



Full wwPDB X-ray Structure Validation Report ⓘ

May 14, 2020 – 03:26 pm BST

PDB ID : 5JRB
Title : Rad52(1-212) K102A/K133A/E202A mutant
Authors : Saotome, M.; Saito, K.; Kurumizaka, H.; Kagawa, W.
Deposited on : 2016-05-06
Resolution : 2.40 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

A user guide is available at

<https://www.wwpdb.org/validation/2017/XrayValidationReportHelp>

with specific help available everywhere you see the ⓘ symbol.

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

MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.11
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.11

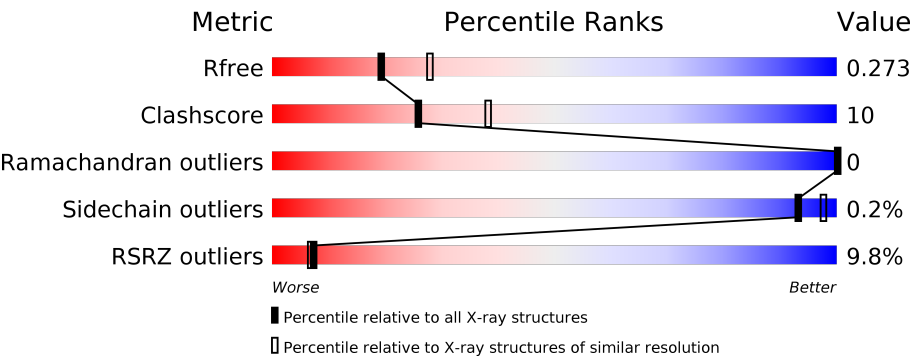
1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

X-RAY DIFFRACTION

The reported resolution of this entry is 2.40 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}	130704	3907 (2.40-2.40)
Clashscore	141614	4398 (2.40-2.40)
Ramachandran outliers	138981	4318 (2.40-2.40)
Sidechain outliers	138945	4319 (2.40-2.40)
RSRZ outliers	127900	3811 (2.40-2.40)

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 ≥ 3 , 2, 1 and 0 types of geometric quality criteria respectively. 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	215	<div><div>3%</div><div><div></div><div>75%</div><div>11%</div><div>14%</div></div></div>
1	B	215	<div><div>6%</div><div><div></div><div>73%</div><div>13%</div><div>14%</div></div></div>
1	C	215	<div><div>6%</div><div><div></div><div>73%</div><div>11%</div><div>14%</div></div></div>
1	D	215	<div><div>6%</div><div><div></div><div>73%</div><div>12%</div><div>14%</div></div></div>
1	E	215	<div><div>5%</div><div><div></div><div>68%</div><div>17%</div><div>14%</div></div></div>
1	F	215	<div><div>10%</div><div><div></div><div>69%</div><div>16%</div><div>14%</div></div></div>

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Mol	Chain	Length	Quality of chain
1	G	215	<div><div>15%</div><div><div></div><div>63%</div><div>23%</div><div>14%</div></div></div>
1	H	215	<div><div>15%</div><div><div></div><div>60%</div><div>26%</div><div>14%</div></div></div>
1	I	215	<div><div>10%</div><div><div></div><div>60%</div><div>26%</div><div>14%</div></div></div>
1	J	215	<div><div>10%</div><div><div></div><div>67%</div><div>18%</div><div>14%</div></div></div>
1	K	215	<div><div>5%</div><div><div></div><div>70%</div><div>16%</div><div>13%</div></div></div>

2 Entry composition

There are 2 unique types of molecules in this entry. The entry contains 16252 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	184	Total	C	N	O	S	0	0	0
			1438	899	259	272	8			
1	B	184	Total	C	N	O	S	0	0	0
			1438	899	259	272	8			
1	C	184	Total	C	N	O	S	0	0	0
			1438	899	259	272	8			
1	D	184	Total	C	N	O	S	0	0	0
			1438	899	259	272	8			
1	E	184	Total	C	N	O	S	0	0	0
			1438	899	259	272	8			
1	F	184	Total	C	N	O	S	0	0	0
			1438	899	259	272	8			
1	G	184	Total	C	N	O	S	0	0	0
			1438	899	259	272	8			
1	H	184	Total	C	N	O	S	0	0	0
			1438	899	259	272	8			
1	I	184	Total	C	N	O	S	0	0	0
			1438	899	259	272	8			
1	J	184	Total	C	N	O	S	0	0	0
			1438	899	259	272	8			
1	K	188	Total	C	N	O	S	0	0	0
			1472	919	267	277	9			

There are 66 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	-2	GLY	-	expression tag	UNP P43351
A	-1	SER	-	expression tag	UNP P43351
A	0	HIS	-	expression tag	UNP P43351
A	102	ALA	LYS	engineered mutation	UNP P43351
A	133	ALA	LYS	engineered mutation	UNP P43351
A	202	ALA	GLU	engineered mutation	UNP P43351
B	-2	GLY	-	expression tag	UNP P43351

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Chain	Residue	Modelled	Actual	Comment	Reference
B	-1	SER	-	expression tag	UNP P43351
B	0	HIS	-	expression tag	UNP P43351
B	102	ALA	LYS	engineered mutation	UNP P43351
B	133	ALA	LYS	engineered mutation	UNP P43351
B	202	ALA	GLU	engineered mutation	UNP P43351
C	-2	GLY	-	expression tag	UNP P43351
C	-1	SER	-	expression tag	UNP P43351
C	0	HIS	-	expression tag	UNP P43351
C	102	ALA	LYS	engineered mutation	UNP P43351
C	133	ALA	LYS	engineered mutation	UNP P43351
C	202	ALA	GLU	engineered mutation	UNP P43351
D	-2	GLY	-	expression tag	UNP P43351
D	-1	SER	-	expression tag	UNP P43351
D	0	HIS	-	expression tag	UNP P43351
D	102	ALA	LYS	engineered mutation	UNP P43351
D	133	ALA	LYS	engineered mutation	UNP P43351
D	202	ALA	GLU	engineered mutation	UNP P43351
E	-2	GLY	-	expression tag	UNP P43351
E	-1	SER	-	expression tag	UNP P43351
E	0	HIS	-	expression tag	UNP P43351
E	102	ALA	LYS	engineered mutation	UNP P43351
E	133	ALA	LYS	engineered mutation	UNP P43351
E	202	ALA	GLU	engineered mutation	UNP P43351
F	-2	GLY	-	expression tag	UNP P43351
F	-1	SER	-	expression tag	UNP P43351
F	0	HIS	-	expression tag	UNP P43351
F	102	ALA	LYS	engineered mutation	UNP P43351
F	133	ALA	LYS	engineered mutation	UNP P43351
F	202	ALA	GLU	engineered mutation	UNP P43351
G	-2	GLY	-	expression tag	UNP P43351
G	-1	SER	-	expression tag	UNP P43351
G	0	HIS	-	expression tag	UNP P43351
G	102	ALA	LYS	engineered mutation	UNP P43351
G	133	ALA	LYS	engineered mutation	UNP P43351
G	202	ALA	GLU	engineered mutation	UNP P43351
H	-2	GLY	-	expression tag	UNP P43351
H	-1	SER	-	expression tag	UNP P43351
H	0	HIS	-	expression tag	UNP P43351
H	102	ALA	LYS	engineered mutation	UNP P43351
H	133	ALA	LYS	engineered mutation	UNP P43351
H	202	ALA	GLU	engineered mutation	UNP P43351
I	-2	GLY	-	expression tag	UNP P43351

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Chain	Residue	Modelled	Actual	Comment	Reference
I	-1	SER	-	expression tag	UNP P43351
I	0	HIS	-	expression tag	UNP P43351
I	102	ALA	LYS	engineered mutation	UNP P43351
I	133	ALA	LYS	engineered mutation	UNP P43351
I	202	ALA	GLU	engineered mutation	UNP P43351
J	-2	GLY	-	expression tag	UNP P43351
J	-1	SER	-	expression tag	UNP P43351
J	0	HIS	-	expression tag	UNP P43351
J	102	ALA	LYS	engineered mutation	UNP P43351
J	133	ALA	LYS	engineered mutation	UNP P43351
J	202	ALA	GLU	engineered mutation	UNP P43351
K	-2	GLY	-	expression tag	UNP P43351
K	-1	SER	-	expression tag	UNP P43351
K	0	HIS	-	expression tag	UNP P43351
K	102	ALA	LYS	engineered mutation	UNP P43351
K	133	ALA	LYS	engineered mutation	UNP P43351
K	202	ALA	GLU	engineered mutation	UNP P43351

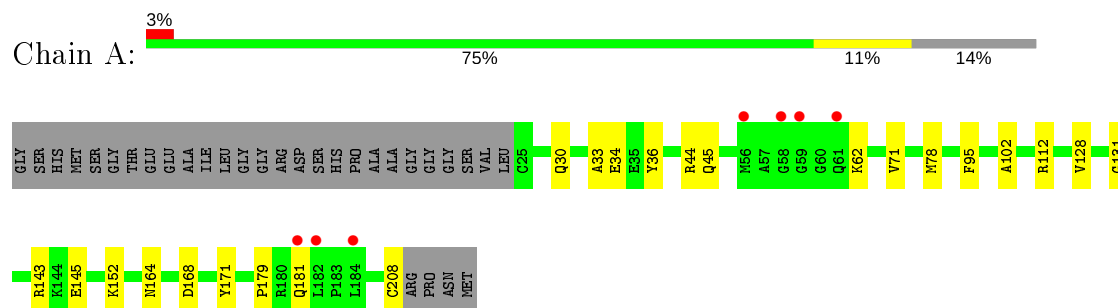
- Molecule 2 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	A	55	Total O 55 55	0	0
2	B	50	Total O 50 50	0	0
2	C	54	Total O 54 54	0	0
2	D	56	Total O 56 56	0	0
2	E	48	Total O 48 48	0	0
2	F	20	Total O 20 20	0	0
2	G	15	Total O 15 15	0	0
2	H	22	Total O 22 22	0	0
2	I	26	Total O 26 26	0	0
2	J	15	Total O 15 15	0	0
2	K	39	Total O 39 39	0	0

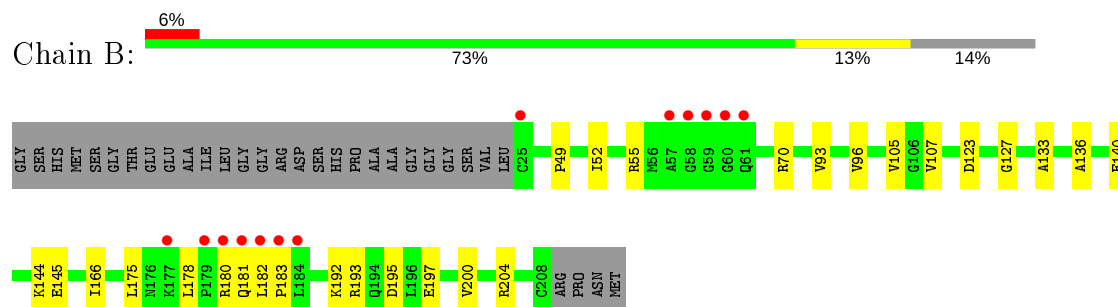
3 Residue-property plots [i](#)

These plots are drawn for all protein, RNA and DNA chains in the entry. The first graphic for a chain summarises the proportions of the various outlier classes 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.

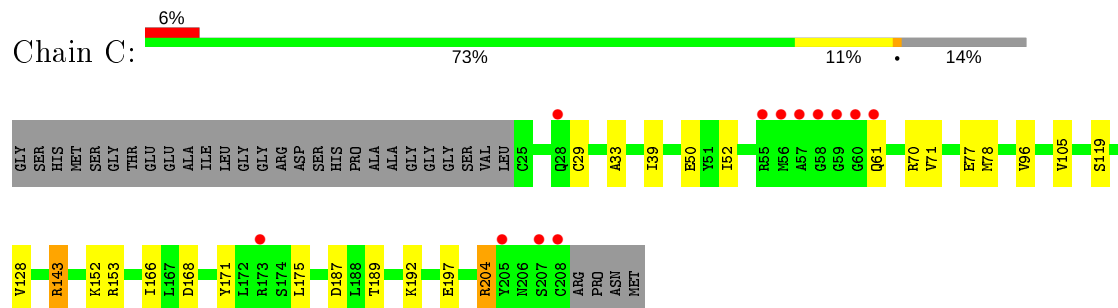
- Molecule 1: DNA repair protein RAD52 homolog



- Molecule 1: DNA repair protein RAD52 homolog

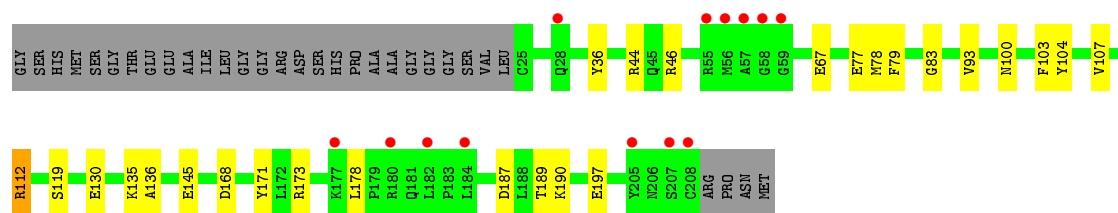


- Molecule 1: DNA repair protein RAD52 homolog

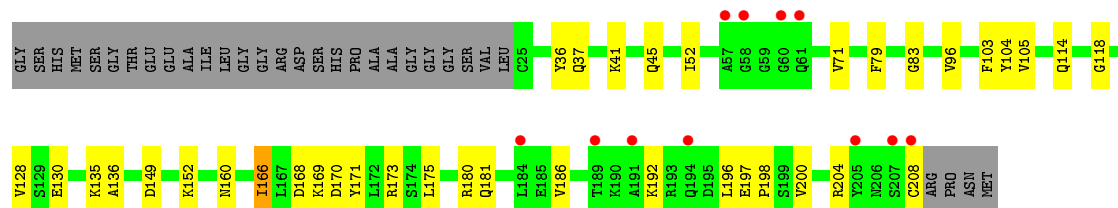


- Molecule 1: DNA repair protein RAD52 homolog

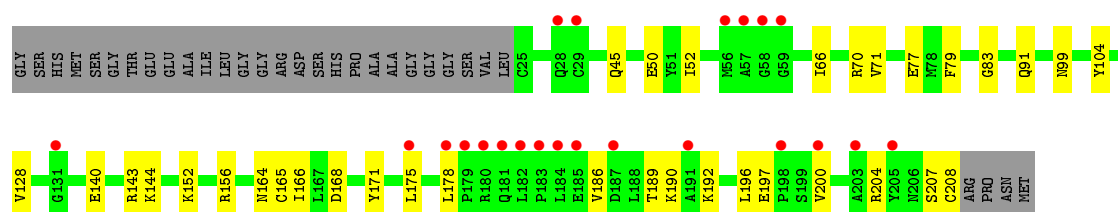




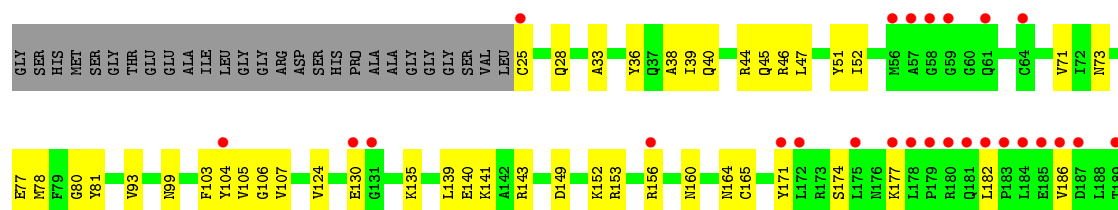
- Molecule 1: DNA repair protein RAD52 homolog



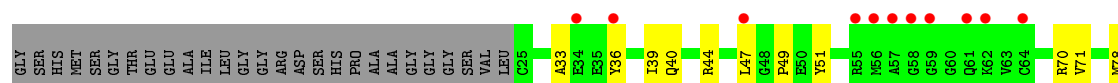
- Molecule 1: DNA repair protein RAD52 homolog

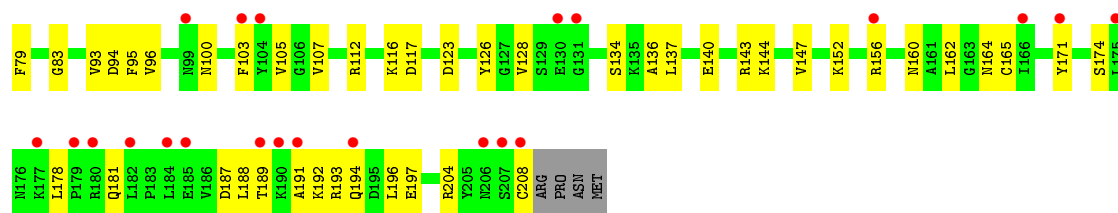


- Molecule 1: DNA repair protein RAD52 homolog

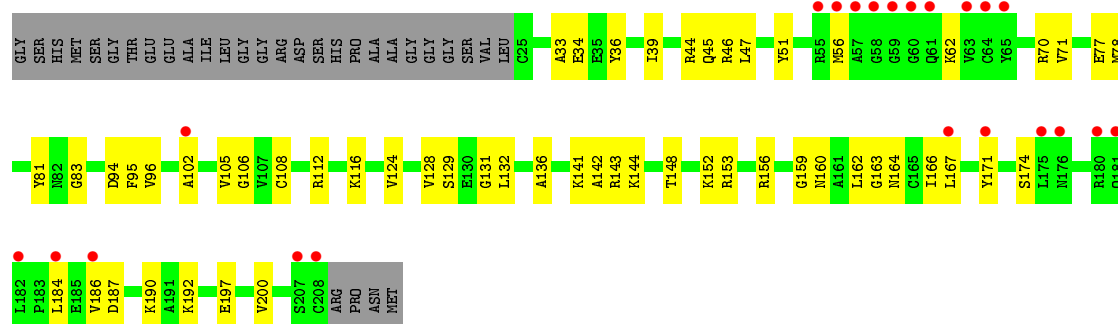


- Molecule 1: DNA repair protein RAD52 homolog

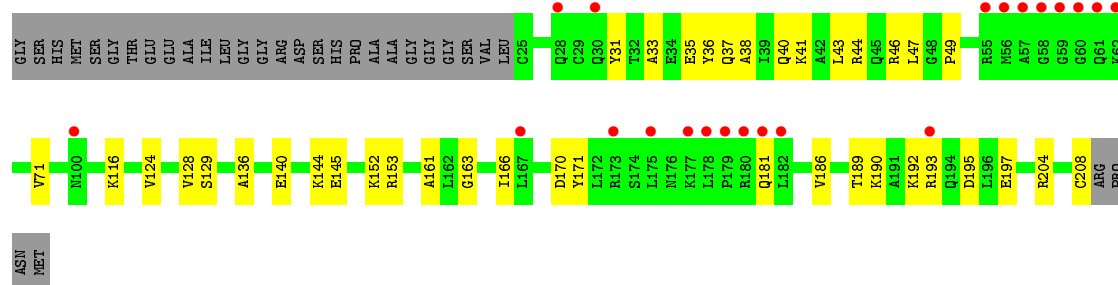




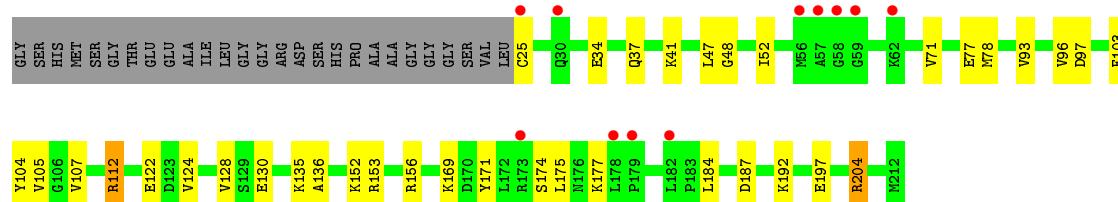
• Molecule 1: DNA repair protein RAD52 homolog



• 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, α , β , γ	110.95Å 98.52Å 116.37Å 90.00° 91.99° 90.00°	Depositor
Resolution (Å)	49.26 – 2.40 46.16 – 2.41	Depositor EDS
% Data completeness (in resolution range)	99.6 (49.26-2.40) 99.6 (46.16-2.41)	Depositor EDS
R_{merge}	0.10	Depositor
R_{sym}	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ ¹	1.37 (at 2.39Å)	Xtriage
Refinement program	PHENIX (1.10.1_2155: ???)	Depositor
R, R_{free}	0.224 , 0.273 0.224 , 0.273	Depositor DCC
R_{free} test set	4841 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å ²)	42.9	Xtriage
Anisotropy	0.565	Xtriage
Bulk solvent k_{sol} (e/Å ³), B_{sol} (Å ²)	0.31 , 50.6	EDS
L-test for twinning ²	$\langle L \rangle = 0.50$, $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.007 for l,k,-h 0.021 for h,-k,-l 0.014 for l,-k,h	Xtriage
F_o, F_c correlation	0.93	EDS
Total number of atoms	16252	wwPDB-VP
Average B, all atoms (Å ²)	58.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 3.50% of the height of the origin peak. No significant pseudotranslation is detected.*

¹Intensities estimated from amplitudes.

²Theoretical values of $\langle |L| \rangle$, $\langle L^2 \rangle$ for acentric reflections are 0.5, 0.333 respectively for untwinned datasets, and 0.375, 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	0.49	0/1462	0.67	1/1968 (0.1%)
1	B	0.49	0/1462	0.68	0/1968
1	C	0.46	0/1462	0.69	2/1968 (0.1%)
1	D	0.46	0/1462	0.65	1/1968 (0.1%)
1	E	0.46	0/1462	0.65	0/1968
1	F	0.42	0/1462	0.63	0/1968
1	G	0.38	0/1462	0.57	0/1968
1	H	0.40	0/1462	0.60	0/1968
1	I	0.39	0/1462	0.58	0/1968
1	J	0.40	0/1462	0.59	0/1968
1	K	0.43	0/1497	0.66	2/2015 (0.1%)
All	All	0.44	0/16117	0.63	6/21695 (0.0%)

There are no bond length outliers.

All (6) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	C	143	ARG	NE-CZ-NH2	-7.58	116.51	120.30
1	K	112	ARG	NE-CZ-NH2	-6.86	116.87	120.30
1	A	143	ARG	NE-CZ-NH2	-6.40	117.10	120.30
1	D	112	ARG	NE-CZ-NH2	-5.26	117.67	120.30
1	C	204	ARG	NE-CZ-NH2	-5.11	117.75	120.30
1	K	204	ARG	NE-CZ-NH2	-5.05	117.78	120.30

There are no chirality outliers.

There are no planarity outliers.

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	1438	0	1416	20	0
1	B	1438	0	1416	24	0
1	C	1438	0	1416	24	0
1	D	1438	0	1416	24	0
1	E	1438	0	1416	32	0
1	F	1438	0	1416	36	0
1	G	1438	0	1416	56	0
1	H	1438	0	1416	58	0
1	I	1438	0	1416	59	0
1	J	1438	0	1416	33	0
1	K	1472	0	1451	33	0
2	A	55	0	0	6	0
2	B	50	0	0	6	0
2	C	54	0	0	3	0
2	D	56	0	0	7	0
2	E	48	0	0	8	0
2	F	20	0	0	6	0
2	G	15	0	0	7	0
2	H	22	0	0	13	0
2	I	26	0	0	20	0
2	J	15	0	0	6	0
2	K	39	0	0	7	0
All	All	16252	0	15611	329	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 10.

All (329) 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:I:143:ARG:NH2	2:I:304:HOH:O	2.01	0.93
1:G:165:CYS:SG	2:G:310:HOH:O	2.28	0.91
1:I:144:LYS:O	2:I:301:HOH:O	1.86	0.91
1:H:112:ARG:NH1	2:H:304:HOH:O	2.04	0.90
1:J:192:LYS:NZ	1:J:197:GLU:OE2	2.05	0.90
1:G:47:LEU:N	2:G:302:HOH:O	2.06	0.85
1:E:170:ASP:OD2	2:E:301:HOH:O	1.95	0.85
1:I:108:CYS:SG	2:I:314:HOH:O	2.34	0.84
1:I:112:ARG:NH1	2:I:307:HOH:O	2.09	0.84

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:192:LYS:O	2:J:301:HOH:O	1.95	0.84
1:I:159:GLY:O	2:I:302:HOH:O	1.94	0.83
1:G:106:GLY:O	2:G:301:HOH:O	1.97	0.83
1:A:62:LYS:NZ	2:A:301:HOH:O	1.98	0.83
1:F:66:ILE:HG13	1:F:166:ILE:HD11	1.63	0.80
1:F:77:GLU:OE1	1:G:44:ARG:NH1	2.14	0.80
1:H:143:ARG:HD2	2:I:303:HOH:O	1.80	0.80
1:I:94:ASP:OD2	2:I:303:HOH:O	2.01	0.79
1:K:187:ASP:O	2:K:301:HOH:O	2.01	0.78
1:J:37:GLN:HG2	1:J:41:LYS:HE2	1.65	0.78
1:I:77:GLU:OE2	2:I:305:HOH:O	2.02	0.78
1:G:25:CYS:SG	1:G:28:GLN:NE2	2.56	0.77
1:H:40:GLN:O	2:H:302:HOH:O	2.02	0.77
1:A:44:ARG:NH2	2:A:302:HOH:O	2.12	0.77
1:G:192:LYS:NZ	1:G:197:GLU:OE2	2.18	0.77
1:F:178:LEU:O	2:F:301:HOH:O	2.01	0.77
1:K:130:GLU:OE2	2:K:302:HOH:O	2.02	0.77
1:H:137:LEU:N	2:H:305:HOH:O	2.18	0.76
1:H:192:LYS:NZ	1:H:197:GLU:OE1	2.19	0.76
1:B:204:ARG:NH2	1:C:78:MET:O	2.18	0.75
1:E:180:ARG:HD2	1:E:181:GLN:H	1.52	0.74
1:I:71:VAL:HG21	1:I:152:LYS:HG2	1.70	0.74
1:H:193:ARG:O	2:H:303:HOH:O	2.04	0.73
1:I:45:GLN:HG3	2:I:306:HOH:O	1.87	0.73
1:A:78:MET:O	1:K:204:ARG:NH2	2.23	0.71
1:E:52:ILE:HD12	1:E:166:ILE:HD11	1.72	0.71
1:I:148:THR:OG1	2:I:301:HOH:O	2.07	0.71
1:H:134:SER:O	2:H:305:HOH:O	2.06	0.71
1:B:49:PRO:HG3	1:B:178:LEU:HD23	1.73	0.71
1:I:186:VAL:HG11	1:J:171:TYR:HA	1.71	0.71
1:K:34:GLU:O	2:K:303:HOH:O	2.08	0.70
1:J:204:ARG:NH2	1:K:78:MET:O	2.24	0.70
1:D:77:GLU:OE2	2:D:301:HOH:O	2.09	0.70
1:G:204:ARG:NH2	1:H:78:MET:O	2.23	0.70
1:D:112:ARG:NH1	2:D:304:HOH:O	2.24	0.70
1:K:122:GLU:OE2	2:K:304:HOH:O	2.09	0.70
1:E:149:ASP:OD1	2:E:302:HOH:O	2.09	0.69
1:B:182:LEU:HG	1:B:183:PRO:HD2	1.74	0.69
1:H:181:GLN:NE2	2:H:308:HOH:O	2.27	0.68
1:J:145:GLU:OE1	2:J:302:HOH:O	2.10	0.68
1:C:187:ASP:OD1	1:C:189:THR:OG1	2.09	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:188:LEU:HD11	1:I:174:SER:HB3	1.76	0.68
1:B:192:LYS:NZ	1:B:197:GLU:OE2	2.25	0.67
1:J:47:LEU:O	1:J:171:TYR:OH	2.08	0.67
1:B:204:ARG:HD2	1:D:36:TYR:OH	1.94	0.67
1:I:56:MET:HA	1:I:62:LYS:HA	1.76	0.67
1:B:133:ALA:N	2:B:302:HOH:O	2.19	0.67
1:H:194:GLN:HE21	1:H:196:LEU:HB2	1.60	0.67
1:E:114:GLN:HE21	1:E:118:GLY:HA2	1.61	0.66
1:I:106:GLY:O	2:I:308:HOH:O	2.12	0.66
1:B:123:ASP:OD2	2:B:301:HOH:O	2.12	0.66
1:D:189:THR:HG23	1:D:190:LYS:HG3	1.77	0.65
1:C:204:ARG:HD2	1:E:36:TYR:OH	1.96	0.65
1:I:81:TYR:O	2:I:309:HOH:O	2.12	0.65
1:K:47:LEU:O	1:K:171:TYR:OH	2.12	0.65
1:F:70:ARG:NH1	2:F:304:HOH:O	2.29	0.65
1:I:95:PHE:O	2:I:308:HOH:O	2.13	0.65
1:E:186:VAL:HG21	1:F:171:TYR:HA	1.79	0.65
1:G:47:LEU:HB3	1:G:51:TYR:HD2	1.61	0.65
1:J:124:VAL:O	1:J:153:ARG:NH1	2.30	0.65
1:J:195:ASP:HB3	1:K:77:GLU:HG3	1.78	0.65
1:C:52:ILE:HD12	1:C:166:ILE:HD11	1.78	0.64
1:E:192:LYS:NZ	1:E:197:GLU:OE1	2.26	0.64
1:J:71:VAL:HG21	1:J:152:LYS:HG2	1.78	0.64
1:I:51:TYR:HD1	1:I:70:ARG:HD3	1.62	0.64
1:I:163:GLY:N	2:I:302:HOH:O	2.30	0.64
1:I:45:GLN:N	2:I:306:HOH:O	2.08	0.63
2:B:319:HOH:O	1:C:119:SER:HB2	1.99	0.63
1:I:192:LYS:NZ	1:I:197:GLU:OE1	2.31	0.63
1:F:208:CYS:HB2	1:H:33:ALA:HA	1.81	0.63
1:F:196:LEU:HA	1:G:77:GLU:HG2	1.81	0.62
1:H:204:ARG:NH2	1:I:78:MET:O	2.28	0.62
1:E:196:LEU:HG	2:E:311:HOH:O	1.98	0.61
1:F:156:ARG:NH2	2:F:305:HOH:O	2.34	0.61
1:C:70:ARG:NH2	2:C:301:HOH:O	2.26	0.61
1:A:208:CYS:HB2	1:C:33:ALA:HB2	1.82	0.61
1:I:187:ASP:OD2	1:I:190:LYS:NZ	2.33	0.61
1:A:164:ASN:OD1	2:A:303:HOH:O	2.17	0.60
1:A:128:VAL:HG22	1:K:136:ALA:HB1	1.83	0.60
1:E:197:GLU:N	2:E:311:HOH:O	2.33	0.60
1:I:144:LYS:HE3	1:J:153:ARG:NH1	2.16	0.60
1:D:100:ASN:ND2	1:D:100:ASN:O	2.35	0.59

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:31:TYR:CE1	1:J:116:LYS:HE3	2.37	0.59
1:H:147:VAL:HG21	1:I:124:VAL:HG23	1.82	0.59
1:H:160:ASN:HA	1:H:164:ASN:HB3	1.83	0.59
1:I:83:GLY:HA2	1:I:116:LYS:HD3	1.84	0.59
1:I:136:ALA:HB1	1:J:128:VAL:HG22	1.83	0.59
1:A:112:ARG:NH1	2:A:304:HOH:O	2.21	0.59
1:K:169:LYS:HB2	2:K:309:HOH:O	2.03	0.58
1:A:36:TYR:OH	1:J:204:ARG:HD2	2.03	0.58
1:F:144:LYS:HG2	1:G:153:ARG:NH1	2.19	0.58
1:J:40:GLN:NE2	2:J:307:HOH:O	2.36	0.58
1:E:103:PHE:CZ	1:E:135:LYS:HB2	2.39	0.58
1:H:147:VAL:HG21	1:I:124:VAL:CG2	2.34	0.58
1:H:78:MET:HG3	1:H:162:LEU:HD11	1.85	0.58
1:D:112:ARG:NH2	2:D:302:HOH:O	2.16	0.58
1:G:141:LYS:NZ	2:G:304:HOH:O	2.31	0.58
1:G:99:ASN:HB2	1:G:104:TYR:HE1	1.67	0.57
1:G:71:VAL:HG21	1:G:152:LYS:HG2	1.85	0.57
1:D:67:GLU:OE2	1:E:169:LYS:NZ	2.37	0.57
1:H:100:ASN:O	1:H:100:ASN:ND2	2.37	0.57
1:H:160:ASN:HB3	1:H:165:CYS:SG	2.43	0.57
1:H:51:TYR:HD1	1:H:70:ARG:HD3	1.70	0.57
1:J:46:ARG:HB3	1:J:171:TYR:HE2	1.70	0.57
1:H:44:ARG:N	2:H:302:HOH:O	2.30	0.56
1:I:129:SER:HB2	1:I:141:LYS:HD3	1.87	0.56
1:I:77:GLU:OE1	1:J:44:ARG:NE	2.32	0.56
1:A:30:GLN:OE1	1:K:25:CYS:HA	2.05	0.56
1:I:47:LEU:O	1:I:171:TYR:OH	2.21	0.56
1:B:136:ALA:HB1	1:C:128:VAL:HG22	1.87	0.56
1:F:52:ILE:HG13	1:F:175:LEU:HD11	1.87	0.56
1:H:49:PRO:HG3	1:H:178:LEU:HD13	1.88	0.56
1:H:136:ALA:HB1	1:I:128:VAL:HG22	1.88	0.56
1:H:187:ASP:OD2	1:H:189:THR:OG1	2.24	0.56
1:I:83:GLY:HA2	1:I:116:LYS:HG2	1.87	0.55
1:B:180:ARG:N	2:B:303:HOH:O	2.32	0.55
1:G:152:LYS:O	1:G:156:ARG:HG3	2.05	0.55
1:C:204:ARG:NH2	1:D:78:MET:O	2.37	0.55
1:E:37:GLN:HG2	1:E:41:LYS:HE2	1.88	0.55
1:F:192:LYS:NZ	1:F:197:GLU:OE1	2.39	0.55
1:I:39:ILE:HA	1:I:78:MET:HE1	1.88	0.55
1:C:168:ASP:HB3	1:C:171:TYR:HB3	1.87	0.54
1:G:186:VAL:HG21	1:H:171:TYR:HA	1.88	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:J:163:GLY:O	1:J:166:ILE:HG22	2.07	0.54
1:J:186:VAL:HG21	1:K:171:TYR:HA	1.89	0.54
1:F:91:GLN:OE1	1:F:143:ARG:NH1	2.33	0.54
1:K:153:ARG:HE	1:K:156:ARG:HH21	1.56	0.54
1:K:37:GLN:HG2	1:K:41:LYS:HE2	1.90	0.53
1:H:208:CYS:HB2	1:J:33:ALA:HB2	1.88	0.53
1:A:71:VAL:HG21	1:A:152:LYS:HG2	1.89	0.53
1:G:52:ILE:HD11	1:G:171:TYR:OH	2.09	0.53
1:F:200:VAL:HG22	1:G:38:ALA:HB1	1.91	0.53
1:B:70:ARG:NH2	2:B:309:HOH:O	2.40	0.53
1:G:46:ARG:HB3	2:G:302:HOH:O	2.08	0.53
1:D:197:GLU:OE2	1:E:45:GLN:NE2	2.35	0.53
1:H:140:GLU:OE2	1:H:144:LYS:NZ	2.27	0.53
1:F:77:GLU:CD	1:G:44:ARG:HH12	2.11	0.53
1:F:189:THR:HG23	1:F:190:LYS:HG2	1.89	0.53
1:B:96:VAL:HG13	1:B:105:VAL:HG22	1.90	0.52
1:J:43:LEU:HA	1:J:161:ALA:HB3	1.92	0.52
1:C:77:GLU:OE1	1:D:44:ARG:NH1	2.42	0.52
1:G:105:VAL:HG11	1:G:139:LEU:HD23	1.92	0.52
1:J:129:SER:OG	2:J:303:HOH:O	2.19	0.52
1:I:83:GLY:HA2	1:I:116:LYS:CG	2.40	0.51
1:E:52:ILE:HG13	1:E:175:LEU:HD11	1.92	0.51
1:B:195:ASP:HB3	1:C:77:GLU:HG3	1.91	0.51
1:J:140:GLU:HG3	1:J:144:LYS:HD2	1.93	0.51
1:H:83:GLY:HA2	1:H:116:LYS:HG2	1.91	0.51
1:I:102:ALA:HB1	1:I:131:GLY:HA2	1.93	0.51
1:F:66:ILE:CG1	1:F:166:ILE:HD11	2.38	0.51
1:E:192:LYS:HB2	1:F:45:GLN:OE1	2.10	0.51
1:G:204:ARG:HH21	1:H:39:ILE:HD11	1.76	0.51
1:J:46:ARG:HB3	1:J:171:TYR:CE2	2.45	0.51
1:E:79:PHE:O	1:E:83:GLY:HA3	2.11	0.51
1:G:47:LEU:HB3	1:G:51:TYR:CD2	2.43	0.51
1:G:80:GLY:HA2	1:H:40:GLN:OE1	2.10	0.50
1:I:152:LYS:O	1:I:156:ARG:HG3	2.11	0.50
1:G:143:ARG:NH2	2:G:306:HOH:O	2.42	0.50
1:H:93:VAL:HG12	1:H:107:VAL:HG22	1.93	0.50
1:I:46:ARG:NH1	2:I:317:HOH:O	2.44	0.50
1:K:71:VAL:HG21	1:K:152:LYS:HG2	1.94	0.50
1:C:192:LYS:NZ	1:C:197:GLU:OE1	2.35	0.49
1:C:61:GLN:N	1:C:61:GLN:OE1	2.45	0.49
1:G:39:ILE:HA	1:G:78:MET:HE2	1.93	0.49

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:71:VAL:HG21	1:C:152:LYS:HG2	1.95	0.49
1:I:163:GLY:O	1:I:166:ILE:HG22	2.13	0.49
1:E:170:ASP:OD2	2:E:303:HOH:O	2.19	0.49
1:I:160:ASN:HA	1:I:164:ASN:HB3	1.95	0.48
1:A:145:GLU:HB2	2:A:307:HOH:O	2.14	0.48
1:F:165:CYS:HA	2:F:302:HOH:O	2.13	0.48
1:G:81:TYR:HE1	1:H:36:TYR:CD1	2.31	0.48
1:H:204:ARG:HD2	1:J:36:TYR:OH	2.14	0.48
1:E:180:ARG:HD2	1:E:181:GLN:N	2.26	0.48
1:G:47:LEU:HD22	1:G:51:TYR:CE2	2.48	0.48
1:K:112:ARG:NE	2:K:306:HOH:O	2.17	0.48
1:F:156:ARG:NE	2:F:305:HOH:O	2.46	0.48
1:I:144:LYS:HG2	1:J:153:ARG:NH1	2.29	0.48
1:F:156:ARG:CZ	2:F:305:HOH:O	2.62	0.48
1:G:208:CYS:HB2	1:I:33:ALA:HB2	1.96	0.48
1:E:96:VAL:HG13	1:E:105:VAL:HG22	1.96	0.48
1:J:35:GLU:OE2	1:J:116:LYS:NZ	2.34	0.48
1:G:25:CYS:HB2	1:H:117:ASP:O	2.14	0.48
2:J:301:HOH:O	1:K:48:GLY:N	2.16	0.48
1:D:93:VAL:HG13	1:D:107:VAL:HG22	1.95	0.47
1:E:104:TYR:HD1	1:E:130:GLU:HG2	1.79	0.47
1:F:99:ASN:HB2	1:F:104:TYR:CE1	2.49	0.47
1:I:184:LEU:H	1:I:184:LEU:HD12	1.78	0.47
1:F:156:ARG:O	1:F:164:ASN:HB2	2.14	0.47
1:F:186:VAL:HG21	1:G:46:ARG:NE	2.29	0.47
1:A:45:GLN:NE2	1:K:197:GLU:OE2	2.42	0.47
1:F:71:VAL:HG21	1:F:152:LYS:HG2	1.95	0.47
1:G:103:PHE:O	2:G:303:HOH:O	2.20	0.47
1:G:46:ARG:NH1	1:G:171:TYR:HB2	2.29	0.47
1:A:78:MET:C	1:K:204:ARG:HH22	2.17	0.47
1:G:73:ASN:HD21	1:H:160:ASN:HD21	1.60	0.47
1:A:33:ALA:HB2	1:J:208:CYS:HB2	1.95	0.47
1:C:143:ARG:NH2	2:C:305:HOH:O	2.46	0.47
1:F:192:LYS:HB2	1:G:45:GLN:OE1	2.15	0.47
1:D:168:ASP:HB3	1:D:171:TYR:HB3	1.96	0.47
1:H:83:GLY:HA2	1:H:116:LYS:HD3	1.95	0.47
1:B:182:LEU:CG	1:B:183:PRO:HD2	2.45	0.47
1:D:104:TYR:HD2	1:D:130:GLU:HG2	1.80	0.47
1:E:197:GLU:HB3	1:E:200:VAL:HG12	1.96	0.47
1:B:93:VAL:HG22	1:B:107:VAL:HG22	1.96	0.47
1:F:144:LYS:HG2	1:G:153:ARG:HH12	1.80	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:D:46:ARG:HD3	1:D:171:TYR:CD1	2.51	0.46
1:G:135:LYS:HE3	1:H:95:PHE:CD2	2.51	0.46
1:H:96:VAL:HG13	1:H:105:VAL:HG22	1.97	0.46
1:F:79:PHE:O	1:F:83:GLY:HA3	2.15	0.46
1:C:96:VAL:HG13	1:C:105:VAL:HG22	1.97	0.46
1:E:198:PRO:N	2:E:311:HOH:O	2.49	0.46
1:E:166:ILE:HD13	1:E:166:ILE:HA	1.74	0.46
1:K:124:VAL:O	1:K:153:ARG:HD3	2.16	0.46
1:K:192:LYS:NZ	1:K:197:GLU:OE2	2.37	0.46
1:H:128:VAL:HG12	2:H:314:HOH:O	2.15	0.45
1:K:112:ARG:NH2	2:K:306:HOH:O	2.41	0.45
1:B:200:VAL:HG23	2:B:328:HOH:O	2.16	0.45
1:B:144:LYS:HE3	1:C:153:ARG:HD2	1.98	0.45
1:E:168:ASP:HB3	1:E:171:TYR:HB3	1.98	0.45
1:H:143:ARG:NH2	2:H:313:HOH:O	2.46	0.45
1:K:93:VAL:HA	1:K:107:VAL:HG22	1.98	0.45
1:E:204:ARG:NE	1:G:36:TYR:OH	2.44	0.45
1:H:107:VAL:HG11	1:H:143:ARG:HA	1.97	0.45
1:A:179:PRO:O	1:A:181:GLN:NE2	2.50	0.45
1:C:52:ILE:HG13	1:C:175:LEU:HD11	1.98	0.45
1:A:34:GLU:CD	1:A:34:GLU:H	2.20	0.45
1:K:52:ILE:HG13	1:K:175:LEU:HD11	1.98	0.45
1:G:99:ASN:HB2	1:G:104:TYR:CE1	2.48	0.45
1:I:96:VAL:HG13	1:I:105:VAL:HG12	1.99	0.44
1:A:102:ALA:HB1	1:A:131:GLY:HA2	1.99	0.44
1:A:30:GLN:HG3	2:A:305:HOH:O	2.17	0.44
1:A:168:ASP:HB3	1:A:171:TYR:HB3	1.99	0.44
1:D:136:ALA:HB1	1:E:128:VAL:HG22	1.99	0.44
1:I:105:VAL:HG22	1:I:129:SER:HB3	1.99	0.44
1:I:190:LYS:H	1:I:190:LYS:HG2	1.50	0.44
1:B:166:ILE:HA	1:B:166:ILE:HD12	1.80	0.44
1:F:168:ASP:HB3	1:F:171:TYR:HB3	1.99	0.44
1:I:132:LEU:HG	2:I:311:HOH:O	2.17	0.44
1:I:166:ILE:HG23	1:I:167:LEU:HG	1.99	0.44
1:K:97:ASP:HB2	1:K:104:TYR:HB2	2.00	0.44
1:J:49:PRO:HG2	1:J:181:GLN:NE2	2.33	0.44
1:D:178:LEU:HD12	2:D:312:HOH:O	2.17	0.44
1:H:103:PHE:O	2:H:306:HOH:O	2.20	0.44
1:H:71:VAL:HG21	1:H:152:LYS:HG2	1.99	0.44
1:D:104:TYR:CD2	1:D:130:GLU:HG2	2.53	0.43
1:G:81:TYR:HE1	1:H:36:TYR:HD1	1.66	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:83:GLY:HA2	1:I:116:LYS:CD	2.47	0.43
1:A:95:PHE:CE2	1:K:135:LYS:HG2	2.53	0.43
1:F:140:GLU:O	1:F:144:LYS:HG3	2.17	0.43
1:H:93:VAL:O	1:H:93:VAL:HG23	2.18	0.43
2:C:306:HOH:O	1:D:119:SER:HB2	2.17	0.43
1:G:149:ASP:O	1:G:153:ARG:HG3	2.18	0.43
1:H:123:ASP:OD2	2:H:307:HOH:O	2.21	0.43
1:H:143:ARG:O	1:H:147:VAL:HG23	2.18	0.43
1:C:166:ILE:HA	1:C:166:ILE:HD13	1.72	0.43
1:C:77:GLU:OE2	1:D:44:ARG:HD3	2.17	0.43
1:B:55:ARG:HD2	1:B:55:ARG:HA	1.87	0.43
1:E:173:ARG:NE	2:E:317:HOH:O	2.50	0.43
1:G:103:PHE:CE2	1:G:135:LYS:HB2	2.54	0.43
1:G:186:VAL:HG23	1:H:174:SER:HB2	2.00	0.43
1:F:140:GLU:HG3	1:F:144:LYS:HE3	2.00	0.43
1:G:143:ARG:NH1	1:H:94:ASP:OD1	2.52	0.43
1:H:191:ALA:O	1:H:193:ARG:HG3	2.18	0.43
1:I:171:TYR:O	1:I:174:SER:HB2	2.19	0.43
1:H:112:ARG:NE	2:H:310:HOH:O	2.43	0.43
1:H:79:PHE:HE2	1:H:162:LEU:HD21	1.84	0.42
1:I:200:VAL:HG12	1:J:38:ALA:HB1	2.00	0.42
1:I:105:VAL:HG23	1:I:142:ALA:HB2	2.00	0.42
1:G:103:PHE:CZ	1:G:135:LYS:HB2	2.54	0.42
1:H:112:ARG:NH2	2:H:310:HOH:O	2.35	0.42
1:J:136:ALA:HB1	1:K:128:VAL:HG22	2.01	0.42
1:C:29:CYS:SG	2:D:352:HOH:O	2.62	0.42
1:H:152:LYS:O	1:H:156:ARG:HG3	2.19	0.42
1:E:71:VAL:HG21	1:E:152:LYS:HG2	2.01	0.42
1:K:153:ARG:HH21	1:K:156:ARG:NH2	2.18	0.42
1:B:52:ILE:HG13	1:B:175:LEU:HD11	2.02	0.42
1:K:96:VAL:HG13	1:K:105:VAL:HG22	2.02	0.42
1:B:49:PRO:HG2	1:B:181:GLN:NE2	2.35	0.42
1:I:44:ARG:N	2:I:306:HOH:O	2.52	0.42
1:G:204:ARG:HD2	1:I:36:TYR:OH	2.20	0.41
1:F:204:ARG:HH12	1:G:80:GLY:N	2.18	0.41
1:K:174:SER:O	1:K:177:LYS:HB3	2.20	0.41
1:K:184:LEU:H	1:K:184:LEU:HD12	1.84	0.41
1:F:186:VAL:HG11	1:G:171:TYR:HA	2.03	0.41
1:G:182:LEU:HD23	1:G:182:LEU:HA	1.85	0.41
1:H:83:GLY:HA2	1:H:116:LYS:CG	2.50	0.41
1:I:132:LEU:N	2:I:311:HOH:O	2.54	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:208:CYS:HB2	1:G:33:ALA:HB2	2.03	0.41
1:H:47:LEU:HD12	1:H:51:TYR:CE2	2.55	0.41
1:J:193:ARG:HD3	1:J:193:ARG:HA	1.71	0.41
1:D:145:GLU:OE1	2:D:303:HOH:O	2.22	0.41
1:E:160:ASN:ND2	2:E:305:HOH:O	2.26	0.41
1:F:204:ARG:O	1:F:207:SER:OG	2.27	0.41
1:G:160:ASN:HA	1:G:164:ASN:HB3	2.02	0.41
1:D:173:ARG:NH1	2:D:311:HOH:O	2.53	0.41
1:F:144:LYS:CG	1:G:153:ARG:NH1	2.83	0.41
1:I:124:VAL:O	1:I:153:ARG:HD3	2.20	0.41
1:I:162:LEU:O	2:I:310:HOH:O	2.22	0.41
1:I:167:LEU:HA	1:I:167:LEU:HD23	1.89	0.41
1:I:34:GLU:H	1:I:34:GLU:CD	2.24	0.41
1:G:124:VAL:O	1:G:153:ARG:HD3	2.20	0.41
2:J:301:HOH:O	1:K:47:LEU:HA	2.19	0.41
1:B:127:GLY:HA2	1:B:145:GLU:HG2	2.03	0.41
1:C:39:ILE:HG23	1:C:78:MET:CE	2.51	0.41
1:D:187:ASP:CG	1:D:189:THR:HG22	2.41	0.41
1:D:79:PHE:O	1:D:83:GLY:HA3	2.21	0.41
1:E:136:ALA:HB1	1:F:128:VAL:HG22	2.03	0.41
1:G:104:TYR:HD2	1:G:130:GLU:HG2	1.85	0.41
1:G:140:GLU:HB2	1:H:126:TYR:CD2	2.56	0.41
1:D:103:PHE:CE2	1:D:135:LYS:HB2	2.55	0.41
1:G:93:VAL:HG12	1:G:107:VAL:HG22	2.02	0.41
1:J:189:THR:HG23	1:J:190:LYS:N	2.36	0.41
1:B:180:ARG:NH1	1:B:181:GLN:O	2.53	0.41
1:B:140:GLU:HG3	1:B:144:LYS:HD2	2.03	0.40
1:K:97:ASP:O	1:K:103:PHE:HA	2.21	0.40
1:F:50:GLU:OE1	1:F:50:GLU:N	2.32	0.40
1:H:47:LEU:O	1:H:171:TYR:OH	2.26	0.40
1:B:193:ARG:CZ	1:C:50:GLU:OE1	2.69	0.40
1:G:174:SER:O	1:G:177:LYS:HG2	2.22	0.40
1:I:129:SER:CB	1:I:141:LYS:HD3	2.51	0.40

There are no symmetry-related clashes.

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	182/215 (85%)	180 (99%)	2 (1%)	0	100	100
1	B	182/215 (85%)	181 (100%)	1 (0%)	0	100	100
1	C	182/215 (85%)	178 (98%)	4 (2%)	0	100	100
1	D	182/215 (85%)	179 (98%)	3 (2%)	0	100	100
1	E	182/215 (85%)	177 (97%)	5 (3%)	0	100	100
1	F	182/215 (85%)	179 (98%)	3 (2%)	0	100	100
1	G	182/215 (85%)	178 (98%)	4 (2%)	0	100	100
1	H	182/215 (85%)	176 (97%)	6 (3%)	0	100	100
1	I	182/215 (85%)	176 (97%)	6 (3%)	0	100	100
1	J	182/215 (85%)	173 (95%)	9 (5%)	0	100	100
1	K	186/215 (86%)	184 (99%)	2 (1%)	0	100	100
All	All	2006/2365 (85%)	1961 (98%)	45 (2%)	0	100	100

There are no Ramachandran outliers to report.

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	150/171 (88%)	150 (100%)	0	100	100
1	B	150/171 (88%)	150 (100%)	0	100	100
1	C	150/171 (88%)	150 (100%)	0	100	100

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Mol	Chain	Analysed	Rotameric	Outliers	Percentiles	
1	D	150/171 (88%)	150 (100%)	0	100	100
1	E	150/171 (88%)	149 (99%)	1 (1%)	84	92
1	F	150/171 (88%)	150 (100%)	0	100	100
1	G	150/171 (88%)	149 (99%)	1 (1%)	84	92
1	H	150/171 (88%)	150 (100%)	0	100	100
1	I	150/171 (88%)	150 (100%)	0	100	100
1	J	150/171 (88%)	149 (99%)	1 (1%)	84	92
1	K	154/171 (90%)	154 (100%)	0	100	100
All	All	1654/1881 (88%)	1651 (100%)	3 (0%)	93	97

All (3) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	E	166	ILE
1	G	40	GLN
1	J	170	ASP

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (7) such sidechains are listed below:

Mol	Chain	Res	Type
1	D	114	GLN
1	E	114	GLN
1	G	28	GLN
1	G	114	GLN
1	H	160	ASN
1	H	194	GLN
1	I	164	ASN

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 [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, 95th 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 ²)	Q<0.9
1	A	184/215 (85%)	0.09	7 (3%) 40 39	23, 37, 86, 140	0
1	B	184/215 (85%)	0.25	13 (7%) 16 14	20, 36, 85, 102	0
1	C	184/215 (85%)	0.06	12 (6%) 18 17	20, 40, 101, 133	0
1	D	184/215 (85%)	0.22	13 (7%) 16 14	19, 40, 88, 119	0
1	E	184/215 (85%)	0.26	11 (5%) 21 20	23, 43, 86, 104	0
1	F	184/215 (85%)	0.53	22 (11%) 4 3	28, 56, 107, 130	0
1	G	184/215 (85%)	1.07	33 (17%) 1 1	37, 71, 133, 153	0
1	H	184/215 (85%)	1.13	33 (17%) 1 1	44, 74, 151, 170	0
1	I	184/215 (85%)	0.85	22 (11%) 4 3	42, 70, 140, 168	0
1	J	184/215 (85%)	0.88	21 (11%) 5 4	35, 58, 119, 159	0
1	K	188/215 (87%)	0.19	11 (5%) 22 21	28, 48, 94, 127	0
All	All	2028/2365 (85%)	0.50	198 (9%) 7 7	19, 53, 117, 170	0

All (198) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	58	GLY	15.7
1	J	60	GLY	14.7
1	J	59	GLY	12.6
1	A	59	GLY	11.0
1	H	59	GLY	10.8
1	J	61	GLN	9.7
1	J	57	ALA	9.3
1	J	58	GLY	8.9
1	K	58	GLY	8.7
1	K	59	GLY	8.6
1	A	182	LEU	7.7
1	D	57	ALA	7.7

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Mol	Chain	Res	Type	RSRZ
1	B	60	GLY	7.6
1	H	58	GLY	7.6
1	I	56	MET	7.6
1	C	58	GLY	7.3
1	F	58	GLY	7.3
1	F	182	LEU	7.1
1	D	59	GLY	7.0
1	C	59	GLY	6.7
1	J	179	PRO	6.7
1	G	181	GLN	6.7
1	D	182	LEU	6.3
1	I	184	LEU	6.1
1	F	57	ALA	6.1
1	G	182	LEU	6.1
1	I	57	ALA	6.0
1	H	57	ALA	5.8
1	A	58	GLY	5.7
1	F	181	GLN	5.6
1	H	56	MET	5.6
1	B	181	GLN	5.5
1	F	56	MET	5.3
1	B	182	LEU	5.3
1	H	55	ARG	5.2
1	B	61	GLN	5.2
1	K	57	ALA	5.1
1	I	207	SER	5.1
1	C	57	ALA	5.0
1	J	62	LYS	5.0
1	C	61	GLN	5.0
1	G	57	ALA	5.0
1	B	59	GLY	5.0
1	I	59	GLY	4.9
1	F	184	LEU	4.6
1	H	190	LYS	4.6
1	I	58	GLY	4.6
1	H	104	TYR	4.5
1	B	58	GLY	4.5
1	H	207	SER	4.5
1	F	59	GLY	4.3
1	J	56	MET	4.3
1	A	61	GLN	4.2
1	B	184	LEU	4.0

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Mol	Chain	Res	Type	RSRZ
1	I	182	LEU	4.0
1	G	61	GLN	4.0
1	G	184	LEU	4.0
1	J	182	LEU	4.0
1	F	183	PRO	3.9
1	K	179	PRO	3.9
1	F	205	TYR	3.9
1	H	180	ARG	3.9
1	G	59	GLY	3.9
1	H	206	ASN	3.9
1	I	65	TYR	3.9
1	C	60	GLY	3.8
1	G	200	VAL	3.8
1	I	180	ARG	3.7
1	E	58	GLY	3.7
1	F	180	ARG	3.7
1	C	208	CYS	3.7
1	E	208	CYS	3.6
1	G	58	GLY	3.6
1	J	193	ARG	3.5
1	B	180	ARG	3.5
1	K	56	MET	3.5
1	H	34	GLU	3.5
1	A	56	MET	3.5
1	I	63	VAL	3.4
1	A	184	LEU	3.4
1	J	55	ARG	3.4
1	D	208	CYS	3.4
1	D	184	LEU	3.4
1	H	184	LEU	3.4
1	G	64	CYS	3.3
1	E	184	LEU	3.3
1	B	179	PRO	3.3
1	G	179	PRO	3.3
1	H	61	GLN	3.2
1	J	30	GLN	3.2
1	G	25	CYS	3.2
1	G	56	MET	3.2
1	I	55	ARG	3.1
1	H	185	GLU	3.1
1	C	205	TYR	3.0
1	G	180	ARG	3.0

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Mol	Chain	Res	Type	RSRZ
1	H	62	LYS	3.0
1	C	56	MET	3.0
1	K	25	CYS	3.0
1	I	186	VAL	3.0
1	F	185	GLU	3.0
1	F	178	LEU	3.0
1	G	178	LEU	3.0
1	H	103	PHE	2.9
1	G	205	TYR	2.9
1	G	185	GLU	2.9
1	G	183	PRO	2.9
1	E	189	THR	2.8
1	J	178	LEU	2.8
1	H	171	TYR	2.8
1	A	181	GLN	2.8
1	K	178	LEU	2.8
1	G	177	LYS	2.8
1	H	177	LYS	2.8
1	G	203	ALA	2.7
1	F	175	LEU	2.7
1	E	61	GLN	2.7
1	G	171	TYR	2.7
1	G	175	LEU	2.7
1	I	61	GLN	2.7
1	D	205	TYR	2.7
1	B	183	PRO	2.7
1	J	181	GLN	2.7
1	H	131	GLY	2.6
1	H	130	GLU	2.6
1	I	208	CYS	2.6
1	J	180	ARG	2.6
1	K	62	LYS	2.6
1	D	177	LYS	2.6
1	E	194	GLN	2.6
1	G	104	TYR	2.5
1	F	28	GLN	2.5
1	D	180	ARG	2.5
1	K	173	ARG	2.5
1	C	55	ARG	2.5
1	I	60	GLY	2.5
1	D	55	ARG	2.5
1	G	194	GLN	2.5

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Mol	Chain	Res	Type	RSRZ
1	B	57	ALA	2.5
1	E	60	GLY	2.5
1	C	207	SER	2.4
1	H	175	LEU	2.4
1	J	173	ARG	2.4
1	I	64	CYS	2.4
1	I	181	GLN	2.4
1	E	191	ALA	2.4
1	I	102	ALA	2.4
1	C	173	ARG	2.4
1	D	56	MET	2.4
1	F	179	PRO	2.4
1	E	205	TYR	2.3
1	I	171	TYR	2.3
1	E	57	ALA	2.3
1	K	182	LEU	2.3
1	C	28	GLN	2.3
1	E	207	SER	2.3
1	F	200	VAL	2.3
1	F	191	ALA	2.3
1	F	187	ASP	2.3
1	G	187	ASP	2.3
1	I	167	LEU	2.3
1	G	156	ARG	2.2
1	H	189	THR	2.2
1	H	36	TYR	2.2
1	H	99	ASN	2.2
1	H	47	LEU	2.2
1	H	179	PRO	2.2
1	F	203	ALA	2.2
1	B	25	CYS	2.2
1	I	176	ASN	2.2
1	I	175	LEU	2.2
1	H	156	ARG	2.2
1	G	186	VAL	2.2
1	J	28	GLN	2.2
1	H	166	ILE	2.2
1	G	172	LEU	2.2
1	F	29	CYS	2.2
1	G	131	GLY	2.1
1	B	177	LYS	2.1
1	G	130	GLU	2.1

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Mol	Chain	Res	Type	RSRZ
1	J	167	LEU	2.1
1	J	100	ASN	2.1
1	K	30	GLN	2.1
1	H	64	CYS	2.1
1	J	175	LEU	2.1
1	J	177	LYS	2.1
1	H	208	CYS	2.1
1	H	194	GLN	2.1
1	G	189	THR	2.1
1	G	207	SER	2.0
1	D	28	GLN	2.0
1	G	193	ARG	2.0
1	D	207	SER	2.0
1	H	191	ALA	2.0
1	F	131	GLY	2.0
1	H	182	LEU	2.0
1	G	192	LYS	2.0
1	F	198	PRO	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.