



# Full wwPDB X-ray Structure Validation Report ⓘ

Mar 10, 2026 – 09:10 AM UTC

PDB ID : 2VLR / pdb\_00002vlr  
Title : The Structural Dynamics and Energetics of an Immunodominant T-cell Receptor are Programmed by its Vbeta Domain  
Authors : Ishizuka, J.; Stewart-Jones, G.; van der Merwe, A.; Bell, J.; McMichael, A.; Jones, Y.  
Deposited on : 2008-01-15  
Resolution : 2.30 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

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

with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at

<http://www.wwpdb.org/validation/2017/FAQs#types>.

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

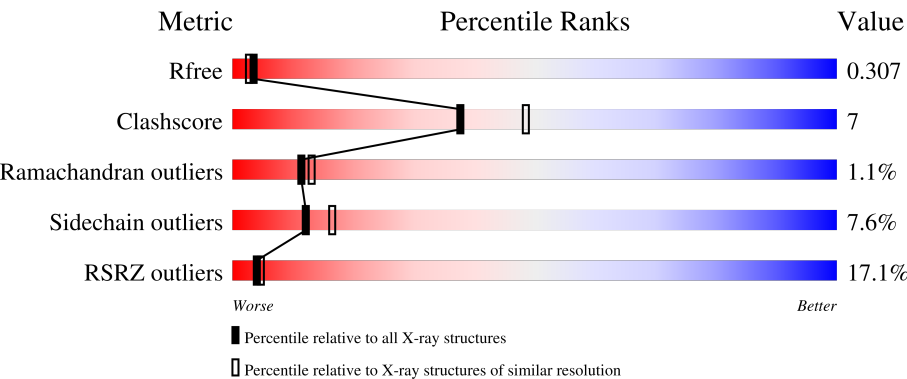
MolProbity : 4-5-2 with Phenix2.0  
Xtriage (Phenix) : 2.0  
EDS : 3.0  
Percentile statistics : 20250101.v01 (using entries in the PDB archive January 1st 2025)  
CCP4 : 9.0.010 (Gargrove)  
Density-Fitness : 1.0.12  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.49

# 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 2.30 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))
$R_{free}$	180053	6319 (2.30-2.30)
Clashscore	190562	6919 (2.30-2.30)
Ramachandran outliers	187476	6854 (2.30-2.30)
Sidechain outliers	187428	6854 (2.30-2.30)
RSRZ outliers	180081	6325 (2.30-2.30)

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 of the lower bar indicate the fraction of residues that contain outliers for  $\geq 3$ , 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	276	<div><div>24%</div><div>86%</div><div>12%</div><div>.</div></div>
1	F	276	<div><div>34%</div><div>73%</div><div>23%</div><div>..</div></div>
2	B	100	<div><div>7%</div><div>79%</div><div>18%</div><div>.</div></div>
2	G	100	<div><div>6%</div><div>79%</div><div>17%</div><div>.</div></div>
3	C	9	<div><div>89%</div><div>11%</div></div>

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Mol	Chain	Length	Quality of chain
3	H	9	<div><div></div><div>89%11%</div></div>
4	D	201	<div><div>8%</div><div>83%14%..</div></div>
4	I	201	<div><div>35%</div><div>73%24%..</div></div>
5	E	244	<div><div>3%</div><div>86%11%... </div></div>
5	J	244	<div><div>7%</div><div>80%15%.. </div></div>

## 2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 13819 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 HLA CLASS I HISTOCOMPATIBILITY ANTIGEN, A-2 ALPHA CHAIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	276	Total	C	N	O	S	1	0	0
			2253	1408	410	426	9			
1	F	276	Total	C	N	O	S	1	0	0
			2253	1408	410	426	9			

- Molecule 2 is a protein called BETA-2-MICROGLOBULIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	100	Total	C	N	O	S	0	0	0
			836	533	141	158	4			
2	G	100	Total	C	N	O	S	0	0	0
			836	533	141	158	4			

- Molecule 3 is a protein called FLU MATRIX PEPTIDE.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
3	C	9	Total	C	N	O	0	0	0
			68	49	9	10			
3	H	9	Total	C	N	O	0	0	0
			68	49	9	10			

- Molecule 4 is a protein called JM22 TCR ALPHA CHAIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	D	199	Total	C	N	O	S	0	0	0
			1530	959	255	310	6			
4	I	199	Total	C	N	O	S	0	0	0
			1530	959	255	310	6			

- Molecule 5 is a protein called JM22 TCR BETA CHAIN.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	E	240	Total 1931	C 1218	N 334	O 374	S 5	0	0	0
5	J	240	Total 1931	C 1218	N 334	O 374	S 5	0	0	0

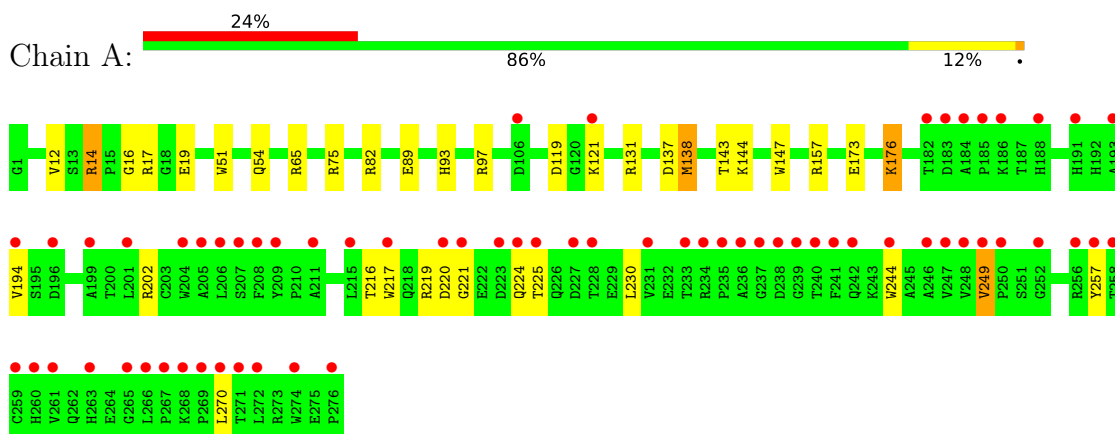
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	90	Total 90	O 90	0	0
6	B	36	Total 36	O 36	0	0
6	C	6	Total 6	O 6	0	0
6	D	75	Total 75	O 75	0	0
6	E	99	Total 99	O 99	0	0
6	F	79	Total 79	O 79	0	0
6	G	36	Total 36	O 36	0	0
6	H	5	Total 5	O 5	0	0
6	I	70	Total 70	O 70	0	0
6	J	87	Total 87	O 87	0	0

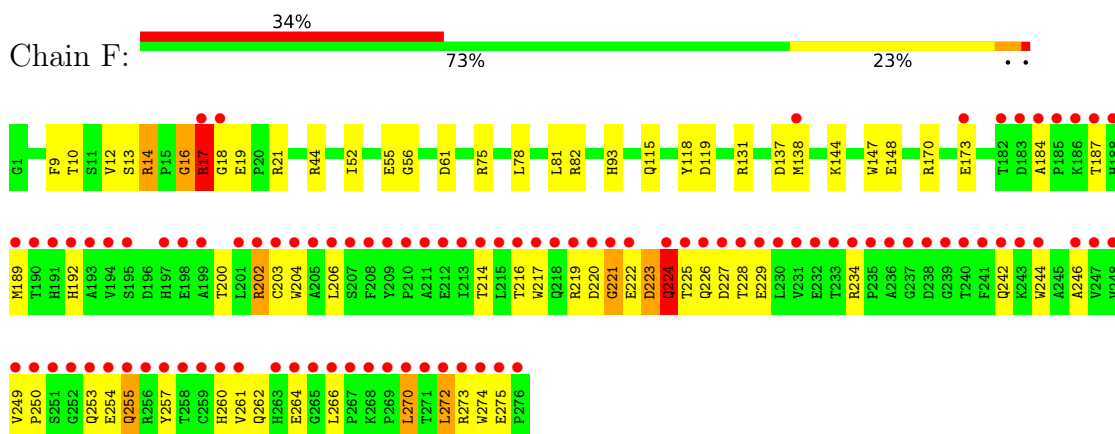
### 3 Residue-property plots

These plots are drawn for all protein, RNA, DNA and oligosaccharide 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.

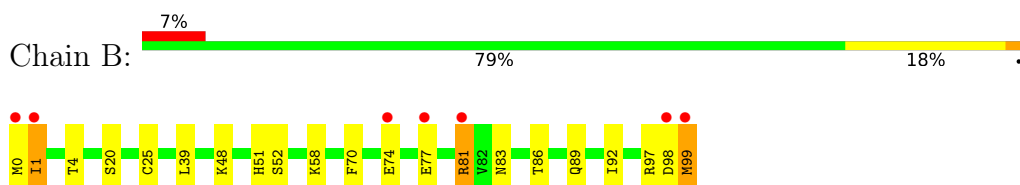
- Molecule 1: HLA CLASS I HISTOCOMPATIBILITY ANTIGEN, A-2 ALPHA CHAIN



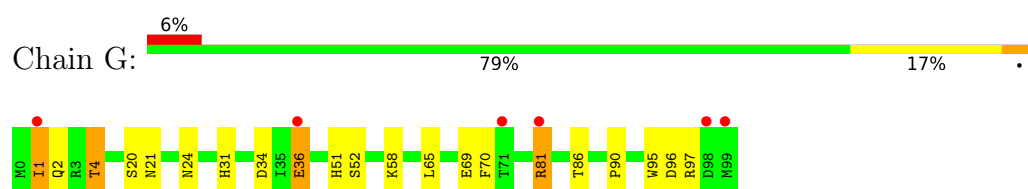
- Molecule 1: HLA CLASS I HISTOCOMPATIBILITY ANTIGEN, A-2 ALPHA CHAIN



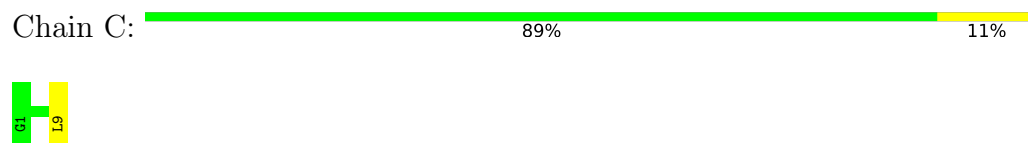
- Molecule 2: BETA-2-MICROGLOBULIN



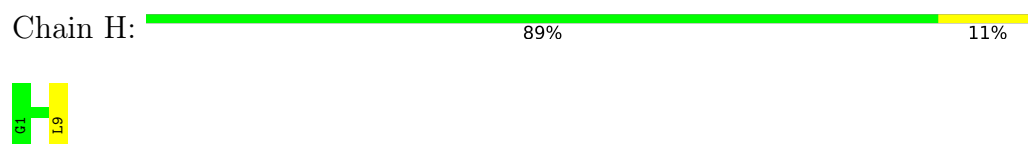
- Molecule 2: BETA-2-MICROGLOBULIN



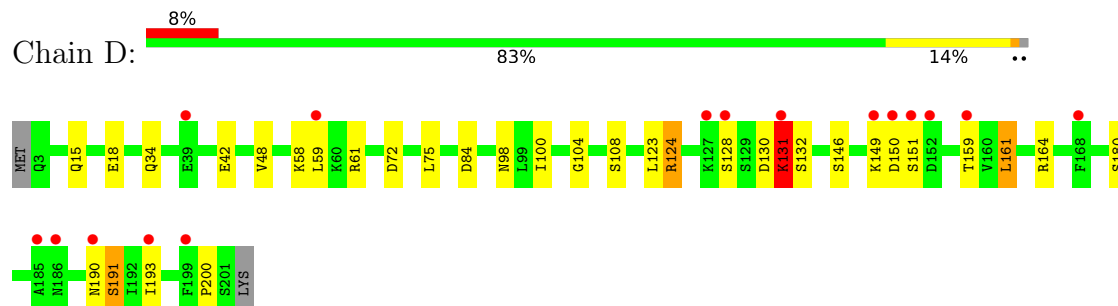
- Molecule 3: FLU MATRIX PEPTIDE



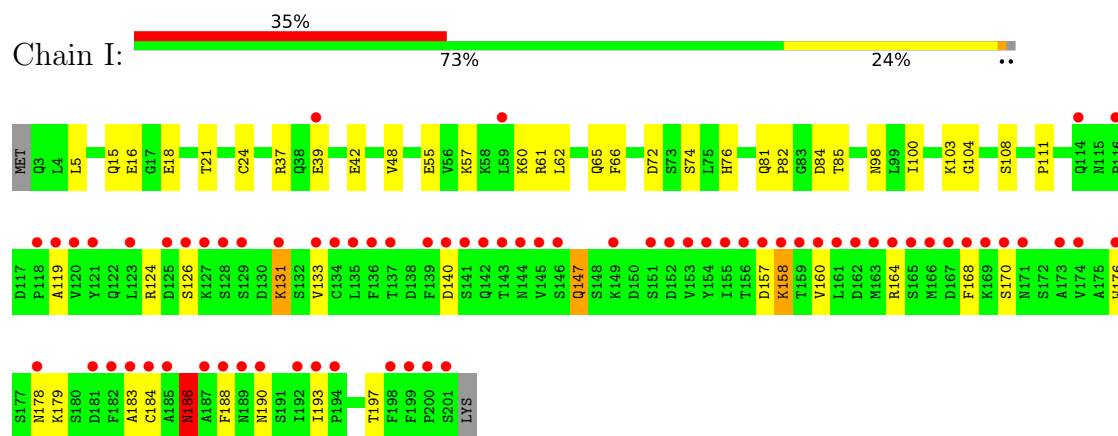
- Molecule 3: FLU MATRIX PEPTIDE



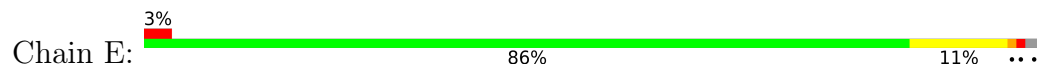
- Molecule 4: JM22 TCR ALPHA CHAIN

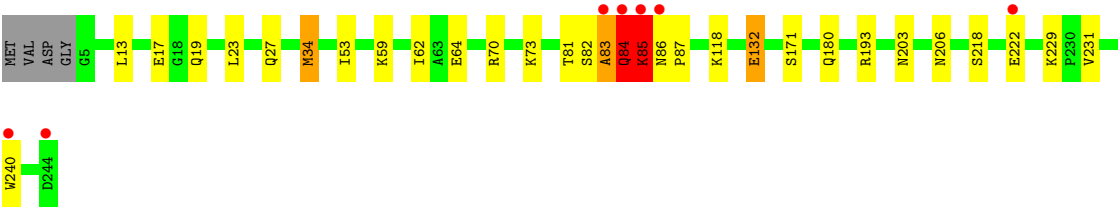


- Molecule 4: JM22 TCR ALPHA CHAIN

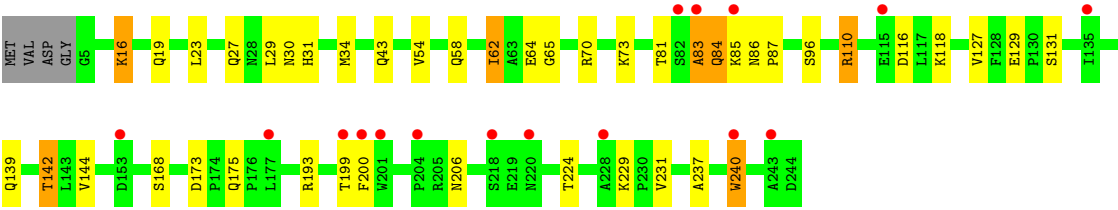
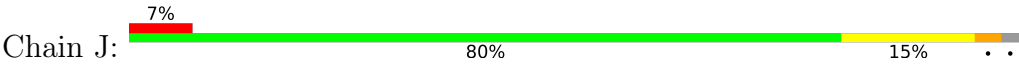


- Molecule 5: JM22 TCR BETA CHAIN





● Molecule 5: JM22 TCR BETA CHAIN





## 4 Data and refinement statistics

Property	Value	Source
Space group	P 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	48.62Å 95.52Å 122.05Å 110.29° 98.64° 93.59°	Depositor
Resolution (Å)	112.51 – 2.30 112.51 – 2.30	Depositor EDS
% Data completeness (in resolution range)	97.5 (112.51-2.30) 97.3 (112.51-2.30)	Depositor EDS
$R_{merge}$	0.10	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	1.94 (at 2.31Å)	Xtriage
Refinement program	REFMAC 5.2.0019	Depositor
R, $R_{free}$	0.219 , 0.281 (Not available) , 0.307	Depositor DCC
$R_{free}$ test set	4402 reflections (4.99%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	39.4	Xtriage
Anisotropy	0.359	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 55.5	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtriage
Estimated twinning fraction	0.001 for -h,-k,h+k+l	Xtriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	13819	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	41.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.72% 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, 0.333 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	2.97	4/2319 (0.2%)	1.45	10/3149 (0.3%)
1	F	5.22	7/2319 (0.3%)	1.49	12/3149 (0.4%)
2	B	1.00	0/859	1.00	0/1162
2	G	0.89	0/859	0.91	0/1162
3	C	1.54	0/69	1.21	0/92
3	H	1.36	0/69	1.08	0/92
4	D	1.19	3/1560 (0.2%)	1.07	2/2113 (0.1%)
4	I	1.11	3/1560 (0.2%)	0.99	1/2113 (0.0%)
5	E	1.20	3/1984 (0.2%)	1.09	4/2699 (0.1%)
5	J	1.03	2/1984 (0.1%)	1.00	0/2699
All	All	2.64	22/13582 (0.2%)	1.20	29/18430 (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	F	0	1
5	J	0	1
All	All	0	2

All (22) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	F	224	GLN	CA-CB	241.65	5.61	1.53
1	A	224	GLN	CA-CB	128.87	4.14	1.53
1	F	224	GLN	CB-CG	41.46	2.76	1.52
1	A	224	GLN	CB-CG	-35.52	0.46	1.52
1	F	224	GLN	CD-OE1	15.14	1.52	1.23
4	I	158	LYS	CE-NZ	10.86	1.81	1.49
4	D	100	ILE	CA-CB	7.89	1.63	1.54
5	J	54	VAL	CA-CB	6.71	1.61	1.54

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
5	E	34	MET	SD-CE	-6.52	1.63	1.79
1	F	224	GLN	CD-NE2	6.47	1.46	1.33
4	I	100	ILE	CA-CB	6.36	1.61	1.54
5	E	53	ILE	CA-CB	6.27	1.62	1.54
5	J	62	ILE	CA-CB	6.22	1.62	1.54
5	E	62	ILE	CA-CB	6.10	1.62	1.54
4	D	48	VAL	CA-CB	5.58	1.61	1.55
1	A	97	ARG	CA-C	5.50	1.59	1.52
1	F	52	ILE	CA-CB	5.50	1.60	1.54
1	A	14	ARG	N-CA	5.47	1.50	1.45
4	I	74	SER	CA-C	5.47	1.59	1.52
1	F	9	PHE	N-CA	5.33	1.52	1.46
1	F	10	THR	CA-C	5.09	1.58	1.52
4	D	34	GLN	N-CA	5.01	1.51	1.45

All (29) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	F	224	GLN	N-CA-CB	-48.73	28.13	110.49
1	A	224	GLN	CA-CB-CG	-47.81	18.49	114.10
1	A	224	GLN	N-CA-CB	-21.25	73.09	111.13
1	F	224	GLN	CB-CA-C	-13.06	84.42	110.42
1	A	224	GLN	CB-CA-C	-11.56	85.92	109.38
1	F	224	GLN	CA-CB-CG	11.43	136.95	114.10
1	F	18	GLY	N-CA-C	-9.88	96.13	111.64
5	E	84	GLN	N-CA-C	-7.05	100.36	110.59
5	E	85	LYS	N-CA-C	-6.79	101.25	110.68
1	F	56	GLY	CA-C-N	6.58	126.52	119.28
1	F	56	GLY	C-N-CA	6.58	126.52	119.28
1	A	19	GLU	CA-C-N	6.53	127.06	120.14
1	A	19	GLU	C-N-CA	6.53	127.06	120.14
1	F	254	GLU	N-CA-C	6.52	118.05	111.07
4	D	104	GLY	N-CA-C	6.18	118.34	112.04
1	A	16	GLY	CA-C-N	6.10	132.68	121.70
1	A	16	GLY	C-N-CA	6.10	132.68	121.70
4	D	161	LEU	CA-CB-CG	6.04	137.42	116.30
1	A	144	LYS	N-CA-C	5.89	118.18	111.11
1	F	16	GLY	N-CA-C	5.87	127.09	113.18
1	F	137	ASP	N-CA-C	5.38	115.33	108.24
1	F	224	GLN	CG-CD-OE1	5.31	131.41	120.80
1	F	244	TRP	N-CA-C	5.30	117.24	109.24
5	E	180	GLN	CA-C-N	5.30	125.61	119.47

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	E	180	GLN	C-N-CA	5.30	125.61	119.47
4	I	104	GLY	N-CA-C	5.20	116.89	111.95
1	A	137	ASP	N-CA-C	5.08	114.53	107.73
1	F	12	VAL	N-CA-C	5.07	115.20	108.11
1	A	12	VAL	N-CA-C	5.04	115.17	108.11

There are no chirality outliers.

All (2) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	F	17	ARG	Peptide
5	J	84	GLN	Peptide

## 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	2253	0	2103	17	1
1	F	2253	0	2103	38	2
2	B	836	0	803	14	2
2	G	836	0	803	14	1
3	C	68	0	75	2	0
3	H	68	0	75	1	0
4	D	1530	0	1480	16	0
4	I	1530	0	1480	27	0
5	E	1931	0	1829	25	0
5	J	1931	0	1829	33	0
6	A	90	0	0	7	0
6	B	36	0	0	2	0
6	C	6	0	0	0	0
6	D	75	0	0	1	0
6	E	99	0	0	6	0
6	F	79	0	0	9	0
6	G	36	0	0	2	0
6	H	5	0	0	0	0
6	I	70	0	0	7	0
6	J	87	0	0	8	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
All	All	13819	0	12580	181	3

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 7.

All (181) 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)
4:I:158:LYS:CE	4:I:158:LYS:NZ	1.81	1.41
2:G:81:ARG:HH11	2:G:81:ARG:HG2	0.94	1.09
1:A:17:ARG:NH1	6:A:2007:HOH:O	1.91	1.02
5:E:81:THR:O	5:E:83:ALA:N	1.96	0.98
2:G:81:ARG:HG2	2:G:81:ARG:NH1	1.73	0.95
5:E:86:ASN:HB3	6:E:2053:HOH:O	1.66	0.94
1:F:266:LEU:HD22	1:F:270:LEU:HD23	1.56	0.88
4:D:61:ARG:NH1	4:D:84:ASP:OD2	2.07	0.87
4:I:119:ALA:HB1	6:I:2052:HOH:O	1.74	0.86
5:E:84:GLN:NE2	5:E:85:LYS:H	1.73	0.86
5:J:84:GLN:O	5:J:86:ASN:N	2.07	0.85
1:A:17:ARG:NH2	6:A:2007:HOH:O	2.08	0.84
5:J:34:MET:HE3	5:J:70:ARG:NE	1.92	0.84
2:B:81:ARG:HH11	2:B:81:ARG:HG2	1.42	0.83
2:G:81:ARG:NH1	2:G:90:PRO:HB3	1.92	0.83
4:D:124:ARG:HH11	4:D:124:ARG:CG	1.93	0.82
5:E:84:GLN:HE21	5:E:85:LYS:H	1.27	0.81
1:F:216:THR:HA	6:F:2063:HOH:O	1.84	0.78
5:J:65:GLY:HA3	5:J:83:ALA:HA	1.63	0.78
2:G:81:ARG:HH11	2:G:81:ARG:CG	1.87	0.77
1:F:17:ARG:HB3	6:F:2005:HOH:O	1.84	0.76
2:B:4:THR:HG22	2:B:86:THR:OG1	1.86	0.76
1:F:217:TRP:HB2	6:F:2066:HOH:O	1.85	0.76
4:D:124:ARG:HH11	4:D:124:ARG:HG3	1.52	0.74
5:J:116:ASP:OD1	5:J:118:LYS:HG2	1.87	0.74
1:A:17:ARG:CZ	6:A:2007:HOH:O	2.25	0.74
5:E:86:ASN:OD1	6:E:2054:HOH:O	2.07	0.72
1:F:202:ARG:NH1	1:F:246:ALA:HB2	2.06	0.70
4:D:124:ARG:HD3	4:D:124:ARG:H	1.56	0.70
4:I:61:ARG:NH1	4:I:84:ASP:OD2	2.24	0.69
5:E:132:GLU:H	5:E:132:GLU:CD	2.01	0.69
4:I:103:LYS:HE3	6:J:2026:HOH:O	1.92	0.68
2:B:98:ASP:HB2	6:B:2036:HOH:O	1.93	0.68

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:61:ARG:HH12	4:D:84:ASP:CG	2.01	0.68
5:J:142:THR:HG22	6:J:2065:HOH:O	1.93	0.67
2:G:2:GLN:HG2	6:G:2001:HOH:O	1.95	0.67
2:G:81:ARG:HH12	2:G:90:PRO:HB3	1.57	0.67
5:J:84:GLN:C	5:J:86:ASN:H	2.00	0.67
5:E:84:GLN:HE21	5:E:85:LYS:N	1.93	0.66
4:D:146:SER:H	4:D:191:SER:HB3	1.60	0.66
5:J:16:LYS:H	5:J:19:GLN:HE21	1.40	0.66
4:I:140:ASP:HA	6:I:2055:HOH:O	1.95	0.65
1:F:187:THR:OG1	1:F:272:LEU:HD13	1.97	0.63
5:E:81:THR:C	5:E:83:ALA:N	2.56	0.63
1:F:228:THR:HA	1:F:246:ALA:O	1.99	0.63
4:I:111:PRO:HG3	4:I:160:VAL:HG11	1.80	0.62
5:J:34:MET:HE2	5:J:73:LYS:O	2.00	0.61
5:J:34:MET:CE	5:J:70:ARG:NE	2.64	0.61
4:I:61:ARG:HH12	4:I:84:ASP:CG	2.09	0.60
4:D:58:LYS:O	4:D:59:LEU:HD13	2.01	0.60
5:J:58:GLN:HG2	6:J:2028:HOH:O	2.01	0.60
5:E:34:MET:HE3	5:E:70:ARG:NE	2.17	0.60
5:J:173:ASP:OD1	5:J:193:ARG:NH2	2.35	0.60
2:B:51:HIS:HD2	2:B:52:SER:O	1.86	0.59
4:D:15:GLN:O	4:D:18:GLU:HG3	2.02	0.59
4:I:131:LYS:HG3	6:I:2065:HOH:O	2.02	0.59
1:F:234:ARG:HE	1:F:242:GLN:HE21	1.48	0.59
1:A:93:HIS:HD2	1:A:119:ASP:OD2	1.84	0.59
4:D:131:LYS:HA	6:D:2059:HOH:O	2.02	0.59
5:J:34:MET:HE3	5:J:70:ARG:HE	1.67	0.59
2:B:74:GLU:HB2	6:B:2029:HOH:O	2.03	0.58
5:J:34:MET:CE	5:J:70:ARG:HE	2.17	0.58
5:E:19:GLN:NE2	6:E:2008:HOH:O	2.36	0.58
2:B:1:ILE:CG2	2:B:1:ILE:O	2.51	0.58
4:I:158:LYS:NZ	4:I:158:LYS:CD	2.65	0.57
1:F:184:ALA:O	6:F:2052:HOH:O	2.17	0.57
5:J:34:MET:HE2	5:J:70:ARG:HH21	1.70	0.56
1:F:229:GLU:HA	6:F:2068:HOH:O	2.04	0.56
4:I:81:GLN:HB3	4:I:82:PRO:HD2	1.87	0.56
1:A:65:ARG:NH1	6:A:2027:HOH:O	2.37	0.56
5:J:34:MET:HE2	5:J:70:ARG:NH2	2.21	0.56
1:F:234:ARG:HE	1:F:242:GLN:NE2	2.02	0.56
5:J:229:LYS:HG3	5:J:231:VAL:HG13	1.87	0.56
1:A:75:ARG:HD2	6:A:2010:HOH:O	2.06	0.55

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:I:183:ALA:O	4:I:186:ASN:ND2	2.39	0.55
1:F:14:ARG:NE	1:F:19:GLU:O	2.39	0.55
1:F:214:THR:HB	1:F:262:GLN:HB2	1.88	0.55
1:F:223:ASP:HA	1:F:224:GLN:HE21	1.72	0.55
4:I:15:GLN:O	4:I:18:GLU:HG3	2.06	0.55
4:D:124:ARG:H	4:D:124:ARG:CD	2.20	0.55
5:E:132:GLU:CD	5:E:132:GLU:N	2.64	0.55
4:I:147:GLN:HE21	4:I:147:GLN:H	1.55	0.55
4:I:37:ARG:NH1	4:I:85:THR:O	2.40	0.54
2:B:81:ARG:HH11	2:B:81:ARG:CG	2.13	0.54
1:A:131:ARG:HE	1:A:157:ARG:NH1	2.05	0.54
4:I:119:ALA:CB	6:I:2052:HOH:O	2.43	0.53
5:J:86:ASN:N	5:J:87:PRO:CD	2.72	0.53
1:F:249:VAL:HB	1:F:250:PRO:HD2	1.91	0.53
5:E:229:LYS:HG3	5:E:231:VAL:HG13	1.91	0.52
1:F:260:HIS:HB2	6:F:2062:HOH:O	2.09	0.52
1:F:202:ARG:HD2	1:F:204:TRP:CD1	2.45	0.52
1:F:147:TRP:CZ2	3:H:9:LEU:HD23	2.45	0.52
1:F:93:HIS:HD2	1:F:119:ASP:OD2	1.92	0.52
5:J:34:MET:CE	5:J:73:LYS:O	2.59	0.51
1:F:192:HIS:O	1:F:200:THR:HB	2.11	0.51
4:I:55:GLU:OE1	4:I:57:LYS:HE3	2.10	0.51
4:D:123:LEU:O	4:D:132:SER:HB2	2.11	0.51
5:E:118:LYS:NZ	6:E:2068:HOH:O	2.45	0.50
5:J:86:ASN:N	5:J:87:PRO:HD2	2.26	0.50
1:A:147:TRP:CZ2	3:C:9:LEU:HD23	2.46	0.50
6:A:2083:HOH:O	2:B:99:MET:HG2	2.10	0.50
2:G:51:HIS:HD2	2:G:52:SER:O	1.95	0.50
4:I:164:ARG:HG2	5:J:168:SER:HB2	1.93	0.49
2:B:25:CYS:HB2	2:B:39:LEU:HD21	1.94	0.49
1:F:13:SER:HB3	1:F:78:LEU:HD13	1.93	0.49
4:D:124:ARG:HH11	4:D:124:ARG:HG2	1.75	0.49
4:I:126:SER:HB3	5:J:129:GLU:HG3	1.95	0.48
1:F:257:TYR:HB2	6:F:2074:HOH:O	2.12	0.48
2:G:31:HIS:ND1	6:G:2011:HOH:O	2.32	0.48
5:J:200:PHE:O	5:J:206:ASN:ND2	2.33	0.48
1:F:202:ARG:HH11	1:F:246:ALA:HB2	1.78	0.48
5:J:64:GLU:OE1	6:J:2039:HOH:O	2.20	0.47
2:B:1:ILE:O	2:B:1:ILE:HG22	2.14	0.47
5:E:84:GLN:HG3	5:E:85:LYS:N	2.28	0.47
1:A:121:LYS:HE3	1:A:121:LYS:HB2	1.65	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
4:D:159:THR:HB	5:E:171:SER:OG	2.14	0.47
2:B:4:THR:CG2	2:B:86:THR:OG1	2.61	0.47
4:I:147:GLN:H	4:I:147:GLN:NE2	2.12	0.47
1:A:202:ARG:HD3	1:A:244:TRP:CE3	2.50	0.47
5:E:84:GLN:HE21	5:E:84:GLN:HA	1.80	0.47
1:F:44:ARG:NH2	1:F:61:ASP:OD1	2.48	0.47
1:A:173:GLU:OE1	1:A:176:LYS:NZ	2.47	0.47
5:E:84:GLN:HE21	5:E:84:GLN:CA	2.28	0.47
4:I:168:PHE:HD2	6:I:2063:HOH:O	1.98	0.47
5:E:84:GLN:CG	5:E:85:LYS:N	2.78	0.46
5:E:34:MET:HE2	5:E:70:ARG:NH2	2.30	0.46
1:F:203:CYS:HA	6:F:2054:HOH:O	2.14	0.46
2:G:24:ASN:HB3	2:G:65:LEU:HD11	1.98	0.46
4:I:81:GLN:HB3	4:I:82:PRO:CD	2.46	0.46
5:J:139:GLN:HB2	6:J:2064:HOH:O	2.15	0.46
1:A:219:ARG:O	1:A:221:GLY:N	2.49	0.45
4:I:133:VAL:HG12	4:I:176:TRP:HB3	1.98	0.45
1:A:51:TRP:O	1:A:54:GLN:HG2	2.16	0.45
4:I:157:ASP:HB3	6:I:2060:HOH:O	2.15	0.45
1:F:144:LYS:O	1:F:148:GLU:HG3	2.17	0.45
5:J:240:TRP:NE1	6:J:2087:HOH:O	2.40	0.45
2:B:81:ARG:HG2	2:B:81:ARG:NH1	2.20	0.45
5:E:86:ASN:N	5:E:87:PRO:HD3	2.31	0.45
5:J:110:ARG:HD3	6:J:2061:HOH:O	2.17	0.45
4:D:124:ARG:HG3	4:D:124:ARG:NH1	2.24	0.44
2:B:81:ARG:CG	2:B:81:ARG:NH1	2.75	0.44
4:D:159:THR:HG23	6:E:2083:HOH:O	2.17	0.44
1:F:249:VAL:HB	1:F:250:PRO:CD	2.46	0.44
5:J:16:LYS:HB3	5:J:16:LYS:NZ	2.33	0.44
2:B:99:MET:HE2	2:B:99:MET:HB3	1.66	0.44
1:F:81:LEU:HD13	1:F:118:TYR:CD1	2.53	0.44
2:G:4:THR:HG23	2:G:86:THR:OG1	2.17	0.44
5:J:16:LYS:H	5:J:19:GLN:NE2	2.11	0.43
5:J:29:LEU:O	5:J:30:ASN:CB	2.66	0.43
2:G:1:ILE:O	2:G:1:ILE:CG2	2.67	0.43
1:F:274:TRP:CG	1:F:275:GLU:N	2.87	0.43
4:D:130:ASP:OD1	4:D:131:LYS:N	2.43	0.43
1:F:14:ARG:NH1	1:F:21:ARG:HB2	2.34	0.42
4:I:16:GLU:HG2	6:I:2008:HOH:O	2.18	0.42
5:E:34:MET:CE	5:E:73:LYS:O	2.66	0.42
2:G:4:THR:CG2	2:G:86:THR:OG1	2.66	0.42

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:J:31:HIS:HB3	5:J:96:SER:O	2.19	0.42
5:E:203:ASN:HB3	5:E:206:ASN:ND2	2.34	0.42
1:F:202:ARG:HH11	1:F:202:ARG:HB2	1.83	0.42
4:I:5:LEU:HD22	4:I:24:CYS:SG	2.60	0.42
5:J:127:VAL:HG23	5:J:237:ALA:HB3	2.01	0.42
5:J:144:VAL:CG2	6:J:2065:HOH:O	2.67	0.41
1:F:202:ARG:NH1	1:F:202:ARG:HB2	2.36	0.41
5:E:34:MET:HE3	5:E:70:ARG:CZ	2.50	0.41
1:A:249:VAL:HG22	6:A:2077:HOH:O	2.20	0.41
2:G:21:ASN:O	2:G:69:GLU:HG3	2.20	0.41
1:A:217:TRP:CZ3	1:A:257:TYR:HB3	2.56	0.41
1:F:131:ARG:HB2	1:F:131:ARG:CZ	2.51	0.41
1:A:176:LYS:NZ	1:A:176:LYS:HB3	2.36	0.41
1:F:55:GLU:CD	1:F:170:ARG:HH21	2.29	0.41
4:I:188:PHE:C	4:I:190:ASN:H	2.28	0.41
1:A:143:THR:HG21	3:C:9:LEU:HD22	2.03	0.40
1:F:219:ARG:O	1:F:221:GLY:N	2.55	0.40
1:F:255:GLN:H	1:F:255:GLN:HG3	1.65	0.40
2:G:95:TRP:CD1	2:G:96:ASP:H	2.39	0.40
5:E:34:MET:HE2	5:E:73:LYS:O	2.21	0.40
1:F:189:MET:HA	6:F:2058:HOH:O	2.20	0.40
1:F:206:LEU:HD23	1:F:242:GLN:HB3	2.03	0.40
5:J:34:MET:HE3	5:J:70:ARG:CZ	2.50	0.40
5:E:240:TRP:CD1	6:E:2098:HOH:O	2.75	0.40
4:I:21:THR:OG1	4:I:76:HIS:HD2	2.05	0.40

All (3) symmetry-related close contacts are listed below. The label for Atom-2 includes the symmetry operator and encoded unit-cell translations to be applied.

Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:138:MET:SD	2:G:36:GLU:OE2[1_544]	1.67	0.53
2:B:81:ARG:NH2	1:F:138:MET:SD[1_444]	2.05	0.15
2:B:81:ARG:CZ	1:F:138:MET:SD[1_444]	2.06	0.14

## 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	274/276 (99%)	258 (94%)	15 (6%)	1 (0%)	30	38
1	F	274/276 (99%)	252 (92%)	15 (6%)	7 (3%)	4	3
2	B	98/100 (98%)	91 (93%)	7 (7%)	0	100	100
2	G	98/100 (98%)	95 (97%)	2 (2%)	1 (1%)	12	15
3	C	7/9 (78%)	6 (86%)	1 (14%)	0	100	100
3	H	7/9 (78%)	6 (86%)	1 (14%)	0	100	100
4	D	197/201 (98%)	190 (96%)	5 (2%)	2 (1%)	12	15
4	I	197/201 (98%)	177 (90%)	17 (9%)	3 (2%)	8	8
5	E	238/244 (98%)	229 (96%)	7 (3%)	2 (1%)	16	20
5	J	238/244 (98%)	222 (93%)	14 (6%)	2 (1%)	16	20
All	All	1628/1660 (98%)	1526 (94%)	84 (5%)	18 (1%)	11	13

All (18) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
5	E	82	SER
5	E	83	ALA
1	F	224	GLN
5	J	83	ALA
5	J	85	LYS
4	D	131	LYS
1	F	16	GLY
1	F	220	ASP
1	F	222	GLU
1	F	226	GLN
1	A	220	ASP
4	I	186	ASN
1	F	223	ASP
2	G	97	ARG
4	I	131	LYS
4	I	184	CYS
4	D	200	PRO
1	F	221	GLY

### 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	232/232 (100%)	221 (95%)	11 (5%)	23	35
1	F	232/232 (100%)	215 (93%)	17 (7%)	13	18
2	B	95/95 (100%)	82 (86%)	13 (14%)	3	4
2	G	95/95 (100%)	87 (92%)	8 (8%)	10	14
3	C	7/7 (100%)	7 (100%)	0	100	100
3	H	7/7 (100%)	7 (100%)	0	100	100
4	D	175/177 (99%)	158 (90%)	17 (10%)	8	10
4	I	175/177 (99%)	157 (90%)	18 (10%)	7	8
5	E	211/214 (99%)	199 (94%)	12 (6%)	18	27
5	J	211/214 (99%)	198 (94%)	13 (6%)	16	24
All	All	1440/1450 (99%)	1331 (92%)	109 (8%)	12	16

All (109) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	14	ARG
1	A	82	ARG
1	A	89	GLU
1	A	138	MET
1	A	176	LYS
1	A	194	VAL
1	A	216	THR
1	A	225	THR
1	A	230	LEU
1	A	249	VAL
1	A	270	LEU
2	B	0	MET
2	B	1	ILE
2	B	20	SER
2	B	48	LYS
2	B	58	LYS

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Mol	Chain	Res	Type
2	B	70	PHE
2	B	77	GLU
2	B	81	ARG
2	B	83	ASN
2	B	89	GLN
2	B	92	ILE
2	B	97	ARG
2	B	99	MET
4	D	42	GLU
4	D	72	ASP
4	D	75	LEU
4	D	98	ASN
4	D	108	SER
4	D	124	ARG
4	D	128	SER
4	D	131	LYS
4	D	149	LYS
4	D	150	ASP
4	D	151	SER
4	D	161	LEU
4	D	164	ARG
4	D	180	SER
4	D	190	ASN
4	D	191	SER
4	D	193	ILE
5	E	13	LEU
5	E	17	GLU
5	E	23	LEU
5	E	27	GLN
5	E	59	LYS
5	E	64	GLU
5	E	84	GLN
5	E	85	LYS
5	E	132	GLU
5	E	193	ARG
5	E	218	SER
5	E	222	GLU
1	F	14	ARG
1	F	17	ARG
1	F	75	ARG
1	F	82	ARG
1	F	115	GLN

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Mol	Chain	Res	Type
1	F	173	GLU
1	F	202	ARG
1	F	224	GLN
1	F	225	THR
1	F	227	ASP
1	F	253	GLN
1	F	255	GLN
1	F	261	VAL
1	F	264	GLU
1	F	270	LEU
1	F	272	LEU
1	F	273	ARG
2	G	1	ILE
2	G	4	THR
2	G	20	SER
2	G	34	ASP
2	G	36	GLU
2	G	58	LYS
2	G	70	PHE
2	G	81	ARG
4	I	39	GLU
4	I	42	GLU
4	I	48	VAL
4	I	60	LYS
4	I	62	LEU
4	I	65	GLN
4	I	66	PHE
4	I	72	ASP
4	I	98	ASN
4	I	108	SER
4	I	124	ARG
4	I	147	GLN
4	I	170	SER
4	I	178	ASN
4	I	179	LYS
4	I	186	ASN
4	I	193	ILE
4	I	197	THR
5	J	16	LYS
5	J	23	LEU
5	J	27	GLN
5	J	43	GLN

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Mol	Chain	Res	Type
5	J	62	ILE
5	J	81	THR
5	J	110	ARG
5	J	131	SER
5	J	142	THR
5	J	175	GLN
5	J	199	THR
5	J	224	THR
5	J	240	TRP

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (34) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	93	HIS
1	A	242	GLN
2	B	51	HIS
2	B	83	ASN
4	D	15	GLN
4	D	76	HIS
4	D	98	ASN
4	D	112	ASN
4	D	114	GLN
5	E	8	GLN
5	E	27	GLN
5	E	43	GLN
5	E	84	GLN
5	E	175	GLN
1	F	3	HIS
1	F	54	GLN
1	F	72	GLN
1	F	93	HIS
1	F	115	GLN
1	F	224	GLN
1	F	242	GLN
1	F	253	GLN
1	F	255	GLN
1	F	262	GLN
2	G	51	HIS
4	I	25	ASN
4	I	76	HIS
4	I	98	ASN
4	I	142	GLN

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Mol	Chain	Res	Type
4	I	147	GLN
4	I	186	ASN
5	J	19	GLN
5	J	27	GLN
5	J	225	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 oligosaccharides 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	276/276 (100%)	0.97	65 (23%) <b>2</b> <b>2</b>	22, 35, 76, 95	1 (0%)
1	F	276/276 (100%)	1.57	94 (34%) <b>1</b> <b>1</b>	21, 38, 81, 94	1 (0%)
2	B	100/100 (100%)	0.82	7 (7%) 22 24	26, 40, 52, 65	0
2	G	100/100 (100%)	0.81	6 (6%) 27 29	26, 40, 54, 64	0
3	C	9/9 (100%)	0.05	0 <b>100</b> <b>100</b>	21, 22, 23, 23	0
3	H	9/9 (100%)	0.06	0 <b>100</b> <b>100</b>	17, 22, 24, 24	0
4	D	199/201 (99%)	0.58	16 (8%) 18 20	18, 34, 57, 65	0
4	I	199/201 (99%)	1.21	70 (35%) <b>1</b> <b>1</b>	19, 36, 82, 84	0
5	E	240/244 (98%)	0.28	7 (2%) 53 56	20, 34, 51, 62	0
5	J	240/244 (98%)	0.62	16 (6%) 24 26	20, 42, 60, 67	0
All	All	1648/1660 (99%)	0.87	281 (17%) <b>4</b> <b>5</b>	17, 37, 77, 95	2 (0%)

All (281) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	F	237	GLY	8.9
1	F	209	TYR	7.5
1	F	235	PRO	7.3
1	F	241	PHE	7.1
1	F	276	PRO	7.1
1	F	211	ALA	7.0
1	F	249	VAL	6.7
1	F	248	VAL	6.3
1	F	239	GLY	5.8
1	F	184	ALA	5.6
1	F	236	ALA	5.5
1	F	190	THR	5.5
1	A	237	GLY	5.4

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Mol	Chain	Res	Type	RSRZ
1	F	250	PRO	5.4
1	F	217	TRP	5.4
1	F	206	LEU	5.3
1	F	272	LEU	5.3
4	I	192	ILE	5.2
1	F	240	THR	5.1
1	F	273	ARG	5.0
1	F	207	SER	5.0
1	A	194	VAL	5.0
1	F	232	GLU	4.9
1	A	239	GLY	4.9
1	F	271	THR	4.9
1	A	276	PRO	4.9
1	F	230	LEU	4.8
1	F	233	THR	4.8
1	F	258	THR	4.8
1	A	272	LEU	4.8
1	A	236	ALA	4.7
1	F	274	TRP	4.7
1	F	183	ASP	4.7
1	F	238	ASP	4.7
1	F	204	TRP	4.6
1	F	213	ILE	4.6
1	F	208	PHE	4.6
1	F	269	PRO	4.5
4	I	126	SER	4.5
1	F	266	LEU	4.4
1	F	265	GLY	4.4
1	F	210	PRO	4.3
1	F	242	GLN	4.3
1	F	268	LYS	4.3
1	F	228	THR	4.3
4	I	119	ALA	4.2
1	F	270	LEU	4.2
4	I	159	THR	4.2
1	F	186	LYS	4.2
1	F	234	ARG	4.1
1	F	246	ALA	4.1
1	F	264	GLU	4.1
1	F	187	THR	4.0
1	F	254	GLU	4.0
1	F	231	VAL	4.0

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Mol	Chain	Res	Type	RSRZ
1	F	182	THR	4.0
1	A	274	TRP	3.9
1	F	259	CYS	3.9
1	F	244	TRP	3.9
1	F	256	ARG	3.8
1	A	207	SER	3.8
1	A	235	PRO	3.8
1	F	201	LEU	3.8
1	F	261	VAL	3.8
1	F	247	VAL	3.7
4	I	198	PHE	3.7
4	I	161	LEU	3.7
4	I	160	VAL	3.7
4	I	136	PHE	3.7
1	A	270	LEU	3.7
1	F	185	PRO	3.7
1	A	221	GLY	3.6
4	I	135	LEU	3.6
5	E	240	TRP	3.6
1	F	205	ALA	3.6
1	F	212	GLU	3.6
1	F	220	ASP	3.6
1	A	269	PRO	3.6
1	F	194	VAL	3.5
4	I	133	VAL	3.5
4	I	158	LYS	3.5
1	A	266	LEU	3.5
4	I	168	PHE	3.5
1	A	271	THR	3.5
2	G	81	ARG	3.5
4	I	120	VAL	3.5
4	I	118	PRO	3.4
2	B	99	MET	3.4
1	F	263	HIS	3.4
1	A	257	TYR	3.4
1	F	215	LEU	3.4
1	F	257	TYR	3.4
4	I	116	PRO	3.4
1	F	189	MET	3.4
4	I	141	SER	3.4
4	I	134	CYS	3.4
4	I	184	CYS	3.4

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Mol	Chain	Res	Type	RSRZ
1	F	221	GLY	3.4
1	F	219	ARG	3.4
4	I	137	THR	3.4
1	F	199	ALA	3.4
1	A	240	THR	3.3
1	A	261	VAL	3.3
1	A	182	THR	3.3
1	F	216	THR	3.3
1	A	201	LEU	3.3
4	I	114	GLN	3.2
4	I	193	ILE	3.2
1	A	228	THR	3.2
1	F	225	THR	3.2
4	I	199	PHE	3.2
1	F	191	HIS	3.2
1	A	265	GLY	3.2
5	J	83	ALA	3.2
5	E	86	ASN	3.2
1	A	199	ALA	3.1
1	F	227	ASP	3.1
4	I	144	ASN	3.1
5	E	83	ALA	3.1
1	A	206	LEU	3.1
1	A	186	LYS	3.1
1	F	188	HIS	3.1
4	I	131	LYS	3.1
5	J	85	LYS	3.1
4	I	201	SER	3.0
4	I	154	TYR	3.0
1	A	193	ALA	3.0
1	A	215	LEU	3.0
1	A	249	VAL	3.0
4	I	59	LEU	3.0
1	A	209	TYR	3.0
4	D	152	ASP	3.0
4	I	170	SER	3.0
1	A	211	ALA	2.9
4	I	142	GLN	2.9
1	F	229	GLU	2.9
1	F	203	CYS	2.9
2	B	81	ARG	2.9
4	I	39	GLU	2.9

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Mol	Chain	Res	Type	RSRZ
4	I	146	SER	2.9
1	F	192	HIS	2.9
1	A	184	ALA	2.9
1	A	259	CYS	2.9
2	G	36	GLU	2.9
1	A	238	ASP	2.9
5	J	153	ASP	2.9
1	A	208	PHE	2.9
1	A	244	TRP	2.9
4	D	159	THR	2.9
1	F	197	HIS	2.8
1	F	198	GLU	2.8
4	I	152	ASP	2.8
1	F	195	SER	2.8
1	A	185	PRO	2.8
1	F	267	PRO	2.8
4	I	121	TYR	2.8
4	I	123	LEU	2.8
4	I	139	PHE	2.8
4	I	185	ALA	2.8
5	J	243	ALA	2.8
2	B	77	GLU	2.8
5	E	85	LYS	2.8
4	D	193	ILE	2.8
2	B	98	ASP	2.8
4	I	163	MET	2.8
4	I	166	MET	2.8
4	I	149	LYS	2.7
2	G	99	MET	2.7
1	F	218	GLN	2.7
5	J	220	ASN	2.7
4	I	169	LYS	2.7
1	F	17	ARG	2.7
4	I	145	VAL	2.7
1	A	267	PRO	2.7
5	E	84	GLN	2.7
1	F	202	ARG	2.7
1	A	204	TRP	2.7
5	J	240	TRP	2.7
1	F	251	SER	2.6
4	I	129	SER	2.6
1	F	275	GLU	2.6

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Mol	Chain	Res	Type	RSRZ
5	J	115	GLU	2.6
4	I	190	ASN	2.6
1	F	253	GLN	2.6
1	F	255	GLN	2.6
1	A	220	ASP	2.6
1	A	223	ASP	2.6
4	I	174	VAL	2.6
1	A	233	THR	2.6
1	A	241	PHE	2.6
4	I	151	SER	2.6
4	I	140	ASP	2.5
4	I	162	ASP	2.5
4	I	178	ASN	2.5
2	G	1	ILE	2.5
1	A	106	ASP	2.5
1	A	250	PRO	2.5
1	F	243	LYS	2.5
1	A	205	ALA	2.5
4	I	187	ALA	2.5
1	A	252	GLY	2.5
1	A	260	HIS	2.5
5	J	204	PRO	2.5
1	F	173	GLU	2.5
5	J	200	PHE	2.5
4	I	155	ILE	2.5
4	D	59	LEU	2.5
2	B	0	MET	2.5
1	A	196	ASP	2.5
4	I	173	ALA	2.5
1	A	225	THR	2.4
4	I	153	VAL	2.4
1	A	217	TRP	2.4
4	I	143	THR	2.4
1	A	231	VAL	2.4
1	A	227	ASP	2.4
4	D	150	ASP	2.4
2	B	1	ILE	2.4
4	D	199	PHE	2.4
5	J	201	TRP	2.4
2	B	74	GLU	2.4
4	D	190	ASN	2.4
4	D	149	LYS	2.4

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Mol	Chain	Res	Type	RSRZ
1	A	247	VAL	2.4
1	A	242	GLN	2.4
5	E	244	ASP	2.3
1	F	193	ALA	2.3
1	A	248	VAL	2.3
4	I	125	ASP	2.3
4	I	171	ASN	2.3
1	F	18	GLY	2.3
4	I	183	ALA	2.3
4	I	165	SER	2.3
1	A	183	ASP	2.3
1	F	222	GLU	2.3
4	D	168	PHE	2.3
4	I	194	PRO	2.3
2	G	71	THR	2.3
4	I	156	THR	2.3
1	F	226	GLN	2.3
2	G	98	ASP	2.2
4	I	200	PRO	2.2
4	I	176	TRP	2.2
5	J	135	ILE	2.2
5	J	177	LEU	2.2
4	I	164	ARG	2.2
1	A	263	HIS	2.2
1	F	260	HIS	2.2
4	I	128	SER	2.2
1	F	252	GLY	2.2
1	A	188	HIS	2.2
4	I	127	LYS	2.2
1	A	258	THR	2.2
5	J	228	ALA	2.2
4	I	181	ASP	2.2
4	I	188	PHE	2.2
1	F	214	THR	2.2
4	D	185	ALA	2.2
5	J	199	THR	2.2
1	A	256	ARG	2.1
1	F	138	MET	2.1
4	I	157	ASP	2.1
4	I	182	PHE	2.1
4	D	128	SER	2.1
4	D	127	LYS	2.1

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Mol	Chain	Res	Type	RSRZ
1	A	234	ARG	2.1
5	J	218	SER	2.1
1	A	121	LYS	2.1
4	D	186	ASN	2.1
1	A	191	HIS	2.1
4	D	131	LYS	2.1
1	A	224	GLN	2.1
1	A	268	LYS	2.0
5	J	82	SER	2.0
1	A	246	ALA	2.0
4	I	189	ASN	2.0
4	D	39	GLU	2.0
4	D	151	SER	2.0
5	E	222	GLU	2.0
1	F	224	GLN	2.0
4	I	167	ASP	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 oligosaccharides 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.