Full wwPDB X-ray Structure Validation Report ⓘ

Jun 30, 2022 – 10:05 AM EDT

PDB ID	:	7R8J
Title	:	Crystal structure of Pseudooceanicola lipolyticus Argonaute bound to 5' p guide DNA in the presence of Mg2+
Authors	:	Shin, Y.; Murakami, K.S.
Deposited on	:	2021-06-26
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:

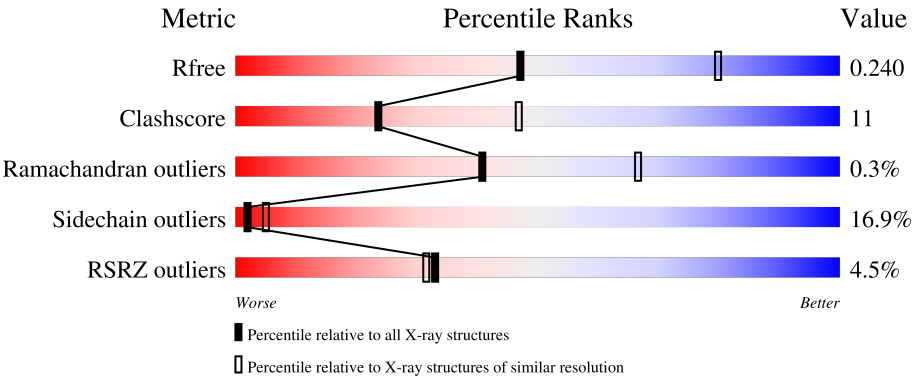
MolProbity	:	4.02b-467
Xtriage (Phenix)	:	1.13
EDS	:	2.29
Percentile statistics	:	20191225.v01 (using entries in the PDB archive December 25th 2019)
Refmac	:	5.8.0158
CCP4	:	7.0.044 (Gargrove)
Ideal geometry (proteins)	:	Engh & Huber (2001)
Ideal geometry (DNA, RNA)	:	Parkinson et al. (1996)
Validation Pipeline (wwPDB-VP)	:	2.29

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	789	4% 64% 28% 5% .
2	T	18	22% 44% 6% 28%

2 Entry composition (i)

There are 2 unique types of molecules in this entry. The entry contains 6264 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 Argonaute.

Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
1	A	764	Total	C	N	O	S	0	0	0
			5996	3806	1074	1087	29			

There are 5 discrepancies between the modelled and reference sequences:

Chain	Residue	Modelled	Actual	Comment	Reference
A	13	THR	LEU	conflict	UNP A0A2M8J4C7
A	14	GLY	GLU	conflict	UNP A0A2M8J4C7
A	15	ALA	GLY	conflict	UNP A0A2M8J4C7
A	16	CYS	LEU	conflict	UNP A0A2M8J4C7
A	17	GLY	THR	conflict	UNP A0A2M8J4C7

- Molecule 2 is DNA/RNA hybrid called DNA (5'-D(*TP*TP*AP*CP*TP*GP*CP*AP*CP *AP*GP*GP*TP*GP*AP*CP*GP*A)-3').

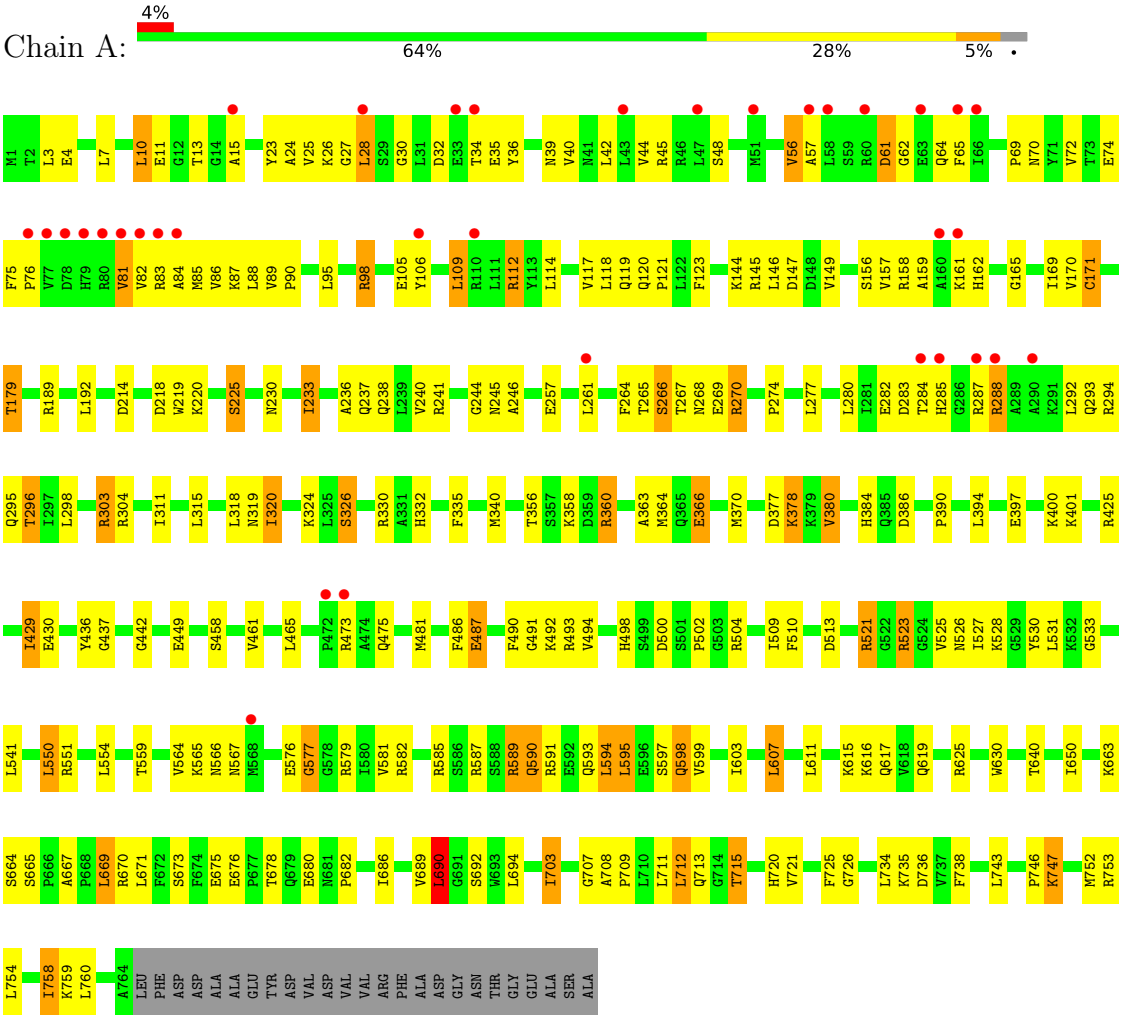
Mol	Chain	Residues	Atoms					ZeroOcc	AltConf	Trace
2	T	13	Total	C	N	O	P	0	0	0
			268	127	50	78	13			

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.

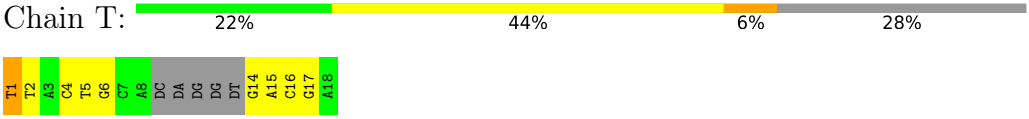
• Molecule 1: Argonaute

Chain A:



• Molecule 2: DNA (5'-D(*TP*TP*AP*CP*TP*GP*CP*AP*CP*AP*GP*GP*TP*GP*AP*CP*GP*A)-3')

Chain T:



4 Data and refinement statistics (i)

Property	Value	Source
Space group	I 2 3	Depositor
Cell constants a, b, c, α, β, γ	199.19Å 199.19Å 199.19Å 90.00° 90.00° 90.00°	Depositor
Resolution (Å)	44.54 – 2.70 44.54 – 2.70	Depositor EDS
% Data completeness (in resolution range)	99.5 (44.54-2.70) 99.5 (44.54-2.70)	Depositor EDS
R_{merge}	(Not available)	Depositor
R_{sym}	(Not available)	Depositor
$< I/\sigma(I) >$ [1]	1.40 (at 2.69Å)	Xtriage
Refinement program	PHENIX 1.20.1_4487	Depositor
R, R_{free}	0.206 , 0.244 0.206 , 0.240	Depositor DCC
R_{free} test set	1981 reflections (5.51%)	wwPDB-VP
Wilson B-factor (Å^2)	80.8	Xtriage
Anisotropy	0.000	Xtriage
Bulk solvent k_{sol}(e/Å^3), B_{sol}(Å^2)	0.29 , 60.6	EDS
L-test for twinning[2]	$< \|L\| > = 0.49$, $< L^2 > = 0.33$	Xtriage
Estimated twinning fraction	0.027 for -l,-k,-h	Xtriage
F_o,F_c correlation	0.95	EDS
Total number of atoms	6264	wwPDB-VP
Average B, all atoms (Å^2)	104.0	wwPDB-VP

Xtriage's analysis on translational NCS is as follows: *The largest off-origin peak in the Patterson function is 1.93% 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	0.47	1/6130 (0.0%)	0.71	4/8289 (0.0%)
2	T	1.15	1/299 (0.3%)	1.14	1/455 (0.2%)
All	All	0.52	2/6429 (0.0%)	0.74	5/8744 (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
1	A	0	4

All (2) bond length outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(Å)	Ideal(Å)
2	T	1	DT	OP3-P	-8.68	1.50	1.61
1	A	551	ARG	C-N	-5.18	1.22	1.34

All (5) bond angle outliers are listed below:

Mol	Chain	Res	Type	Atoms	Z	Observed(^{o})	Ideal(^{o})
1	A	690	LEU	C-N-CA	-6.22	109.23	122.30
1	A	735	LYS	C-N-CA	-5.72	107.41	121.70
2	T	4	DC	O5'-P-OP2	-5.70	100.57	105.70
1	A	490	PHE	C-N-CA	-5.68	110.37	122.30
1	A	576	GLU	C-N-CA	-5.54	110.67	122.30

There are no chirality outliers.

All (4) planarity outliers are listed below:

Mol	Chain	Res	Type	Group
1	A	436	TYR	Peptide

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Mol	Chain	Res	Type	Group
1	A	491	GLY	Peptide
1	A	577	GLY	Peptide
1	A	707	GLY	Peptide

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	5996	0	6038	139	1
2	T	268	0	148	13	0
All	All	6264	0	6186	139	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 11.

All (139) 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:A:590:GLN:HG3	1:A:593:GLN:HB3	1.65	0.79
1:A:554:LEU:HD22	1:A:736:ASP:HB2	1.67	0.77
1:A:144:LYS:NZ	1:A:295:GLN:OE1	2.18	0.75
1:A:270:ARG:H	1:A:270:ARG:HD3	1.54	0.71
1:A:567:ASN:ND2	1:A:589:ARG:O	2.26	0.68
1:A:593:GLN:HG2	1:A:594:LEU:H	1.57	0.67
1:A:754:LEU:HD22	1:A:758:ILE:HD11	1.77	0.66
1:A:35:GLU:O	1:A:39:ASN:ND2	2.29	0.65
1:A:311:ILE:HD13	1:A:315:LEU:HD12	1.78	0.64
1:A:303:ARG:NH1	2:T:6:DG:OP1	2.30	0.64
1:A:145:ARG:NH2	1:A:147:ASP:O	2.31	0.64
1:A:400:LYS:HE3	1:A:430:GLU:HB3	1.79	0.63
1:A:298:LEU:O	1:A:715:THR:HG22	1.99	0.62
1:A:594:LEU:HD22	1:A:599:VAL:HG23	1.80	0.62
1:A:15:ALA:HA	1:A:98:ARG:HH22	1.66	0.61
1:A:28:LEU:HD13	1:A:30:GLY:H	1.66	0.60
1:A:189:ARG:NH2	1:A:218:ASP:HA	2.16	0.60
1:A:233:ILE:HD12	1:A:237:GLN:HG2	1.81	0.60

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:663:LYS:O	1:A:753:ARG:NH2	2.34	0.60
1:A:189:ARG:HH22	1:A:218:ASP:HA	1.65	0.60
1:A:24:ALA:HB3	1:A:89:VAL:HG13	1.83	0.59
1:A:24:ALA:O	1:A:88:LEU:HA	2.02	0.59
1:A:117:VAL:HB	1:A:320:ILE:HG21	1.84	0.59
1:A:106:TYR:O	1:A:109:LEU:HB2	2.02	0.59
1:A:437:GLY:HA2	1:A:442:GLY:HA3	1.85	0.59
1:A:303:ARG:HD2	1:A:715:THR:HG21	1.85	0.58
1:A:74:GLU:OE1	1:A:75:PHE:N	2.37	0.58
1:A:394:LEU:HD13	1:A:429:ILE:HG22	1.85	0.57
1:A:162:HIS:HE1	1:A:332:HIS:HD2	1.50	0.57
1:A:703:ILE:H	1:A:703:ILE:HD12	1.69	0.57
1:A:607:LEU:HD22	1:A:611:LEU:HG	1.87	0.56
1:A:593:GLN:HG2	1:A:594:LEU:N	2.20	0.56
1:A:283:ASP:H	1:A:287:ARG:NH2	2.04	0.56
1:A:40:VAL:O	1:A:44:VAL:HG23	2.06	0.55
1:A:112:ARG:HH22	2:T:14:DG:H3'	1.72	0.55
1:A:554:LEU:HD22	1:A:736:ASP:CB	2.36	0.55
1:A:157:VAL:O	1:A:158:ARG:HD2	2.06	0.54
1:A:23:TYR:O	1:A:65:PHE:HA	2.07	0.54
1:A:675:GLU:HB3	1:A:686:ILE:HD13	1.89	0.54
1:A:179:THR:HG23	1:A:280:LEU:O	2.08	0.54
1:A:11:GLU:HB2	1:A:326:SER:HB3	1.91	0.53
1:A:747:LYS:HE3	2:T:2:DT:O2	2.08	0.53
1:A:120:GLN:HG2	2:T:15:DA:H62	1.75	0.52
1:A:121:PRO:HG2	1:A:318:LEU:HG	1.91	0.52
1:A:303:ARG:HH11	1:A:715:THR:HG23	1.74	0.52
1:A:274:PRO:HG2	1:A:277:LEU:HD12	1.91	0.52
1:A:713:GLN:NE2	2:T:5:DT:O2	2.42	0.52
1:A:593:GLN:HG3	1:A:630:TRP:CD2	2.45	0.51
1:A:364:MET:HB2	1:A:709:PRO:HG2	1.93	0.50
1:A:703:ILE:HG13	1:A:734:LEU:HD22	1.91	0.50
1:A:708:ALA:HB3	1:A:709:PRO:HD3	1.93	0.50
1:A:56:VAL:HG22	1:A:112:ARG:HD2	1.94	0.50
1:A:42:LEU:HD23	1:A:82:VAL:HG13	1.94	0.49
1:A:360:ARG:O	1:A:364:MET:HG2	2.13	0.49
1:A:162:HIS:CE1	1:A:332:HIS:HD2	2.29	0.49
1:A:680:GLU:O	1:A:682:PRO:HD3	2.13	0.49
1:A:669:LEU:HD21	1:A:671:LEU:HD21	1.94	0.48
1:A:703:ILE:HG21	1:A:738:PHE:HB2	1.95	0.48
1:A:593:GLN:HG3	1:A:630:TRP:CG	2.49	0.48

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:754:LEU:HD13	1:A:758:ILE:HD11	1.95	0.48
1:A:170:VAL:HG21	1:A:667:ALA:HB1	1.94	0.48
1:A:244:GLY:O	1:A:246:ALA:N	2.47	0.48
1:A:689:VAL:HG22	1:A:690:LEU:H	1.79	0.48
1:A:219:TRP:HB2	1:A:225:SER:HB3	1.96	0.48
1:A:288:ARG:HE	1:A:288:ARG:HB2	1.49	0.48
1:A:670:ARG:NH1	1:A:715:THR:O	2.47	0.47
1:A:156:SER:O	1:A:171:CYS:HA	2.15	0.47
1:A:34:THR:HG21	1:A:595:LEU:HD22	1.96	0.47
1:A:266:SER:OG	2:T:16:DC:OP1	2.32	0.47
1:A:303:ARG:HD2	1:A:715:THR:CG2	2.44	0.47
1:A:3:LEU:HD11	1:A:692:SER:HB3	1.96	0.47
1:A:270:ARG:HD3	1:A:270:ARG:N	2.25	0.47
1:A:587:ARG:O	1:A:598:GLN:NE2	2.47	0.47
1:A:665:SER:OG	1:A:720:HIS:ND1	2.32	0.47
1:A:162:HIS:HB3	1:A:165:GLY:O	2.14	0.47
1:A:746:PRO:HD2	1:A:752:MET:HE1	1.95	0.47
1:A:27:GLY:HA2	1:A:86:VAL:HG12	1.98	0.46
1:A:61:ASP:HB2	1:A:62:GLY:H	1.66	0.46
1:A:725:PHE:CG	1:A:726:GLY:N	2.84	0.46
1:A:81:VAL:HG12	1:A:82:VAL:H	1.81	0.45
1:A:500:ASP:O	1:A:504:ARG:HG3	2.16	0.45
1:A:120:GLN:HG2	2:T:15:DA:N6	2.31	0.45
1:A:296:THR:HG23	2:T:6:DG:H4'	1.99	0.45
1:A:589:ARG:HB2	1:A:590:GLN:NE2	2.31	0.45
1:A:577:GLY:H	1:A:579:ARG:HH11	1.63	0.45
1:A:550:LEU:HD22	1:A:743:LEU:HD11	1.99	0.45
1:A:39:ASN:HA	1:A:42:LEU:HB3	1.99	0.45
1:A:358:LYS:HB2	1:A:363:ALA:HB2	1.99	0.44
1:A:32:ASP:C	1:A:34:THR:H	2.19	0.44
1:A:10:LEU:HD12	1:A:10:LEU:HA	1.56	0.44
1:A:502:PRO:HD3	1:A:530:TYR:CZ	2.52	0.44
1:A:56:VAL:HG12	1:A:57:ALA:H	1.82	0.44
1:A:429:ILE:HD13	1:A:429:ILE:HA	1.61	0.44
1:A:390:PRO:HB2	1:A:458:SER:HB2	2.00	0.44
1:A:690:LEU:HD22	1:A:709:PRO:HD2	2.00	0.44
1:A:465:LEU:O	1:A:498:HIS:HA	2.18	0.44
1:A:293:GLN:O	1:A:296:THR:HG22	2.18	0.43
1:A:690:LEU:HD13	1:A:690:LEU:HA	1.84	0.43
1:A:270:ARG:H	1:A:270:ARG:HH11	1.66	0.43
1:A:521:ARG:HE	1:A:521:ARG:HB2	1.70	0.43

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Atom-1	Atom-2	Interatomic distance (Å)	Clash overlap (Å)
1:A:56:VAL:HG13	1:A:112:ARG:HG3	2.01	0.43
1:A:171:CYS:SG	1:A:311:ILE:HD11	2.58	0.43
1:A:236:ALA:O	1:A:240:VAL:HG23	2.19	0.43
1:A:378:LYS:H	1:A:378:LYS:HG3	1.59	0.43
1:A:615:LYS:HD3	1:A:615:LYS:HA	1.51	0.43
1:A:366:GLU:O	1:A:370:MET:HB2	2.19	0.42
1:A:23:TYR:CE2	1:A:90:PRO:HG3	2.54	0.42
1:A:69:PRO:O	1:A:72:VAL:HG22	2.19	0.42
1:A:123:PHE:CZ	2:T:17:DG:N2	2.87	0.42
1:A:673:SER:HB3	1:A:686:ILE:HG13	2.01	0.42
1:A:564:VAL:CG2	1:A:594:LEU:HD12	2.50	0.42
1:A:112:ARG:NH2	2:T:14:DG:H3'	2.33	0.42
1:A:233:ILE:HG23	1:A:237:GLN:HB3	2.02	0.41
1:A:487:GLU:OE2	1:A:493:ARG:HA	2.19	0.41
1:A:712:LEU:HD22	1:A:712:LEU:HA	1.85	0.41
1:A:159:ALA:HA	1:A:169:ILE:HD13	2.02	0.41
1:A:114:LEU:HD23	1:A:159:ALA:HB1	2.02	0.41
1:A:377:ASP:HB3	1:A:380:VAL:HG13	2.02	0.41
1:A:28:LEU:HB2	1:A:84:ALA:HB3	2.01	0.41
1:A:220:LYS:HD3	1:A:257:GLU:HA	2.01	0.41
1:A:712:LEU:HB3	1:A:713:GLN:OE1	2.21	0.41
1:A:118:LEU:CD1	1:A:169:ILE:HD11	2.51	0.41
1:A:264:PHE:HE1	1:A:270:ARG:HB3	1.85	0.41
1:A:340:MET:HE1	1:A:360:ARG:HD2	2.02	0.41
1:A:119:GLN:O	1:A:123:PHE:HB2	2.21	0.41
1:A:486:PHE:HB3	1:A:492:LYS:HB2	2.03	0.41
1:A:565:LYS:O	1:A:566:ASN:HB2	2.21	0.41
1:A:4:GLU:OE2	1:A:304:ARG:HD2	2.20	0.41
1:A:458:SER:O	1:A:492:LYS:HE3	2.21	0.41
1:A:523:ARG:O	1:A:523:ARG:HD2	2.20	0.41
1:A:533:GLY:HA3	2:T:1:DT:O2	2.21	0.41
1:A:581:VAL:O	1:A:582:ARG:HD3	2.21	0.41
1:A:120:GLN:HB2	1:A:121:PRO:HD3	2.02	0.41
1:A:45:ARG:CZ	2:T:14:DG:N7	2.83	0.40
1:A:75:PHE:HA	1:A:76:PRO:HD3	1.92	0.40
1:A:296:THR:HG21	2:T:6:DG:H2"	2.02	0.40
1:A:527:ILE:O	1:A:531:LEU:HG	2.21	0.40
1:A:603:ILE:HG22	1:A:640:THR:HG21	2.02	0.40
1:A:36:TYR:O	1:A:40:VAL:HG23	2.22	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:A:241:ARG:NH1	1:A:397:GLU:OE2[6_555]	2.15	0.05

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	762/789 (97%)	710 (93%)	50 (7%)	2 (0%)	41 66

All (2) Ramachandran outliers are listed below:

Mol	Chain	Res	Type
1	A	81	VAL
1	A	245	ASN

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	639/657 (97%)	531 (83%)	108 (17%)	2 5

All (108) residues with a non-rotameric sidechain are listed below:

Mol	Chain	Res	Type
1	A	7	LEU
1	A	10	LEU
1	A	13	THR
1	A	25	VAL

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Mol	Chain	Res	Type
1	A	26	LYS
1	A	28	LEU
1	A	48	SER
1	A	56	VAL
1	A	61	ASP
1	A	64	GLN
1	A	70	ASN
1	A	83	ARG
1	A	85	MET
1	A	87	LYS
1	A	95	LEU
1	A	98	ARG
1	A	105	GLU
1	A	109	LEU
1	A	112	ARG
1	A	146	LEU
1	A	149	VAL
1	A	161	LYS
1	A	171	CYS
1	A	179	THR
1	A	192	LEU
1	A	214	ASP
1	A	225	SER
1	A	230	ASN
1	A	233	ILE
1	A	238	GLN
1	A	261	LEU
1	A	265	THR
1	A	266	SER
1	A	267	THR
1	A	268	ASN
1	A	269	GLU
1	A	270	ARG
1	A	282	GLU
1	A	284	THR
1	A	285	HIS
1	A	288	ARG
1	A	292	LEU
1	A	294	ARG
1	A	296	THR
1	A	303	ARG
1	A	319	ASN

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Mol	Chain	Res	Type
1	A	320	ILE
1	A	324	LYS
1	A	326	SER
1	A	330	ARG
1	A	335	PHE
1	A	356	THR
1	A	360	ARG
1	A	366	GLU
1	A	378	LYS
1	A	380	VAL
1	A	384	HIS
1	A	386	ASP
1	A	401	LYS
1	A	425	ARG
1	A	429	ILE
1	A	449	GLU
1	A	461	VAL
1	A	473	ARG
1	A	475	GLN
1	A	481	MET
1	A	487	GLU
1	A	494	VAL
1	A	509	ILE
1	A	510	PHE
1	A	513	ASP
1	A	521	ARG
1	A	523	ARG
1	A	525	VAL
1	A	526	ASN
1	A	528	LYS
1	A	541	LEU
1	A	550	LEU
1	A	559	THR
1	A	585	ARG
1	A	589	ARG
1	A	590	GLN
1	A	591	ARG
1	A	594	LEU
1	A	595	LEU
1	A	597	SER
1	A	598	GLN
1	A	607	LEU

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Mol	Chain	Res	Type
1	A	616	LYS
1	A	617	GLN
1	A	619	GLN
1	A	625	ARG
1	A	650	ILE
1	A	664	SER
1	A	669	LEU
1	A	676	GLU
1	A	678	THR
1	A	690	LEU
1	A	694	LEU
1	A	703	ILE
1	A	711	LEU
1	A	712	LEU
1	A	715	THR
1	A	721	VAL
1	A	747	LYS
1	A	758	ILE
1	A	759	LYS
1	A	760	LEU

Sometimes sidechains can be flipped to improve hydrogen bonding and reduce clashes. All (1) such sidechains are listed below:

Mol	Chain	Res	Type
1	A	332	HIS

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

There are no ligands in this entry.

5.7 Other polymers

There are no such residues in this entry.

5.8 Polymer linkage issues

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	764/789 (96%)	0.13	35 (4%) 32 31	54, 93, 181, 252	0
2	T	13/18 (72%)	-0.29	0 100 100	65, 96, 125, 162	0
All	All	777/807 (96%)	0.12	35 (4%) 33 31	54, 93, 181, 252	0

All (35) RSRZ outliers are listed below:

Mol	Chain	Res	Type	RSRZ
1	A	65	PHE	5.9
1	A	473	ARG	5.0
1	A	287	ARG	4.7
1	A	110	ARG	4.6
1	A	63	GLU	4.2
1	A	285	HIS	4.1
1	A	81	VAL	3.8
1	A	66	ILE	3.8
1	A	77	VAL	3.7
1	A	79	HIS	3.7
1	A	106	TYR	3.7
1	A	82	VAL	3.6
1	A	43	LEU	3.1
1	A	80	ARG	3.0
1	A	15	ALA	2.9
1	A	568	MET	2.8
1	A	261	LEU	2.8
1	A	57	ALA	2.8
1	A	83	ARG	2.8
1	A	288	ARG	2.7
1	A	290	ALA	2.6
1	A	78	ASP	2.6
1	A	33	GLU	2.5
1	A	60	ARG	2.5

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Mol	Chain	Res	Type	RSRZ
1	A	284	THR	2.4
1	A	472	PRO	2.4
1	A	47	LEU	2.4
1	A	84	ALA	2.3
1	A	160	ALA	2.2
1	A	58	LEU	2.1
1	A	51	MET	2.1
1	A	28	LEU	2.1
1	A	34	THR	2.1
1	A	161	LYS	2.0
1	A	76	PRO	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.