



# Full wwPDB X-ray Structure Validation Report ⓘ

Feb 1, 2016 – 10:41 AM GMT

PDB ID : 3MQ7  
Title : Crystal Structure of Ectodomain Mutant of BST-2/Tetherin/CD317  
Authors : Xiong, Y.; Yang, H.; Wang, J.; Meng, W.  
Deposited on : 2010-04-27  
Resolution : 2.28 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

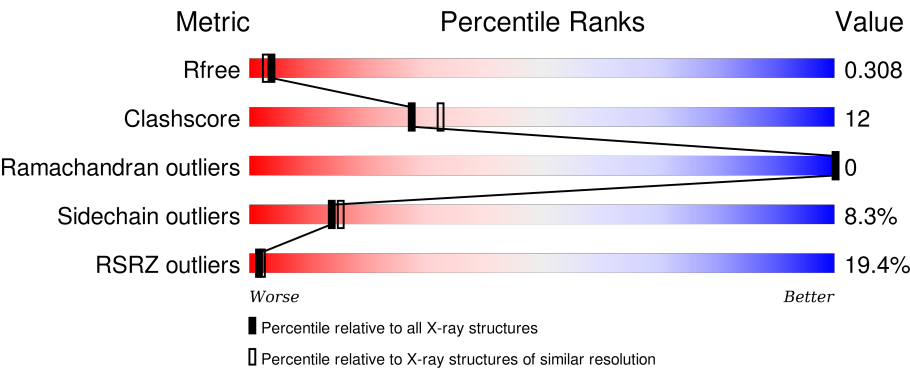
# 1 Overall quality at a glance i

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*

The reported resolution of this entry is 2.28 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 <sub>free</sub>	91344	5193 (2.30-2.26)
Clashscore	102246	5929 (2.30-2.26)
Ramachandran outliers	100387	5851 (2.30-2.26)
Sidechain outliers	100360	5850 (2.30-2.26)
RSRZ outliers	91569	5204 (2.30-2.26)

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	121	<div><div>9%</div><div>67%</div><div>14%</div><div>•</div><div>18%</div></div>
1	B	121	<div><div>13%</div><div>60%</div><div>20%</div><div>•</div><div>18%</div></div>
1	C	121	<div><div>15%</div><div>66%</div><div>13%</div><div>•</div><div>18%</div></div>
1	D	121	<div><div>21%</div><div>65%</div><div>16%</div><div>•</div><div>18%</div></div>
1	E	121	<div><div>26%</div><div>65%</div><div>14%</div><div>•</div><div>18%</div></div>

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Mol	Chain	Length	Quality of chain
1	F	121	<div><div><div></div><div></div><div></div><div></div><div></div></div><div>7%62%15%••18%</div></div>
1	G	121	<div><div><div></div><div></div><div></div><div></div><div></div></div><div>15%67%12%•18%</div></div>
1	H	121	<div><div><div></div><div></div><div></div><div></div><div></div></div><div>12%62%16%•18%</div></div>
1	I	121	<div><div><div></div><div></div><div></div><div></div><div></div></div><div>12%60%17%••18%</div></div>
1	J	121	<div><div><div></div><div></div><div></div><div></div><div></div></div><div>18%67%12%••18%</div></div>
1	K	121	<div><div><div></div><div></div><div></div><div></div><div></div></div><div>19%65%14%•18%</div></div>
1	L	121	<div><div><div></div><div></div><div></div><div></div><div></div></div><div>17%65%15%•18%</div></div>

## 2 Entry composition [i](#)

There are 3 unique types of molecules in this entry. The entry contains 9314 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 Bone marrow stromal antigen 2.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	99	Total	C	N	O	Se	0	0	0
			765	463	144	155	3			
1	B	99	Total	C	N	O	Se	0	0	0
			765	463	144	155	3			
1	C	99	Total	C	N	O	Se	0	0	0
			765	463	144	155	3			
1	D	99	Total	C	N	O	Se	0	0	0
			765	463	144	155	3			
1	E	99	Total	C	N	O	Se	0	0	0
			765	463	144	155	3			
1	F	99	Total	C	N	O	Se	0	0	0
			765	463	144	155	3			
1	G	99	Total	C	N	O	Se	0	0	0
			765	463	144	155	3			
1	H	99	Total	C	N	O	Se	0	0	0
			765	463	144	155	3			
1	I	99	Total	C	N	O	Se	0	0	0
			765	463	144	155	3			
1	J	99	Total	C	N	O	Se	0	0	0
			765	463	144	155	3			
1	K	99	Total	C	N	O	Se	0	0	0
			765	463	144	155	3			
1	L	99	Total	C	N	O	Se	0	0	0
			765	463	144	155	3			

There are 108 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	41	ALA	-	EXPRESSION TAG	UNP Q10589
A	42	GLY	-	EXPRESSION TAG	UNP Q10589
A	43	PHE	-	EXPRESSION TAG	UNP Q10589
A	44	SER	-	EXPRESSION TAG	UNP Q10589
A	45	MSE	-	EXPRESSION TAG	UNP Q10589

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Chain	Residue	Modelled	Actual	Comment	Reference
A	46	ASP	-	EXPRESSION TAG	UNP Q10589
A	53	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
A	63	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
A	91	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
B	41	ALA	-	EXPRESSION TAG	UNP Q10589
B	42	GLY	-	EXPRESSION TAG	UNP Q10589
B	43	PHE	-	EXPRESSION TAG	UNP Q10589
B	44	SER	-	EXPRESSION TAG	UNP Q10589
B	45	MSE	-	EXPRESSION TAG	UNP Q10589
B	46	ASP	-	EXPRESSION TAG	UNP Q10589
B	53	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
B	63	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
B	91	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
C	41	ALA	-	EXPRESSION TAG	UNP Q10589
C	42	GLY	-	EXPRESSION TAG	UNP Q10589
C	43	PHE	-	EXPRESSION TAG	UNP Q10589
C	44	SER	-	EXPRESSION TAG	UNP Q10589
C	45	MSE	-	EXPRESSION TAG	UNP Q10589
C	46	ASP	-	EXPRESSION TAG	UNP Q10589
C	53	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
C	63	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
C	91	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
D	41	ALA	-	EXPRESSION TAG	UNP Q10589
D	42	GLY	-	EXPRESSION TAG	UNP Q10589
D	43	PHE	-	EXPRESSION TAG	UNP Q10589
D	44	SER	-	EXPRESSION TAG	UNP Q10589
D	45	MSE	-	EXPRESSION TAG	UNP Q10589
D	46	ASP	-	EXPRESSION TAG	UNP Q10589
D	53	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
D	63	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
D	91	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
E	41	ALA	-	EXPRESSION TAG	UNP Q10589
E	42	GLY	-	EXPRESSION TAG	UNP Q10589
E	43	PHE	-	EXPRESSION TAG	UNP Q10589
E	44	SER	-	EXPRESSION TAG	UNP Q10589
E	45	MSE	-	EXPRESSION TAG	UNP Q10589
E	46	ASP	-	EXPRESSION TAG	UNP Q10589
E	53	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
E	63	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
E	91	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
F	41	ALA	-	EXPRESSION TAG	UNP Q10589
F	42	GLY	-	EXPRESSION TAG	UNP Q10589

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Chain	Residue	Modelled	Actual	Comment	Reference
F	43	PHE	-	EXPRESSION TAG	UNP Q10589
F	44	SER	-	EXPRESSION TAG	UNP Q10589
F	45	MSE	-	EXPRESSION TAG	UNP Q10589
F	46	ASP	-	EXPRESSION TAG	UNP Q10589
F	53	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
F	63	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
F	91	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
G	41	ALA	-	EXPRESSION TAG	UNP Q10589
G	42	GLY	-	EXPRESSION TAG	UNP Q10589
G	43	PHE	-	EXPRESSION TAG	UNP Q10589
G	44	SER	-	EXPRESSION TAG	UNP Q10589
G	45	MSE	-	EXPRESSION TAG	UNP Q10589
G	46	ASP	-	EXPRESSION TAG	UNP Q10589
G	53	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
G	63	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
G	91	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
H	41	ALA	-	EXPRESSION TAG	UNP Q10589
H	42	GLY	-	EXPRESSION TAG	UNP Q10589
H	43	PHE	-	EXPRESSION TAG	UNP Q10589
H	44	SER	-	EXPRESSION TAG	UNP Q10589
H	45	MSE	-	EXPRESSION TAG	UNP Q10589
H	46	ASP	-	EXPRESSION TAG	UNP Q10589
H	53	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
H	63	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
H	91	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
I	41	ALA	-	EXPRESSION TAG	UNP Q10589
I	42	GLY	-	EXPRESSION TAG	UNP Q10589
I	43	PHE	-	EXPRESSION TAG	UNP Q10589
I	44	SER	-	EXPRESSION TAG	UNP Q10589
I	45	MSE	-	EXPRESSION TAG	UNP Q10589
I	46	ASP	-	EXPRESSION TAG	UNP Q10589
I	53	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
I	63	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
I	91	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
J	41	ALA	-	EXPRESSION TAG	UNP Q10589
J	42	GLY	-	EXPRESSION TAG	UNP Q10589
J	43	PHE	-	EXPRESSION TAG	UNP Q10589
J	44	SER	-	EXPRESSION TAG	UNP Q10589
J	45	MSE	-	EXPRESSION TAG	UNP Q10589
J	46	ASP	-	EXPRESSION TAG	UNP Q10589
J	53	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
J	63	ALA	CYS	ENGINEERED MUTATION	UNP Q10589

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Chain	Residue	Modelled	Actual	Comment	Reference
J	91	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
K	41	ALA	-	EXPRESSION TAG	UNP Q10589
K	42	GLY	-	EXPRESSION TAG	UNP Q10589
K	43	PHE	-	EXPRESSION TAG	UNP Q10589
K	44	SER	-	EXPRESSION TAG	UNP Q10589
K	45	MSE	-	EXPRESSION TAG	UNP Q10589
K	46	ASP	-	EXPRESSION TAG	UNP Q10589
K	53	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
K	63	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
K	91	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
L	41	ALA	-	EXPRESSION TAG	UNP Q10589
L	42	GLY	-	EXPRESSION TAG	UNP Q10589
L	43	PHE	-	EXPRESSION TAG	UNP Q10589
L	44	SER	-	EXPRESSION TAG	UNP Q10589
L	45	MSE	-	EXPRESSION TAG	UNP Q10589
L	46	ASP	-	EXPRESSION TAG	UNP Q10589
L	53	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
L	63	ALA	CYS	ENGINEERED MUTATION	UNP Q10589
L	91	ALA	CYS	ENGINEERED MUTATION	UNP Q10589

- Molecule 2 is CALCIUM ION (three-letter code: CA) (formula: Ca).

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
2	K	1	Total Ca 1 1	0	0
2	E	1	Total Ca 1 1	0	0

- Molecule 3 is water.

Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	7	Total O 7 7	0	0
3	B	5	Total O 5 5	0	0
3	C	8	Total O 8 8	0	0
3	D	9	Total O 9 9	0	0
3	E	21	Total O 21 21	0	0
3	F	17	Total O 17 17	0	0

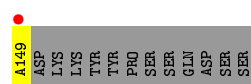
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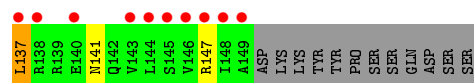
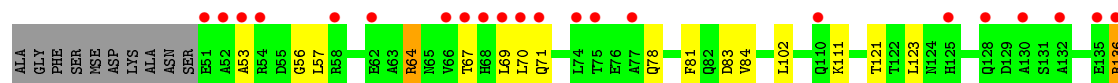
Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
3	G	7	Total 7	O 7	0	0
3	H	7	Total 7	O 7	0	0
3	I	10	Total 10	O 10	0	0
3	J	9	Total 9	O 9	0	0
3	K	24	Total 24	O 24	0	0
3	L	8	Total 8	O 8	0	0



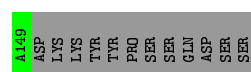
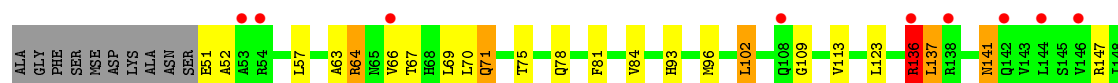




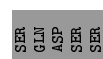
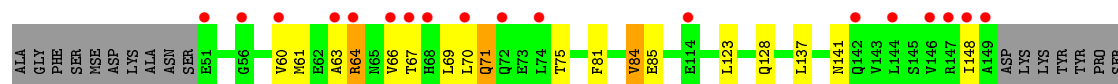
• Molecule 1: Bone marrow stromal antigen 2



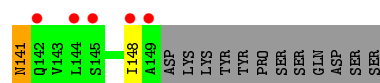
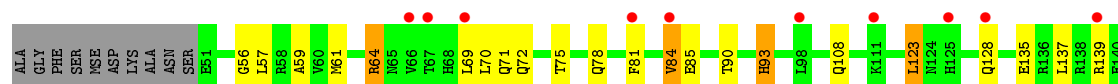
• Molecule 1: Bone marrow stromal antigen 2



• Molecule 1: Bone marrow stromal antigen 2

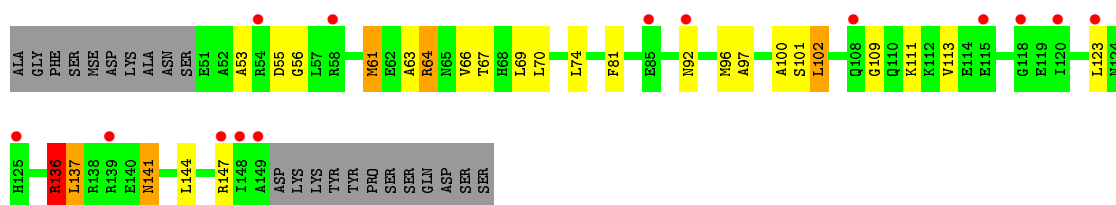


• Molecule 1: Bone marrow stromal antigen 2

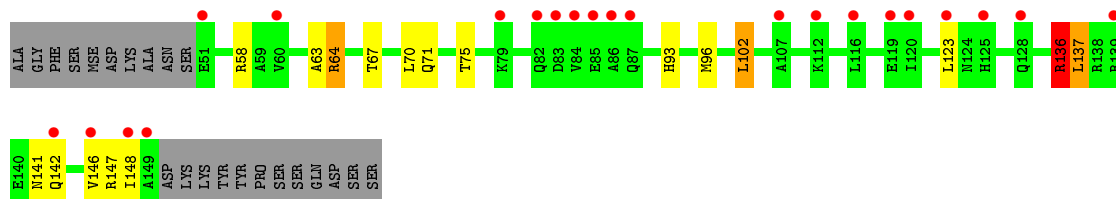


• Molecule 1: Bone marrow stromal antigen 2

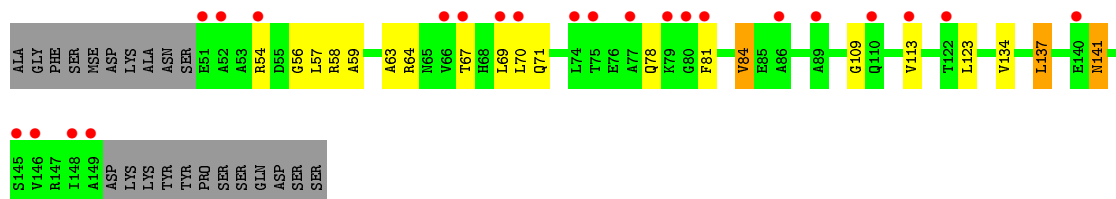




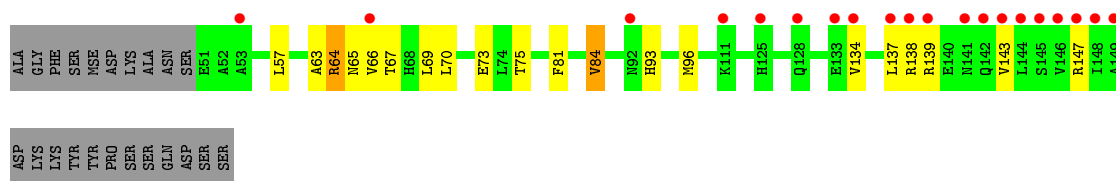
• Molecule 1: Bone marrow stromal antigen 2



• Molecule 1: Bone marrow stromal antigen 2



• Molecule 1: Bone marrow stromal antigen 2



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	66.00Å 97.16Å 117.40Å 90.00° 105.86° 90.00°	Depositor
Resolution (Å)	38.68 – 2.28 38.58 – 2.29	Depositor EDS
% Data completeness (in resolution range)	96.0 (38.68-2.28) 97.6 (38.58-2.29)	Depositor EDS
$R_{merge}$	0.07	Depositor
$R_{sym}$	0.07	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.17 (at 2.29Å)	Xtriage
Refinement program	REFMAC 5.5.0102	Depositor
R, $R_{free}$	0.236 , 0.270 0.279 , 0.308	Depositor DCC
$R_{free}$ test set	3136 reflections (4.96%)	DCC
Wilson B-factor (Å <sup>2</sup> )	38.9	Xtriage
Anisotropy	0.732	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.33 , 32.3	EDS
Estimated twinning fraction	0.893 for H, K, L 0.107 for -H, -K, H+L 0.000 for h,-k,-h-l	Xtriage
Reported twinning fraction	0.893 for H, K, L 0.107 for -H, -K, H+L	Depositor
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.55$ , $\langle L^2 \rangle = 0.40$	Xtriage
Outliers	3 of 63326 reflections (0.005%)	Xtriage
$F_o, F_c$ correlation	0.92	EDS
Total number of atoms	9314	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	26.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 20.16 % of the origin peak, indicating pseudo translational symmetry. The chance of finding a peak of this or larger height randomly in a structure without pseudo translational symmetry is equal to 9.2414e-03. The detected translational NCS is most likely also responsible for the elevated intensity ratio.*

<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

Bond lengths and bond angles in the following residue types are not validated in this section: CA

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	0.62	0/765	0.67	0/1023
1	B	0.61	0/765	0.69	2/1023 (0.2%)
1	C	0.61	0/765	0.68	0/1023
1	D	0.60	0/765	0.67	0/1023
1	E	0.77	0/765	0.86	1/1023 (0.1%)
1	F	0.67	0/765	0.82	2/1023 (0.2%)
1	G	0.79	1/765 (0.1%)	0.78	0/1023
1	H	0.65	0/765	0.69	0/1023
1	I	0.71	0/765	0.83	3/1023 (0.3%)
1	J	0.60	0/765	0.76	2/1023 (0.2%)
1	K	0.75	0/765	0.78	0/1023
1	L	0.70	0/765	0.72	0/1023
All	All	0.68	1/9180 (0.0%)	0.75	10/12276 (0.1%)

All (1) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	G	60	VAL	CB-CG2	-6.54	1.39	1.52

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	J	58	ARG	NE-CZ-NH2	6.70	123.65	120.30
1	F	102	LEU	CA-CB-CG	6.54	130.34	115.30
1	B	136	ARG	NE-CZ-NH1	-6.20	117.20	120.30
1	B	136	ARG	NE-CZ-NH2	6.19	123.39	120.30
1	I	136	ARG	NE-CZ-NH2	-5.55	117.53	120.30
1	E	83	ASP	CB-CG-OD1	-5.42	113.42	118.30
1	F	136	ARG	NE-CZ-NH2	5.42	123.01	120.30
1	I	136	ARG	NE-CZ-NH1	5.14	122.87	120.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	J	136	ARG	NE-CZ-NH2	5.11	122.86	120.30
1	I	55	ASP	CB-CG-OD1	-5.09	113.72	118.30

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	765	0	766	25	0
1	B	765	0	766	31	0
1	C	765	0	766	27	0
1	D	765	0	766	25	0
1	E	765	0	766	32	0
1	F	765	0	766	35	0
1	G	765	0	766	35	0
1	H	765	0	766	43	0
1	I	765	0	766	32	0
1	J	765	0	766	14	0
1	K	765	0	766	26	0
1	L	765	0	766	25	0
2	E	1	0	0	0	0
2	K	1	0	0	0	0
3	A	7	0	0	0	0
3	B	5	0	0	0	0
3	C	8	0	0	0	0
3	D	9	0	0	0	0
3	E	21	0	0	1	0
3	F	17	0	0	2	0
3	G	7	0	0	8	0
3	H	7	0	0	2	0
3	I	10	0	0	2	0
3	J	9	0	0	1	0
3	K	24	0	0	6	0
3	L	8	0	0	0	0
All	All	9314	0	9192	216	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 12.

All (216) 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:A:84:VAL:CG1	1:B:84:VAL:HG11	1.73	1.19
1:C:70:LEU:HD21	1:D:70:LEU:HD21	1.28	1.15
1:K:70:LEU:HD21	1:L:70:LEU:HD21	1.21	1.14
1:A:84:VAL:HG11	1:B:84:VAL:CG1	1.78	1.12
1:G:84:VAL:HG11	1:H:84:VAL:HG11	1.31	1.11
1:G:70:LEU:HD21	1:H:70:LEU:HD21	1.32	1.11
1:A:70:LEU:HD21	1:B:70:LEU:HD21	1.15	1.07
1:C:84:VAL:HG11	1:D:84:VAL:HG11	1.27	1.07
1:A:66:VAL:HG13	1:D:66:VAL:HG13	1.38	1.06
1:E:84:VAL:HG11	1:F:84:VAL:HG11	1.39	1.05
1:E:78:GLN:OE1	1:G:64:ARG:NH1	1.92	1.00
1:I:70:LEU:CD2	1:J:70:LEU:HD21	1.93	0.99
1:F:51:GLU:HG3	1:F:52:ALA:H	1.27	0.99
1:H:135:GLU:HG3	1:L:143:VAL:HG22	1.51	0.93
1:C:84:VAL:CG1	1:D:84:VAL:HG11	2.01	0.91
1:F:67:THR:OG1	1:H:71:GLN:NE2	2.04	0.89
1:A:70:LEU:HD21	1:B:70:LEU:CD2	2.01	0.89
1:G:141:ASN:HD22	1:H:141:ASN:HD22	1.20	0.89
1:G:71:GLN:OE1	3:G:162:HOH:O	1.89	0.89
1:B:66:VAL:HG13	1:C:66:VAL:HG13	1.51	0.89
1:B:96:MSE:CE	1:L:57:LEU:HD23	2.03	0.88
1:I:64:ARG:HD2	3:I:168:HOH:O	1.76	0.85
1:E:84:VAL:CG1	1:F:84:VAL:HG11	2.06	0.84
1:A:66:VAL:CG1	1:D:66:VAL:HG13	2.09	0.83
1:A:84:VAL:HG11	1:B:84:VAL:HG11	0.87	0.83
1:B:96:MSE:HE3	1:L:57:LEU:HD23	1.60	0.82
1:F:71:GLN:HE22	1:H:64:ARG:CG	1.94	0.81
1:G:84:VAL:CG1	1:H:84:VAL:HG11	2.10	0.81
1:K:78:GLN:OE1	3:K:5:HOH:O	1.99	0.79
1:G:64:ARG:NE	3:G:168:HOH:O	2.14	0.79
1:E:53:ALA:HB2	1:H:84:VAL:HG23	1.65	0.78
1:K:78:GLN:CD	3:K:5:HOH:O	2.21	0.78
1:A:84:VAL:CG1	1:B:84:VAL:CG1	2.46	0.78
1:I:70:LEU:HD21	1:J:70:LEU:HD21	1.64	0.77
1:I:141:ASN:HD22	1:J:141:ASN:HD22	1.30	0.76
1:E:111:LYS:NZ	1:I:97:ALA:O	2.18	0.76
1:I:102:LEU:HD23	1:J:102:LEU:HD23	1.68	0.76

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:I:70:LEU:HD23	1:J:70:LEU:HD21	1.67	0.76
1:B:66:VAL:HG13	1:C:66:VAL:CG1	2.15	0.75
1:E:78:GLN:CD	1:G:61:MSE:HE1	2.07	0.75
1:F:93:HIS:HA	1:F:96:MSE:HE3	1.69	0.75
1:F:51:GLU:HG3	1:F:52:ALA:N	2.02	0.74
1:G:141:ASN:HD22	1:H:141:ASN:ND2	1.85	0.74
1:I:56:GLY:HA3	1:K:81:PHE:CZ	2.23	0.74
1:E:84:VAL:HG11	1:F:84:VAL:CG1	2.14	0.73
1:F:71:GLN:HE22	1:H:64:ARG:HG3	1.52	0.73
1:K:70:LEU:CD2	1:L:70:LEU:HD21	2.11	0.72
1:G:84:VAL:HG11	1:H:84:VAL:CG1	2.15	0.72
1:E:78:GLN:OE1	1:G:61:MSE:HE1	1.90	0.72
1:E:136:ARG:HE	1:E:137:LEU:HD13	1.55	0.72
1:F:71:GLN:NE2	1:H:64:ARG:HG3	2.06	0.71
1:A:64:ARG:NH1	1:C:78:GLN:OE1	2.25	0.70
1:E:84:VAL:CG1	1:F:84:VAL:CG1	2.70	0.70
1:E:53:ALA:HB2	1:H:84:VAL:CG2	2.23	0.69
1:B:66:VAL:CG1	1:C:66:VAL:HG13	2.23	0.68
1:I:61:MSE:HE1	1:K:78:GLN:NE2	2.08	0.68
1:A:66:VAL:HG13	1:D:66:VAL:CG1	2.20	0.67
1:I:61:MSE:HE1	1:K:78:GLN:CD	2.14	0.67
1:F:64:ARG:NH2	1:H:75:THR:OG1	2.27	0.67
1:H:139:ARG:NH2	1:L:143:VAL:O	2.28	0.67
1:J:93:HIS:HA	1:J:96:MSE:HE3	1.77	0.67
1:G:84:VAL:CG1	1:H:84:VAL:HG21	2.26	0.65
1:E:56:GLY:HA3	1:G:81:PHE:CZ	2.32	0.65
1:A:78:GLN:OE1	1:C:64:ARG:NH1	2.30	0.65
1:I:63:ALA:O	1:I:67:THR:HG23	1.97	0.65
1:F:67:THR:HG1	1:H:71:GLN:NE2	1.94	0.64
1:I:136:ARG:HE	1:I:137:LEU:HD13	1.62	0.63
1:B:66:VAL:CG1	1:C:66:VAL:CG1	2.76	0.63
1:J:64:ARG:NH2	1:L:75:THR:OG1	2.31	0.63
1:H:81:PHE:O	1:H:84:VAL:HG12	1.99	0.63
1:G:71:GLN:HG3	3:G:162:HOH:O	1.99	0.63
1:H:56:GLY:O	1:H:59:ALA:HB3	1.99	0.63
1:B:70:LEU:HD23	1:D:67:THR:HG22	1.80	0.63
1:F:71:GLN:HE22	1:H:64:ARG:HG2	1.63	0.62
1:A:78:GLN:HG3	1:C:57:LEU:HD11	1.82	0.62
1:J:63:ALA:O	1:J:67:THR:HG23	2.00	0.62
1:K:84:VAL:HG11	1:L:84:VAL:HG11	1.81	0.61
1:E:64:ARG:NE	3:E:32:HOH:O	2.30	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:E:111:LYS:HE3	1:I:100:ALA:C	2.20	0.61
1:E:121:THR:OG1	1:I:111:LYS:HD2	2.00	0.61
1:H:72:GLN:NE2	3:H:166:HOH:O	2.32	0.61
1:G:81:PHE:CE2	1:H:81:PHE:CE2	2.88	0.61
1:B:70:LEU:HD23	1:D:67:THR:CG2	2.30	0.60
1:E:70:LEU:HD21	1:F:70:LEU:HD21	1.85	0.59
1:J:142:GLN:HG2	3:J:164:HOH:O	2.02	0.58
1:A:66:VAL:CG1	1:D:66:VAL:CG1	2.79	0.58
1:F:136:ARG:HD2	1:F:137:LEU:HD13	1.86	0.58
1:F:75:THR:OG1	1:H:64:ARG:NH2	2.37	0.57
1:E:71:GLN:NE2	1:G:67:THR:OG1	2.38	0.57
1:F:66:VAL:HG13	1:G:66:VAL:HG13	1.87	0.57
1:G:84:VAL:CG1	1:H:84:VAL:CG1	2.79	0.57
1:B:104:ALA:HB2	1:L:65:ASN:CG	2.24	0.57
1:F:67:THR:HG1	1:H:71:GLN:HE21	1.48	0.56
1:B:78:GLN:OE1	1:D:64:ARG:NH1	2.39	0.56
1:H:84:VAL:CG1	1:H:85:GLU:N	2.69	0.56
1:K:71:GLN:NE2	3:K:164:HOH:O	2.35	0.56
1:B:57:LEU:HD11	1:B:61:MSE:HE3	1.88	0.56
1:B:111:LYS:NZ	1:L:73:GLU:OE2	2.29	0.56
1:G:71:GLN:CG	3:G:162:HOH:O	2.53	0.56
1:H:139:ARG:HE	1:L:147:ARG:HG2	1.70	0.55
1:G:84:VAL:HG12	1:G:85:GLU:N	2.21	0.55
1:C:84:VAL:CG1	1:D:84:VAL:CG1	2.80	0.55
3:F:163:HOH:O	1:H:71:GLN:HG3	2.05	0.55
1:I:141:ASN:ND2	1:J:141:ASN:HD22	2.01	0.55
1:K:109:GLY:O	1:K:113:VAL:HG23	2.08	0.54
1:B:142:GLN:O	1:B:146:VAL:HG23	2.08	0.54
1:C:148:ILE:HD12	1:D:148:ILE:HD12	1.90	0.54
1:F:57:LEU:HD11	1:H:78:GLN:HG3	1.89	0.53
1:I:66:VAL:CG1	1:L:66:VAL:HG13	2.39	0.53
1:F:64:ARG:HD3	3:F:165:HOH:O	2.08	0.53
1:K:70:LEU:HD21	1:L:70:LEU:CD2	2.15	0.52
1:A:63:ALA:O	1:A:67:THR:HG23	2.10	0.52
1:A:67:THR:HG22	1:C:70:LEU:HD23	1.90	0.52
1:B:96:MSE:HE1	1:L:57:LEU:HD23	1.90	0.51
1:J:142:GLN:O	1:J:146:VAL:HG23	2.10	0.51
1:B:71:GLN:NE2	1:D:64:ARG:HG3	2.26	0.51
1:K:134:VAL:HG23	1:L:134:VAL:HG23	1.92	0.51
1:A:71:GLN:HE22	1:C:64:ARG:CG	2.23	0.51
1:J:136:ARG:HD2	1:J:137:LEU:HD13	1.92	0.51

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:70:LEU:HD21	1:D:70:LEU:CD2	2.20	0.51
1:G:63:ALA:O	1:G:67:THR:HG23	2.11	0.50
1:E:81:PHE:CD1	1:F:81:PHE:CE1	3.00	0.50
1:F:109:GLY:O	1:F:113:VAL:HG23	2.11	0.50
1:H:84:VAL:HG12	1:H:85:GLU:N	2.26	0.50
1:E:64:ARG:NH2	1:G:75:THR:OG1	2.45	0.50
1:E:141:ASN:HD22	1:F:141:ASN:HD22	1.58	0.50
1:H:128:GLN:HG2	1:L:139:ARG:HG3	1.92	0.50
1:I:81:PHE:CZ	1:K:56:GLY:HA3	2.47	0.49
1:B:63:ALA:O	1:B:67:THR:HG23	2.13	0.49
1:G:64:ARG:CZ	3:G:168:HOH:O	2.56	0.49
1:D:63:ALA:O	1:D:67:THR:HG23	2.12	0.49
1:G:148:ILE:CD1	1:H:148:ILE:HD13	2.43	0.48
1:E:111:LYS:CE	1:I:100:ALA:CB	2.92	0.48
1:C:57:LEU:HD11	1:C:61:MSE:HE3	1.95	0.48
1:K:137:LEU:HD21	1:L:138:ARG:HG3	1.96	0.48
1:G:84:VAL:CG1	1:H:84:VAL:CG2	2.91	0.48
1:A:70:LEU:HD23	1:C:67:THR:HG22	1.94	0.48
1:H:69:LEU:HD13	3:H:25:HOH:O	2.13	0.48
1:K:81:PHE:CE2	1:L:81:PHE:CE2	3.02	0.48
1:I:96:MSE:CE	3:I:165:HOH:O	2.61	0.48
1:G:70:LEU:HD21	1:H:70:LEU:CD2	2.23	0.47
1:E:78:GLN:CD	3:K:172:HOH:O	2.52	0.47
1:G:84:VAL:HG13	1:H:84:VAL:CG2	2.44	0.47
1:A:71:GLN:NE2	1:C:64:ARG:HG3	2.30	0.47
1:I:61:MSE:HE1	1:K:78:GLN:HG3	1.96	0.47
1:K:137:LEU:O	1:K:141:ASN:HB2	2.14	0.47
1:H:90:THR:O	1:H:93:HIS:HB2	2.15	0.47
1:B:64:ARG:CG	1:D:71:GLN:HE22	2.28	0.47
1:E:84:VAL:HG13	1:F:84:VAL:CG1	2.43	0.46
1:G:64:ARG:HB3	3:G:166:HOH:O	2.14	0.46
1:I:61:MSE:HE1	1:K:78:GLN:CG	2.45	0.46
1:B:74:LEU:HA	1:B:74:LEU:HD23	1.79	0.46
1:G:67:THR:O	1:G:70:LEU:HB3	2.14	0.46
1:H:128:GLN:CD	1:L:138:ARG:HB3	2.35	0.46
1:F:66:VAL:CG1	1:G:66:VAL:HG13	2.44	0.46
1:F:78:GLN:NE2	1:H:61:MSE:HE2	2.31	0.46
1:L:93:HIS:HA	1:L:96:MSE:HE3	1.97	0.46
1:E:84:VAL:HG13	1:F:84:VAL:HG13	1.98	0.46
1:F:64:ARG:HH22	1:H:75:THR:HG23	1.80	0.46
1:B:136:ARG:NH2	1:B:137:LEU:CD1	2.79	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:137:LEU:O	1:B:141:ASN:HB2	2.16	0.45
1:C:137:LEU:O	1:C:141:ASN:HB2	2.16	0.45
1:K:84:VAL:HG11	1:L:84:VAL:HG21	1.98	0.45
1:E:56:GLY:HA3	1:G:81:PHE:CE1	2.51	0.45
1:A:71:GLN:HE22	1:C:64:ARG:HG3	1.81	0.45
1:F:136:ARG:HD2	1:F:137:LEU:CD1	2.47	0.44
1:B:71:GLN:HE22	1:D:64:ARG:HG3	1.82	0.44
1:C:142:GLN:O	1:C:146:VAL:HG23	2.17	0.44
1:B:64:ARG:HG3	1:D:71:GLN:NE2	2.32	0.44
1:E:111:LYS:HZ1	1:I:100:ALA:HB3	1.83	0.44
1:K:84:VAL:CG1	1:L:84:VAL:HG11	2.47	0.44
1:B:64:ARG:HG3	1:D:71:GLN:HE22	1.82	0.44
1:E:81:PHE:CE1	1:F:81:PHE:CE1	3.05	0.44
1:K:69:LEU:HD13	3:K:165:HOH:O	2.18	0.44
1:D:137:LEU:O	1:D:141:ASN:HB2	2.18	0.44
1:B:136:ARG:NH2	1:B:137:LEU:HD13	2.32	0.44
1:D:57:LEU:HD11	1:D:61:MSE:HE3	2.00	0.44
1:K:63:ALA:O	1:K:67:THR:HG23	2.18	0.43
1:F:78:GLN:HG3	1:H:57:LEU:HD11	1.99	0.43
1:I:144:LEU:HD22	1:J:148:ILE:HD12	2.00	0.43
1:A:78:GLN:HG3	1:C:57:LEU:CD1	2.49	0.43
1:A:78:GLN:O	1:A:82:GLN:HG3	2.18	0.43
1:K:54:ARG:NH1	3:K:166:HOH:O	2.52	0.43
1:G:64:ARG:HD3	3:G:166:HOH:O	2.19	0.43
1:H:123:LEU:HD12	1:H:123:LEU:HA	1.83	0.43
1:C:78:GLN:O	1:C:82:GLN:HG3	2.19	0.43
1:E:111:LYS:CE	1:I:100:ALA:HB3	2.49	0.42
1:E:111:LYS:HE2	1:I:100:ALA:CB	2.49	0.42
1:G:64:ARG:NH2	3:G:168:HOH:O	2.52	0.42
1:I:92:ASN:HB3	1:I:96:MSE:HE2	2.02	0.42
1:C:137:LEU:HD21	1:D:138:ARG:HG3	2.01	0.42
1:I:67:THR:OG1	1:K:71:GLN:NE2	2.52	0.42
1:D:139:ARG:O	1:D:143:VAL:HG23	2.20	0.42
1:G:81:PHE:CD2	1:H:81:PHE:CZ	3.07	0.42
1:I:137:LEU:O	1:I:141:ASN:HB2	2.20	0.42
1:E:67:THR:O	1:E:70:LEU:HB3	2.19	0.42
1:C:63:ALA:O	1:C:67:THR:HG23	2.20	0.42
1:I:109:GLY:O	1:I:113:VAL:HG23	2.20	0.42
1:K:57:LEU:O	1:K:58:ARG:C	2.58	0.42
1:J:75:THR:OG1	1:L:64:ARG:NH2	2.52	0.41
1:F:51:GLU:CG	1:F:52:ALA:N	2.75	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:139:ARG:O	1:B:143:VAL:HG23	2.20	0.41
1:I:74:LEU:HA	1:I:74:LEU:HD23	1.88	0.41
1:F:63:ALA:O	1:F:67:THR:HG23	2.21	0.41
1:L:63:ALA:O	1:L:67:THR:HG23	2.20	0.41
1:E:57:LEU:HD13	1:G:81:PHE:HB2	2.01	0.41
1:E:111:LYS:NZ	1:I:101:SER:N	2.69	0.41
1:D:148:ILE:CG2	1:D:149:ALA:N	2.83	0.41
1:K:56:GLY:O	1:K:59:ALA:HB3	2.21	0.41
1:A:148:ILE:CG2	1:A:149:ALA:N	2.84	0.41
1:F:51:GLU:CG	1:F:52:ALA:H	2.12	0.41
1:C:148:ILE:CD1	1:D:148:ILE:HD12	2.51	0.41
1:A:64:ARG:O	1:A:67:THR:OG1	2.39	0.40
1:I:53:ALA:HB2	1:L:84:VAL:CG2	2.52	0.40
1:A:142:GLN:O	1:A:146:VAL:HG23	2.21	0.40
1:A:71:GLN:HE22	1:C:64:ARG:HG2	1.86	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	97/121 (80%)	97 (100%)	0	0	100	100
1	B	97/121 (80%)	96 (99%)	1 (1%)	0	100	100
1	C	97/121 (80%)	97 (100%)	0	0	100	100
1	D	97/121 (80%)	97 (100%)	0	0	100	100
1	E	97/121 (80%)	97 (100%)	0	0	100	100
1	F	97/121 (80%)	96 (99%)	1 (1%)	0	100	100
1	G	97/121 (80%)	95 (98%)	2 (2%)	0	100	100
1	H	97/121 (80%)	95 (98%)	2 (2%)	0	100	100

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Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	I	97/121 (80%)	97 (100%)	0	0	100	100
1	J	97/121 (80%)	96 (99%)	1 (1%)	0	100	100
1	K	97/121 (80%)	96 (99%)	1 (1%)	0	100	100
1	L	97/121 (80%)	96 (99%)	1 (1%)	0	100	100
All	All	1164/1452 (80%)	1155 (99%)	9 (1%)	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	79/94 (84%)	73 (92%)	6 (8%)	16	19
1	B	79/94 (84%)	73 (92%)	6 (8%)	16	19
1	C	79/94 (84%)	72 (91%)	7 (9%)	12	13
1	D	79/94 (84%)	74 (94%)	5 (6%)	22	27
1	E	79/94 (84%)	72 (91%)	7 (9%)	12	13
1	F	79/94 (84%)	70 (89%)	9 (11%)	7	7
1	G	79/94 (84%)	72 (91%)	7 (9%)	12	13
1	H	79/94 (84%)	72 (91%)	7 (9%)	12	13
1	I	79/94 (84%)	70 (89%)	9 (11%)	7	7
1	J	79/94 (84%)	72 (91%)	7 (9%)	12	13
1	K	79/94 (84%)	74 (94%)	5 (6%)	22	27
1	L	79/94 (84%)	75 (95%)	4 (5%)	29	37
All	All	948/1128 (84%)	869 (92%)	79 (8%)	14	15

All (79) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	72	GLN

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Mol	Chain	Res	Type
1	A	114	GLU
1	A	121	THR
1	A	131	SER
1	A	137	LEU
1	A	148	ILE
1	B	69	LEU
1	B	72	GLN
1	B	114	GLU
1	B	123	LEU
1	B	131	SER
1	B	137	LEU
1	C	72	GLN
1	C	114	GLU
1	C	123	LEU
1	C	131	SER
1	C	137	LEU
1	C	141	ASN
1	C	148	ILE
1	D	72	GLN
1	D	103	ASP
1	D	114	GLU
1	D	131	SER
1	D	148	ILE
1	E	64	ARG
1	E	69	LEU
1	E	102	LEU
1	E	123	LEU
1	E	136	ARG
1	E	137	LEU
1	E	147	ARG
1	F	64	ARG
1	F	69	LEU
1	F	71	GLN
1	F	102	LEU
1	F	123	LEU
1	F	136	ARG
1	F	137	LEU
1	F	141	ASN
1	F	147	ARG
1	G	64	ARG
1	G	69	LEU
1	G	71	GLN

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Mol	Chain	Res	Type
1	G	84	VAL
1	G	123	LEU
1	G	128	GLN
1	G	137	LEU
1	H	64	ARG
1	H	84	VAL
1	H	93	HIS
1	H	108	GLN
1	H	123	LEU
1	H	137	LEU
1	H	141	ASN
1	I	61	MSE
1	I	64	ARG
1	I	69	LEU
1	I	102	LEU
1	I	123	LEU
1	I	136	ARG
1	I	137	LEU
1	I	141	ASN
1	I	147	ARG
1	J	64	ARG
1	J	71	GLN
1	J	102	LEU
1	J	123	LEU
1	J	136	ARG
1	J	137	LEU
1	J	147	ARG
1	K	64	ARG
1	K	84	VAL
1	K	123	LEU
1	K	137	LEU
1	K	141	ASN
1	L	64	ARG
1	L	69	LEU
1	L	84	VAL
1	L	137	LEU

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (40) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	71	GLN
1	A	72	GLN

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Mol	Chain	Res	Type
1	A	92	ASN
1	A	128	GLN
1	B	71	GLN
1	B	72	GLN
1	B	128	GLN
1	C	72	GLN
1	C	92	ASN
1	C	128	GLN
1	D	82	GLN
1	D	141	ASN
1	E	71	GLN
1	E	72	GLN
1	E	110	GLN
1	E	128	GLN
1	F	71	GLN
1	F	78	GLN
1	F	110	GLN
1	F	128	GLN
1	F	141	ASN
1	G	71	GLN
1	G	92	ASN
1	H	71	GLN
1	H	72	GLN
1	H	82	GLN
1	H	87	GLN
1	H	92	ASN
1	H	141	ASN
1	I	87	GLN
1	I	110	GLN
1	J	71	GLN
1	J	110	GLN
1	J	128	GLN
1	J	141	ASN
1	K	71	GLN
1	K	72	GLN
1	K	92	ASN
1	K	141	ASN
1	L	92	ASN

### 5.3.3 RNA ⓘ

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](#)

Of 2 ligands modelled in this entry, 2 are monoatomic - leaving 0 for Mogul analysis.

There are no bond length outliers.

There are no bond angle outliers.

There are no chirality outliers.

There are no torsion outliers.

There are no ring outliers.

No monomer is involved in short contacts.

## 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	96/121 (79%)	1.31	11 (11%)	6 9	2, 22, 58, 72	0
1	B	96/121 (79%)	1.53	16 (16%)	2 3	3, 27, 67, 84	0
1	C	96/121 (79%)	1.28	18 (18%)	2 2	2, 24, 57, 71	0
1	D	96/121 (79%)	1.75	25 (26%)	1 1	2, 24, 64, 78	0
1	E	96/121 (79%)	1.86	32 (33%)	0 0	2, 19, 52, 69	0
1	F	96/121 (79%)	0.97	9 (9%)	11 15	2, 22, 43, 59	0
1	G	96/121 (79%)	1.09	18 (18%)	2 2	2, 22, 57, 89	0
1	H	96/121 (79%)	1.25	15 (15%)	3 4	2, 23, 52, 88	0
1	I	96/121 (79%)	1.26	14 (14%)	3 5	2, 24, 46, 62	0
1	J	96/121 (79%)	1.35	22 (22%)	1 1	2, 26, 51, 59	0
1	K	96/121 (79%)	1.35	23 (23%)	1 1	2, 22, 61, 83	0
1	L	96/121 (79%)	1.42	20 (20%)	1 2	3, 22, 57, 83	0
All	All	1152/1452 (79%)	1.37	223 (19%)	1 2	2, 23, 57, 89	0

All (223) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	D	149	ALA	20.8
1	H	149	ALA	15.5
1	E	149	ALA	15.1
1	A	149	ALA	12.6
1	E	148	ILE	11.9
1	B	147	ARG	10.1
1	A	145	SER	9.5
1	B	149	ALA	9.0
1	B	146	VAL	8.1
1	A	143	VAL	8.0
1	L	146	VAL	8.0

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Mol	Chain	Res	Type	RSRZ
1	A	148	ILE	7.7
1	B	143	VAL	7.5
1	K	148	ILE	7.5
1	G	148	ILE	7.3
1	L	149	ALA	6.5
1	L	142	GLN	6.4
1	L	148	ILE	6.0
1	I	149	ALA	6.0
1	A	147	ARG	6.0
1	D	146	VAL	6.0
1	D	147	ARG	5.9
1	B	148	ILE	5.8
1	J	148	ILE	5.4
1	A	144	LEU	5.4
1	C	143	VAL	5.4
1	D	128	GLN	5.2
1	D	145	SER	5.2
1	E	143	VAL	5.0
1	J	86	ALA	5.0
1	J	149	ALA	5.0
1	C	149	ALA	4.9
1	E	128	GLN	4.8
1	G	149	ALA	4.8
1	H	148	ILE	4.7
1	D	143	VAL	4.7
1	F	146	VAL	4.6
1	L	145	SER	4.6
1	D	125	HIS	4.5
1	D	144	LEU	4.5
1	K	149	ALA	4.4
1	E	53	ALA	4.4
1	D	134	VAL	4.4
1	B	132	ALA	4.3
1	E	137	LEU	4.3
1	F	53	ALA	4.2
1	L	139	ARG	4.1
1	H	139	ARG	4.1
1	I	147	ARG	4.0
1	D	130	ALA	4.0
1	K	52	ALA	4.0
1	E	54	ARG	4.0
1	L	138	ARG	4.0

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Mol	Chain	Res	Type	RSRZ
1	C	148	ILE	4.0
1	I	139	ARG	3.9
1	J	84	VAL	3.9
1	C	54	ARG	3.9
1	G	144	LEU	3.7
1	L	144	LEU	3.7
1	I	54	ARG	3.7
1	J	125	HIS	3.6
1	E	146	VAL	3.6
1	B	139	ARG	3.6
1	H	142	GLN	3.5
1	D	133	GLU	3.3
1	E	70	LEU	3.3
1	I	148	ILE	3.3
1	D	124	ASN	3.3
1	D	139	ARG	3.3
1	B	141	ASN	3.3
1	H	84	VAL	3.3
1	L	134	VAL	3.3
1	J	139	ARG	3.2
1	L	143	VAL	3.2
1	B	142	GLN	3.2
1	D	137	LEU	3.2
1	C	145	SER	3.2
1	F	54	ARG	3.2
1	K	75	THR	3.2
1	G	51	GLU	3.2
1	B	110	GLN	3.1
1	K	77	ALA	3.1
1	E	74	LEU	3.1
1	G	146	VAL	3.1
1	C	141	ASN	3.1
1	H	128	GLN	3.1
1	E	69	LEU	3.1
1	A	51	GLU	3.1
1	J	83	ASP	3.1
1	K	70	LEU	3.1
1	E	130	ALA	3.0
1	D	122	THR	3.0
1	B	138	ARG	3.0
1	E	77	ALA	3.0
1	D	69	LEU	3.0

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Mol	Chain	Res	Type	RSRZ
1	E	67	THR	2.9
1	D	141	ASN	2.9
1	D	135	GLU	2.9
1	K	54	ARG	2.9
1	B	108	GLN	2.9
1	E	147	ARG	2.8
1	G	147	ARG	2.8
1	J	82	GLN	2.8
1	L	141	ASN	2.8
1	J	119	GLU	2.8
1	A	141	ASN	2.8
1	K	74	LEU	2.7
1	L	137	LEU	2.7
1	C	146	VAL	2.7
1	I	125	HIS	2.7
1	A	134	VAL	2.7
1	E	66	VAL	2.7
1	D	136	ARG	2.7
1	E	144	LEU	2.7
1	D	132	ALA	2.7
1	J	120	ILE	2.6
1	K	80	GLY	2.6
1	G	67	THR	2.6
1	B	144	LEU	2.6
1	H	145	SER	2.6
1	I	118	GLY	2.6
1	K	110	GLN	2.6
1	F	66	VAL	2.6
1	D	148	ILE	2.6
1	C	132	ALA	2.6
1	E	145	SER	2.6
1	C	147	ARG	2.6
1	G	60	VAL	2.6
1	K	145	SER	2.5
1	L	111	LYS	2.5
1	L	92	ASN	2.5
1	G	70	LEU	2.5
1	K	51	GLU	2.5
1	K	81	PHE	2.5
1	B	145	SER	2.5
1	K	140	GLU	2.5
1	K	89	ALA	2.5

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Mol	Chain	Res	Type	RSRZ
1	C	123	LEU	2.5
1	C	127	LEU	2.5
1	E	125	HIS	2.5
1	K	67	THR	2.4
1	E	68	HIS	2.4
1	A	142	GLN	2.4
1	C	138	ARG	2.4
1	E	135	GLU	2.4
1	J	112	LYS	2.4
1	C	110	GLN	2.4
1	F	144	LEU	2.4
1	J	79	LYS	2.4
1	C	136	ARG	2.4
1	J	146	VAL	2.4
1	K	113	VAL	2.4
1	E	132	ALA	2.4
1	K	86	ALA	2.4
1	G	114	GLU	2.4
1	I	85	GLU	2.4
1	H	144	LEU	2.4
1	I	123	LEU	2.4
1	J	116	LEU	2.4
1	G	142	GLN	2.4
1	D	126	LYS	2.4
1	E	75	THR	2.4
1	J	128	GLN	2.4
1	C	70	LEU	2.3
1	E	140	GLU	2.3
1	K	69	LEU	2.3
1	C	120	ILE	2.3
1	D	140	GLU	2.3
1	G	63	ALA	2.3
1	L	125	HIS	2.3
1	L	53	ALA	2.3
1	H	81	PHE	2.3
1	I	58	ARG	2.3
1	J	85	GLU	2.3
1	L	128	GLN	2.3
1	E	51	GLU	2.3
1	E	58	ARG	2.3
1	G	68	HIS	2.3
1	G	74	LEU	2.3

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Mol	Chain	Res	Type	RSRZ
1	F	138	ARG	2.3
1	H	67	THR	2.3
1	E	110	GLN	2.2
1	I	115	GLU	2.2
1	F	142	GLN	2.2
1	J	142	GLN	2.2
1	E	52	ALA	2.2
1	E	138	ARG	2.2
1	H	125	HIS	2.2
1	G	64	ARG	2.2
1	C	71	GLN	2.2
1	E	62	GLU	2.2
1	J	51	GLU	2.2
1	G	66	VAL	2.1
1	J	123	LEU	2.1
1	G	72	GLN	2.1
1	C	66	VAL	2.1
1	K	122	THR	2.1
1	L	147	ARG	2.1
1	J	87	GLN	2.1
1	B	92	ASN	2.1
1	H	66	VAL	2.1
1	K	66	VAL	2.1
1	D	142	GLN	2.1
1	F	108	GLN	2.1
1	H	69	LEU	2.1
1	L	133	GLU	2.1
1	I	108	GLN	2.1
1	I	92	ASN	2.1
1	F	136	ARG	2.1
1	G	56	GLY	2.1
1	B	72	GLN	2.1
1	K	146	VAL	2.1
1	D	138	ARG	2.0
1	A	127	LEU	2.0
1	E	71	GLN	2.0
1	I	120	ILE	2.0
1	E	136	ARG	2.0
1	J	60	VAL	2.0
1	L	66	VAL	2.0
1	J	107	ALA	2.0
1	H	111	LYS	2.0

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Mol	Chain	Res	Type	RSRZ
1	K	79	LYS	2.0
1	H	98	LEU	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](#)

In the following table, the Atoms column lists the number of modelled atoms in the group and the number defined in the chemical component dictionary. LLDF column lists the quality of electron density of the group with respect to its neighbouring residues in protein, DNA or RNA chains. The B-factors column lists the minimum, median, 95<sup>th</sup> percentile and maximum values of B factors of atoms in the group. The column labelled 'Q< 0.9' lists the number of atoms with occupancy less than 0.9.

Mol	Type	Chain	Res	Atoms	RSCC	RSR	LLDF	B-factors( $\text{\AA}^2$ )	Q<0.9
2	CA	K	1	1/1	0.71	0.18	-	73,73,73,73	0
2	CA	E	1	1/1	0.52	0.26	-	79,79,79,79	0

## 6.5 Other polymers [i](#)

There are no such residues in this entry.