



# Full wwPDB X-ray Structure Validation Report ⓘ

Nov 11, 2024 – 12:13 PM EST

PDB ID : 1T98  
Title : Crystal Structure of MukF(1-287)  
Authors : Fennell-Fezzie, R.; Berger, J.M.  
Deposited on : 2004-05-14  
Resolution : 2.90 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 : 4.02b-467  
Mogul : 2022.3.0, CSD as543be (2022)  
Xtriage (Phenix) : 1.20.1  
EDS : 3.0  
Percentile statistics : 20231227.v01 (using entries in the PDB archive December 27th 2023)  
CCP4 : 9.0.003 (Gargrove)  
Density-Fitness : 1.0.11  
Ideal geometry (proteins) : Engh & Huber (2001)  
Ideal geometry (DNA, RNA) : Parkinson et al. (1996)  
Validation Pipeline (wwPDB-VP) : 2.39

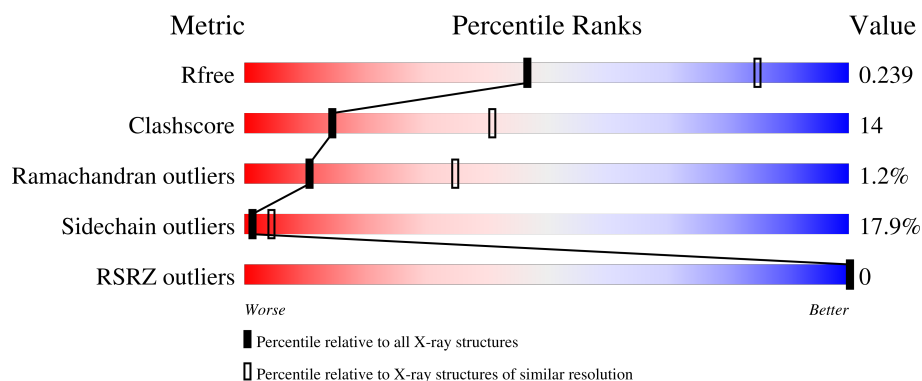
# 1 Overall quality at a glance

The following experimental techniques were used to determine the structure:

*X-RAY DIFFRACTION*



The reported resolution of this entry is 2.90 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))
$R_{free}$	164625	2335 (2.90-2.90)
Clashscore	180529	2564 (2.90-2.90)
Ramachandran outliers	177936	2514 (2.90-2.90)
Sidechain outliers	177891	2516 (2.90-2.90)
RSRZ outliers	164620	2337 (2.90-2.90)

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	287	
1	B	287	

## 2 Entry composition

There is only 1 type of molecule in this entry. The entry contains 4228 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 Chromosome partition protein mukF.

Mol	Chain	Residues	Atoms						ZeroOcc	AltConf	Trace
1	A	266	Total	C	N	O	S	Se	0	0	0
			2140	1342	378	414	1	5			
1	B	260	Total	C	N	O	S	Se	0	0	0
			2088	1308	368	407	1	4			

There are 10 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	47	MSE	MET	modified residue	UNP P60293
A	81	MSE	MET	modified residue	UNP P60293
A	127	MSE	MET	modified residue	UNP P60293
A	178	MSE	MET	modified residue	UNP P60293
A	241	MSE	MET	modified residue	UNP P60293
B	47	MSE	MET	modified residue	UNP P60293
B	81	MSE	MET	modified residue	UNP P60293
B	127	MSE	MET	modified residue	UNP P60293
B	178	MSE	MET	modified residue	UNP P60293
B	241	MSE	MET	modified residue	UNP P60293



## 4 Data and refinement statistics

Property	Value	Source
Space group	P 61	Depositor
Cell constants a, b, c, $\alpha$ , $\beta$ , $\gamma$	58.70Å 58.70Å 307.41Å 90.00° 90.00° 120.00°	Depositor
Resolution (Å)	20.00 – 2.90 20.00 – 2.90	Depositor EDS
% Data completeness (in resolution range)	95.5 (20.00-2.90) 95.2 (20.00-2.90)	Depositor EDS
$R_{merge}$	(Not available)	Depositor
$R_{sym}$	0.08	Depositor
$\langle I/\sigma(I) \rangle$ <sup>1</sup>	3.35 (at 2.91Å)	Xtriage
Refinement program	REFMAC 5.1.24	Depositor
R, $R_{free}$	0.233 , 0.273 0.202 , 0.239	Depositor DCC
$R_{free}$ test set	625 reflections (4.97%)	wwPDB-VP
Wilson B-factor (Å <sup>2</sup> )	67.4	Xtriage
Anisotropy	0.232	Xtriage
Bulk solvent $k_{sol}$ (e/Å <sup>3</sup> ), $B_{sol}$ (Å <sup>2</sup> )	0.34 , 57.6	EDS
L-test for twinning <sup>2</sup>	$\langle  L  \rangle = 0.47$ , $\langle L^2 \rangle = 0.30$	Xtriage
Estimated twinning fraction	0.118 for h,-h-k,-l	Xtriage
$F_o, F_c$ correlation	0.93	EDS
Total number of atoms	4228	wwPDB-VP
Average B, all atoms (Å <sup>2</sup> )	34.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.08% 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	0.45	0/2169	0.80	11/2926 (0.4%)
1	B	0.44	0/2114	0.79	11/2850 (0.4%)
All	All	0.44	0/4283	0.80	22/5776 (0.4%)

There are no bond length outliers.

All (22) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
1	A	227	ASP	CB-CG-OD2	6.72	124.35	118.30
1	A	172	ASP	CB-CG-OD2	6.15	123.83	118.30
1	B	172	ASP	CB-CG-OD2	6.08	123.78	118.30
1	A	245	ASP	CB-CG-OD2	5.78	123.50	118.30
1	B	19	ASP	CB-CG-OD2	5.77	123.50	118.30
1	A	278	ASP	CB-CG-OD2	5.72	123.45	118.30
1	B	250	ASP	CB-CG-OD2	5.58	123.32	118.30
1	B	54	ASP	CB-CG-OD2	5.55	123.29	118.30
1	A	80	ASP	CB-CG-OD2	5.53	123.28	118.30
1	B	148	ASP	CB-CG-OD2	5.48	123.23	118.30
1	B	272	ASP	CB-CG-OD2	5.38	123.14	118.30
1	B	220	ASP	CB-CG-OD2	5.38	123.14	118.30
1	B	238	ASP	CB-CG-OD2	5.37	123.13	118.30
1	A	187	ASP	CB-CG-OD2	5.35	123.12	118.30
1	A	272	ASP	CB-CG-OD2	5.29	123.06	118.30
1	B	141	ASP	CB-CG-OD2	5.16	122.94	118.30
1	A	220	ASP	CB-CG-OD2	5.15	122.94	118.30
1	B	278	ASP	CB-CG-OD2	5.12	122.90	118.30
1	A	244	ASP	CB-CG-OD2	5.11	122.90	118.30
1	B	169	ASP	CB-CG-OD2	5.09	122.88	118.30
1	A	188	ASP	CB-CG-OD2	5.05	122.84	118.30
1	A	196	ASP	CB-CG-OD2	5.04	122.83	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	2140	0	2103	54	0
1	B	2088	0	2048	69	0
All	All	4228	0	4151	116	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 14.

All (116) 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:B:120:PHE:HZ	1:B:218:LEU:HD21	1.17	1.09
1:A:138:ARG:HH11	1:A:138:ARG:HG3	1.13	1.08
1:A:90:PHE:O	1:A:100:ILE:HG13	1.68	0.92
1:B:124:ARG:HD2	1:B:174:THR:HG23	1.51	0.91
1:A:37:THR:HG21	1:B:11:LEU:HD11	1.54	0.89
1:B:120:PHE:CZ	1:B:218:LEU:HD21	2.06	0.89
1:A:48:SER:HA	1:A:100:ILE:HG22	1.54	0.87
1:A:138:ARG:HG3	1:A:138:ARG:NH1	1.86	0.87
1:B:268:GLN:O	1:B:271:ILE:HG22	1.76	0.85
1:A:127:MSE:O	1:A:131:ILE:HG23	1.81	0.80
1:B:201:ILE:N	1:B:204:CYS:HG	1.79	0.80
1:A:23:SER:H	1:A:84:GLN:NE2	1.82	0.77
1:B:28:ARG:HG3	1:B:28:ARG:HH11	1.51	0.75
1:B:31:PHE:CD2	1:B:81:MSE:HE2	2.22	0.74
1:B:216:ARG:HH21	1:B:219:GLN:HG3	1.54	0.71
1:B:125:LEU:HD22	1:B:218:LEU:HD22	1.72	0.71
1:B:32:LEU:HB2	1:B:81:MSE:HE1	1.74	0.69
1:A:104:THR:HB	1:A:105:PRO:HD2	1.74	0.68
1:B:162:TYR:O	1:B:166:GLU:HG3	1.92	0.68
1:A:8:VAL:N	1:A:9:PRO:HD3	2.09	0.67
1:A:184:GLN:HE21	1:A:184:GLN:HA	1.59	0.67
1:B:77:ALA:O	1:B:81:MSE:HG2	1.94	0.67

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:33:LEU:O	1:A:37:THR:HG23	1.96	0.66
1:B:219:GLN:HE22	1:B:271:ILE:HB	1.61	0.66
1:A:8:VAL:N	1:A:9:PRO:CD	2.60	0.65
1:B:233:LEU:O	1:B:236:ILE:HG22	1.98	0.64
1:B:219:GLN:HE22	1:B:271:ILE:CB	2.11	0.63
1:A:219:GLN:NE2	1:A:267:GLY:HA3	2.15	0.62
1:A:23:SER:H	1:A:84:GLN:HE22	1.45	0.61
1:B:204:CYS:O	1:B:208:LEU:HG	2.00	0.61
1:B:39:ASN:HB2	1:B:47:MSE:SE	2.51	0.60
1:A:132:VAL:HG23	1:A:164:VAL:HG22	1.83	0.60
1:B:124:ARG:CD	1:B:174:THR:HG23	2.27	0.60
1:A:48:SER:HA	1:A:100:ILE:CG2	2.30	0.59
1:A:49:GLU:O	1:A:53:VAL:HG23	2.03	0.59
1:B:158:ALA:HB3	1:B:159:PRO:HD3	1.86	0.58
1:A:37:THR:HG21	1:B:11:LEU:CD1	2.32	0.58
1:B:38:LEU:O	1:B:42:ARG:HB2	2.04	0.57
1:B:37:THR:O	1:B:41:GLU:HB3	2.04	0.57
1:A:42:ARG:HD3	1:A:45:GLY:O	2.05	0.57
1:B:124:ARG:HD2	1:B:174:THR:CG2	2.32	0.57
1:A:123:LEU:O	1:A:127:MSE:HG3	2.05	0.56
1:B:14:TRP:O	1:B:18:ASN:ND2	2.29	0.56
1:B:120:PHE:HZ	1:B:218:LEU:CD2	2.04	0.56
1:B:249:VAL:O	1:B:253:VAL:HG23	2.05	0.55
1:B:8:VAL:N	1:B:9:PRO:CD	2.69	0.55
1:B:31:PHE:HD2	1:B:81:MSE:HE2	1.67	0.55
1:A:104:THR:HB	1:A:105:PRO:CD	2.38	0.54
1:A:236:ILE:O	1:A:240:THR:HG23	2.08	0.53
1:B:57:ARG:HG2	1:B:70:ILE:HD13	1.90	0.53
1:B:125:LEU:CD2	1:B:218:LEU:HD22	2.39	0.53
1:A:102:ARG:HD3	1:B:266:TRP:CZ2	2.43	0.53
1:A:190:ALA:O	1:A:194:ASN:ND2	2.42	0.52
1:B:178:MSE:HE2	1:B:215:LEU:CD1	2.40	0.52
1:A:100:ILE:HG23	1:A:101:TYR:CD2	2.45	0.52
1:B:49:GLU:O	1:B:53:VAL:HG23	2.10	0.52
1:B:6:GLN:C	1:B:9:PRO:HD2	2.30	0.52
1:B:28:ARG:HG3	1:B:28:ARG:NH1	2.23	0.52
1:A:183:GLN:NE2	1:B:89:ARG:O	2.43	0.51
1:B:125:LEU:HG	1:B:129:LEU:HD22	1.93	0.51
1:A:65:GLN:HB3	1:A:73:ARG:HH22	1.76	0.51
1:A:132:VAL:CG2	1:A:164:VAL:HG13	2.41	0.50
1:A:12:VAL:O	1:A:16:ARG:HB2	2.13	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:184:GLN:HE21	1:A:184:GLN:CA	2.24	0.48
1:A:87:LEU:HD12	1:A:103:LEU:HA	1.94	0.48
1:B:8:VAL:O	1:B:12:VAL:HG23	2.14	0.48
1:B:175:GLN:NE2	1:B:263:ILE:HG23	2.29	0.48
1:A:177:LEU:HD23	1:B:105:PRO:HG2	1.95	0.47
1:B:230:GLN:HE22	1:B:257:GLN:HG2	1.78	0.47
1:B:39:ASN:O	1:B:39:ASN:ND2	2.41	0.47
1:A:170:SER:O	1:A:174:THR:HG23	2.15	0.47
1:A:107:GLY:O	1:A:111:THR:HB	2.14	0.47
1:A:16:ARG:HG2	1:B:63:PHE:CZ	2.50	0.46
1:B:152:TRP:CE3	1:B:156:VAL:HG11	2.50	0.46
1:B:275:ILE:O	1:B:279:ARG:HG2	2.16	0.46
1:B:48:SER:OG	1:B:51:GLU:HG3	2.16	0.46
1:B:219:GLN:HE22	1:B:271:ILE:CG1	2.28	0.46
1:B:219:GLN:NE2	1:B:271:ILE:HB	2.30	0.44
1:A:157:TYR:HB2	1:A:249:VAL:HG22	1.99	0.44
1:B:251:ARG:CG	1:B:252:LEU:N	2.81	0.44
1:B:36:ALA:HB2	1:B:111:THR:HG21	2.00	0.44
1:A:43:LEU:HB3	1:A:44:ASP:H	1.58	0.44
1:B:49:GLU:HB2	1:B:101:TYR:HE2	1.83	0.44
1:A:241:MSE:HE2	1:A:241:MSE:HB2	1.98	0.43
1:B:25:PRO:HD2	1:B:28:ARG:HB2	2.00	0.43
1:A:9:PRO:HA	1:A:12:VAL:HG23	2.01	0.43
1:B:32:LEU:HD12	1:B:81:MSE:HE3	2.00	0.43
1:A:127:MSE:HE1	1:B:158:ALA:HB1	2.01	0.42
1:A:89:ARG:NH1	1:A:101:TYR:OH	2.45	0.42
1:B:266:TRP:HA	1:B:269:GLN:HB2	2.01	0.42
1:A:132:VAL:HG23	1:A:164:VAL:HG13	2.01	0.42
1:B:172:ASP:O	1:B:176:ARG:HG3	2.19	0.42
1:B:251:ARG:HG3	1:B:252:LEU:N	2.34	0.42
1:A:73:ARG:HA	1:A:76:ASN:HD22	1.85	0.42
1:B:216:ARG:NH2	1:B:219:GLN:HG3	2.28	0.42
1:B:167:ILE:O	1:B:171:ILE:HD12	2.19	0.42
1:B:123:LEU:HD12	1:B:123:LEU:HA	1.85	0.41
1:B:157:TYR:CZ	1:B:161:LYS:HD2	2.55	0.41
1:B:33:LEU:HD11	1:B:114:TYR:HB2	2.03	0.41
1:B:39:ASN:HD22	1:B:39:ASN:C	2.21	0.41
1:A:75:ASN:HD22	1:A:75:ASN:HA	1.67	0.41
1:A:87:LEU:CD1	1:A:103:LEU:HD13	2.51	0.41
1:A:146:GLY:HA2	1:A:151:HIS:CE1	2.56	0.41
1:A:184:GLN:HA	1:A:184:GLN:NE2	2.29	0.41

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:B:28:ARG:HD3	1:B:28:ARG:HA	1.83	0.41
1:B:120:PHE:CD2	1:B:120:PHE:C	2.94	0.41
1:A:31:PHE:O	1:A:34:ALA:HB3	2.21	0.41
1:A:238:ASP:O	1:A:241:MSE:HG3	2.21	0.41
1:A:77:ALA:O	1:A:81:MSE:HG2	2.21	0.41
1:A:138:ARG:NH1	1:A:138:ARG:CG	2.67	0.41
1:A:132:VAL:O	1:A:136:LEU:HB2	2.21	0.41
1:A:72:VAL:HG12	1:A:76:ASN:HD21	1.86	0.40
1:A:156:VAL:C	1:A:159:PRO:HD2	2.41	0.40
1:B:35:VAL:HG13	1:B:47:MSE:HE1	2.04	0.40
1:B:47:MSE:HE2	1:B:52:LEU:HD23	2.03	0.40
1:B:167:ILE:O	1:B:167:ILE:HG22	2.20	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	262/287 (91%)	245 (94%)	14 (5%)	3 (1%)	12	37
1	B	252/287 (88%)	234 (93%)	15 (6%)	3 (1%)	11	35
All	All	514/574 (90%)	479 (93%)	29 (6%)	6 (1%)	11	35

All (6) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	147	GLY
1	A	244	ASP
1	B	146	GLY
1	B	43	LEU
1	A	43	LEU
1	B	40	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	231/244 (95%)	185 (80%)	46 (20%)	1	3
1	B	227/244 (93%)	191 (84%)	36 (16%)	2	6
All	All	458/488 (94%)	376 (82%)	82 (18%)	1	4

All (82) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	11	LEU
1	A	16	ARG
1	A	17	LYS
1	A	28	ARG
1	A	32	LEU
1	A	33	LEU
1	A	42	ARG
1	A	43	LEU
1	A	44	ASP
1	A	46	GLU
1	A	47	MSE
1	A	59	VAL
1	A	68	GLU
1	A	69	THR
1	A	80	ASP
1	A	87	LEU
1	A	103	LEU
1	A	108	ILE
1	A	111	THR
1	A	115	ILE
1	A	116	ARG
1	A	118	ARG
1	A	121	SER
1	A	126	SER
1	A	131	ILE
1	A	135	GLU
1	A	138	ARG

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Mol	Chain	Res	Type
1	A	144	GLU
1	A	145	GLU
1	A	149	GLU
1	A	154	ARG
1	A	156	VAL
1	A	170	SER
1	A	174	THR
1	A	181	GLN
1	A	182	GLN
1	A	184	GLN
1	A	186	LYS
1	A	197	TRP
1	A	206	LEU
1	A	228	LYS
1	A	234	LEU
1	A	241	MSE
1	A	244	ASP
1	A	250	ASP
1	A	268	GLN
1	B	5	SER
1	B	8	VAL
1	B	11	LEU
1	B	28	ARG
1	B	33	LEU
1	B	39	ASN
1	B	100	ILE
1	B	116	ARG
1	B	129	LEU
1	B	130	SER
1	B	144	GLU
1	B	145	GLU
1	B	148	ASP
1	B	149	GLU
1	B	154	ARG
1	B	156	VAL
1	B	177	LEU
1	B	193	LEU
1	B	206	LEU
1	B	209	SER
1	B	210	GLU
1	B	212	SER
1	B	217	GLU

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Mol	Chain	Res	Type
1	B	218	LEU
1	B	222	LEU
1	B	228	LYS
1	B	243	HIS
1	B	246	LEU
1	B	248	PHE
1	B	250	ASP
1	B	252	LEU
1	B	259	LYS
1	B	262	ARG
1	B	270	SER
1	B	271	ILE
1	B	281	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (17) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	75	ASN
1	A	76	ASN
1	A	84	GLN
1	A	88	ASN
1	A	128	GLN
1	A	151	HIS
1	A	155	ASN
1	A	182	GLN
1	A	184	GLN
1	A	194	ASN
1	A	219	GLN
1	B	39	ASN
1	B	151	HIS
1	B	219	GLN
1	B	230	GLN
1	B	257	GLN
1	B	268	GLN

### 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 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 [i](#)

### 6.1 Protein, DNA and RNA chains [i](#)

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	261/287 (90%)	-0.60	0 100 100	15, 32, 53, 65	0
1	B	256/287 (89%)	-0.30	0 100 100	13, 32, 54, 65	0
All	All	517/574 (90%)	-0.45	0 100 100	13, 32, 54, 65	0

There are no RSRZ outliers to report.

### 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 monosaccharides 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.