Full wwPDB X-ray Structure Validation Report ⓘ

Aug 8, 2024 – 03:02 PM EDT

PDB ID	:	8U5L
Title	:	MAU868, a novel human-derived monoclonal neutralizing antibody targeting BK virus VP1
Authors	:	Knapp, M.S.; Ornelas, E.
Deposited on	:	2023-09-12
Resolution	:	2.70 Å(reported)

This is a Full wwPDB X-ray Structure Validation Report for a publicly released PDB entry.

We welcome your comments at *validation@mail.wwpdb.org*
A user guide is available at
https://www.wwpdb.org/validation/2017/XrayValidationReportHelp
with specific help available everywhere you see the ⓘ symbol.

The types of validation reports are described at
http://www.wwpdb.org/validation/2017/FAQs#types.

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

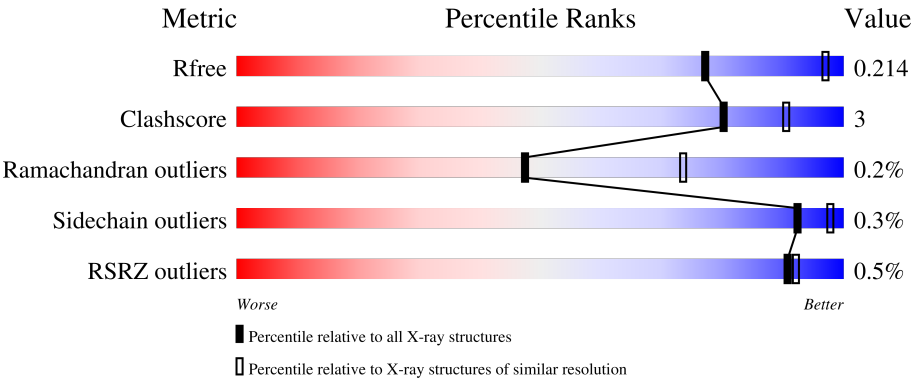
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.37.1
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.37.1

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 2.70 Å.

Percentile scores (ranging between 0-100) for global validation metrics of the entry are shown in the following graphic. The table shows the number of entries on which the scores are based.



Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	2808 (2.70-2.70)
Clashscore	141614	3122 (2.70-2.70)
Ramachandran outliers	138981	3069 (2.70-2.70)
Sidechain outliers	138945	3069 (2.70-2.70)
RSRZ outliers	127900	2737 (2.70-2.70)

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 >=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 <=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	269	90% 7% .
1	B	269	90% 7% .
1	C	269	88% 9% .
1	D	269	89% 7% .
1	E	269	85% 10% .

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Mol	Chain	Length	Quality of chain
2	F	253	2% 85% 11%
2	H	253	2% 82% 8% 11%
2	J	253	2% 85% 11%
2	K	253	81% 8% 11%
2	N	253	82% 6% 11%

2 Entry composition

There are 3 unique types of molecules in this entry. The entry contains 19903 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 Capsid protein VP1.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	259	Total	C	N	O	S	0	2	0
			2012	1265	351	384	12			
1	B	260	Total	C	N	O	S	0	1	0
			2016	1267	349	388	12			
1	C	262	Total	C	N	O	S	0	3	0
			2032	1276	354	390	12			
1	D	260	Total	C	N	O	S	0	1	0
			2019	1268	347	392	12			
1	E	258	Total	C	N	O	S	0	3	0
			2016	1266	355	383	12			

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	29	GLY	-	expression tag	UNP A7VLA4
B	29	GLY	-	expression tag	UNP A7VLA4
C	29	GLY	-	expression tag	UNP A7VLA4
D	29	GLY	-	expression tag	UNP A7VLA4
E	29	GLY	-	expression tag	UNP A7VLA4

- Molecule 2 is a protein called scFv fragment of the monoclonal antibody MAU868.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	F	225	Total	C	N	O	S	0	0	0
			1707	1072	301	328	6			
2	H	226	Total	C	N	O	S	0	0	0
			1691	1062	297	326	6			
2	J	226	Total	C	N	O	S	0	1	0
			1722	1078	302	336	6			
2	K	225	Total	C	N	O	S	0	1	0
			1728	1084	306	332	6			
2	N	225	Total	C	N	O	S	0	0	0
			1706	1070	298	332	6			

- Molecule 3 is water.

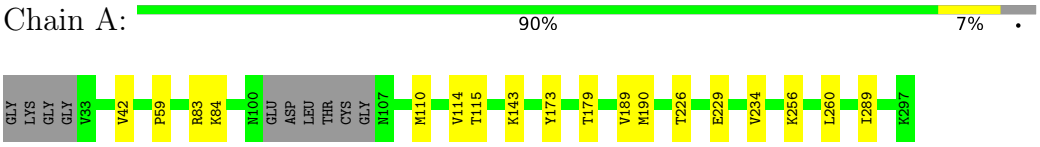
Mol	Chain	Residues	Atoms	ZeroOcc	AltConf
3	A	174	Total O 174 174	0	0
3	B	175	Total O 175 175	0	0
3	C	178	Total O 178 178	0	0
3	D	165	Total O 165 165	0	0
3	E	168	Total O 168 168	0	0
3	F	62	Total O 62 62	0	0
3	H	61	Total O 61 61	0	0
3	J	120	Total O 120 120	0	0
3	K	86	Total O 86 86	0	0
3	N	65	Total O 65 65	0	0

3 Residue-property plots (i)

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.

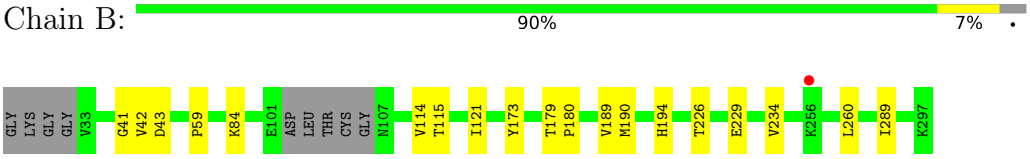
• Molecule 1: Capsid protein VP1

Chain A:



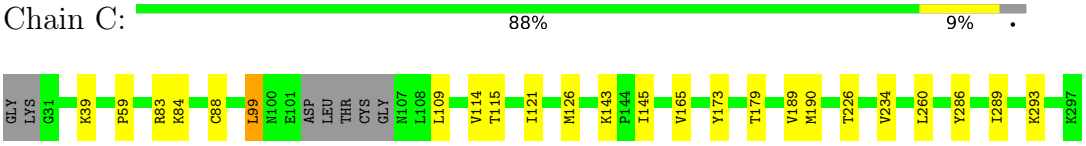
• Molecule 1: Capsid protein VP1

Chain B:



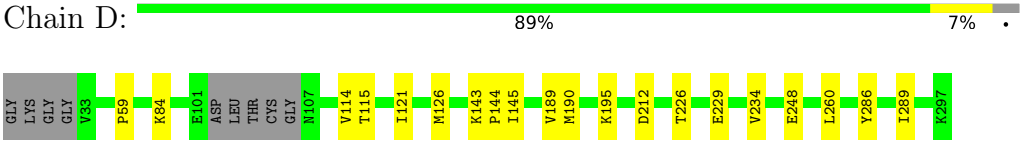
• Molecule 1: Capsid protein VP1

Chain C:



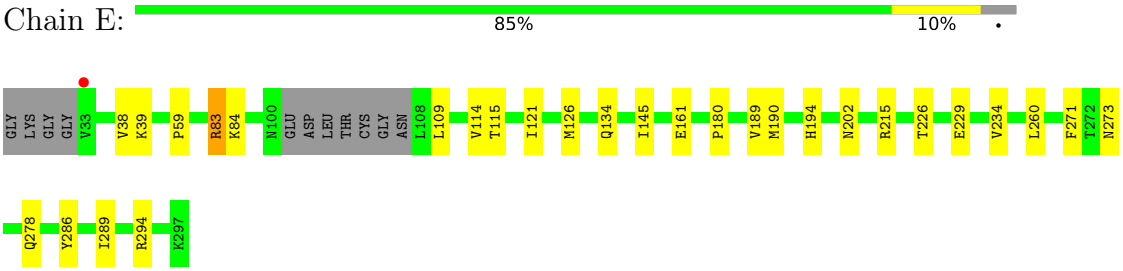
• Molecule 1: Capsid protein VP1

Chain D:



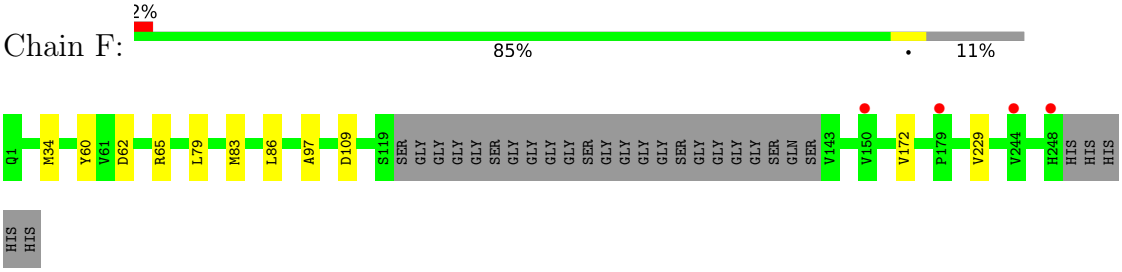
• Molecule 1: Capsid protein VP1

Chain E:



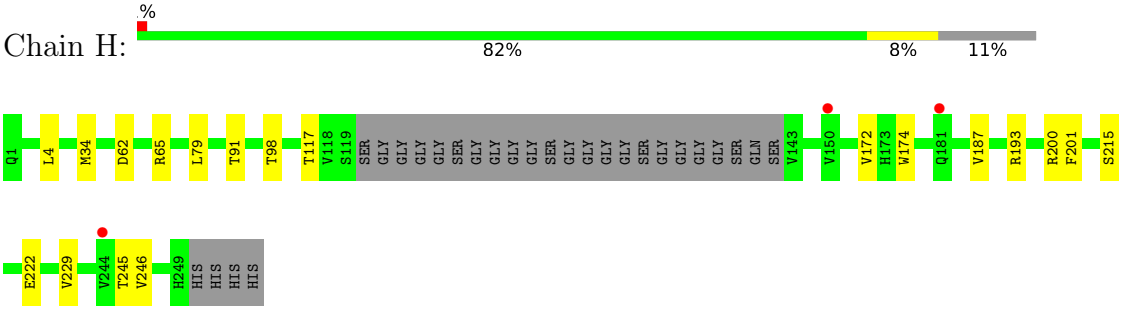
• Molecule 2: scFv fragment of the monoclonal antibody MAU868

Chain F:



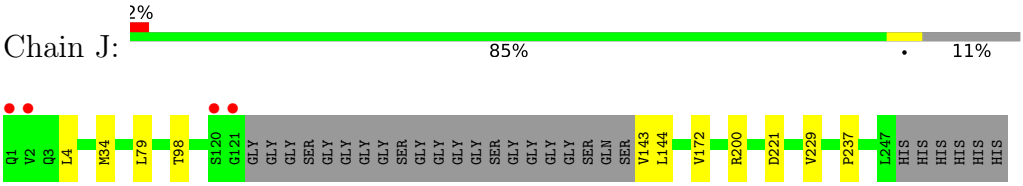
• Molecule 2: scFv fragment of the monoclonal antibody MAU868

Chain H:



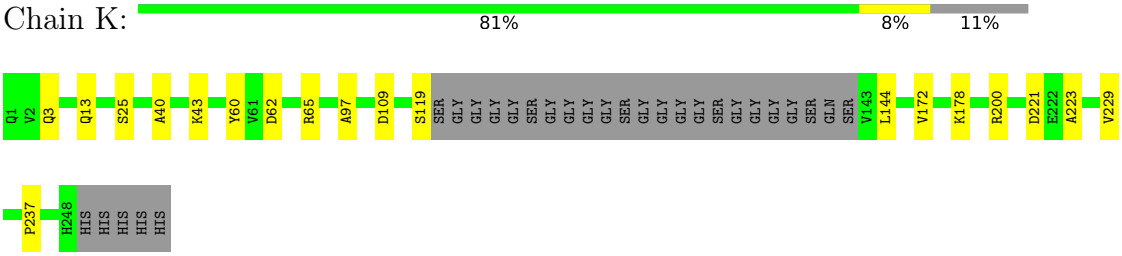
• Molecule 2: scFv fragment of the monoclonal antibody MAU868

Chain J:



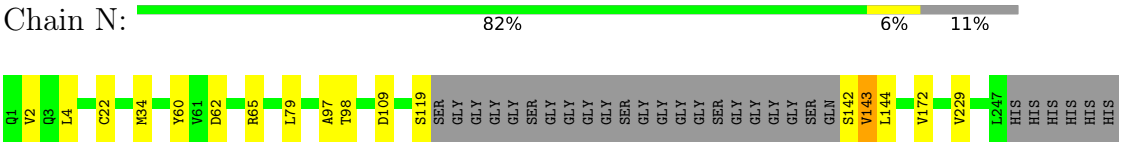
• Molecule 2: scFv fragment of the monoclonal antibody MAU868

Chain K:



• Molecule 2: scFv fragment of the monoclonal antibody MAU868

Chain N:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 42 21 2	Depositor
Cell constants a, b, c, α, β, γ	224.22Å 224.22Å 143.94Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	79.28 – 2.70 79.28 – 2.70	Depositor EDS
% Data completeness (in resolution range)	99.5 (79.28-2.70) 99.5 (79.28-2.70)	Depositor EDS
R_{merge}	0.28	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.56 (at 2.69Å)	Xtriage
Refinement program	PHENIX (1.20.1_4487: ???)	Depositor
R, R_{free}	0.183 , 0.216 0.181 , 0.214	Depositor DCC
R_{free} test set	5063 reflections (5.06%)	wwPDB-VP
Wilson B-factor (Å^2)	37.7	Xtriage
Anisotropy	0.043	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.28 , 37.0	EDS
L-test for twinning[2]	$< \|L\| > = 0.52$, $< L^2 > = 0.36$	Xtriage
Estimated twinning fraction	No twinning to report.	Xtriage
F_o,F_c correlation	0.94	EDS
Total number of atoms	19903	wwPDB-VP
Average B, all atoms (Å^2)	41.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 2.51% of the height of the origin peak. No significant pseudotranslation is detected.*

[1] Intensities estimated from amplitudes.

[2] Theoretical values of $< |L| >$, $< L^2 >$ 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	0.26	0/2061	0.52	0/2801
1	B	0.25	0/2062	0.52	0/2803
1	C	0.26	0/2078	0.52	0/2823
1	D	0.25	0/2065	0.50	0/2805
1	E	0.26	0/2062	0.53	0/2801
2	F	0.25	0/1749	0.52	0/2382
2	H	0.25	0/1732	0.51	0/2363
2	J	0.26	0/1763	0.53	0/2401
2	K	0.26	0/1773	0.52	0/2412
2	N	0.25	0/1747	0.53	0/2380
All	All	0.25	0/19092	0.52	0/25971

There are no bond length outliers.

There are no bond angle outliers.

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	2012	0	1955	11	0
1	B	2016	0	1949	11	0
1	C	2032	0	1966	15	0
1	D	2019	0	1951	14	0
1	E	2016	0	1955	18	0
2	F	1707	0	1631	6	0

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Mol	Chain	Non-H	H(model)	H(added)	Clashes	Symm-Clashes
2	H	1691	0	1587	9	0
2	J	1722	0	1637	6	0
2	K	1728	0	1662	11	0
2	N	1706	0	1623	8	0
3	A	174	0	0	1	0
3	B	175	0	0	0	0
3	C	178	0	0	0	0
3	D	165	0	0	2	0
3	E	168	0	0	1	0
3	F	62	0	0	0	0
3	H	61	0	0	0	0
3	J	120	0	0	0	0
3	K	86	0	0	0	0
3	N	65	0	0	0	0
All	All	19903	0	17916	100	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 3.

All (100) 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:C:83[B]:ARG:NH2	1:C:88:CYS:SG	2.65	0.68
1:E:114:VAL:HG12	1:E:115:THR:HG23	1.76	0.67
2:J:143:VAL:HG22	2:J:144:LEU:H	1.59	0.67
1:A:189:VAL:HG23	1:A:190:MET:H	1.61	0.65
1:A:114:VAL:HG12	1:A:115:THR:HG23	1.81	0.62
2:F:62:ASP:OD1	2:F:65:ARG:NH2	2.32	0.62
1:D:121:ILE:HD11	1:D:286:TYR:HB2	1.83	0.61
1:B:260:LEU:HD21	1:B:289:ILE:HD13	1.83	0.60
1:E:215[B]:ARG:NH2	3:E:302:HOH:O	2.34	0.59
2:F:60:TYR:O	2:F:65:ARG:NH1	2.36	0.59
1:C:114:VAL:HG12	1:C:115:THR:HG23	1.85	0.59
2:H:172:VAL:HG22	2:H:229:VAL:HG22	1.85	0.59
1:D:260:LEU:HD21	1:D:289:ILE:HD13	1.85	0.58
1:D:189:VAL:HG23	1:D:190:MET:H	1.68	0.58
2:J:172:VAL:HG22	2:J:229:VAL:HG22	1.86	0.58
1:A:260:LEU:HD21	1:A:289:ILE:HD13	1.84	0.57
1:A:59:PRO:HA	1:A:84:LYS:HD3	1.87	0.57
2:J:200:ARG:NH2	2:J:221:ASP:OD2	2.37	0.57
1:C:121:ILE:HD11	1:C:286:TYR:HB2	1.87	0.56

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:C:189:VAL:HG23	1:C:190:MET:H	1.70	0.56
2:N:62:ASP:OD1	2:N:65:ARG:NH2	2.34	0.55
2:H:222:GLU:HB2	2:H:246:VAL:HG23	1.88	0.55
1:A:143:LYS:NZ	3:A:304:HOH:O	2.40	0.55
1:C:260:LEU:HD21	1:C:289:ILE:HD13	1.89	0.55
2:K:144:LEU:HD11	2:K:229:VAL:HG13	1.89	0.54
1:C:143:LYS:HE2	1:D:229:GLU:OE2	2.08	0.54
1:C:99:LEU:HD13	1:C:109:LEU:HB2	1.89	0.53
1:D:234:VAL:HG22	1:E:226:THR:HG23	1.90	0.53
1:E:126:MET:HG2	1:E:145:ILE:HD12	1.90	0.53
1:E:260:LEU:HD21	1:E:289:ILE:HD13	1.89	0.53
1:E:189:VAL:HG23	1:E:190:MET:H	1.73	0.53
2:K:200:ARG:NH2	2:K:221:ASP:OD2	2.41	0.53
1:D:114:VAL:HG12	1:D:115:THR:HG23	1.89	0.53
2:K:229:VAL:HG22	2:K:237:PRO:HG2	1.90	0.53
1:B:114:VAL:HG12	1:B:115:THR:HG23	1.90	0.53
2:N:22:CYS:HB3	2:N:79:LEU:HB3	1.91	0.52
1:B:234:VAL:HG22	1:C:226:THR:HG23	1.90	0.52
2:N:60:TYR:O	2:N:65:ARG:NH1	2.42	0.52
1:E:83[B]:ARG:NH2	1:E:202:ASN:O	2.43	0.51
2:J:4:LEU:HD11	2:J:98:THR:HG23	1.92	0.51
2:H:34:MET:HB3	2:H:79:LEU:HD22	1.92	0.50
2:F:172:VAL:HG22	2:F:229:VAL:HG22	1.93	0.50
1:A:226:THR:HG23	1:E:234:VAL:HG22	1.94	0.50
1:E:59:PRO:HA	1:E:84:LYS:HD3	1.94	0.49
1:E:121:ILE:HD11	1:E:286:TYR:HB2	1.93	0.49
1:B:41:GLY:O	1:B:43:ASP:N	2.46	0.49
1:A:173:TYR:CG	1:A:179:THR:HG21	2.48	0.48
1:A:143:LYS:HE2	1:B:229:GLU:OE2	2.13	0.48
2:K:62:ASP:OD1	2:K:65:ARG:NH2	2.42	0.48
1:A:110:MET:HE3	1:A:256:LYS:HA	1.96	0.48
1:D:143:LYS:HE2	1:E:229:GLU:OE2	2.14	0.47
2:N:4:LEU:HD11	2:N:98:THR:HG23	1.96	0.47
2:H:193:ARG:HD3	2:H:201:PHE:O	2.14	0.47
1:E:134:GLN:HB2	1:E:273:ASN:O	2.15	0.47
2:J:34:MET:HB3	2:J:79:LEU:HD22	1.97	0.47
1:C:121:ILE:HD11	1:C:286:TYR:CB	2.45	0.46
2:N:172:VAL:HG22	2:N:229:VAL:HG22	1.97	0.46
1:D:126:MET:HG2	1:D:145:ILE:HD12	1.97	0.46
1:E:39:LYS:HE3	1:E:109:LEU:HD21	1.97	0.46
2:H:62:ASP:OD1	2:H:65:ARG:NH2	2.44	0.46

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:H:4:LEU:HD11	2:H:98:THR:HG23	1.97	0.46
1:C:59:PRO:HA	1:C:84:LYS:HD3	1.98	0.45
2:K:178:LYS:HG2	2:K:223:ALA:HB2	1.99	0.45
2:K:172:VAL:HG22	2:K:229:VAL:HG12	1.99	0.45
2:H:200:ARG:HB3	2:H:215:SER:O	2.16	0.45
1:B:173:TYR:CG	1:B:179:THR:HG21	2.52	0.44
1:E:180:PRO:HB3	1:E:194:HIS:CD2	2.52	0.44
1:D:59:PRO:HA	1:D:84:LYS:HD3	1.98	0.44
1:D:121:ILE:HD11	1:D:286:TYR:CB	2.47	0.44
2:H:91:THR:HG23	2:H:117:THR:HA	1.99	0.44
2:K:13:GLN:OE1	2:K:119:SER:OG	2.35	0.44
1:D:195:LYS:NZ	1:D:212:ASP:OD2	2.39	0.44
1:A:83[B]:ARG:HG3	1:A:83[B]:ARG:HH11	1.83	0.44
2:K:40:ALA:HB3	2:K:43:LYS:HD2	1.99	0.44
1:B:189:VAL:HG23	1:B:190:MET:H	1.82	0.43
1:C:126:MET:HG2	1:C:145:ILE:HD12	2.01	0.43
2:H:174:TRP:HB2	2:H:187:VAL:HB	2.00	0.43
1:B:180:PRO:HB3	1:B:194:HIS:CG	2.54	0.43
2:F:83:MET:HB3	2:F:86:LEU:HD21	2.00	0.43
2:K:3:GLN:HB2	2:K:25:SER:OG	2.19	0.43
2:K:60:TYR:O	2:K:65:ARG:NH1	2.52	0.43
2:K:97:ALA:HA	2:K:109:ASP:O	2.18	0.43
1:B:121:ILE:HG22	1:C:165:VAL:HG21	2.01	0.42
1:E:38:VAL:HG22	1:E:294:ARG:HD2	2.01	0.42
1:B:59:PRO:HA	1:B:84:LYS:HD3	2.00	0.42
1:E:271:PHE:O	1:E:278:GLN:HA	2.19	0.42
1:D:144:PRO:HB3	3:D:340:HOH:O	2.19	0.42
1:C:234:VAL:HG22	1:D:226:THR:HG23	2.01	0.42
2:F:34:MET:HB3	2:F:79:LEU:HD22	2.01	0.42
1:C:173:TYR:CG	1:C:179:THR:HG21	2.54	0.42
1:E:121:ILE:HD11	1:E:286:TYR:CB	2.50	0.42
1:D:248:GLU:OE1	3:D:301:HOH:O	2.21	0.41
1:E:161:GLU:HB3	1:E:215[B]:ARG:CZ	2.49	0.41
2:N:142:SER:C	2:N:144:LEU:H	2.22	0.41
2:J:229:VAL:O	2:J:237:PRO:HD2	2.20	0.41
1:C:39:LYS:HB2	1:C:293:LYS:HB2	2.02	0.41
2:F:97:ALA:HA	2:F:109:ASP:O	2.21	0.41
2:N:34:MET:HB3	2:N:79:LEU:HD22	2.02	0.41
2:N:97:ALA:HA	2:N:109:ASP:O	2.20	0.41
1:A:234:VAL:HG22	1:B:226:THR:HG23	2.03	0.40

There are no symmetry-related clashes.

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	257/269 (96%)	241 (94%)	15 (6%)	1 (0%)	34	60
1	B	257/269 (96%)	242 (94%)	14 (5%)	1 (0%)	34	60
1	C	261/269 (97%)	249 (95%)	12 (5%)	0	100	100
1	D	257/269 (96%)	246 (96%)	11 (4%)	0	100	100
1	E	257/269 (96%)	242 (94%)	15 (6%)	0	100	100
2	F	221/253 (87%)	217 (98%)	4 (2%)	0	100	100
2	H	222/253 (88%)	218 (98%)	4 (2%)	0	100	100
2	J	223/253 (88%)	218 (98%)	5 (2%)	0	100	100
2	K	222/253 (88%)	217 (98%)	5 (2%)	0	100	100
2	N	221/253 (87%)	212 (96%)	7 (3%)	2 (1%)	17	40
All	All	2398/2610 (92%)	2302 (96%)	92 (4%)	4 (0%)	47	73

All (4) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	42	VAL
2	N	143	VAL
2	N	2	VAL
1	B	42	VAL

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	221/230 (96%)	220 (100%)	1 (0%)	88 96
1	B	221/230 (96%)	221 (100%)	0	100 100
1	C	222/230 (96%)	221 (100%)	1 (0%)	88 96
1	D	222/230 (96%)	222 (100%)	0	100 100
1	E	220/230 (96%)	218 (99%)	2 (1%)	78 92
2	F	182/199 (92%)	182 (100%)	0	100 100
2	H	175/199 (88%)	174 (99%)	1 (1%)	86 95
2	J	184/199 (92%)	184 (100%)	0	100 100
2	K	186/199 (94%)	186 (100%)	0	100 100
2	N	182/199 (92%)	180 (99%)	2 (1%)	73 90
All	All	2015/2145 (94%)	2008 (100%)	7 (0%)	92 98

All (7) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	229	GLU
1	C	99	LEU
1	E	83[A]	ARG
1	E	83[B]	ARG
2	H	245	THR
2	N	119	SER
2	N	143	VAL

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. There are no such sidechains identified.

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 monosaccharides 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^{th} percentile and maximum values of the occupancy-weighted average B-factor per residue. The column labelled 'Q< 0.9' lists the number of (and percentage) of residues with an average occupancy less than 0.9.

Mol	Chain	Analysed	<RSRZ>	#RSRZ>2	OWAB(Å^2)	Q<0.9
1	A	259/269 (96%)	-0.60	0 100 100	21, 29, 59, 79	0
1	B	260/269 (96%)	-0.51	1 (0%) 92 93	22, 30, 58, 94	0
1	C	262/269 (97%)	-0.54	0 100 100	23, 31, 53, 98	0
1	D	260/269 (96%)	-0.56	0 100 100	23, 31, 59, 92	0
1	E	258/269 (95%)	-0.55	1 (0%) 92 93	23, 30, 51, 79	0
2	F	225/253 (88%)	-0.31	4 (1%) 68 70	32, 50, 73, 110	0
2	H	226/253 (89%)	-0.14	3 (1%) 77 78	39, 63, 91, 154	0
2	J	226/253 (89%)	-0.42	4 (1%) 68 70	25, 38, 67, 126	0
2	K	225/253 (88%)	-0.51	0 100 100	31, 46, 65, 89	0
2	N	225/253 (88%)	-0.33	0 100 100	30, 48, 73, 90	0
All	All	2426/2610 (92%)	-0.45	13 (0%) 91 92	21, 37, 73, 154	0

All (13) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
2	H	244	VAL	3.0
2	H	150	VAL	2.7
2	J	121	GLY	2.7
2	F	150	VAL	2.7
2	J	120	SER	2.7
2	F	244	VAL	2.7
2	J	1	GLN	2.1
1	B	256	LYS	2.1
2	H	181	GLN	2.1
2	F	248	HIS	2.1
1	E	33	VAL	2.0
2	F	179	PRO	2.0
2	J	2	VAL	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 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.