



# The World's Worst Animal Disease Killing Frogs Worldwide

**For Prelims:** Panzootic, Chytridiomycosis or chytrid, Transboundary and Emerging Diseases, quantitative polymerase chain reaction (qPCR), CSIRO, [Council of Scientific and Industrial Research – Centre for Cellular and Molecular Biology \(CCMB\)](#), Amphibian Species, Fungal Diseases.

**For Mains:** Emerging diseases affecting the flora and fauna, Impact of the climate change on the biodiversity, Advances in biotechnology brings new awakening about the wildlife.

## Why in News?

For the past 40 years, a devastating **fungal disease, called chytridiomycosis or chytrid**, has been ravaging frog populations around the world, wiping out 90 species. This is a **“panzootic” - a pandemic in the animal world**.

- Transboundary and Emerging Diseases, a multinational study has **developed a method to detect all known strains of this disease**, caused by the amphibian chytrid fungus.

## What is Chytridiomycosis or Chytrid?

- **About:**
  - **Chytrid infects frogs by reproducing in their skin, affecting their ability to balance water and salt levels**, and eventually leading to death if infection levels are high enough.
  - The **high mortality rate** and the high number of species affected **make chytrid unequivocally the deadliest animal disease known to date**.
- **Origin:**
  - **Chytrid originated in Asia** and was unwittingly spread to other continents through global travel and trade in amphibians.
- **Infection:**
  - Chytrid has been devastating frog populations for the past 40 years, **wiping out 90 species, including seven in Australia**, and causing severe **declines in over 500 frog species**.
  - Many species' immune systems were simply not equipped to defend against the disease, and **mass mortalities ensued**.
    - In the 1980s, amphibian biologists began **to notice sharp population declines, and in 1998, the chytrid fungal pathogen** was finally recognised as the culprit.
- **Diagnosis of Disease:**
  - **Researchers use a qPCR test to detect chytrid in frogs by swabbing their skin**, and the new test is more sensitive, meaning it can detect very low infection levels, thereby broadening the scope of species that can be studied.
    - **qPCR stands for quantitative polymerase chain reaction**. It is a way to measure the volume of DNA from a species of interest. **The test was developed at CSIRO, Australia in 2004**; unlike a COVID test, however, scientists swab the frog's skin, not the nose.

- CSIRO, which stands for **Commonwealth Scientific and Industrial Research Organisation**, is **Australia's national science agency**.
- Over the past years, researchers from the [Council of Scientific and Industrial Research \(CSIR\)- Centre for Cellular and Molecular Biology](#) in India also has been working on a new qPCR test that can detect strains of chytrid from Asia.
  - In collaboration **with researchers in Australia and Panama**, India have now verified the qPCR test also reliably detects chytrid in these countries.
  - The **new qPCR test can detect strains of chytrid** from Asia and another closely related species of **chytrid that infects salamanders**.
- **Immunity to Some Amphibians:**
  - **Some amphibian species don't become sick** when they carry the fungus, which is puzzling.
  - So far, no clear trend has been found between resistance and immune function. There is also evidence chytrid can suppress a host's immune response.
- **Research about the Species:**
  - Asia is lagging the rest of the world in chytrid research.
  - A multinational study has **developed a method to detect all known strains of chytrid**, which will advance our ability to detect and research the disease, working towards a widely available cure.

### What is CSIR - Centre for Cellular and Molecular Biology?

- The **Centre for Cellular & Molecular Biology (CCMB)** is a premier research organization in frontier areas of modern biology and promotes centralised national facilities for new and modern techniques in the inter-disciplinary areas of biology.
- **CCMB was set up initially as a semi-autonomous Centre on April 1, 1977** with the Biochemistry Division of the then Regional Research Laboratory (presently, Indian Institute of Chemical Technology, IICT) Hyderabad forming its nucleus.

### UPSC Civil Services Examination Previous Year Question (PYQ)

**Q.1 The term 'ACE2' is talked about in the context of**

- (a) Genes introduced in the genetically modified plants
- (b) Development of India's own satellite navigation system
- (c) Radio collars for wildlife tracking
- (d) Spread of viral diseases

**Ans: (d)**

**Q.2 H1N1 virus is sometimes mentioned in the news with reference to which one of the following diseases?**

- (a) AIDS
- (b) Bird flu
- (c) Dengue
- (d) Swine flu

**Ans: (d)**

**Source: TH**

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