

Naked Mole Rat

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Naked Mole Rat Latest News

A new study of the naked mole rat shows that these animals have evolved a DNA repair mechanism that could explain their longevity.

About Naked Mole Rat

- It is a small, hairless **burrowing rodent** native to parts of East Africa.
- **Distribution:** They are predominantly found in **southern Ethiopia, Kenya, Somalia, and Djibouti.**
- **Habitat:** They **inhabit drier parts** of the tropical **grasslands and savanna.**
- **Food:** They are **herbivores** and feed primarily on very large tubers.
- **Social Structure:** It is **eusocial**, meaning they live in large colonies in which **only one female breeds** and the majority of workers (both males and females) spend their entire lives working for the colony.
- **Conservation Status:** IUCN: **Least Concern**

Characteristics of Naked Mole Rat

- It is famous for **living an astonishingly long time**, up to around 37 years, nearly 10x longer than mammals of similar size.
- It **lacks pain sensitivity in its skin** and has **very low metabolic and respiratory rates**.
- It is also remarkable for its longevity and its resistance to cancer and **oxygen deprivation**.
- Their lifestyle is more akin to that of bees and wasps and **other eusocial insects**.
- They live in underground burrows that may stretch to 5 km, in colonies of around 70 animals.
- It is **cold-blooded**, unable to control their body temperature and dependent on the prevailing outside temperature.

Key Findings of Researchers

- The **cyclic GMP-AMP synthase (cGAS) functions** differently in naked mole rats compared to humans and mice. (GMP –AMP synthesis which modulates various cellular processes)
- **Key differences in cGAS function**
 - **Humans and Mice:** cGAS **interferes with DNA repair**, increasing the risk of aging and cancer
 - **Naked Mole Rats:** cGAS **enhances DNA repair**, promoting genome stability and potentially contributing to their longevity.
 - This is due to **four amino acid substitutions** in the cGAS structure that allow it to bind to DNA longer and facilitate repair by bringing together **repair proteins FANCI and RAD50**.

Source: **TH**

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