



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)

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