



# wwPDB X-ray Structure Validation Summary Report ⓘ

Jan 31, 2016 – 07:48 PM GMT

PDB ID : 1H2I  
Title : HUMAN RAD52 PROTEIN, N-TERMINAL DOMAIN  
Authors : Singleton, M.R.; Wentzell, L.M.; Liu, Y.; West, S.C.; Wigley, D.B.  
Deposited on : 2002-08-09  
Resolution : 2.70 Å(reported)

This is a wwPDB X-ray Structure Validation Summary 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

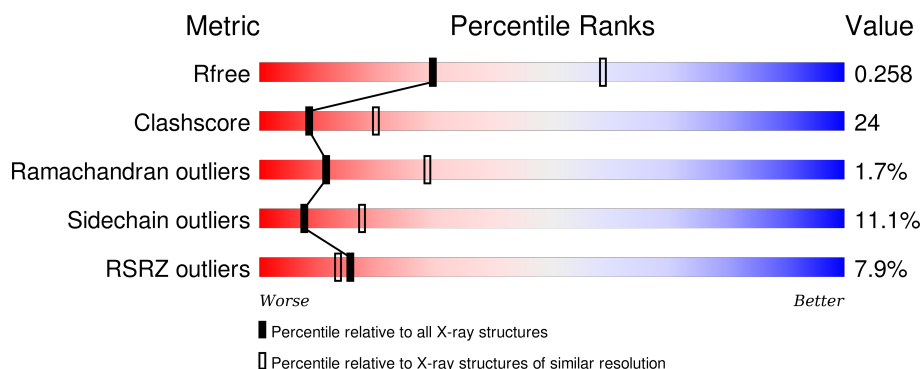
# 1 Overall quality at a glance ⓘ

The following experimental techniques were used to determine the structure:

## *X-RAY DIFFRACTION*

The reported resolution of this entry is 2.70 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	2103 (2.70-2.70)
Clashscore	102246	2422 (2.70-2.70)
Ramachandran outliers	100387	2382 (2.70-2.70)
Sidechain outliers	100360	2382 (2.70-2.70)
RSRZ outliers	91569	2107 (2.70-2.70)

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	209	<div> <div>3%</div> <div> <div>55%</div> <div>28%</div> <div>5% •</div> <div>11%</div> </div> </div>
1	B	209	<div> <div>6%</div> <div> <div>58%</div> <div>22%</div> <div>7% •</div> <div>11%</div> </div> </div>
1	C	209	<div> <div>5%</div> <div> <div>59%</div> <div>23%</div> <div>5% •</div> <div>11%</div> </div> </div>
1	D	209	<div> <div>7%</div> <div> <div>56%</div> <div>26%</div> <div>5% •</div> <div>11%</div> </div> </div>
1	E	209	<div> <div>6%</div> <div> <div>53%</div> <div>27%</div> <div>6% •</div> <div>11%</div> </div> </div>

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Mol	Chain	Length	Quality of chain
1	F	209	
1	G	209	
1	H	209	
1	I	209	
1	J	209	
1	K	209	
1	L	209	
1	M	209	
1	N	209	
1	O	209	
1	P	209	
1	Q	209	
1	R	209	
1	S	209	
1	T	209	
1	U	209	
1	V	209	

## 2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 32802 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 DNA REPAIR PROTEIN RAD52 HOMOLOG.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	B	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	C	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	D	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	E	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	F	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	G	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	H	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	I	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	J	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	K	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	L	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	M	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	N	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	O	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			
1	P	186	Total	C	N	O	S	0	0	0
			1469	919	266	276	8			

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Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	Q	186	Total 1469	C 919	N 266	O 276	S 8	0	0	0
1	R	186	Total 1469	C 919	N 266	O 276	S 8	0	0	0
1	S	186	Total 1469	C 919	N 266	O 276	S 8	0	0	0
1	T	186	Total 1469	C 919	N 266	O 276	S 8	0	0	0
1	U	186	Total 1469	C 919	N 266	O 276	S 8	0	0	0
1	V	186	Total 1469	C 919	N 266	O 276	S 8	0	0	0

- Molecule 2 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	A	23	Total 23	O 23	0	0
2	B	22	Total 22	O 22	0	0
2	C	21	Total 21	O 21	0	0
2	D	24	Total 24	O 24	0	0
2	E	22	Total 22	O 22	0	0
2	F	25	Total 25	O 25	0	0
2	G	18	Total 18	O 18	0	0
2	H	22	Total 22	O 22	0	0
2	I	22	Total 22	O 22	0	0
2	J	20	Total 20	O 20	0	0
2	K	23	Total 23	O 23	0	0
2	L	21	Total 21	O 21	0	0
2	M	23	Total 23	O 23	0	0

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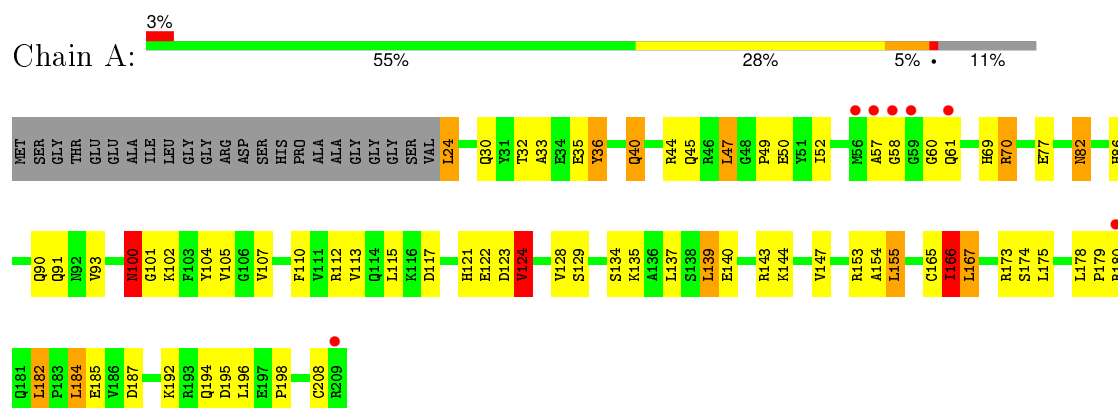
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Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
2	N	26	Total 26	O 26	0	0
2	O	17	Total 17	O 17	0	0
2	P	24	Total 24	O 24	0	0
2	Q	21	Total 21	O 21	0	0
2	R	22	Total 22	O 22	0	0
2	S	22	Total 22	O 22	0	0
2	T	22	Total 22	O 22	0	0
2	U	23	Total 23	O 23	0	0
2	V	21	Total 21	O 21	0	0

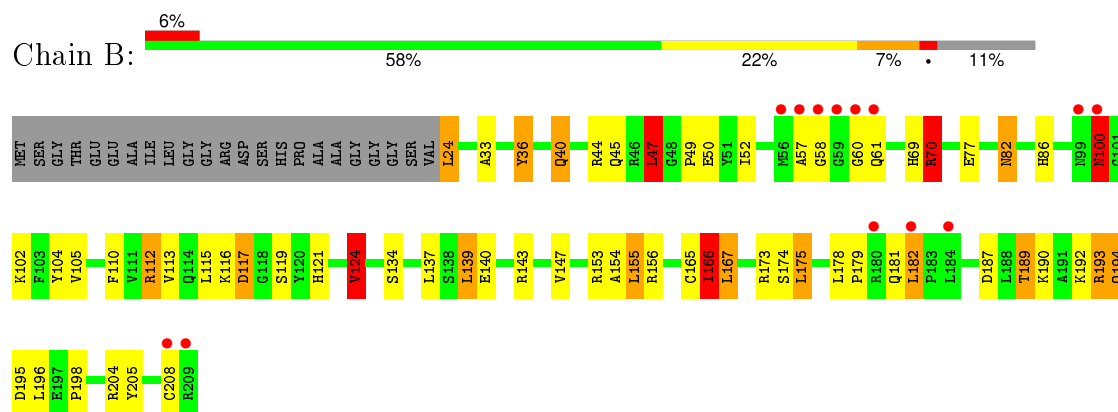
### 3 Residue-property plots

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.

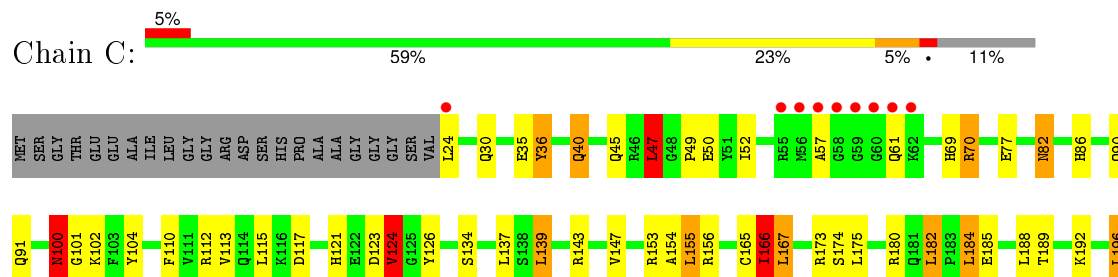
#### • Molecule 1: DNA REPAIR PROTEIN RAD52 HOMOLOG



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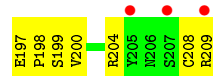
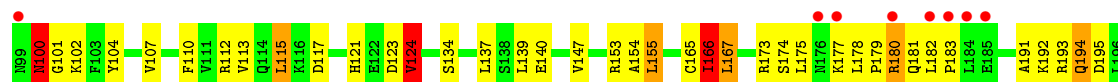


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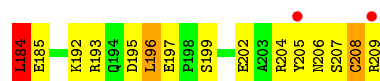




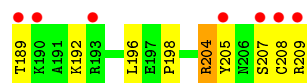
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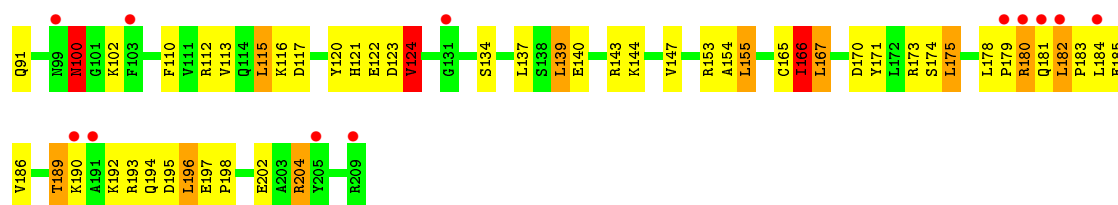
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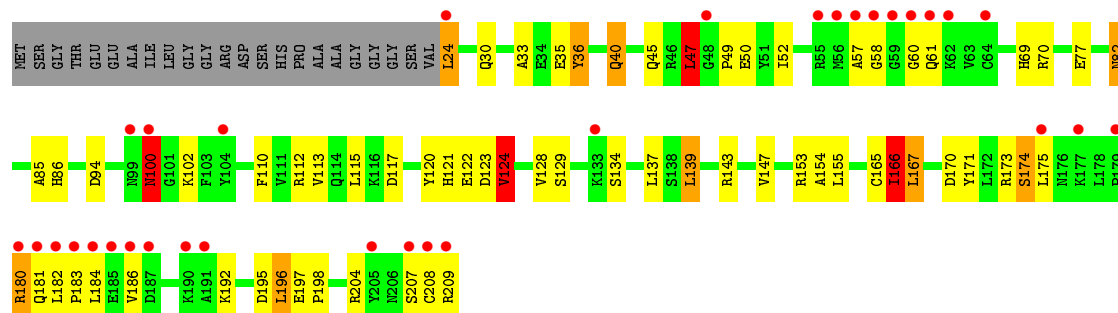
• Molecule 1: DNA REPAIR PROTEIN RAD52 HOMOLOG



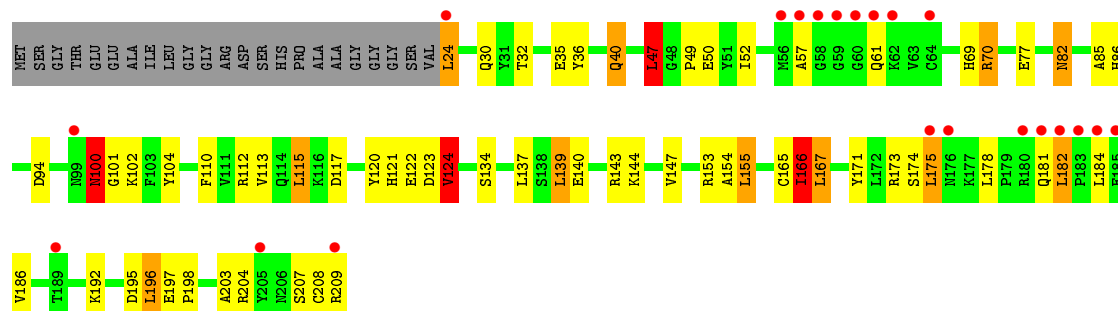




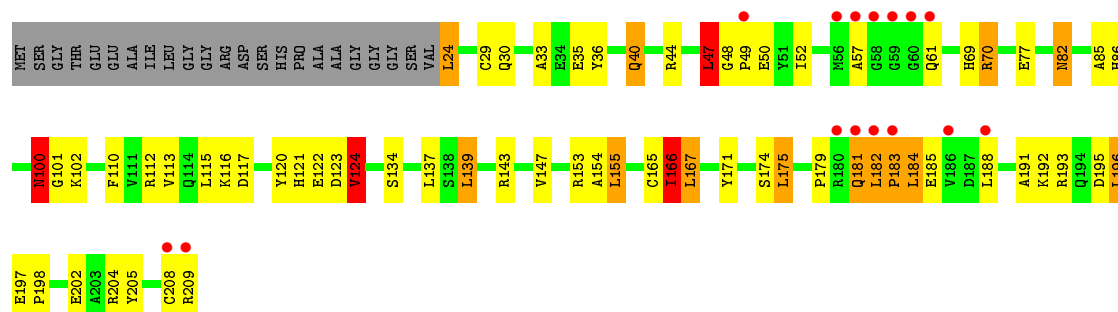
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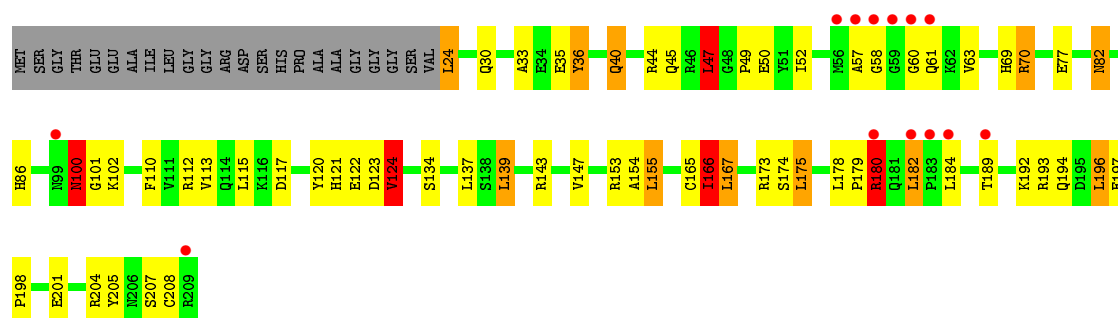


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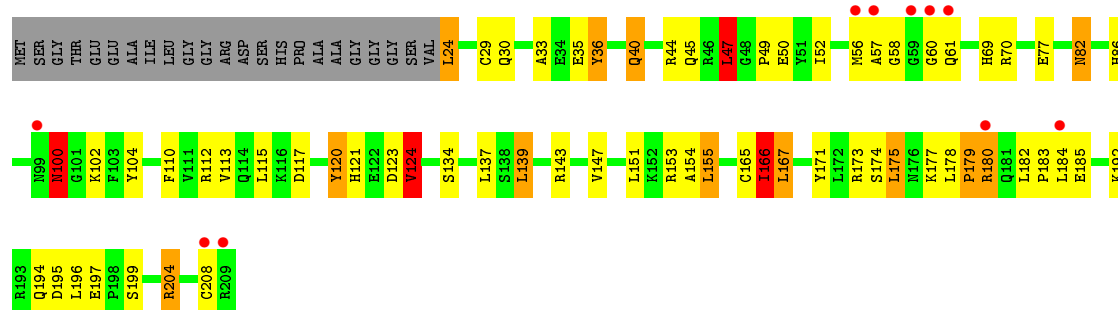


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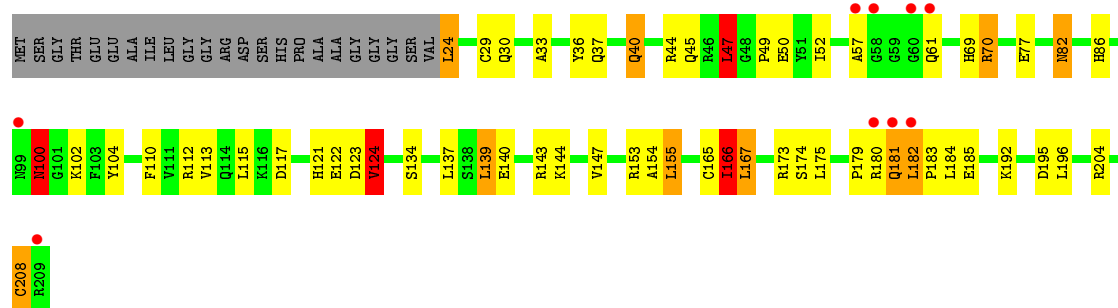




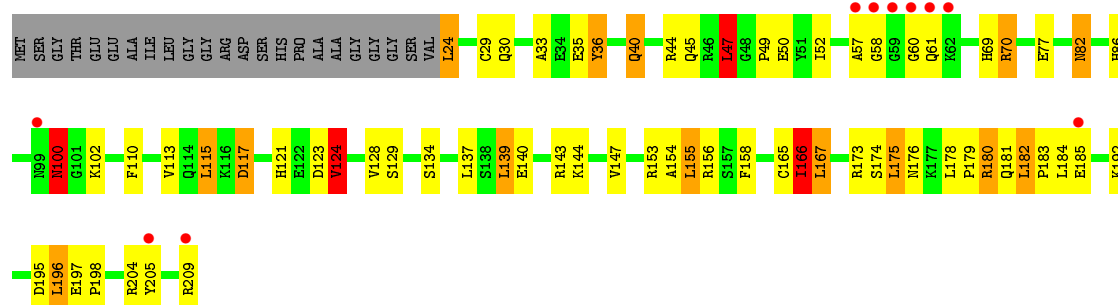
• Molecule 1: DNA REPAIR PROTEIN RAD52 HOMOLOG



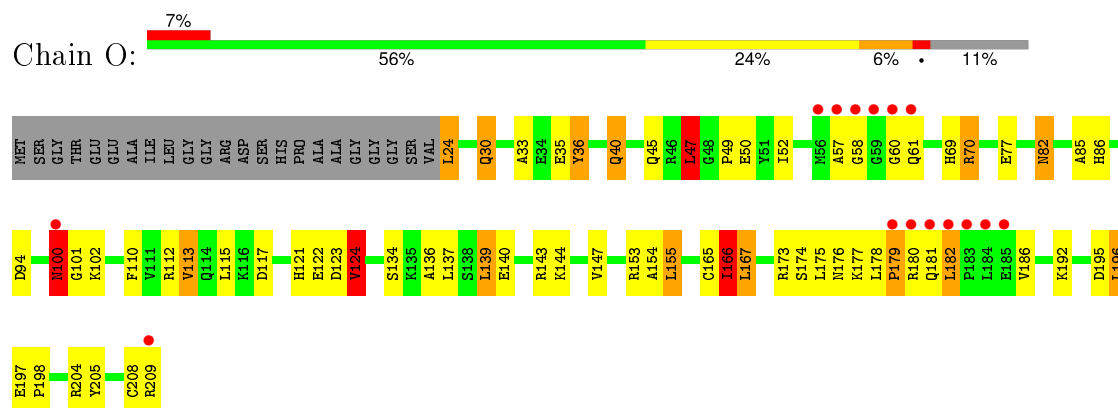
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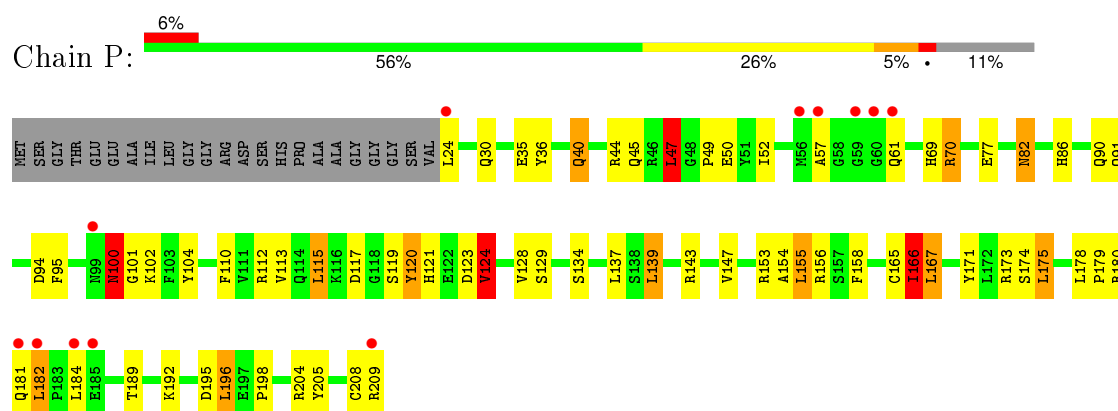
• Molecule 1: DNA REPAIR PROTEIN RAD52 HOMOLOG



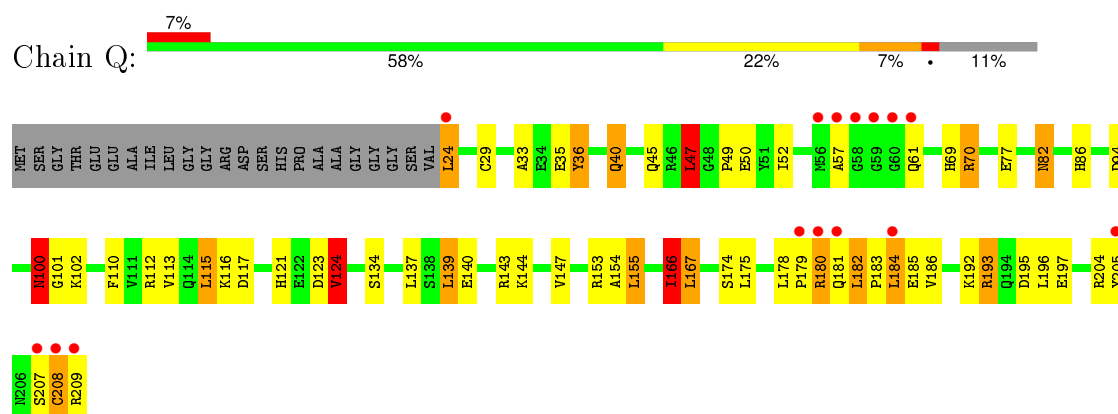
- Molecule 1: DNA REPAIR PROTEIN RAD52 HOMOLOG



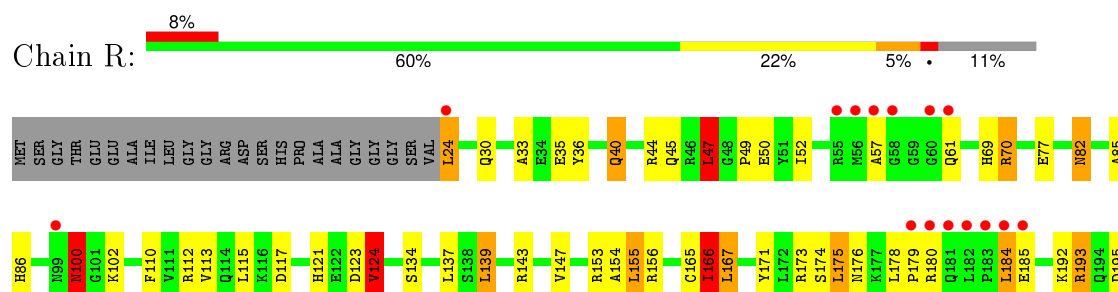
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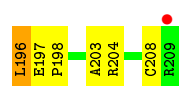


- Molecule 1: DNA REPAIR PROTEIN RAD52 HOMOLOG

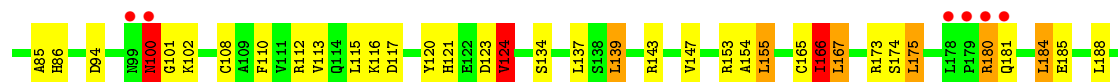


- Molecule 1: DNA REPAIR PROTEIN RAD52 HOMOLOG

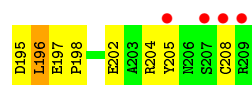
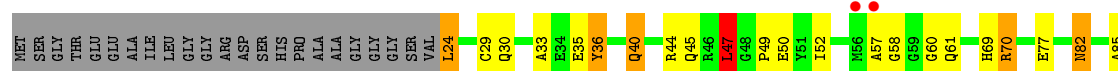




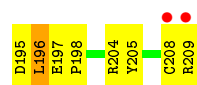
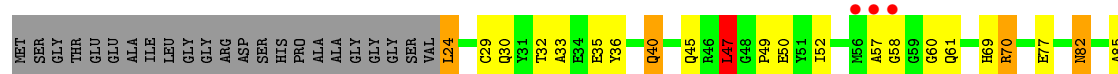
• Molecule 1: DNA REPAIR PROTEIN RAD52 HOMOLOG



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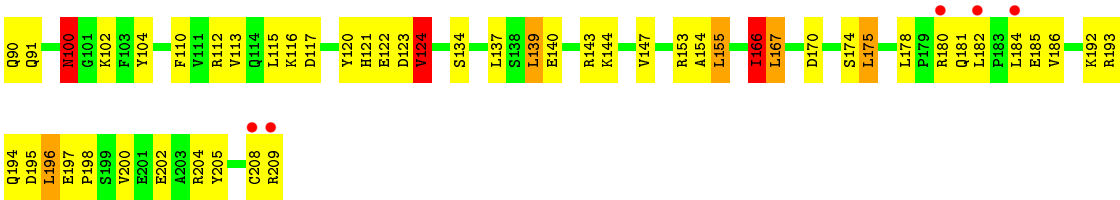


• Molecule 1: DNA REPAIR PROTEIN RAD52 HOMOLOG



• Molecule 1: DNA REPAIR PROTEIN RAD52 HOMOLOG





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	117.26Å 127.32Å 191.23Å 90.00° 90.29° 90.00°	Depositor
Resolution (Å)	30.00 – 2.70 29.86 – 2.70	Depositor EDS
% Data completeness (in resolution range)	96.9 (30.00-2.70) 97.0 (29.86-2.70)	Depositor EDS
$R_{merge}$	0.06	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.48 (at 2.68Å)	Xtriage
Refinement program	CNS 1.1	Depositor
R, $R_{free}$	0.225 , 0.262 0.225 , 0.258	Depositor DCC
$R_{free}$ test set	7511 reflections (5.03%)	DCC
Wilson B-factor (Å <sup>2</sup> )	46.4	Xtriage
Anisotropy	0.056	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.31 , 54.9	EDS
Estimated twinning fraction	0.015 for h,-k,-l	Xtriage
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtriage
Outliers	1 of 149457 reflections (0.001%)	Xtriage
$F_o, F_c$ correlation	0.92	EDS
Total number of atoms	32802	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	52.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.68% 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	0.77	0/1493	0.89	2/2006 (0.1%)
1	B	0.84	1/1493 (0.1%)	0.97	7/2006 (0.3%)
1	C	0.77	0/1493	0.94	5/2006 (0.2%)
1	D	0.69	0/1493	0.84	2/2006 (0.1%)
1	E	0.62	0/1493	0.83	3/2006 (0.1%)
1	F	0.58	0/1493	0.78	2/2006 (0.1%)
1	G	0.54	0/1493	0.79	2/2006 (0.1%)
1	H	0.54	0/1493	0.79	2/2006 (0.1%)
1	I	0.57	0/1493	0.80	2/2006 (0.1%)
1	J	0.61	1/1493 (0.1%)	0.81	3/2006 (0.1%)
1	K	0.70	1/1493 (0.1%)	0.83	2/2006 (0.1%)
1	L	0.79	1/1493 (0.1%)	0.92	3/2006 (0.1%)
1	M	0.77	1/1493 (0.1%)	0.90	2/2006 (0.1%)
1	N	0.81	2/1493 (0.1%)	0.93	5/2006 (0.2%)
1	O	0.74	1/1493 (0.1%)	0.89	4/2006 (0.2%)
1	P	0.71	0/1493	0.88	3/2006 (0.1%)
1	Q	0.71	1/1493 (0.1%)	0.86	3/2006 (0.1%)
1	R	0.71	0/1493	0.89	5/2006 (0.2%)
1	S	0.77	2/1493 (0.1%)	0.88	4/2006 (0.2%)
1	T	0.73	1/1493 (0.1%)	0.87	3/2006 (0.1%)
1	U	0.71	1/1493 (0.1%)	0.87	3/2006 (0.1%)
1	V	0.74	0/1493	0.86	3/2006 (0.1%)
All	All	0.71	13/32846 (0.0%)	0.87	70/44132 (0.2%)

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	A	0	2
1	B	0	2
1	C	0	2

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Mol	Chain	#Chirality outliers	#Planarity outliers
1	D	0	2
1	E	0	2
1	F	0	1
1	G	0	1
1	H	0	1
1	I	0	1
1	K	0	1
1	L	0	3
1	M	0	1
1	N	0	1
1	O	0	1
1	P	0	2
1	Q	0	1
1	T	0	2
1	U	0	1
1	V	0	1
All	All	0	28

The worst 5 of 13 bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	S	29	CYS	CB-SG	-7.25	1.70	1.82
1	J	29	CYS	CB-SG	-6.87	1.70	1.82
1	N	29	CYS	CB-SG	-6.86	1.70	1.82
1	L	29	CYS	CB-SG	-6.64	1.71	1.82
1	M	29	CYS	CB-SG	-6.22	1.71	1.82

The worst 5 of 70 bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	124	VAL	CB-CA-C	-6.89	98.31	111.40
1	P	124	VAL	CB-CA-C	-6.87	98.36	111.40
1	B	156	ARG	NE-CZ-NH2	-6.63	116.98	120.30
1	D	124	VAL	CB-CA-C	-6.56	98.93	111.40
1	N	124	VAL	CB-CA-C	-6.54	98.97	111.40

There are no chirality outliers.

5 of 28 planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	104	TYR	Sidechain

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Mol	Chain	Res	Type	Group
1	A	36	TYR	Sidechain
1	B	104	TYR	Sidechain
1	B	36	TYR	Sidechain
1	C	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	1469	0	1457	87	0
1	B	1469	0	1457	93	0
1	C	1469	0	1457	78	0
1	D	1469	0	1457	85	0
1	E	1469	0	1457	88	0
1	F	1469	0	1457	77	0
1	G	1469	0	1457	106	0
1	H	1469	0	1457	89	0
1	I	1469	0	1457	82	0
1	J	1469	0	1457	82	0
1	K	1469	0	1457	99	0
1	L	1469	0	1457	104	0
1	M	1469	0	1457	70	0
1	N	1469	0	1457	85	0
1	O	1469	0	1457	83	0
1	P	1469	0	1457	85	0
1	Q	1469	0	1457	89	0
1	R	1469	0	1457	83	0
1	S	1469	0	1457	89	0
1	T	1469	0	1457	87	0
1	U	1469	0	1457	86	0
1	V	1469	0	1457	92	0
2	A	23	0	0	1	0
2	B	22	0	0	2	0
2	C	21	0	0	1	0
2	D	24	0	0	1	0
2	E	22	0	0	0	0
2	F	25	0	0	1	0
2	G	18	0	0	1	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	H	22	0	0	0	0
2	I	22	0	0	1	0
2	J	20	0	0	1	0
2	K	23	0	0	1	0
2	L	21	0	0	0	0
2	M	23	0	0	0	0
2	N	26	0	0	0	0
2	O	17	0	0	0	0
2	P	24	0	0	1	0
2	Q	21	0	0	1	0
2	R	22	0	0	0	0
2	S	22	0	0	1	0
2	T	22	0	0	1	0
2	U	23	0	0	2	0
2	V	21	0	0	1	0
All	All	32802	0	32054	1544	0

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 24.

The worst 5 of 1544 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:K:193:ARG:HB3	1:L:180:ARG:NH2	1.55	1.21
1:C:182:LEU:HD23	1:C:182:LEU:H	1.01	1.17
1:B:193:ARG:HG2	1:B:193:ARG:HH11	0.98	1.14
1:K:193:ARG:HB3	1:L:180:ARG:HH21	1.02	1.07
1:C:182:LEU:H	1:C:182:LEU:CD2	1.66	1.04

There are no symmetry-related clashes.

## 5.3 Torsion angles [i](#)

### 5.3.1 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 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	184/209 (88%)	177 (96%)	4 (2%)	3 (2%)	12	30
1	B	184/209 (88%)	178 (97%)	4 (2%)	2 (1%)	17	42
1	C	184/209 (88%)	172 (94%)	9 (5%)	3 (2%)	12	30
1	D	184/209 (88%)	173 (94%)	6 (3%)	5 (3%)	6	16
1	E	184/209 (88%)	171 (93%)	6 (3%)	7 (4%)	4	9
1	F	184/209 (88%)	171 (93%)	8 (4%)	5 (3%)	6	16
1	G	184/209 (88%)	169 (92%)	12 (6%)	3 (2%)	12	30
1	H	184/209 (88%)	171 (93%)	11 (6%)	2 (1%)	17	42
1	I	184/209 (88%)	174 (95%)	8 (4%)	2 (1%)	17	42
1	J	184/209 (88%)	175 (95%)	5 (3%)	4 (2%)	8	22
1	K	184/209 (88%)	176 (96%)	5 (3%)	3 (2%)	12	30
1	L	184/209 (88%)	175 (95%)	5 (3%)	4 (2%)	8	22
1	M	184/209 (88%)	173 (94%)	6 (3%)	5 (3%)	6	16
1	N	184/209 (88%)	173 (94%)	8 (4%)	3 (2%)	12	30
1	O	184/209 (88%)	173 (94%)	9 (5%)	2 (1%)	17	42
1	P	184/209 (88%)	179 (97%)	3 (2%)	2 (1%)	17	42
1	Q	184/209 (88%)	173 (94%)	8 (4%)	3 (2%)	12	30
1	R	184/209 (88%)	178 (97%)	4 (2%)	2 (1%)	17	42
1	S	184/209 (88%)	175 (95%)	7 (4%)	2 (1%)	17	42
1	T	184/209 (88%)	173 (94%)	8 (4%)	3 (2%)	12	30
1	U	184/209 (88%)	175 (95%)	6 (3%)	3 (2%)	12	30
1	V	184/209 (88%)	173 (94%)	9 (5%)	2 (1%)	17	42
All	All	4048/4598 (88%)	3827 (94%)	151 (4%)	70 (2%)	11	29

5 of 70 Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	D	166	ILE
1	E	184	LEU
1	F	166	ILE
1	G	166	ILE
1	G	189	THR

### 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	155/169 (92%)	139 (90%)	16 (10%)	9	20
1	B	155/169 (92%)	136 (88%)	19 (12%)	6	14
1	C	155/169 (92%)	138 (89%)	17 (11%)	8	18
1	D	155/169 (92%)	138 (89%)	17 (11%)	8	18
1	E	155/169 (92%)	136 (88%)	19 (12%)	6	14
1	F	155/169 (92%)	138 (89%)	17 (11%)	8	18
1	G	155/169 (92%)	137 (88%)	18 (12%)	7	16
1	H	155/169 (92%)	140 (90%)	15 (10%)	10	23
1	I	155/169 (92%)	138 (89%)	17 (11%)	8	18
1	J	155/169 (92%)	135 (87%)	20 (13%)	5	12
1	K	155/169 (92%)	136 (88%)	19 (12%)	6	14
1	L	155/169 (92%)	138 (89%)	17 (11%)	8	18
1	M	155/169 (92%)	140 (90%)	15 (10%)	10	23
1	N	155/169 (92%)	139 (90%)	16 (10%)	9	20
1	O	155/169 (92%)	138 (89%)	17 (11%)	8	18
1	P	155/169 (92%)	138 (89%)	17 (11%)	8	18
1	Q	155/169 (92%)	137 (88%)	18 (12%)	7	16
1	R	155/169 (92%)	138 (89%)	17 (11%)	8	18
1	S	155/169 (92%)	136 (88%)	19 (12%)	6	14
1	T	155/169 (92%)	137 (88%)	18 (12%)	7	16
1	U	155/169 (92%)	140 (90%)	15 (10%)	10	23
1	V	155/169 (92%)	138 (89%)	17 (11%)	8	18
All	All	3410/3718 (92%)	3030 (89%)	380 (11%)	8	17

5 of 380 residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	J	183	PRO
1	M	40	GLN
1	U	70	ARG
1	K	40	GLN
1	K	189	THR

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. 5 of 285 such sidechains are listed below:

Mol	Chain	Res	Type
1	J	121	HIS
1	M	40	GLN
1	U	61	GLN
1	K	30	GLN
1	L	28	GLN

### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

## 5.5 Carbohydrates [i](#)

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	186/209 (88%)	-0.13	7 (3%) 44 44	19, 37, 80, 95	0
1	B	186/209 (88%)	-0.12	13 (6%) 19 17	14, 32, 84, 98	0
1	C	186/209 (88%)	-0.12	10 (5%) 29 28	16, 35, 82, 101	0
1	D	186/209 (88%)	0.08	14 (7%) 17 15	22, 46, 91, 105	0
1	E	186/209 (88%)	0.31	13 (6%) 19 17	32, 58, 98, 108	0
1	F	186/209 (88%)	0.64	25 (13%) 4 3	39, 67, 102, 116	0
1	G	186/209 (88%)	0.59	20 (10%) 8 6	45, 73, 105, 118	0
1	H	186/209 (88%)	0.73	32 (17%) 2 1	42, 74, 103, 120	0
1	I	186/209 (88%)	0.56	21 (11%) 7 5	41, 69, 107, 116	0
1	J	186/209 (88%)	0.35	15 (8%) 15 12	33, 61, 101, 108	0
1	K	186/209 (88%)	0.17	13 (6%) 19 17	25, 48, 96, 105	0
1	L	186/209 (88%)	-0.15	10 (5%) 29 28	18, 37, 85, 97	0
1	M	186/209 (88%)	-0.07	9 (4%) 34 33	16, 35, 81, 94	0
1	N	186/209 (88%)	-0.10	10 (5%) 29 28	19, 36, 82, 104	0
1	O	186/209 (88%)	-0.03	15 (8%) 15 12	18, 38, 91, 100	0
1	P	186/209 (88%)	0.06	12 (6%) 22 20	21, 44, 91, 100	0
1	Q	186/209 (88%)	0.12	15 (8%) 15 12	23, 45, 95, 111	0
1	R	186/209 (88%)	0.04	16 (8%) 13 10	22, 43, 93, 100	0
1	S	186/209 (88%)	0.07	17 (9%) 11 9	21, 42, 91, 107	0
1	T	186/209 (88%)	0.10	13 (6%) 19 17	22, 46, 95, 109	0
1	U	186/209 (88%)	-0.03	11 (5%) 26 24	21, 46, 89, 106	0
1	V	186/209 (88%)	-0.04	12 (6%) 22 20	20, 42, 86, 98	0
All	All	4092/4598 (88%)	0.14	323 (7%) 15 13	14, 49, 95, 120	0

The worst 5 of 323 RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	E	58	GLY	7.4
1	Q	209	ARG	6.8
1	H	208	CYS	6.7
1	I	209	ARG	6.6
1	M	58	GLY	6.3

## 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.