

Yak Genomics

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Yak Genomics Latest News

The first-ever chromosome-level genome of the Indian yak (*Bos grunniens*) has been successfully assembled by scientists from four ICAR institutes, marking a milestone in livestock genetics and Himalayan biodiversity research.

About Indian yak

- The **Indian yak**, often referred to as the “**ship of the Himalayas**”, plays a crucial role in the **livelihoods of high-altitude pastoral communities**, especially in **Ladakh, Himachal Pradesh, Sikkim, Arunachal Pradesh**, and other Himalayan states.
- Yaks are a **source of meat, milk, fibre, dung fuel, and pack transport**, making them essential to **mountain economies**.
- Yaks display **exceptional cold tolerance**, making them a **biological model** for studying **adaptation to extreme climates**.
- **Domestic yak (*Bos grunniens*)** is found at **altitudes above 7,000 ft** in:
 - **Ladakh, Sikkim, Arunachal Pradesh, Himachal Pradesh, and Jammu & Kashmir.**

- **Wild yak (*Bos mutus*)** is found in **Tibet**, and the species extends to parts of **Mongolia and Russia**.
- Yaks belong to the **genus *Bos***, making them **close relatives of cattle (*Bos primigenius*)**.

About ICAR-National Research Centre on Yak

- The **ICAR-NRC on Yak** was established in **1989** in **Dirang, Arunachal Pradesh**.
- It serves as the **apex institution** for research in **yak husbandry**, including **health, nutrition, breeding**, and **genetic conservation**.

Technological Methodology

- The team employed **long-read sequencing technology** and **advanced bioinformatics tools** to achieve **chromosome-level genome assembly**, which provides **precise mapping of genes** on chromosomes.
- This enables a **clearer understanding of genetic traits** related to **disease resistance, milk quality, fertility**, and **climate adaptation**.

Yak Genomics FAQs

Q1: What is Yak Genomics?

Ans: Yak Genomics refers to the genomic sequencing and analysis of the domestic yak (*Bos grunniens*) to understand its adaptation to high altitudes and improve its productivity and health.

Q2: Which organisation led the Yak genome sequencing in India?

Ans: The National Research Centre on Yak (ICAR-NRCY) in Arunachal Pradesh carried out India's first whole genome sequencing of the yak.

Q3: Where are yaks primarily found in India?

Ans: Yaks are primarily found in Arunachal Pradesh, Sikkim, Ladakh, Himachal Pradesh, and Uttarakhand.

Source: TH

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