K	100	ASN
1	D	183	PRO
1	H	166	ILE
1	I	179	PRO

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Mol	Chain	Res	Type
1	J	166	ILE
1	C	183	PRO

### 5.3.2 Protein sidechains ⓘ

In the following table, the Percentiles column shows the percent sidechain outliers of the chain as a percentile score with respect to all X-ray entries followed by that with respect to entries of similar resolution.

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	153/172 (89%)	147 (96%)	6 (4%)	39	73
1	B	153/172 (89%)	147 (96%)	6 (4%)	39	73
1	C	153/172 (89%)	146 (95%)	7 (5%)	33	66
1	D	153/172 (89%)	146 (95%)	7 (5%)	33	66
1	E	153/172 (89%)	145 (95%)	8 (5%)	29	60
1	F	153/172 (89%)	147 (96%)	6 (4%)	39	73
1	G	153/172 (89%)	145 (95%)	8 (5%)	29	60
1	H	153/172 (89%)	146 (95%)	7 (5%)	33	66
1	I	153/172 (89%)	148 (97%)	5 (3%)	45	78
1	J	153/172 (89%)	147 (96%)	6 (4%)	39	73
1	K	153/172 (89%)	147 (96%)	6 (4%)	39	73
All	All	1683/1892 (89%)	1611 (96%)	72 (4%)	35	69

All (72) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	28	GLN
1	A	112	ARG
1	A	124	VAL
1	A	180	ARG
1	A	183	PRO
1	A	184	LEU
1	B	28	GLN
1	B	112	ARG
1	B	124	VAL

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Mol	Chain	Res	Type
1	B	180	ARG
1	B	183	PRO
1	B	184	LEU
1	C	28	GLN
1	C	104	TYR
1	C	112	ARG
1	C	124	VAL
1	C	180	ARG
1	C	183	PRO
1	C	184	LEU
1	D	28	GLN
1	D	86	HIS
1	D	112	ARG
1	D	124	VAL
1	D	180	ARG
1	D	183	PRO
1	D	184	LEU
1	E	28	GLN
1	E	86	HIS
1	E	104	TYR
1	E	112	ARG
1	E	124	VAL
1	E	180	ARG
1	E	183	PRO
1	E	184	LEU
1	F	28	GLN
1	F	112	ARG
1	F	124	VAL
1	F	180	ARG
1	F	183	PRO
1	F	184	LEU
1	G	28	GLN
1	G	86	HIS
1	G	104	TYR
1	G	112	ARG
1	G	124	VAL
1	G	180	ARG
1	G	183	PRO
1	G	184	LEU
1	H	28	GLN
1	H	104	TYR
1	H	112	ARG

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Mol	Chain	Res	Type
1	H	124	VAL
1	H	180	ARG
1	H	183	PRO
1	H	184	LEU
1	I	112	ARG
1	I	124	VAL
1	I	180	ARG
1	I	183	PRO
1	I	184	LEU
1	J	28	GLN
1	J	112	ARG
1	J	124	VAL
1	J	180	ARG
1	J	183	PRO
1	J	184	LEU
1	K	28	GLN
1	K	112	ARG
1	K	124	VAL
1	K	180	ARG
1	K	183	PRO
1	K	184	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (85) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	28	GLN
1	A	37	GLN
1	A	45	GLN
1	A	86	HIS
1	A	91	GLN
1	A	114	GLN
1	A	121	HIS
1	A	181	GLN
1	B	28	GLN
1	B	37	GLN
1	B	86	HIS
1	B	91	GLN
1	B	121	HIS
1	B	181	GLN
1	C	28	GLN
1	C	37	GLN
1	C	45	GLN

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Mol	Chain	Res	Type
1	C	86	HIS
1	C	91	GLN
1	C	121	HIS
1	C	181	GLN
1	D	28	GLN
1	D	37	GLN
1	D	73	ASN
1	D	86	HIS
1	D	91	GLN
1	D	114	GLN
1	D	121	HIS
1	D	181	GLN
1	D	206	ASN
1	E	28	GLN
1	E	37	GLN
1	E	45	GLN
1	E	73	ASN
1	E	86	HIS
1	E	91	GLN
1	E	114	GLN
1	E	121	HIS
1	E	181	GLN
1	E	206	ASN
1	F	28	GLN
1	F	37	GLN
1	F	45	GLN
1	F	73	ASN
1	F	86	HIS
1	F	91	GLN
1	F	114	GLN
1	F	181	GLN
1	G	28	GLN
1	G	37	GLN
1	G	45	GLN
1	G	73	ASN
1	G	86	HIS
1	G	91	GLN
1	G	114	GLN
1	G	121	HIS
1	G	181	GLN
1	H	28	GLN
1	H	37	GLN

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Mol	Chain	Res	Type
1	H	45	GLN
1	H	86	HIS
1	H	91	GLN
1	H	121	HIS
1	H	181	GLN
1	I	28	GLN
1	I	37	GLN
1	I	45	GLN
1	I	86	HIS
1	I	91	GLN
1	I	121	HIS
1	I	181	GLN
1	J	28	GLN
1	J	37	GLN
1	J	45	GLN
1	J	86	HIS
1	J	91	GLN
1	J	121	HIS
1	J	181	GLN
1	K	28	GLN
1	K	37	GLN
1	K	45	GLN
1	K	86	HIS
1	K	91	GLN
1	K	121	HIS
1	K	181	GLN

### 5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

## 5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

## 5.5 Carbohydrates ⓘ

There are no carbohydrates in this entry.

## 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

## 5.7 Other polymers [i](#)

There are no such residues in this entry.

## 5.8 Polymer linkage issues [i](#)

There are no chain breaks in this entry.

## 6 Fit of model and data ⓘ

### 6.1 Protein, DNA and RNA chains ⓘ

In the following table, the column labelled ‘#RSRZ> 2’ contains the number (and percentage) of RSRZ outliers, followed by percent RSRZ outliers for the chain as percentile scores relative to all X-ray entries and entries of similar resolution. The OWAB column contains the minimum, median, 95<sup>th</sup> percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled ‘Q< 0.9’ lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å <sup>2</sup> )	Q<0.9
1	A	184/212 (86%)	-0.23	2 (1%) 82 80	25, 60, 136, 198	0
1	B	184/212 (86%)	-0.12	7 (3%) 44 37	25, 56, 150, 200	0
1	C	184/212 (86%)	-0.12	7 (3%) 44 37	25, 61, 166, 200	0
1	D	184/212 (86%)	0.15	10 (5%) 29 23	28, 78, 156, 200	0
1	E	184/212 (86%)	0.58	24 (13%) 5 3	33, 85, 170, 200	0
1	F	184/212 (86%)	0.50	18 (9%) 10 5	38, 87, 163, 199	0
1	G	184/212 (86%)	0.20	9 (4%) 33 27	37, 82, 170, 200	0
1	H	184/212 (86%)	0.04	6 (3%) 50 43	30, 72, 149, 198	0
1	I	184/212 (86%)	-0.12	3 (1%) 74 72	31, 69, 139, 185	0
1	J	184/212 (86%)	-0.04	6 (3%) 50 43	31, 70, 158, 200	0
1	K	184/212 (86%)	0.11	16 (8%) 13 8	30, 65, 154, 182	0
All	All	2024/2332 (86%)	0.09	108 (5%) 30 24	25, 72, 160, 200	0

All (108) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	182	LEU	7.0
1	E	48	GLY	6.8
1	G	184	LEU	6.6
1	I	182	LEU	6.5
1	C	181	GLN	5.9
1	C	58	GLY	5.4
1	E	60	GLY	5.3
1	G	48	GLY	5.3
1	F	62	LYS	5.3
1	K	184	LEU	5.1
1	E	100	ASN	4.8
1	K	185	GLU	4.8

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Mol	Chain	Res	Type	RSRZ
1	H	182	LEU	4.7
1	E	181	GLN	4.7
1	K	182	LEU	4.6
1	E	61	GLN	4.4
1	K	61	GLN	4.4
1	J	181	GLN	4.4
1	G	59	GLY	4.4
1	D	187	ASP	4.3
1	B	180	ARG	4.3
1	K	183	PRO	4.2
1	E	59	GLY	4.2
1	B	61	GLN	4.1
1	E	183	PRO	4.0
1	F	59	GLY	4.0
1	F	183	PRO	4.0
1	F	182	LEU	3.8
1	F	181	GLN	3.7
1	K	207	SER	3.7
1	B	182	LEU	3.6
1	D	56	MET	3.5
1	J	180	ARG	3.5
1	K	190	LYS	3.5
1	F	176	ASN	3.5
1	D	179	PRO	3.4
1	G	182	LEU	3.4
1	J	183	PRO	3.4
1	H	59	GLY	3.3
1	E	179	PRO	3.3
1	E	99	ASN	3.3
1	F	179	PRO	3.2
1	C	184	LEU	3.2
1	F	97	ASP	3.1
1	H	177	LYS	3.1
1	K	28	GLN	3.0
1	E	193	ARG	3.0
1	E	47	LEU	2.9
1	J	179	PRO	2.9
1	K	181	GLN	2.9
1	C	62	LYS	2.9
1	D	178	LEU	2.9
1	E	189	THR	2.9
1	E	184	LEU	2.9

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Mol	Chain	Res	Type	RSRZ
1	J	191	ALA	2.9
1	E	180	ARG	2.9
1	G	180	ARG	2.9
1	F	133	LYS	2.8
1	F	198	PRO	2.8
1	F	48	GLY	2.7
1	E	185	GLU	2.7
1	E	104	TYR	2.7
1	E	58	GLY	2.7
1	K	178	LEU	2.7
1	F	57	ALA	2.7
1	K	180	ARG	2.7
1	I	177	LYS	2.6
1	A	180	ARG	2.6
1	F	184	LEU	2.6
1	G	190	LYS	2.5
1	E	177	LYS	2.4
1	E	25	CYS	2.4
1	F	99	ASN	2.4
1	K	189	THR	2.4
1	D	59	GLY	2.4
1	F	170	ASP	2.4
1	E	172	LEU	2.4
1	D	177	LYS	2.4
1	F	180	ARG	2.4
1	K	186	VAL	2.4
1	D	184	LEU	2.3
1	E	178	LEU	2.3
1	B	98	LEU	2.3
1	F	177	LYS	2.3
1	F	175	LEU	2.3
1	E	63	VAL	2.3
1	D	99	ASN	2.2
1	H	181	GLN	2.2
1	K	208	CYS	2.2
1	B	60	GLY	2.2
1	H	183	PRO	2.1
1	K	179	PRO	2.1
1	G	183	PRO	2.1
1	H	33	ALA	2.1
1	C	182	LEU	2.1
1	K	176	ASN	2.1

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Mol	Chain	Res	Type	RSRZ
1	B	181	GLN	2.1
1	I	181	GLN	2.1
1	G	159	GLY	2.0
1	J	29	CYS	2.0
1	C	176	ASN	2.0
1	D	61	GLN	2.0
1	A	177	LYS	2.0
1	G	61	GLN	2.0
1	B	183	PRO	2.0
1	C	59	GLY	2.0
1	D	30	GLN	2.0
1	E	206	ASN	2.0

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

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

## 6.3 Carbohydrates [i](#)

There are no carbohydrates in this entry.

## 6.4 Ligands [i](#)

There are no ligands in this entry.

## 6.5 Other polymers [i](#)

There are no such residues in this entry.