



## ONE DAY ONE GENOME: SCIENCE & TECHNOLOGY

NEWS: ‘One Day One Genome’ initiative to harness the microbial potential of India

### WHAT’S IN THE NEWS?

The ‘One Day One Genome’ initiative, launched by BRIC, sequences one bacterial genome daily to showcase India’s microbial diversity and its role in the environment, agriculture, and human health. It promotes public access to genomic data, fostering research and innovation.

### Initiative Overview

- **Name:** ‘One Day One Genome.’
- **Launch:** Introduced on the foundation day of the Biotechnology Research and Innovation Council (BRIC).
- **Purpose:** To sequence one bacterial genome daily, showcasing India's vast microbial diversity.

### Objectives

- Highlight unique microbial species in India.
- Promote the significance of microbes in key sectors: environment, agriculture, and human health.
- Enhance research, innovation, and public access to microbial genome data.

DEPARTMENT OF BIOTECHNOLOGY  
Ministry of Science & Technology  
Government of India

**One Day One Genome Initiative!**  
Unlocking the Microbial Potential of India  
Microbe sequenced: *Staphylococcus aureus*

BRIC  
a BIR Organization

*Staphylococcus aureus*: isolated from skin cells

What its genes say?

Future Application

- Insights into mechanism of multidrug resistance
- Strategies to tackle AMR aka antimicrobial resistance
- Improving healthcare strategies

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*S. aureus* is resistant to multiple antibiotics such as beta-lactams, aminoglycosides and tetracyclines



## Key Focus Areas

### Environmental Conservation:

- Microorganisms contribute to **biogeochemical cycles**, soil formation, waste degradation, and pollution control.
- Specific bacteria aid in **methane production** and **nutrient cycling**, helping mitigate climate change effects.

### Agricultural Impact:

- Essential for **nitrogen fixation**, improving soil fertility.
- Assist in **pest control** and enhancing plant resilience to stress (drought, salinity).

### Human Health:

- Crucial for digestion, immunity, and mental well-being.
- Non-pathogenic microbes prevent infections and support a balanced microbiome.

## Genome Sequencing and Data Sharing

### Enables understanding of microbial roles, including:

- Discovery of **bioactive compounds** and enzymes.
- Identifying **antimicrobial resistance** patterns.

### Fully annotated bacterial genomes to be:

- Publicly accessible with graphical summaries.
- Accompanied by detailed genome assembly data for scientific use.

## Expected Outcomes

- Promote **scientific research** on microbial diversity and its applications.
- Foster **innovation** in biotechnology and microbial studies.
- Enhance **public awareness** about microbial importance in daily life.
- Drive progress in **environmental conservation**, sustainable agriculture, and healthcare.