Full wwPDB X-ray Structure Validation Report ⓘ

Jun 17, 2024 – 11:20 PM EDT

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PDB ID	:	5Z00
Title	:	AtVAL1 B3 domain in complex with 15bp-DNA
Authors	:	Wu, B.X.; Zhang, M.M.
Deposited on	:	2017-12-17
Resolution	:	2.59 Å(reported)

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 2.59 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.
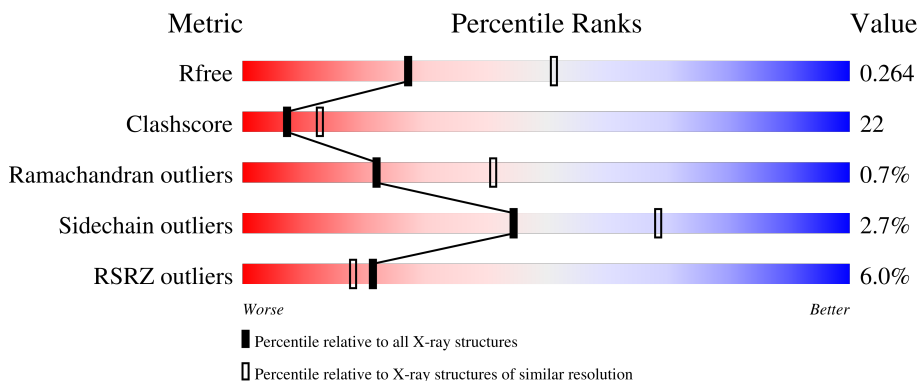
Metric	Whole archive (#Entries)	Similar resolution (#Entries, resolution range(Å))
R_{free}	130704	3676 (2.60-2.56)
Clashscore	141614	4049 (2.60-2.56)
Ramachandran outliers	138981	3979 (2.60-2.56)
Sidechain outliers	138945	3979 (2.60-2.56)
RSRZ outliers	127900	3614 (2.60-2.56)

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	15	33% / 53% / 13%
1	E	15	13% (upper) / 20% / 53% / 27%
1	I	15	7% (upper) / 27% / 73%
2	B	15	20% / 47% / 33%
2	J	15	13% / 87%

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Mol	Chain	Length	Quality of chain
3	C	128	3% 60% 27% 13%
3	G	128	2% 60% 25% · 13%
3	K	128	12% 42% 41% · 13%
3	M	128	3% 54% 31% · 13%
4	F	16	12% 38% 44% 12% 6%

2 Entry composition ⓘ

There are 4 unique types of molecules in this entry. The entry contains 5294 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 DNA chain called DNA (5'-D(*AP*AP*TP*TP*CP*TP*GP*CP*AP*TP*GP*GP*AP*TP*T)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	15	Total	C	N	O	P	0	0	0
			305	148	53	90	14			
1	E	15	Total	C	N	O	P	0	0	0
			308	148	53	92	15			
1	I	15	Total	C	N	O	P	0	0	0
			305	148	53	90	14			

- Molecule 2 is a DNA chain called DNA (5'-D(*TP*AP*AP*TP*CP*CP*AP*TP*GP*CP*AP*GP*AP*AP*T)-3').

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	B	15	Total	C	N	O	P	0	0	0
			304	147	57	86	14			
2	J	15	Total	C	N	O	P	0	0	0
			304	147	57	86	14			

- Molecule 3 is a protein called B3 domain-containing transcription repressor VAL1.

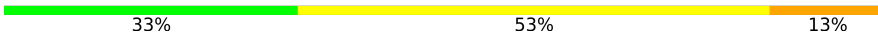| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
3	C	111	Total	C	N	O	S	0	0	0
			866	551	153	156	6			
3	G	111	Total	C	N	O	S	0	0	0
			866	551	153	156	6			
3	K	111	Total	C	N	O	S	0	0	0
			866	551	153	156	6			
3	M	111	Total	C	N	O	S	0	0	0
			866	551	153	156	6			

- Molecule 4 is a DNA chain called DNA (5'-D(*TP*AP*AP*TP*CP*CP*AP*TP*GP*CP*AP*GP*AP*AP*TP*T)-3').

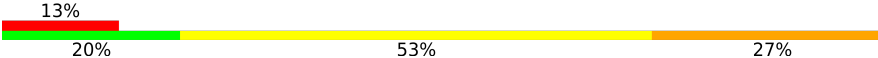| Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
			Total	C	N	O	P			
4	F	15	304	147	57	86	14	0	0	0

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: DNA (5'-D(*AP*AP*TP*TP*CP*TP*GP*CP*AP*TP*GP*GP*AP*TP*T)-3')

Chain A:

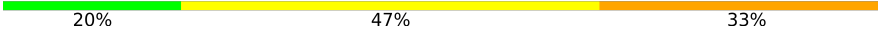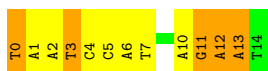- Molecule 1: DNA (5'-D(*AP*AP*TP*TP*CP*TP*GP*CP*AP*TP*GP*GP*AP*TP*T)-3')

Chain E:

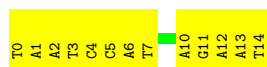- Molecule 1: DNA (5'-D(*AP*AP*TP*TP*CP*TP*GP*CP*AP*TP*GP*GP*AP*TP*T)-3')

Chain I:

- Molecule 2: DNA (5'-D(*TP*AP*AP*TP*CP*CP*AP*TP*GP*CP*AP*GP*AP*AP*T)-3')

Chain B:

- Molecule 2: DNA (5'-D(*TP*AP*AP*TP*CP*CP*AP*TP*GP*CP*AP*GP*AP*AP*T)-3')

Chain J:

T0 A1 A2 T3 C4 C5 A6 T7 A10 G11 A12 A13 T14

• Molecule 3: B3 domain-containing transcription repressor VAL1

Chain C:

3%

60% 27% 13%

PRO LYS TYR THR ASP LYS GLU VAL GLN GLN ILE SER GLY ASN L287 N288 L289 K297 D303 I307 G308 R309 L310 V311 L312 P313 K314 E318 E328 G329 D336 V337 R340 E341 W342 T343 F344 Q345 F346 R347 N351 N352 N353 M356 L359 V362 C365 I366

M370 L371 D375 T378 R381 P384 I389 K394 A395 A396 N397 ALA GLY ASP

• Molecule 3: B3 domain-containing transcription repressor VAL1

Chain G:

2%

60% 25% 13%

PRO LYS TYR THR ASP LYS GLU VAL GLN GLN ILE SER GLY ASN L287 I291 E296 K297 S300 D303 R306 R309 K314 E318 F321 P322 S325 G329 K333 I334 Q335 D336 V337 E341 F346 R347 Y348 W349 R355 M356 Y357 E360 M369

M370 L371 D375 V382 K387 R393 K394 A395 A396 N397 ALA GLY ASP

• Molecule 3: B3 domain-containing transcription repressor VAL1

Chain K:

12%

42% 41% 13%

PRO LYS TYR THR ASP LYS GLU VAL GLN GLN ILE SER GLY ASN L287 N288 L289 N290 I291 L294 F295 E296 K297 T298 S302 D303 R306 I307 G308 R309 L310 V311 L312 P313 K314 A315 C316 A317 E318 A319 Y320 F321 P322 P323 I324 S325 Q326 S327 E328 G329 I330 P331 L332 K333 D336 V337

R338 G339 R340 Q345 F346 R347 Y348 N353 S354 R355 M356 Y357 V358 L359 E360 G361 V362 T363 P364 C365 I366 Q367 S368 M369 M370 L371 Q372 A373 G374 D375 T376 R381 V382 D383 P384 G385 G386 K387 K394 A395 A396 N397 ALA GLY ASP

• Molecule 3: B3 domain-containing transcription repressor VAL1

Chain M:

3%

54% 31% 13%

PRO LYS TYR THR ASP LYS GLU VAL GLN GLN ILE SER GLY ASN L287 N288 L289 N290 I291 L294 K297 G308 R309 L310 V311 K314 E318 F321 S327 E328 G329 L332 K333 I334 Q335 D336 V337 R338 G339 R340 E341 F346 R347 Y348 W349 P350 N351 N352 N353 S354

L359 E360 T363 P364 C365 I366 Q367 S368 L371 R381 V382 D383 P384 K387 M390 G391 S392 A395 A396 N397 ALA GLY ASP

• Molecule 4: DNA (5'-D(*TP*AP*AP*TP*CP*CP*AP*TP*GP*CP*AP*GP*AP*AP*TP*T)-3')

Chain F:

12%

38%　　　　　　　　　　　　44%　　　　　　12%　　6%

DT A1 A2 T3 C4 C5 A6 T7 G8 T14 T15

4 Data and refinement statistics (i)

Property	Value	Source
Space group	P 1 21 1	Depositor
Cell constants a, b, c, α, β, γ	68.22Å 97.42Å 71.15Å 90.00° 110.19° 90.00°	Depositor
Resolution (Å)	29.20 – 2.59 29.20 – 2.59	Depositor EDS
% Data completeness (in resolution range)	77.1 (29.20-2.59) 75.7 (29.20-2.59)	Depositor EDS
R_{merge}	0.15	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.76 (at 2.57Å)	Xtriage
Refinement program	PHENIX (1.10.1_2155: ???)	Depositor
R, R_{free}	0.216 , 0.268 0.219 , 0.264	Depositor DCC
R_{free} test set	1013 reflections (4.80%)	wwPDB-VP
Wilson B-factor (Å^2)	41.5	Xtriage
Anisotropy	0.280	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.30 , 43.3	EDS
L-test for twinning [2]	$< |L| > = 0.47, < L^2 > = 0.30$	Xtriage
Estimated twinning fraction	0.034 for l,-k,h	Xtriage
F_o,F_c correlation	0.91	EDS
Total number of atoms	5294	wwPDB-VP
Average B, all atoms (Å^2)	53.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 4.94% of the height of the origin peak. No significant pseudotranslation is detected.*

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[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 (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	1.47	7/341 (2.1%)	0.89	1/525 (0.2%)
1	E	1.07	4/344 (1.2%)	0.88	1/529 (0.2%)
1	I	0.78	0/341	0.95	0/525
2	B	1.49	8/341 (2.3%)	0.92	0/524
2	J	0.93	1/341 (0.3%)	0.92	0/524
3	C	0.63	0/885	0.83	1/1198 (0.1%)
3	G	0.60	0/885	0.82	0/1198
3	K	0.69	0/885	1.06	7/1198 (0.6%)
3	M	0.62	1/885 (0.1%)	0.86	0/1198
4	F	1.36	2/341 (0.6%)	1.08	0/524
All	All	0.89	23/5589 (0.4%)	0.91	10/7943 (0.1%)

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
3	K	0	1

All (23) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	293	DT	O3'-P	-9.57	1.49	1.61
2	B	5	DC	O3'-P	-9.17	1.50	1.61
4	F	5	DC	O3'-P	-9.04	1.50	1.61
1	A	292	DC	O3'-P	-7.14	1.52	1.61
4	F	6	DA	O3'-P	-6.68	1.53	1.61
1	A	294	DG	O3'-P	-6.59	1.53	1.61
2	B	11	DG	O3'-P	-6.50	1.53	1.61
2	B	12	DA	O3'-P	-6.48	1.53	1.61
2	B	13	DA	O3'-P	-6.23	1.53	1.61
1	E	293	DT	O3'-P	-6.21	1.53	1.61

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Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
1	A	291	DT	O3'-P	-6.05	1.53	1.61
1	A	298	DG	O3'-P	-5.67	1.54	1.61
2	B	2	DA	O3'-P	-5.48	1.54	1.61
1	E	292	DC	O3'-P	-5.48	1.54	1.61
1	A	288	DA	O3'-P	-5.47	1.54	1.61
1	E	297	DT	O3'-P	-5.42	1.54	1.61
2	B	3	DT	O3'-P	-5.41	1.54	1.61
2	B	6	DA	O3'-P	-5.33	1.54	1.61
2	B	0	DT	O3'-P	-5.26	1.54	1.61
1	E	294	DG	C3'-O3'	-5.23	1.37	1.44
3	M	365	CYS	CB-SG	-5.14	1.73	1.81
1	A	290	DT	O3'-P	-5.13	1.54	1.61
2	J	5	DC	O3'-P	-5.11	1.55	1.61

All (10) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(°)	Ideal(°)
3	K	347	ARG	NE-CZ-NH1	11.09	125.85	120.30
3	K	333	LYS	CD-CE-NZ	6.36	126.32	111.70
3	K	347	ARG	NE-CZ-NH2	-6.33	117.14	120.30
3	K	333	LYS	CG-CD-CE	-6.19	93.34	111.90
3	C	347	ARG	NE-CZ-NH1	5.76	123.18	120.30
1	E	290	DT	C1'-O4'-C4'	-5.54	104.56	110.10
1	A	295	DC	C1'-O4'-C4'	-5.50	104.60	110.10
3	K	347	ARG	CB-CG-CD	-5.29	97.84	111.60
3	K	314	LYS	CG-CD-CE	-5.27	96.09	111.90
3	K	347	ARG	CA-CB-CG	5.24	124.92	113.40

There are no chirality outliers.

All (1) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
3	K	367	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	305	0	173	12	0
1	E	308	0	172	23	0
1	I	305	0	173	21	1
2	B	304	0	171	10	0
2	J	304	0	171	19	1
3	C	866	0	876	26	0
3	G	866	0	876	28	0
3	K	866	0	876	66	0
3	M	866	0	876	31	0
4	F	304	0	171	19	0
All	All	5294	0	4535	217	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 22.

All (217) 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:E:301:DT:O4	4:F:2:DA:N6	1.65	1.27
1:I:300:DA:N1	2:J:3:DT:O4	1.95	1.00
1:E:288:DA:N1	4:F:15:DT:N3	2.10	0.99
1:E:289:DA:H61	4:F:14:DT:H3	1.00	0.98
1:E:301:DT:N3	4:F:2:DA:N1	2.12	0.96
3:M:371:LEU:HD21	3:M:392:SER:HB2	1.47	0.95
1:E:288:DA:H2	4:F:15:DT:O2	1.54	0.91
1:E:288:DA:C2	4:F:15:DT:O2	2.25	0.90
1:I:294:DG:OP2	3:K:347:ARG:NH2	2.04	0.90
1:I:294:DG:P	3:K:347:ARG:HH22	1.95	0.90
3:K:307:ILE:HD12	3:K:307:ILE:H	1.37	0.87
2:B:0:DT:H2"	2:B:1:DA:O5'	1.72	0.87
1:E:288:DA:H2"	1:E:289:DA:OP1	1.74	0.86
3:M:350:PRO:O	3:M:354:SER:O	1.95	0.84
3:K:322:PRO:HG2	3:K:330:ILE:HD11	1.58	0.84
1:I:291:DT:H2'	1:I:292:DC:H6	1.46	0.81
3:C:378:THR:OG1	3:K:338:ARG:NH2	2.14	0.80
3:M:347:ARG:HG2	3:M:348:TYR:N	2.00	0.76
3:K:294:LEU:HD13	3:K:320:TYR:HB3	1.67	0.76
3:K:327:SER:HA	3:K:348:TYR:CZ	2.21	0.75
2:J:4:DC:H5"	2:J:4:DC:H6	1.50	0.75
3:K:307:ILE:HD12	3:K:307:ILE:N	2.01	0.75
3:K:347:ARG:HB3	3:K:358:VAL:HG23	1.69	0.75
1:E:291:DT:H1'	1:E:292:DC:H5'	1.69	0.74

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:325:SER:HA	3:K:355:ARG:HH12	1.52	0.74
1:I:291:DT:H2'	1:I:292:DC:C6	2.23	0.74
1:I:299:DG:H1'	1:I:300:DA:H5'	1.68	0.73
2:J:1:DA:H2"	2:J:2:DA:H5"	1.70	0.73
2:B:0:DT:H2'	2:B:1:DA:C8	2.23	0.73
3:M:327:SER:OG	3:M:348:TYR:O	2.06	0.73
3:G:291:ILE:HG12	3:G:382:VAL:HG22	1.71	0.72
1:A:288:DA:H5"	1:A:288:DA:H8	1.54	0.72
3:G:297:LYS:NZ	3:G:303:ASP:OD2	2.24	0.70
2:J:4:DC:H5"	2:J:4:DC:C6	2.25	0.70
1:A:288:DA:H8	1:A:288:DA:C5'	2.05	0.70
1:I:300:DA:H2	2:J:3:DT:H3	1.35	0.70
3:K:297:LYS:HZ1	3:K:311:VAL:HG23	1.56	0.69
3:C:297:LYS:NZ	3:C:303:ASP:OD1	2.25	0.69
3:G:296:GLU:OE2	3:G:393:ARG:NH2	2.26	0.69
2:J:4:DC:H6	2:J:4:DC:C5'	2.07	0.67
3:K:314:LYS:HE3	3:K:355:ARG:O	1.95	0.67
3:G:347:ARG:HD3	3:G:360:GLU:OE2	1.95	0.67
1:E:301:DT:O4	4:F:2:DA:C6	2.45	0.66
3:M:329:GLY:HA3	3:M:346:PHE:O	1.96	0.66
3:G:296:GLU:HG3	3:M:289:LEU:HD11	1.77	0.66
1:A:296:DA:H1'	1:A:297:DT:H5'	1.77	0.66
3:K:371:LEU:HD11	3:K:375:ASP:HB2	1.77	0.65
2:J:3:DT:H2'	2:J:4:DC:H5"	1.78	0.65
1:E:288:DA:C2	4:F:15:DT:C2	2.84	0.65
3:K:328:GLU:HG2	3:K:347:ARG:CZ	2.27	0.64
3:G:291:ILE:HD11	3:M:339:GLY:HA2	1.79	0.64
3:K:297:LYS:NZ	3:K:311:VAL:O	2.31	0.63
3:G:337:VAL:HG13	3:M:341:GLU:HB2	1.79	0.63
1:I:289:DA:N6	2:J:13:DA:N6	2.46	0.63
2:J:3:DT:C2'	2:J:4:DC:H5"	2.29	0.62
3:M:335:GLN:NE2	3:M:387:LYS:HE3	2.14	0.62
3:G:309:ARG:HG2	3:G:360:GLU:HG2	1.80	0.62
3:C:366:ILE:HD13	3:C:371:LEU:HD12	1.80	0.62
2:B:0:DT:C2'	2:B:1:DA:O5'	2.48	0.62
2:J:10:DA:H2"	2:J:11:DG:C8	2.35	0.62
1:A:296:DA:C8	1:A:296:DA:H5'	2.35	0.62
1:E:288:DA:C2'	1:E:289:DA:OP1	2.45	0.61
2:J:2:DA:H2"	2:J:3:DT:O4'	2.00	0.61
3:K:362:VAL:HG23	3:K:366:ILE:HD11	1.81	0.61
3:K:371:LEU:HD11	3:K:375:ASP:CB	2.29	0.61

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
2:J:7:DT:OP2	3:K:302:SER:OG	2.14	0.61
3:G:369:MET:HB2	3:G:371:LEU:HG	1.83	0.60
3:K:369:MET:SD	3:K:369:MET:N	2.74	0.60
1:A:288:DA:C5'	1:A:288:DA:C8	2.84	0.60
4:F:5:DC:H2"	4:F:6:DA:C8	2.36	0.60
3:M:327:SER:HB2	3:M:348:TYR:CE1	2.37	0.59
3:C:329:GLY:HA3	3:C:346:PHE:O	2.02	0.59
1:I:300:DA:N1	2:J:3:DT:C4	2.69	0.59
3:G:306:ARG:HD3	3:G:306:ARG:N	2.17	0.59
3:K:307:ILE:H	3:K:307:ILE:CD1	2.10	0.59
2:J:3:DT:H2'	2:J:4:DC:C6	2.37	0.59
1:I:295:DC:H2"	1:I:296:DA:H5'	1.84	0.59
3:K:327:SER:OG	3:K:328:GLU:N	2.34	0.58
3:M:297:LYS:NZ	3:M:311:VAL:O	2.27	0.58
3:G:314:LYS:O	3:G:318:GLU:HG3	2.04	0.58
1:A:288:DA:H5"	1:A:288:DA:C8	2.39	0.57
3:K:325:SER:HA	3:K:355:ARG:NH1	2.18	0.57
3:C:310:LEU:HD22	3:C:359:LEU:HD12	1.86	0.57
1:E:301:DT:C4	4:F:2:DA:N1	2.72	0.57
3:C:297:LYS:HE3	3:C:311:VAL:O	2.04	0.56
1:A:295:DC:H2"	1:A:296:DA:H5'	1.88	0.56
3:G:335:GLN:HB2	3:G:387:LYS:NZ	2.20	0.56
3:K:314:LYS:HZ3	3:K:354:SER:HB2	1.69	0.56
1:E:295:DC:H2"	1:E:296:DA:H5'	1.88	0.56
4:F:5:DC:H2"	4:F:6:DA:N7	2.21	0.56
4:F:1:DA:H4'	4:F:2:DA:OP1	2.06	0.56
2:J:6:DA:H1'	2:J:7:DT:H5'	1.86	0.56
1:A:297:DT:O4	3:C:351:ASN:ND2	2.39	0.56
3:K:328:GLU:HG2	3:K:347:ARG:NE	2.20	0.55
1:E:288:DA:N1	4:F:15:DT:C2	2.74	0.55
3:M:347:ARG:HD2	3:M:360:GLU:OE2	2.05	0.55
3:C:328:GLU:H	3:C:328:GLU:CD	2.09	0.55
3:K:370:MET:O	3:K:394:LYS:NZ	2.40	0.55
3:K:381:ARG:HA	3:K:387:LYS:O	2.07	0.55
4:F:6:DA:H3'	3:G:300:SER:HB2	1.89	0.54
3:G:306:ARG:HD3	3:G:306:ARG:H	1.71	0.54
3:K:362:VAL:O	3:K:366:ILE:HD12	2.08	0.54
1:I:298:DG:H1'	1:I:299:DG:C8	2.42	0.54
1:E:293:DT:H2'	1:E:294:DG:C8	2.42	0.54
3:C:312:LEU:HD11	3:C:359:LEU:HG	1.90	0.54
3:K:310:LEU:HD23	3:K:359:LEU:HD12	1.90	0.53

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:G:321:PHE:HB3	3:G:322:PRO:HD2	1.91	0.53
3:K:328:GLU:OE2	3:K:345:GLN:HG2	2.09	0.53
3:K:336:ASP:OD1	3:K:340:ARG:HB2	2.08	0.53
3:C:336:ASP:OD2	3:C:340:ARG:HB3	2.09	0.52
3:K:366:ILE:HG22	3:K:371:LEU:O	2.09	0.52
3:C:289:LEU:O	3:K:387:LYS:HE2	2.10	0.52
3:G:370:MET:O	3:G:394:LYS:HE2	2.10	0.52
2:B:7:DT:O4	3:C:356:MET:HE1	2.10	0.51
3:C:337:VAL:HG22	3:K:337:VAL:CG2	2.40	0.51
1:I:288:DA:H2"	1:I:289:DA:H5'	1.92	0.51
2:B:11:DG:H2"	2:B:12:DA:C8	2.45	0.51
1:I:290:DT:H6	1:I:290:DT:OP1	1.93	0.51
1:I:298:DG:H2'	1:I:298:DG:O5'	2.11	0.51
3:K:362:VAL:CG2	3:K:366:ILE:HD11	2.40	0.51
1:E:294:DG:OP2	3:G:347:ARG:NH2	2.44	0.50
3:K:314:LYS:NZ	3:K:354:SER:OG	2.44	0.50
3:K:371:LEU:HD12	3:K:372:GLN:H	1.76	0.50
3:K:371:LEU:HD11	3:K:375:ASP:OD1	2.11	0.50
3:G:314:LYS:HG3	3:G:357:TYR:CE1	2.47	0.50
3:M:327:SER:HA	3:M:348:TYR:CE2	2.46	0.50
3:C:314:LYS:O	3:C:318:GLU:HG3	2.12	0.50
3:M:287:LEU:HD12	3:M:288:ASN:H	1.77	0.50
3:K:328:GLU:HA	3:K:347:ARG:HD2	1.93	0.49
2:J:1:DA:C2'	2:J:2:DA:H5"	2.42	0.49
3:G:325:SER:O	3:G:355:ARG:NH2	2.46	0.49
3:C:370:MET:O	3:C:394:LYS:NZ	2.37	0.49
1:I:294:DG:OP2	3:K:347:ARG:NH1	2.45	0.49
1:I:296:DA:H2'	1:I:296:DA:O5'	2.12	0.49
2:B:0:DT:H2"	2:B:1:DA:C5'	2.43	0.49
3:M:314:LYS:O	3:M:318:GLU:HG3	2.12	0.49
2:B:10:DA:H8	2:B:10:DA:OP2	1.95	0.48
3:K:371:LEU:HD12	3:K:372:GLN:N	2.27	0.48
3:M:335:GLN:HE21	3:M:387:LYS:HE3	1.78	0.48
3:M:287:LEU:HD21	3:M:384:PRO:HG2	1.96	0.48
2:J:4:DC:C6	2:J:4:DC:C5'	2.90	0.48
3:M:309:ARG:HG2	3:M:360:GLU:HG2	1.94	0.48
3:M:321:PHE:HE2	3:M:359:LEU:HD21	1.79	0.48
3:K:317:ALA:O	3:K:321:PHE:HB2	2.13	0.47
3:K:289:LEU:HD12	3:K:384:PRO:HD2	1.96	0.47
1:E:300:DA:N6	4:F:2:DA:N6	2.62	0.47
1:I:290:DT:O4'	1:I:290:DT:P	2.73	0.47

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:M:327:SER:HB2	3:M:348:TYR:CZ	2.50	0.47
4:F:4:DC:H2"	4:F:5:DC:C6	2.50	0.47
3:M:327:SER:HB2	3:M:348:TYR:CD1	2.50	0.47
3:G:329:GLY:HA3	3:G:346:PHE:O	2.15	0.47
3:K:303:ASP:CG	3:K:310:LEU:HD12	2.36	0.47
1:E:289:DA:H2'	1:E:290:DT:C7	2.46	0.46
1:I:294:DG:OP2	3:K:347:ARG:CZ	2.63	0.46
3:K:309:ARG:HG2	3:K:360:GLU:HG2	1.97	0.46
3:K:297:LYS:NZ	3:K:311:VAL:HG23	2.27	0.46
3:K:312:LEU:HD21	3:K:359:LEU:HG	1.98	0.46
3:K:347:ARG:NH1	3:K:360:GLU:OE2	2.38	0.46
1:E:293:DT:C2'	1:E:294:DG:C8	2.99	0.46
1:I:288:DA:H8	1:I:288:DA:C5'	2.29	0.46
1:I:290:DT:OP1	1:I:290:DT:C6	2.69	0.46
3:M:294:LEU:HD11	3:M:381:ARG:HB2	1.98	0.46
3:M:338:ARG:NH2	3:M:368:SER:O	2.47	0.46
3:K:364:PRO:O	3:K:368:SER:HB3	2.16	0.46
3:C:375:ASP:OD2	3:C:394:LYS:HD3	2.16	0.45
3:K:314:LYS:NZ	3:K:354:SER:HB2	2.30	0.45
3:K:338:ARG:HD3	3:K:338:ARG:N	2.32	0.45
3:C:342:TRP:CH2	3:C:365:CYS:HA	2.51	0.45
3:K:314:LYS:NZ	3:K:354:SER:CB	2.79	0.45
3:C:375:ASP:CG	3:C:394:LYS:HD3	2.37	0.45
1:A:295:DC:H2"	1:A:296:DA:C8	2.52	0.44
3:G:375:ASP:OD1	3:G:395:ALA:N	2.46	0.44
3:K:328:GLU:OE2	3:K:347:ARG:HD3	2.17	0.44
3:C:337:VAL:HG22	3:K:337:VAL:HG21	2.00	0.44
1:I:294:DG:P	3:K:347:ARG:NH2	2.78	0.44
3:K:308:GLY:C	3:K:362:VAL:HG22	2.38	0.44
3:G:314:LYS:HG3	3:G:357:TYR:HE1	1.82	0.43
3:K:381:ARG:HD3	3:K:386:GLY:HA2	1.98	0.43
2:B:12:DA:H1'	2:B:13:DA:H5'	2.00	0.43
3:M:291:ILE:HG12	3:M:382:VAL:HG22	2.00	0.43
1:A:296:DA:C1'	1:A:297:DT:H5'	2.47	0.43
1:E:296:DA:C2	4:F:8:DG:C2	3.07	0.43
3:K:364:PRO:O	3:K:368:SER:N	2.41	0.43
3:K:298:THR:HA	3:K:376:THR:HA	1.99	0.43
1:A:288:DA:C8	1:A:288:DA:O5'	2.70	0.43
1:E:301:DT:C4	4:F:2:DA:N6	2.65	0.43
3:G:333:LYS:HD3	3:G:341:GLU:OE2	2.19	0.43
3:M:332:LEU:HD23	3:M:334:ILE:HD11	2.01	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
3:K:337:VAL:HG12	3:K:338:ARG:HD3	2.01	0.43
3:K:303:ASP:OD1	3:K:311:VAL:HG22	2.18	0.42
3:K:382:VAL:HB	3:K:387:LYS:HB3	2.01	0.42
3:K:318:GLU:OE1	3:K:357:TYR:OH	2.24	0.42
3:C:287:LEU:O	3:C:287:LEU:HD22	2.19	0.42
1:E:295:DC:H5	3:G:349:TRP:CD2	2.37	0.42
3:C:289:LEU:HD23	3:C:384:PRO:HD2	2.01	0.42
3:G:337:VAL:O	3:M:340:ARG:HD3	2.20	0.42
3:C:344:PHE:CE1	3:C:362:VAL:HA	2.55	0.41
3:G:336:ASP:C	3:G:336:ASP:OD1	2.58	0.41
3:K:295:PHE:CG	3:K:316:CYS:HB3	2.54	0.41
2:J:13:DA:H2"	2:J:14:DT:H6	1.86	0.41
3:M:287:LEU:HD12	3:M:288:ASN:N	2.34	0.41
3:K:348:TYR:HB2	3:K:355:ARG:HB3	2.02	0.41
3:M:371:LEU:HD11	3:M:392:SER:HB3	2.03	0.41
2:J:11:DG:H2"	2:J:12:DA:H5'	2.00	0.41
1:A:296:DA:H61	3:C:356:MET:HE1	1.86	0.41
3:C:389:ILE:HG21	3:K:291:ILE:HD11	2.03	0.41
3:G:335:GLN:HB2	3:G:387:LYS:CE	2.51	0.41
3:M:308:GLY:HA2	3:M:363:THR:OG1	2.20	0.41
3:M:336:ASP:HA	3:M:390:MET:O	2.21	0.41
3:M:363:THR:O	3:M:367:GLN:HG3	2.21	0.41
3:G:335:GLN:OE1	3:G:387:LYS:HE2	2.21	0.40
2:B:11:DG:H2"	2:B:12:DA:H8	1.84	0.40
2:B:3:DT:H2"	2:B:4:DC:H5'	2.04	0.40
3:C:309:ARG:HH11	3:C:309:ARG:HD2	1.74	0.40
3:C:314:LYS:HE2	3:C:318:GLU:OE1	2.20	0.40
1:E:289:DA:H2'	1:E:290:DT:H72	2.01	0.40
4:F:3:DT:H2"	4:F:4:DC:C6	2.56	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)
1:I:288:DA:N1	2:J:0:DT:O4[2_458]	2.13	0.07

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	
3	C	109/128 (85%)	102 (94%)	7 (6%)	0	100	100
3	G	109/128 (85%)	104 (95%)	5 (5%)	0	100	100
3	K	109/128 (85%)	102 (94%)	5 (5%)	2 (2%)	8	16
3	M	109/128 (85%)	103 (94%)	5 (5%)	1 (1%)	17	34
All	All	436/512 (85%)	411 (94%)	22 (5%)	3 (1%)	22	41

All (3) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
3	K	306	ARG
3	K	327	SER
3	M	352	ASN

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	
3	C	94/108 (87%)	92 (98%)	2 (2%)	53	75
3	G	94/108 (87%)	91 (97%)	3 (3%)	39	63
3	K	94/108 (87%)	92 (98%)	2 (2%)	53	75
3	M	94/108 (87%)	91 (97%)	3 (3%)	39	63
All	All	376/432 (87%)	366 (97%)	10 (3%)	44	68

All (10) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
3	C	307	ILE
3	C	381	ARG
3	G	306	ARG
3	G	334	ILE
3	G	337	VAL
3	K	369	MET
3	K	370	MET
3	M	327	SER
3	M	353	ASN
3	M	354	SER

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (2) such sidechains are listed below:

Mol	Chain	Res	Type
3	G	290	ASN
3	M	335	GLN

5.3.3 RNA ⓘ

There are no RNA molecules in this entry.

5.4 Non-standard residues in protein, DNA, RNA chains ⓘ

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

5.5 Carbohydrates ⓘ

There are no monosaccharides in this entry.

5.6 Ligand geometry ⓘ

There are no ligands in this entry.

5.7 Other polymers ⓘ

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, 95th 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(Å²)	Q<0.9
1	A	15/15 (100%)	-0.51	0	100	100	45, 49, 56, 56	0
1	E	15/15 (100%)	0.66	2 (13%)	3	2	54, 62, 109, 114	0
1	I	15/15 (100%)	0.92	1 (6%)	17	14	84, 94, 107, 112	0
2	B	15/15 (100%)	-0.27	0	100	100	35, 52, 61, 64	0
2	J	15/15 (100%)	0.49	0	100	100	65, 91, 101, 102	0
3	C	111/128 (86%)	0.02	4 (3%)	42	38	20, 33, 53, 92	0
3	G	111/128 (86%)	0.09	3 (2%)	54	51	24, 38, 66, 80	0
3	K	111/128 (86%)	0.81	16 (14%)	2	1	32, 63, 90, 115	0
3	M	111/128 (86%)	0.01	4 (3%)	42	38	19, 34, 66, 111	0
4	F	15/16 (93%)	0.35	2 (13%)	3	2	40, 49, 96, 104	0
All	All	534/603 (88%)	0.24	32 (5%)	21	18	19, 43, 92, 115	0

All (32) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
3	M	397	ASN	9.6
3	M	396	ALA	8.6
3	K	396	ALA	8.3
3	K	397	ASN	7.0
3	G	287	LEU	6.2
3	C	397	ASN	4.6
1	E	288	DA	4.5
4	F	15	DT	4.2
3	C	287	LEU	3.8
3	K	395	ALA	3.5
3	K	354	SER	3.4
3	K	353	ASN	3.1
3	K	287	LEU	3.1

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Mol	Chain	Res	Type	RSRZ
4	F	1	DA	2.9
3	K	348	TYR	2.9
3	M	395	ALA	2.8
1	E	289	DA	2.7
3	G	397	ASN	2.6
3	M	351	ASN	2.6
3	K	367	GLN	2.4
3	K	373	ALA	2.3
3	K	322	PRO	2.3
3	C	396	ALA	2.2
3	K	324	ILE	2.2
3	K	314	LYS	2.1
3	C	353	ASN	2.1
3	K	323	PRO	2.1
3	K	330	ILE	2.1
3	K	332	LEU	2.1
1	I	288	DA	2.1
3	G	396	ALA	2.1
3	K	306	ARG	2.1

6.2 Non-standard residues in protein, DNA, RNA chains ⓘ

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

6.3 Carbohydrates ⓘ

There are no monosaccharides in this entry.

6.4 Ligands ⓘ

There are no ligands in this entry.

6.5 Other polymers ⓘ

There are no such residues in this entry.