



DEPARTMENT OF BIOTECHNOLOGY
Ministry of Science & Technology
Government of India

#ONE DAY ONE GENOME

Arthrobacter globiformis mrc11 from cave deposit of Manipur having antimicrobial potential



Isolation

Isolated from cave deposit of
Khangkhui cave, Manipur, India



Ukhrul district of
Manipur



Khangkhui cave

Importance

Antimicrobial activity

Application

Antimicrobial drug development.

Organism & Genome details

Arthrobacter globiformis mrc11

Accession no. NZ_QLNP00000000

Genome size is 4.89 Mb



Arthrobacter globiformis (mrc11) Genome Accession Number: [NZ_QLNP01000001.1](#)

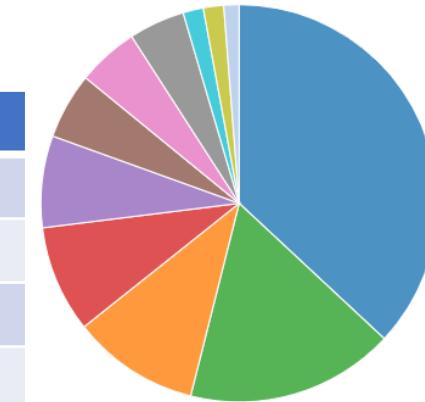
Quality of Genome Assembly and Annotation:

Results from indigenously developed **BHARAT** analysis pipeline:

(Bacterial Hybrid genome Assembly and Rapid Annotation Toolset)

Table 1: Assembly Details	
Contigs	105
GC Content	65.89
Contig L50	10
Genome length	4,892,409 bp
Contig N50	139,250

Table 2: Annotated Genome Features	
CDS	4,596
tRNA	54
rRNA	7
Repeat Regions	0



Subsystem Analysis

Subsystem (Subsystems, Genes)
METABOLISM (89, 790)
PROTEIN PROCESSING (41, 218)
ENERGY (25, 233)
STRESS RESPONSE, DEFENSE, VIRULENCE (21, 106)
DNA PROCESSING (18, 84)
CELLULAR PROCESSES (13, 81)
MEMBRANE TRANSPORT (12, 72)
RNA PROCESSING (11, 44)
MISCELLANEOUS (4, 11)
REGULATION AND CELL SIGNALING (4, 12)
CELL ENVELOPE (3, 6)

Genome Assembly

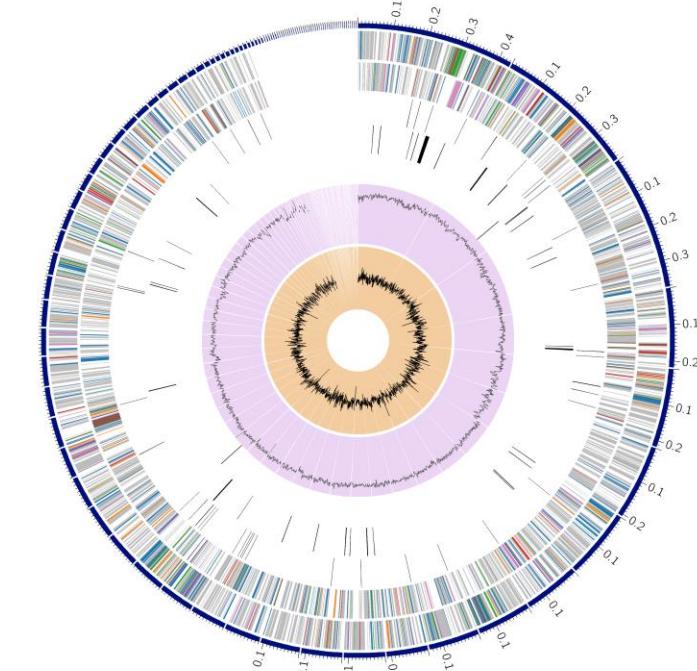


Table 3: Antimicrobial Resistance Genes

AMR Mechanism	Genes
Antibiotic activation enzyme	KatG
Antibiotic target in susceptible species	Alr, Ddl, dxr, EF-G, EF-Tu, folA, Dfr, folP, gyrA, gyrB, Iso-tRNA, kasA, MurA, rho, rpoB, rpoC, S10p, S12p
Antibiotic target replacement protein	FabG, FabL-like, HtdX
Gene conferring resistance via absence	gidB
Protein altering cell wall charge conferring antibiotic resistance	GdpD, PgsA
Regulator modulating expression of antibiotic resistance genes	LpqB, MtrA, MtrB