



# Full wwPDB X-ray Structure Validation Report

May 13, 2020 – 06:43 am BST

PDB ID : 2JCC  
Title : AH3 recognition of mutant HLA-A2 W167A  
Authors : Miller, P.; Benhar, Y.P.; Biddison, W.; Collins, E.J.  
Deposited on : 2006-12-21  
Resolution : 2.50 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.

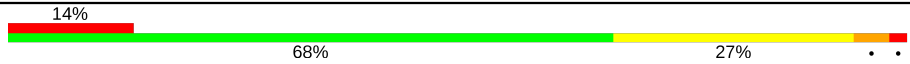
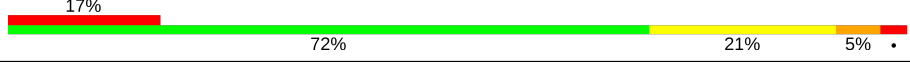
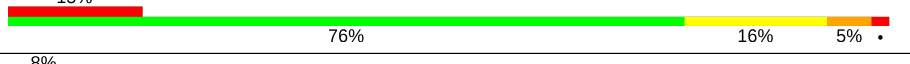

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The following versions of software and data (see [references](#) ) were used in the production of this report:

MolProbity : 4.02b-467  
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



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Mol	Chain	Length	Quality of chain
4	E	194	 <p>14% 68% 27%</p>
4	L	194	 <p>17% 72% 21% 5%</p>
5	F	238	 <p>15% 76% 16% 5%</p>
5	M	238	 <p>8% 84% 14%</p>

## 2 Entry composition

There are 6 unique types of molecules in this entry. The entry contains 13180 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
			Total	C	N	O	S			
1	A	275	2238	1395	408	426	9	4	0	0
1	H	275	2238	1395	408	426	9	3	0	0

There are 2 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	167	ALA	TRP	engineered mutation	UNP P01892
H	167	ALA	TRP	engineered mutation	UNP P01892

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

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	S			
2	B	100	837	533	141	159	4	0	0	0
2	I	100	837	533	141	159	4	0	0	0

- Molecule 3 is a protein called P1049.

Mol	Chain	Residues	Atoms				ZeroOcc	AltConf	Trace
			Total	C	N	O			
3	C	9	76	56	10	10	0	0	0
3	J	9	76	56	10	10	0	0	0

- Molecule 4 is a protein called TCR ALPHA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
4	E	194	Total	C	N	O	S	86	0	0
			1521	965	245	302	9			
4	L	194	Total	C	N	O	S	87	0	0
			1521	965	245	302	9			

- Molecule 5 is a protein called TCR BETA.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
5	F	237	Total	C	N	O	S	0	0	0
			1891	1194	331	361	5			
5	M	237	Total	C	N	O	S	3	0	0
			1891	1194	331	361	5			

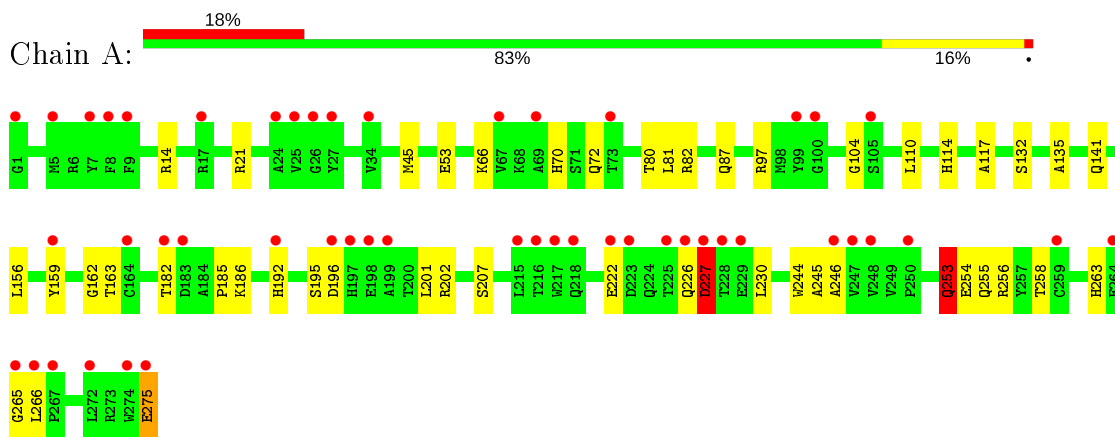
- Molecule 6 is water.

Mol	Chain	Residues	Atoms		ZeroOcc	AltConf
6	A	9	Total	O	0	0
			9	9		
6	B	1	Total	O	0	0
			1	1		
6	E	10	Total	O	0	0
			10	10		
6	F	5	Total	O	0	0
			5	5		
6	H	9	Total	O	0	0
			9	9		
6	I	6	Total	O	0	0
			6	6		
6	L	9	Total	O	0	0
			9	9		
6	M	5	Total	O	0	0
			5	5		

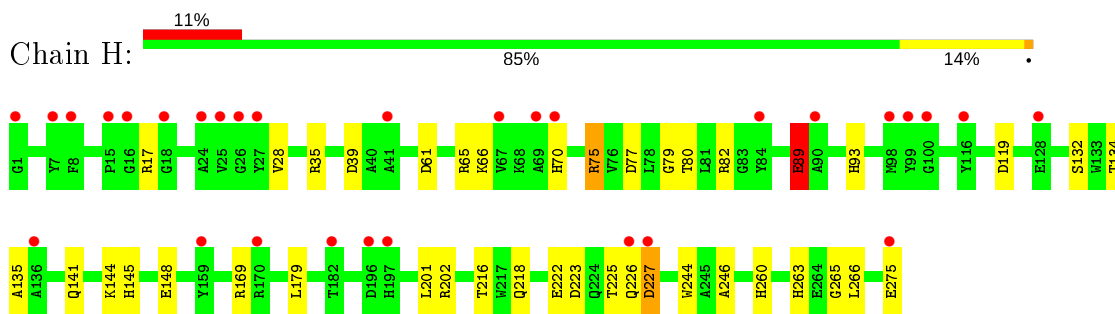
### 3 Residue-property plots [i](#)

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.

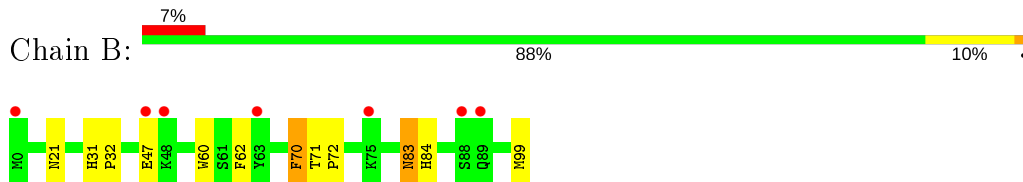
- Molecule 1: HLA CLASS I HISTOCOMPATIBILITY ANTIGEN, A-2 ALPHA CHAIN



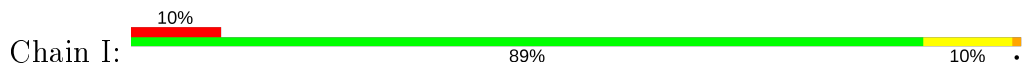
- Molecule 1: HLA CLASS I HISTOCOMPATIBILITY ANTIGEN, A-2 ALPHA CHAIN

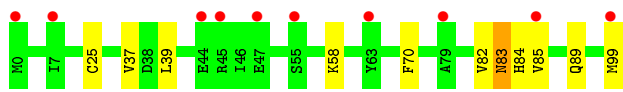


- Molecule 2: BETA-2-MICROGLOBULIN

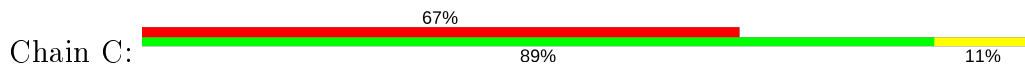


- Molecule 2: BETA-2-MICROGLOBULIN

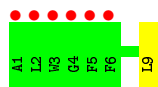




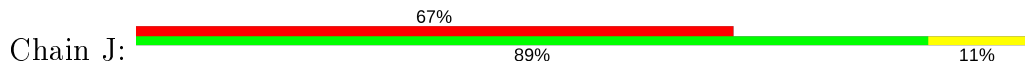
● Molecule 3: P1049



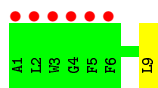
Chain C:



● Molecule 3: P1049



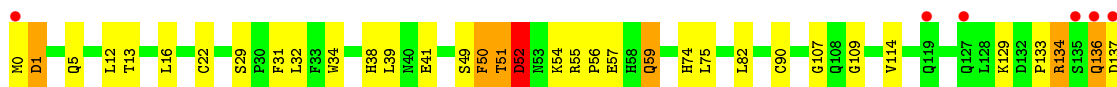
Chain J:



● Molecule 4: TCR ALPHA



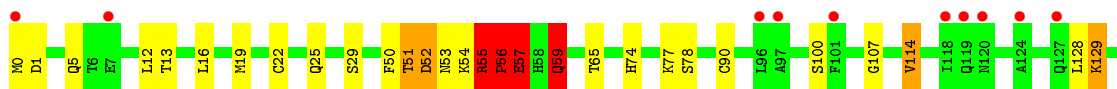
Chain E:



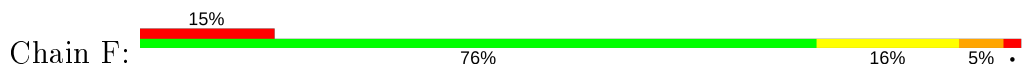
● Molecule 4: TCR ALPHA



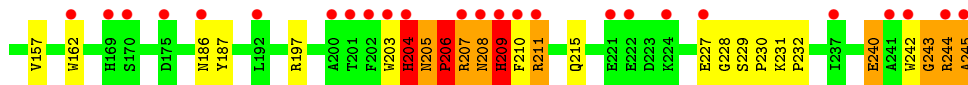
Chain L:




● Molecule 5: TCR BETA

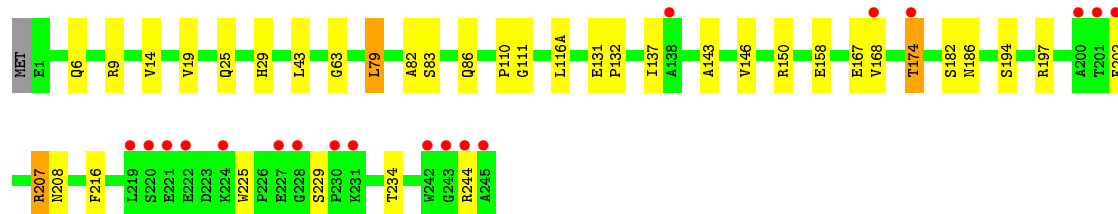


Chain F:



## ● Molecule 5: TCR BETA

Chain M:  8% 84% 14%





## 4 Data and refinement statistics i

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	94.28Å 84.35Å 122.47Å 90.00° 92.53° 90.00°	Depositor
Resolution (Å)	122.17 – 2.50 40.78 – 2.50	Depositor EDS
% Data completeness (in resolution range)	92.5 (122.17-2.50) 92.5 (40.78-2.50)	Depositor EDS
$R_{merge}$	0.07	Depositor
$R_{sym}$	(Not available)	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	2.60 (at 2.51Å)	Xtrriage
Refinement program	REFMAC 5.2.0019	Depositor
R, $R_{free}$	0.242 , 0.292 0.269 , 0.298	Depositor DCC
$R_{free}$ test set	3099 reflections (5.02%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	47.7	Xtrriage
Anisotropy	0.558	Xtrriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.35 , 32.1	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.50$ , $\langle L^2 \rangle = 0.33$	Xtrriage
Estimated twinning fraction	0.000 for h,-k,-l	Xtrriage
$F_o, F_c$ correlation	0.92	EDS
Total number of atoms	13180	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	50.0	wwPDB-VP

Xtrriage's analysis on translational NCS is as follows: *The analyses of the Patterson function reveals a significant off-origin peak that is 42.51 % 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 2.0198e-04. 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, 0.333 respectively for untwinned datasets, and 0.375, 0.2 for perfectly twinned datasets.

## 5 Model quality i

### 5.1 Standard geometry i

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	1.07	14/2301 (0.6%)	0.72	7/3121 (0.2%)
1	H	0.76	7/2301 (0.3%)	0.72	1/3121 (0.0%)
2	B	0.73	2/860 (0.2%)	0.65	0/1162
2	I	0.82	3/860 (0.3%)	0.85	1/1162 (0.1%)
3	C	0.81	0/80	0.62	0/108
3	J	0.76	0/80	0.62	0/108
4	E	1.40	24/1555 (1.5%)	1.12	12/2106 (0.6%)
4	L	1.22	14/1557 (0.9%)	1.54	31/2112 (1.5%)
5	F	1.60	29/1947 (1.5%)	1.13	18/2649 (0.7%)
5	M	0.68	3/1947 (0.2%)	0.59	1/2649 (0.0%)
All	All	1.10	96/13488 (0.7%)	0.95	71/18298 (0.4%)

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

Mol	Chain	#Chirality outliers	#Planarity outliers
1	A	0	1
4	E	0	2
4	L	0	4
5	F	0	4
All	All	0	11

All (96) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	275	GLU	C-O	25.85	1.72	1.23
5	F	62	ASP	C-N	22.68	1.73	1.33
4	E	56	PRO	N-CD	21.81	1.78	1.47
5	F	117	GLU	CD-OE1	20.21	1.47	1.25
5	F	64	GLY	N-CA	19.33	1.75	1.46
4	L	59	GLN	C-N	16.59	1.62	1.33

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	L	52	ASP	C-N	15.94	1.70	1.34
5	F	208	ASN	C-N	14.96	1.68	1.34
5	F	209	HIS	CE1-NE2	14.89	1.66	1.32
5	F	154	PRO	N-CD	14.74	1.68	1.47
1	A	253	GLN	CD-NE2	14.71	1.69	1.32
4	E	59	GLN	C-N	-14.52	1.06	1.33
1	A	275	GLU	C-OXT	13.22	1.48	1.23
4	E	197	GLU	CD-OE2	12.46	1.39	1.25
5	F	244	ARG	CZ-NH2	12.41	1.49	1.33
4	E	197	GLU	C-O	12.06	1.46	1.23
4	L	57	GLU	N-CA	11.72	1.69	1.46
5	F	240	GLU	CD-OE2	11.57	1.38	1.25
5	F	242	TRP	C-O	11.53	1.45	1.23
5	F	207	ARG	NE-CZ	-11.50	1.18	1.33
1	A	195	SER	CB-OG	11.48	1.57	1.42
4	L	56	PRO	CA-C	11.43	1.75	1.52
5	F	209	HIS	CG-ND1	11.01	1.62	1.38
4	E	197	GLU	CD-OE1	11.01	1.37	1.25
5	F	117	GLU	CD-OE2	-10.93	1.13	1.25
4	E	174	ASP	CG-OD1	10.62	1.49	1.25
4	L	59	GLN	C-O	10.54	1.43	1.23
5	F	240	GLU	CD-OE1	10.53	1.37	1.25
4	E	186	GLN	CD-NE2	10.33	1.58	1.32
5	F	243	GLY	C-O	10.27	1.40	1.23
4	L	56	PRO	N-CA	9.74	1.63	1.47
5	M	182	SER	C-N	9.31	1.55	1.34
5	F	242	TRP	C-N	9.31	1.49	1.33
1	H	223	ASP	CB-CG	-9.20	1.32	1.51
2	I	58	LYS	CD-CE	9.01	1.73	1.51
5	F	227	GLU	CD-OE1	8.88	1.35	1.25
4	E	134	ARG	NE-CZ	8.69	1.44	1.33
5	F	245	ALA	CA-CB	8.69	1.70	1.52
4	L	56	PRO	C-N	8.62	1.53	1.34
4	L	57	GLU	CA-C	8.60	1.75	1.52
5	F	134	LYS	CE-NZ	8.47	1.70	1.49
5	F	244	ARG	CZ-NH1	8.33	1.43	1.33
1	H	145	HIS	CE1-NE2	8.05	1.51	1.32
1	A	253	GLN	CD-OE1	8.00	1.41	1.24
5	F	227	GLU	CD-OE2	7.98	1.34	1.25
4	E	188	SER	C-N	7.95	1.52	1.34
5	F	204	HIS	CE1-NE2	7.89	1.50	1.32
4	E	137	ASP	CB-CG	7.76	1.68	1.51

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	L	176	LYS	CD-CE	7.70	1.70	1.51
2	B	32	PRO	N-CD	7.60	1.58	1.47
5	F	207	ARG	CZ-NH2	-7.48	1.23	1.33
4	E	186	GLN	CD-OE1	-7.47	1.07	1.24
1	A	275	GLU	CD-OE1	7.46	1.33	1.25
4	E	136	GLN	C-O	-7.42	1.09	1.23
5	F	211	ARG	CZ-NH1	7.14	1.42	1.33
4	L	157	GLU	CD-OE1	7.11	1.33	1.25
5	M	158	GLU	CG-CD	-7.07	1.41	1.51
5	F	245	ALA	C-OXT	7.06	1.36	1.23
1	H	145	HIS	CG-CD2	7.06	1.47	1.35
4	E	193	ASP	CB-CG	7.02	1.66	1.51
1	A	222	GLU	CD-OE1	6.90	1.33	1.25
1	A	227	ASP	CG-OD2	6.83	1.41	1.25
1	A	196	ASP	CG-OD2	-6.79	1.09	1.25
4	L	136	GLN	CD-NE2	6.61	1.49	1.32
4	L	136	GLN	CD-OE1	6.58	1.38	1.24
5	F	210	PHE	C-N	6.49	1.49	1.34
1	A	256	ARG	CZ-NH1	6.48	1.41	1.33
1	H	275	GLU	CD-OE1	6.48	1.32	1.25
2	B	47	GLU	CG-CD	6.42	1.61	1.51
4	E	174	ASP	CG-OD2	-6.28	1.10	1.25
4	E	188	SER	C-O	6.25	1.35	1.23
4	E	52	ASP	N-CA	-6.13	1.34	1.46
4	E	157	GLU	CD-OE1	6.10	1.32	1.25
1	A	255	GLN	CD-OE1	6.05	1.37	1.24
4	E	193	ASP	CG-OD1	6.03	1.39	1.25
5	M	63	GLY	C-O	5.86	1.33	1.23
1	H	275	GLU	C-O	5.84	1.34	1.23
2	I	89	GLN	CD-OE1	5.83	1.36	1.24
5	F	187	TYR	CE1-CZ	5.74	1.46	1.38
4	E	51	THR	N-CA	-5.63	1.35	1.46
1	H	145	HIS	CG-ND1	5.63	1.51	1.38
1	A	222	GLU	CD-OE2	5.54	1.31	1.25
5	F	204	HIS	CG-CD2	5.47	1.45	1.35
4	L	197	GLU	C-N	5.47	1.46	1.34
2	I	89	GLN	CD-NE2	5.43	1.46	1.32
4	E	50	PHE	C-N	-5.33	1.21	1.34
1	A	227	ASP	CG-OD1	5.33	1.37	1.25
5	F	205	ASN	CB-CG	5.23	1.63	1.51
4	E	185	ASN	CG-OD1	5.23	1.35	1.24
1	A	254	GLU	CD-OE1	5.22	1.31	1.25

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
4	E	136	GLN	C-N	5.20	1.46	1.34
1	H	89	GLU	CB-CG	5.14	1.61	1.52
4	E	56	PRO	CB-CG	5.07	1.75	1.50
4	E	56	PRO	C-O	5.06	1.33	1.23
4	L	129	LYS	CE-NZ	5.05	1.61	1.49
5	F	211	ARG	CZ-NH2	-5.04	1.26	1.33

All (71) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
5	F	244	ARG	NE-CZ-NH1	23.41	132.00	120.30
4	L	52	ASP	CA-C-N	-21.03	70.94	117.20
5	F	207	ARG	NE-CZ-NH2	-19.11	110.75	120.30
4	E	134	ARG	NE-CZ-NH1	19.05	129.82	120.30
2	I	99	MET	CA-C-O	18.29	158.52	120.10
1	H	275	GLU	CA-C-O	18.13	158.18	120.10
4	L	197	GLU	O-C-N	-17.42	94.83	122.70
4	L	51	THR	O-C-N	16.93	149.78	122.70
4	L	52	ASP	C-N-CA	-16.66	80.05	121.70
4	L	59	GLN	CA-C-O	-16.51	85.44	120.10
4	L	51	THR	CA-C-N	-16.34	81.26	117.20
4	E	174	ASP	CB-CG-OD1	-16.07	103.84	118.30
4	L	57	GLU	CB-CA-C	-15.79	78.83	110.40
4	E	134	ARG	NE-CZ-NH2	-15.64	112.48	120.30
4	L	59	GLN	O-C-N	-15.40	97.02	123.20
5	F	244	ARG	NE-CZ-NH2	-15.32	112.64	120.30
4	L	57	GLU	N-CA-C	13.39	147.16	111.00
4	L	56	PRO	N-CA-C	12.27	144.00	112.10
4	L	59	GLN	CB-CA-C	10.81	132.02	110.40
5	F	117	GLU	OE1-CD-OE2	10.68	136.12	123.30
5	F	153	PHE	C-N-CD	-10.54	97.40	120.60
4	L	51	THR	C-N-CA	10.14	147.05	121.70
5	F	62	ASP	C-N-CA	-9.94	101.44	122.30
4	E	174	ASP	OD1-CG-OD2	9.56	141.47	123.30
4	L	57	GLU	CA-C-O	-9.54	100.06	120.10
4	E	197	GLU	O-C-N	-9.29	107.84	122.70
4	E	59	GLN	C-N-CA	9.21	141.65	122.30
4	L	137	ASP	CB-CG-OD2	9.16	126.55	118.30
4	E	51	THR	CA-C-N	-8.78	97.89	117.20
4	L	197	GLU	CA-C-N	8.62	136.16	117.20
5	F	211	ARG	NE-CZ-NH2	-8.41	116.09	120.30
4	L	137	ASP	CB-CG-OD1	-8.32	110.81	118.30

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Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
4	L	56	PRO	CA-C-N	8.10	135.01	117.20
4	L	52	ASP	O-C-N	-7.99	109.92	122.70
1	A	275	GLU	CA-C-O	-7.62	104.09	120.10
5	F	153	PHE	C-N-CA	7.57	153.81	122.00
1	A	256	ARG	NE-CZ-NH2	-7.55	116.53	120.30
4	L	56	PRO	CB-CA-C	-7.36	93.60	112.00
4	L	57	GLU	CA-C-N	7.35	133.38	117.20
4	L	59	GLN	CA-C-N	-7.30	101.60	116.20
5	F	210	PHE	CB-CG-CD2	7.18	125.83	120.80
4	L	56	PRO	N-CA-CB	-6.86	95.06	102.60
4	L	197	GLU	C-N-CA	6.80	138.69	121.70
5	F	208	ASN	CA-C-N	-6.79	102.27	117.20
1	A	255	GLN	CG-CD-NE2	6.56	132.45	116.70
4	L	59	GLN	N-CA-C	-6.53	93.36	111.00
5	F	245	ALA	CB-CA-C	-6.35	100.58	110.10
4	L	56	PRO	C-N-CA	-6.22	106.14	121.70
4	E	51	THR	O-C-N	6.22	132.65	122.70
1	A	227	ASP	CB-CG-OD1	-6.20	112.72	118.30
5	F	207	ARG	NH1-CZ-NH2	6.17	126.18	119.40
5	F	154	PRO	CA-N-CD	-5.92	103.22	111.50
4	L	50	PHE	O-C-N	-5.79	113.44	122.70
4	L	55	ARG	C-N-CD	-5.77	107.90	120.60
5	F	206	PRO	O-C-N	-5.73	113.53	122.70
4	E	55	ARG	C-N-CD	-5.67	108.13	120.60
4	L	57	GLU	C-N-CA	-5.67	107.53	121.70
4	E	136	GLN	O-C-N	-5.62	113.71	122.70
5	F	207	ARG	NE-CZ-NH1	5.53	123.07	120.30
5	F	243	GLY	CA-C-N	-5.52	105.06	117.20
1	A	253	GLN	CG-CD-OE1	-5.49	110.62	121.60
5	F	210	PHE	O-C-N	5.41	131.36	122.70
4	L	168	LEU	CA-CB-CG	5.34	127.59	115.30
1	A	227	ASP	CB-CG-OD2	-5.31	113.52	118.30
4	L	57	GLU	N-CA-CB	-5.28	101.09	110.60
4	L	140	LEU	CA-CB-CG	5.28	127.43	115.30
4	E	56	PRO	N-CD-CG	-5.26	95.31	103.20
5	F	210	PHE	CA-C-O	-5.20	109.18	120.10
1	A	227	ASP	OD1-CG-OD2	5.16	133.11	123.30
4	E	50	PHE	O-C-N	5.09	130.85	122.70
5	M	43	LEU	CA-CB-CG	5.08	126.97	115.30

There are no chirality outliers.

All (11) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	253	GLN	Sidechain
4	E	197	GLU	Sidechain,Mainchain
5	F	153	PHE	Peptide
5	F	204	HIS	Mainchain
5	F	206	PRO	Mainchain
5	F	209	HIS	Sidechain
4	L	197	GLU	Mainchain
4	L	55	ARG	Mainchain
4	L	56	PRO	Peptide
4	L	59	GLN	Mainchain

## 5.2 Too-close contacts [\(i\)](#)

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	2238	0	2091	36	0
1	H	2238	0	2091	25	1
2	B	837	0	803	9	0
2	I	837	0	803	6	0
3	C	76	0	76	2	0
3	J	76	0	76	2	0
4	E	1521	0	1472	32	1
4	L	1521	0	1476	36	0
5	F	1891	0	1793	55	0
5	M	1891	0	1794	21	0
6	A	9	0	0	0	0
6	B	1	0	0	0	0
6	E	10	0	0	0	0
6	F	5	0	0	0	0
6	H	9	0	0	0	0
6	I	6	0	0	0	0
6	L	9	0	0	1	0
6	M	5	0	0	0	0
All	All	13180	0	12475	202	1

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 8.

All (202) 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)
5:F:134:LYS:CE	5:F:134:LYS:NZ	1.70	1.51
5:F:64:GLY:CA	5:F:64:GLY:N	1.75	1.47
5:F:154:PRO:N	5:F:154:PRO:CD	1.68	1.46
1:A:253:GLN:CD	1:A:253:GLN:NE2	1.69	1.43
5:F:208:ASN:C	5:F:209:HIS:N	1.68	1.41
5:F:62:ASP:C	5:F:64:GLY:N	1.73	1.41
1:A:275:GLU:C	1:A:275:GLU:O	1.72	1.27
4:L:129:LYS:HD2	4:L:139:THR:HG22	1.30	1.11
4:L:184:SER:HB3	4:L:189:PHE:CE1	1.87	1.08
4:L:184:SER:HB3	4:L:189:PHE:HE1	1.04	1.08
4:L:190:THR:HG22	4:L:191:CYS:H	1.18	1.04
5:F:153:PHE:C	5:F:154:PRO:CD	2.28	1.02
4:L:129:LYS:CD	4:L:139:THR:HG22	1.91	0.99
4:E:31:PHE:CD2	4:E:50:PHE:HE1	1.81	0.98
2:I:83:ASN:HD22	2:I:84:HIS:H	0.98	0.97
1:A:72:GLN:HG3	5:F:51:VAL:HG11	1.52	0.89
2:I:83:ASN:HD22	2:I:84:HIS:N	1.70	0.88
2:B:83:ASN:HD22	2:B:84:HIS:H	1.20	0.86
1:A:97:ARG:HH21	1:A:114:HIS:HE1	1.24	0.85
4:L:184:SER:CB	4:L:189:PHE:HE1	1.88	0.85
1:H:66:LYS:O	1:H:70:HIS:HD2	1.60	0.83
4:E:134:ARG:NH2	5:F:128:SER:HA	1.93	0.83
4:L:22:CYS:H	4:L:74:HIS:HD2	1.26	0.83
1:H:263:HIS:CD2	1:H:265:GLY:H	1.96	0.82
2:B:83:ASN:HD22	2:B:84:HIS:N	1.78	0.81
1:H:263:HIS:HD2	1:H:265:GLY:H	1.28	0.80
4:E:5:GLN:HE21	4:E:107:GLY:HA3	1.48	0.79
4:L:190:THR:HG22	4:L:191:CYS:N	1.98	0.79
1:H:75:ARG:CG	1:H:75:ARG:HH11	1.96	0.78
4:E:38:HIS:HB2	4:E:41:GLU:OE1	1.83	0.78
1:A:66:LYS:O	1:A:70:HIS:HD2	1.66	0.77
1:A:14:ARG:HH11	1:A:21:ARG:HB2	1.50	0.76
4:E:31:PHE:CD2	4:E:50:PHE:CE1	2.72	0.76
4:E:196:LYS:O	4:E:197:GLU:HG2	1.85	0.75
1:A:263:HIS:CD2	1:A:265:GLY:H	2.05	0.73
5:F:208:ASN:CA	5:F:209:HIS:N	2.52	0.72
4:L:190:THR:CG2	4:L:191:CYS:H	2.01	0.71
4:L:129:LYS:CD	4:L:139:THR:CG2	2.67	0.71
1:A:97:ARG:HH21	1:A:114:HIS:CE1	2.09	0.69
4:L:160:THR:HG23	4:L:184:SER:HB2	1.75	0.68
1:A:72:GLN:CG	5:F:51:VAL:HG11	2.24	0.67
1:H:75:ARG:HG2	1:H:75:ARG:HH11	1.60	0.66

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:162:TRP:HB2	5:F:211:ARG:CG	2.27	0.65
5:F:162:TRP:HB2	5:F:211:ARG:HG3	1.80	0.64
4:L:129:LYS:HD2	4:L:139:THR:CG2	2.17	0.64
1:A:263:HIS:HD2	1:A:265:GLY:H	1.46	0.64
5:F:162:TRP:CE3	5:F:211:ARG:NH2	2.66	0.64
5:F:186:ASN:CB	4:L:171:LYS:O	2.46	0.63
4:L:0:MET:HE2	6:L:2001:HOH:O	1.96	0.63
1:A:185:PRO:HD2	1:A:266:LEU:HD13	1.80	0.63
5:F:203:TRP:CZ3	5:F:243:GLY:HA2	2.34	0.62
4:L:185:ASN:HD21	5:M:150:ARG:HH22	1.45	0.62
5:M:83:SER:H	5:M:86:GLN:HE21	1.47	0.62
4:E:31:PHE:HD2	4:E:50:PHE:HE1	1.41	0.62
2:I:83:ASN:ND2	2:I:84:HIS:H	1.83	0.61
4:L:129:LYS:HD3	4:L:139:THR:HG22	1.81	0.61
5:F:143:ALA:O	5:F:197:ARG:HA	2.01	0.61
5:M:25:GLN:NE2	5:M:29:HIS:H	1.98	0.61
4:E:136:GLN:H	4:E:136:GLN:CD	2.04	0.61
5:F:62:ASP:C	5:F:64:GLY:CA	2.69	0.61
5:F:25:GLN:HE22	5:F:29:HIS:H	1.48	0.60
4:E:22:CYS:H	4:E:74:HIS:HD2	1.47	0.60
5:F:208:ASN:C	5:F:209:HIS:CA	2.67	0.60
1:A:97:ARG:NH2	1:A:114:HIS:HE1	1.96	0.60
1:H:66:LYS:O	1:H:70:HIS:CD2	2.50	0.59
5:F:229:SER:HB2	5:F:230:PRO:CD	2.33	0.58
5:F:153:PHE:CD2	5:F:154:PRO:HD3	2.38	0.58
5:M:207:ARG:C	5:M:207:ARG:HD3	2.24	0.58
1:A:66:LYS:O	1:A:70:HIS:CD2	2.55	0.58
1:H:226:GLN:O	1:H:227:ASP:CB	2.52	0.58
4:L:5:GLN:HE21	4:L:107:GLY:HA3	1.70	0.57
5:F:186:ASN:HB2	4:L:171:LYS:O	2.05	0.56
1:A:104:GLY:HA2	1:A:110:LEU:HD11	1.88	0.56
4:E:82:LEU:HA	4:E:114:VAL:HG13	1.88	0.55
5:F:137:ILE:HD11	5:F:143:ALA:HB2	1.89	0.55
4:E:129:LYS:HG2	4:E:139:THR:HG22	1.88	0.55
5:F:118:ASP:OD2	5:F:120:ARG:NE	2.40	0.55
1:H:135:ALA:HB3	1:H:141:GLN:NE2	2.22	0.55
4:L:188:SER:O	4:L:189:PHE:HB2	2.07	0.55
2:B:31:HIS:HD1	2:B:62:PHE:HE2	1.54	0.54
1:H:226:GLN:O	1:H:227:ASP:HB2	2.08	0.54
4:L:129:LYS:HD3	4:L:139:THR:CG2	2.38	0.54
5:F:50:TYR:HD1	5:F:51:VAL:HG13	1.73	0.54

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:80:THR:HG21	3:C:9:LEU:O	2.07	0.54
5:F:37:GLN:OE1	5:F:91:PHE:HE1	1.90	0.54
5:M:25:GLN:HE22	5:M:29:HIS:H	1.56	0.53
4:E:159:GLY:O	4:E:184:SER:HA	2.08	0.53
4:L:135:SER:HB3	4:L:138:SER:HB3	1.91	0.53
5:M:216:PHE:O	5:M:234:THR:HA	2.09	0.53
4:E:31:PHE:HD2	4:E:50:PHE:CE1	2.19	0.52
1:A:253:GLN:NE2	1:A:253:GLN:CG	2.68	0.52
4:L:12:LEU:O	4:L:114:VAL:HA	2.10	0.52
5:F:52:ALA:O	5:F:53:ASP:HB2	2.09	0.52
1:A:135:ALA:HB3	1:A:141:GLN:HE21	1.75	0.52
4:E:13:THR:HB	4:E:16:LEU:HD12	1.91	0.52
1:H:93:HIS:HD2	1:H:119:ASP:OD2	1.92	0.52
4:E:32:LEU:O	4:E:49:SER:HB3	2.11	0.51
1:H:263:HIS:HD2	1:H:265:GLY:N	2.03	0.51
4:L:168:LEU:HB3	4:L:177:SER:HB2	1.92	0.51
1:A:117:ALA:HB2	2:B:60:TRP:CE2	2.46	0.51
5:F:25:GLN:HE21	5:F:27:ASN:H	1.58	0.51
5:F:153:PHE:O	5:F:154:PRO:CD	2.59	0.51
1:A:275:GLU:CA	1:A:275:GLU:O	2.57	0.51
5:F:203:TRP:O	5:F:243:GLY:HA3	2.11	0.51
1:A:226:GLN:O	1:A:227:ASP:CB	2.58	0.50
4:L:184:SER:CB	4:L:189:PHE:CE1	2.74	0.50
1:A:14:ARG:NH1	1:A:21:ARG:HB2	2.23	0.50
4:E:172:ALA:O	4:E:173:MET:HG2	2.10	0.50
5:F:118:ASP:OD1	5:F:119:LEU:N	2.45	0.50
5:F:120:ARG:NH1	5:M:168:VAL:HG12	2.26	0.50
4:E:134:ARG:HH21	5:F:128:SER:HA	1.75	0.50
1:H:28:VAL:HG11	1:H:179:LEU:HD13	1.93	0.50
5:M:6:GLN:HG3	5:M:110:PRO:HD2	1.93	0.50
1:A:202:ARG:HD3	1:A:244:TRP:CD2	2.46	0.50
1:A:53:GLU:OE1	1:H:134:THR:HG23	2.12	0.50
1:H:77:ASP:HB3	3:J:9:LEU:HD12	1.94	0.50
5:M:82:ALA:HA	5:M:86:GLN:NE2	2.27	0.49
5:F:186:ASN:HB3	4:L:171:LYS:O	2.11	0.49
2:B:83:ASN:ND2	2:B:84:HIS:N	2.55	0.49
4:L:13:THR:HB	4:L:16:LEU:HD12	1.94	0.49
2:I:83:ASN:ND2	2:I:84:HIS:N	2.52	0.49
1:H:144:LYS:O	1:H:148:GLU:HG3	2.13	0.49
1:A:182:THR:CG2	1:A:265:GLY:HA2	2.43	0.48
1:H:79:GLY:HA2	1:H:82:ARG:NH1	2.29	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:H:82:ARG:HD3	1:H:89:GLU:HB3	1.95	0.48
1:A:192:HIS:HE1	2:B:99:MET:OXT	1.96	0.48
1:H:75:ARG:HG3	1:H:75:ARG:HH11	1.77	0.48
5:M:143:ALA:O	5:M:197:ARG:HA	2.14	0.48
1:H:225:THR:HG22	1:H:225:THR:O	2.15	0.47
4:E:170:MET:HB2	4:E:175:SER:HB2	1.97	0.47
4:E:0:MET:O	4:E:1:ASP:HB2	2.14	0.47
5:F:25:GLN:NE2	5:F:29:HIS:H	2.12	0.47
5:F:122:VAL:HG12	5:F:232:PRO:HB2	1.97	0.47
5:M:19:VAL:HB	5:M:79:LEU:HG	1.97	0.47
4:L:146:PHE:CD2	4:L:150:ILE:HD11	2.50	0.47
5:F:204:HIS:HA	5:F:244:ARG:O	2.15	0.46
1:A:201:LEU:O	1:A:246:ALA:HA	2.14	0.46
4:E:134:ARG:HH22	5:F:128:SER:HA	1.78	0.46
4:L:154:LYS:NZ	4:L:164:ASP:OD1	2.48	0.46
1:A:72:GLN:HG3	5:F:51:VAL:CG1	2.36	0.46
4:E:141:CYS:HB2	4:E:194:ILE:HD11	1.98	0.46
4:L:129:LYS:NZ	4:L:139:THR:HG23	2.31	0.46
5:M:79:LEU:N	5:M:79:LEU:HD23	2.31	0.46
1:A:81:LEU:HD11	3:C:9:LEU:HD12	1.98	0.45
4:E:171:LYS:O	4:E:172:ALA:C	2.54	0.45
4:L:187:THR:HG22	4:L:188:SER:N	2.31	0.45
1:A:186:LYS:HE2	1:A:207:SER:CB	2.45	0.45
1:H:216:THR:HG23	1:H:260:HIS:HB2	1.98	0.45
2:B:71:THR:HA	2:B:72:PRO:HD2	1.80	0.45
2:I:25:CYS:HB2	2:I:39:LEU:HD21	1.99	0.45
5:M:14:VAL:HA	5:M:116(A):LEU:O	2.17	0.45
1:A:230:LEU:HD12	1:A:245:ALA:HB2	1.98	0.45
4:E:160:THR:HG23	4:E:184:SER:HB2	1.99	0.45
5:F:209:HIS:NE2	5:F:240:GLU:OE1	2.45	0.45
5:F:79:LEU:N	5:F:79:LEU:HD23	2.32	0.45
5:M:174:THR:HB	5:M:194:SER:HB2	1.98	0.45
5:F:204:HIS:ND1	5:F:245:ALA:OXT	2.50	0.45
4:E:140:LEU:HD12	4:E:183:TRP:HB3	1.99	0.44
1:H:80:THR:HG21	3:J:9:LEU:O	2.18	0.44
2:I:37:VAL:HG22	2:I:82:VAL:HG22	1.99	0.44
5:F:157:VAL:HA	5:F:215:GLN:O	2.18	0.44
5:M:225:TRP:HE1	5:M:229:SER:HB3	1.82	0.44
5:F:123:THR:HA	5:F:124:PRO:HD3	1.88	0.44
1:A:82:ARG:HA	1:A:87:GLN:HE21	1.82	0.44
5:F:153:PHE:O	5:F:154:PRO:HD2	2.18	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
5:F:203:TRP:CE3	5:F:243:GLY:HA2	2.53	0.43
5:F:229:SER:HB2	5:F:230:PRO:HD2	1.98	0.43
4:E:148:SER:O	4:E:165:LYS:NZ	2.51	0.43
1:A:104:GLY:CA	1:A:110:LEU:HD11	2.48	0.43
5:M:202:PHE:O	5:M:208:ASN:ND2	2.42	0.43
4:L:1:ASP:HA	4:L:25:GLN:O	2.19	0.43
4:L:128:LEU:HD22	5:M:131:GLU:O	2.18	0.43
4:L:5:GLN:NE2	4:L:90:CYS:H	2.16	0.43
4:E:5:GLN:NE2	4:E:109:GLY:H	2.17	0.43
5:F:120:ARG:NH2	5:M:167:GLU:O	2.46	0.42
5:F:231:LYS:HA	5:F:232:PRO:HD3	1.88	0.42
2:B:21:ASN:HB3	2:B:70:PHE:CE1	2.54	0.42
1:A:117:ALA:HB2	2:B:60:TRP:CD2	2.54	0.42
4:E:34:TRP:CE2	4:E:75:LEU:HB2	2.54	0.42
5:F:134:LYS:CD	5:F:134:LYS:NZ	2.69	0.42
5:F:50:TYR:CE1	5:F:51:VAL:HG22	2.54	0.42
4:E:12:LEU:O	4:E:114:VAL:HA	2.20	0.42
5:F:64:GLY:N	5:F:65:TYR:N	2.67	0.42
4:E:146:PHE:CE2	4:E:178:ASN:HB3	2.54	0.42
5:F:205:ASN:HA	5:F:206:PRO:HD3	1.91	0.42
1:H:218:GLN:HG2	1:H:222:GLU:O	2.20	0.42
4:E:5:GLN:NE2	4:E:90:CYS:H	2.18	0.41
5:F:89:VAL:HG22	5:F:113:ARG:HG2	2.02	0.41
4:L:152:VAL:HA	4:L:153:PRO:HD3	1.94	0.41
1:H:61:ASP:HB3	1:H:65:ARG:NH2	2.36	0.41
4:L:22:CYS:H	4:L:74:HIS:CD2	2.18	0.41
1:H:202:ARG:HD3	1:H:244:TRP:CD2	2.56	0.41
5:M:132:PRO:HB2	5:M:137:ILE:HD11	2.03	0.41
1:H:202:ARG:HG3	1:H:246:ALA:HB2	2.03	0.41
1:A:186:LYS:HE2	1:A:207:SER:HB3	2.02	0.41
4:E:173:MET:O	4:E:174:ASP:C	2.60	0.41
1:A:159:TYR:CD1	1:A:163:THR:HB	2.57	0.40
4:E:129:LYS:O	4:E:133:PRO:HD3	2.21	0.40
1:A:14:ARG:HH11	1:A:21:ARG:CB	2.26	0.40
4:L:177:SER:OG	5:M:197:ARG:NH2	2.53	0.40
5:F:153:PHE:C	5:F:154:PRO:HD2	2.30	0.40
5:M:9:ARG:NH1	5:M:111:GLY:O	2.54	0.40

All (1) 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)
4:E:198:THR:O	1:H:169:ARG:NH2[2_645]	2.14	0.06

### 5.3 Torsion angles [i](#)

#### 5.3.1 Protein backbone [i](#)

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

The Analysed column shows the number of residues for which the backbone conformation was analysed, and the total number of residues.

Mol	Chain	Analysed	Favoured	Allowed	Outliers	Percentiles	
1	A	273/275 (99%)	268 (98%)	3 (1%)	2 (1%)	22	39
1	H	273/275 (99%)	262 (96%)	9 (3%)	2 (1%)	22	39
2	B	98/100 (98%)	96 (98%)	2 (2%)	0	100	100
2	I	98/100 (98%)	96 (98%)	2 (2%)	0	100	100
3	C	7/9 (78%)	6 (86%)	1 (14%)	0	100	100
3	J	7/9 (78%)	6 (86%)	1 (14%)	0	100	100
4	E	189/194 (97%)	165 (87%)	17 (9%)	7 (4%)	3	4
4	L	192/194 (99%)	164 (85%)	17 (9%)	11 (6%)	1	1
5	F	235/238 (99%)	219 (93%)	14 (6%)	2 (1%)	17	31
5	M	235/238 (99%)	227 (97%)	8 (3%)	0	100	100
All	All	1607/1632 (98%)	1509 (94%)	74 (5%)	24 (2%)	10	18

All (24) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
4	E	51	THR
4	E	52	ASP
4	E	174	ASP
5	F	154	PRO
4	L	51	THR
4	L	53	ASN
4	L	55	ARG
4	L	57	GLU
4	L	59	GLN

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Mol	Chain	Res	Type
1	A	227	ASP
4	E	59	GLN
1	H	227	ASP
4	L	56	PRO
4	E	1	ASP
4	E	172	ALA
4	E	197	GLU
1	H	17	ARG
4	L	52	ASP
4	L	54	LYS
4	L	187	THR
4	L	189	PHE
4	L	197	GLU
5	F	228	GLY
1	A	162	GLY

### 5.3.2 Protein sidechains [i](#)

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	230/230 (100%)	226 (98%)	4 (2%)	60	82
1	H	230/230 (100%)	223 (97%)	7 (3%)	41	68
2	B	95/95 (100%)	93 (98%)	2 (2%)	53	78
2	I	95/95 (100%)	92 (97%)	3 (3%)	39	65
3	C	7/7 (100%)	7 (100%)	0	100	100
3	J	7/7 (100%)	7 (100%)	0	100	100
4	E	177/177 (100%)	169 (96%)	8 (4%)	27	51
4	L	177/177 (100%)	166 (94%)	11 (6%)	18	35
5	F	205/206 (100%)	200 (98%)	5 (2%)	49	74
5	M	205/206 (100%)	199 (97%)	6 (3%)	42	69
All	All	1428/1430 (100%)	1382 (97%)	46 (3%)	39	65

All (46) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	45	MET
1	A	132	SER
1	A	156	LEU
1	A	258	THR
2	B	70	PHE
2	B	83	ASN
4	E	29	SER
4	E	39	LEU
4	E	52	ASP
4	E	54	LYS
4	E	57	GLU
4	E	155	THR
4	E	168	LEU
4	E	185	ASN
5	F	14	VAL
5	F	55	THR
5	F	79	LEU
5	F	154	PRO
5	F	207	ARG
1	H	35	ARG
1	H	39	ASP
1	H	75	ARG
1	H	89	GLU
1	H	132	SER
1	H	201	LEU
1	H	266	LEU
2	I	70	PHE
2	I	83	ASN
2	I	85	VAL
4	L	19	MET
4	L	29	SER
4	L	57	GLU
4	L	65	THR
4	L	77	LYS
4	L	78	SER
4	L	100	SER
4	L	114	VAL
4	L	135	SER
4	L	191	CYS
4	L	197	GLU
5	M	79	LEU
5	M	146	VAL
5	M	174	THR

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Mol	Chain	Res	Type
5	M	186	ASN
5	M	207	ARG
5	M	244	ARG

Some sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (31) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	70	HIS
1	A	87	GLN
1	A	114	HIS
1	A	141	GLN
1	A	192	HIS
1	A	263	HIS
2	B	2	GLN
2	B	83	ASN
4	E	5	GLN
4	E	74	HIS
4	E	81	GLN
5	F	24	HIS
5	F	25	GLN
5	F	28	ASN
5	F	139	ASN
1	H	70	HIS
1	H	87	GLN
1	H	93	HIS
1	H	141	GLN
1	H	263	HIS
2	I	83	ASN
4	L	5	GLN
4	L	38	HIS
4	L	74	HIS
4	L	185	ASN
5	M	24	HIS
5	M	25	GLN
5	M	74	ASN
5	M	86	GLN
5	M	186	ASN
5	M	215	GLN



### 5.3.3 RNA [i](#)

There are no RNA molecules in this entry.

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

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

### 5.5 Carbohydrates [i](#)

There are no carbohydrates in this entry.

### 5.6 Ligand geometry [i](#)

There are no ligands in this entry.

### 5.7 Other polymers [i](#)

There are no such residues in this entry.

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

The following chains have linkage breaks:

Mol	Chain	Number of breaks
4	E	3
4	L	2
5	F	2

All chain breaks are listed below:

Model	Chain	Residue-1	Atom-1	Residue-2	Atom-2	Distance (Å)
1	E	56:PRO	C	57:GLU	N	4.37
1	E	57:GLU	C	58:HIS	N	3.72
1	F	62:ASP	C	64:GLY	N	1.73
1	L	52:ASP	C	53:ASN	N	1.70
1	F	208:ASN	C	209:HIS	N	1.68
1	L	59:GLN	C	61:GLY	N	1.62
1	E	59:GLN	C	61:GLY	N	1.06

## 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	275/275 (100%)	1.09	49 (17%) 1 1	40, 50, 58, 67	1 (0%)
1	H	275/275 (100%)	0.89	30 (10%) 5 5	38, 50, 59, 74	1 (0%)
2	B	100/100 (100%)	0.73	7 (7%) 16 16	42, 49, 59, 73	0
2	I	100/100 (100%)	0.82	10 (10%) 7 6	43, 51, 60, 76	0
3	C	9/9 (100%)	2.00	6 (66%) 0 0	44, 45, 51, 54	0
3	J	9/9 (100%)	2.23	6 (66%) 0 0	48, 50, 54, 57	0
4	E	184/194 (94%)	1.11	27 (14%) 2 2	37, 49, 66, 75	0
4	L	185/194 (95%)	1.08	33 (17%) 1 1	36, 49, 67, 73	2 (1%)
5	F	237/238 (99%)	1.01	35 (14%) 2 2	35, 50, 63, 69	0
5	M	237/238 (99%)	0.73	19 (8%) 12 12	37, 49, 58, 66	1 (0%)
All	All	1611/1632 (98%)	0.96	222 (13%) 2 2	35, 50, 62, 76	5 (0%)

All (222) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
4	E	189	PHE	9.3
5	M	245	ALA	8.7
4	E	173	MET	8.3
5	F	245	ALA	7.8
4	L	156	MET	7.4
4	E	187	THR	7.2
5	F	201	THR	7.1
1	A	197	HIS	6.8
4	E	136	GLN	6.3
4	L	187	THR	6.2
4	L	188	SER	6.1
4	L	119	GLN	5.9
1	A	196	ASP	5.8

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
4	E	156	MET	5.8
5	F	244	ARG	5.8
4	L	173	MET	5.6
4	L	186	GLN	5.4
4	L	190	THR	5.4
4	E	190	THR	5.2
4	E	158	SER	5.2
1	A	227	ASP	5.2
1	A	228	THR	5.1
1	H	128	GLU	5.0
4	L	189	PHE	5.0
4	E	175	SER	5.0
1	A	259	CYS	4.9
4	L	0	MET	4.9
5	F	200	ALA	4.9
4	E	137	ASP	4.7
1	H	136	ALA	4.7
5	F	138	ALA	4.7
4	E	188	SER	4.6
5	F	135	ALA	4.6
4	L	185	ASN	4.5
4	E	192	GLN	4.4
4	L	136	GLN	4.4
1	H	1	GLY	4.3
5	M	138	ALA	4.3
4	E	0	MET	4.2
5	F	145	LEU	4.2
5	F	210	PHE	4.2
1	A	223	ASP	4.1
4	E	186	GLN	4.1
4	E	172	ALA	4.0
1	H	16	GLY	4.0
1	A	225	THR	4.0
2	B	0	MET	3.9
1	A	1	GLY	3.9
1	A	248	VAL	3.9
5	M	222	GLU	3.9
2	I	0	MET	3.8
5	F	227	GLU	3.8
4	E	119	GLN	3.8
4	E	171	LYS	3.8
1	A	229	GLU	3.8

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
4	L	161	PHE	3.8
5	F	207	ARG	3.7
3	J	4	GLY	3.7
1	A	266	LEU	3.6
4	L	158	SER	3.6
5	M	228	GLY	3.6
4	L	157	GLU	3.6
1	A	246	ALA	3.5
1	A	199	ALA	3.5
5	M	244	ARG	3.4
5	M	224	LYS	3.4
1	H	226	GLN	3.4
5	F	170	SER	3.3
5	F	2	ALA	3.3
5	F	186	ASN	3.3
5	F	222	GLU	3.3
1	A	250	PRO	3.2
1	A	217	TRP	3.2
3	J	3	TRP	3.2
2	I	99	MET	3.2
4	E	174	ASP	3.2
1	A	222	GLU	3.2
4	E	193	ASP	3.2
5	M	221	GLU	3.2
1	A	267	PRO	3.2
1	H	84	TYR	3.1
1	H	99	TYR	3.1
1	H	18	GLY	3.1
1	H	70	HIS	3.1
1	A	265	GLY	3.1
1	H	275	GLU	3.1
1	A	192	HIS	3.1
3	J	2	LEU	3.1
4	E	141	CYS	3.0
1	A	25	VAL	3.0
4	L	155	THR	3.0
1	A	8	PHE	3.0
4	E	157	GLU	2.9
5	F	204	HIS	2.9
3	C	3	TRP	2.9
4	E	170	MET	2.9
4	L	191	CYS	2.9

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
1	H	26	GLY	2.8
1	A	99	TYR	2.8
5	F	134	LYS	2.8
1	A	216	THR	2.8
4	L	127	GLN	2.8
4	L	192	GLN	2.8
1	H	8	PHE	2.8
3	C	1	ALA	2.8
1	A	226	GLN	2.8
5	M	201	THR	2.8
1	A	272	LEU	2.8
1	H	67	VAL	2.7
5	M	219	LEU	2.7
5	F	242	TRP	2.7
1	A	264	GLU	2.7
1	H	25	VAL	2.7
5	F	202	PHE	2.7
1	A	26	GLY	2.7
5	M	227	GLU	2.6
4	L	120	ASN	2.6
3	J	1	ALA	2.6
5	M	231	LYS	2.6
4	L	171	LYS	2.6
3	C	2	LEU	2.6
1	A	5	MET	2.6
4	E	155	THR	2.6
5	F	131	GLU	2.6
4	L	141	CYS	2.5
4	L	135	SER	2.5
1	A	183	ASP	2.5
1	A	274	TRP	2.5
5	F	140	LYS	2.5
5	F	169	HIS	2.5
2	I	55	SER	2.5
4	E	127	GLN	2.5
5	M	242	TRP	2.5
1	A	67	VAL	2.5
5	F	137	ILE	2.5
5	F	221	GLU	2.5
1	A	24	ALA	2.5
4	L	175	SER	2.5
5	F	211	ARG	2.5

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
2	I	45	ARG	2.4
5	F	162	TRP	2.4
1	A	198	GLU	2.4
2	B	48	LYS	2.4
5	F	241	ALA	2.4
1	A	34	VAL	2.4
5	F	237	ILE	2.4
1	H	197	HIS	2.4
1	H	182	THR	2.4
5	M	220	SER	2.4
2	I	63	TYR	2.4
3	J	6	PHE	2.4
1	A	73	THR	2.4
1	H	15	PRO	2.4
4	L	194	ILE	2.4
1	A	215	LEU	2.4
3	C	5	PHE	2.3
1	A	275	GLU	2.3
5	F	14	VAL	2.3
5	M	230	PRO	2.3
1	A	9	PHE	2.3
1	H	159	TYR	2.3
1	H	7	TYR	2.3
4	L	124	ALA	2.3
1	H	24	ALA	2.3
1	H	100	GLY	2.3
2	I	47	GLU	2.3
3	J	5	PHE	2.3
2	I	85	VAL	2.3
2	B	75	LYS	2.3
1	H	116	TYR	2.3
1	A	247	VAL	2.2
4	L	101	PHE	2.2
2	I	79	ALA	2.2
5	M	200	ALA	2.2
5	F	209	HIS	2.2
4	E	142	LEU	2.2
5	F	208	ASN	2.2
4	L	193	ASP	2.2
5	M	174	THR	2.2
2	B	63	TYR	2.2
1	A	182	THR	2.2

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<b>Mol</b>	<b>Chain</b>	<b>Res</b>	<b>Type</b>	<b>RSRZ</b>
4	L	7	GLU	2.2
1	A	7	TYR	2.2
1	A	159	TYR	2.2
4	L	170	MET	2.2
1	A	164	CYS	2.2
4	L	174	ASP	2.2
1	H	196	ASP	2.2
3	C	6	PHE	2.2
5	F	203	TRP	2.1
1	H	90	ALA	2.1
3	C	4	GLY	2.1
1	H	27	TYR	2.1
5	M	168	VAL	2.1
2	I	7	ILE	2.1
4	E	176	LYS	2.1
5	F	192	LEU	2.1
1	H	98	MET	2.1
5	M	243	GLY	2.1
1	H	41	ALA	2.1
2	B	89	GLN	2.1
4	L	118	ILE	2.1
1	A	100	GLY	2.1
1	A	27	TYR	2.1
5	M	202	PHE	2.1
1	A	105	SER	2.1
5	F	224	LYS	2.1
1	H	227	ASP	2.1
2	B	88	SER	2.1
1	H	69	ALA	2.1
5	F	175	ASP	2.1
4	L	96	LEU	2.1
1	A	218	GLN	2.1
2	I	44	GLU	2.0
4	E	135	SER	2.0
5	F	139	ASN	2.0
1	A	69	ALA	2.0
4	L	97	ALA	2.0
1	A	17	ARG	2.0
1	H	170	ARG	2.0
4	E	161	PHE	2.0
2	B	47	GLU	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.