



WHO BioHub Initiative

Why in News

The [World Health Organization \(WHO\)](#) and **Switzerland** have launched a **BioHub facility** that will allow **pathogens sharing** between laboratories and facilitate “analysis and preparedness” against them.

Key Points

▪ About BioHub Facility:

- The facility will help in **safe reception, sequencing, storage and preparation of biological materials** for distribution to other laboratories, so as to facilitate global preparedness against these pathogens.
- It will **enable member states to share biological materials with and via the BioHub** under pre-agreed conditions, including biosafety, biosecurity, and other applicable regulations.
- In parallel, WHO will **broaden its BioHub System for the use of biological materials by qualified entities** – such as manufacturers – for the development of medical by-products for fair allocation to countries.

▪ Significance:

- The [Covid-19](#) pandemic and other outbreaks and epidemics have underscored the **importance of rapidly sharing pathogens** to help the global scientific community **assess the risk and develop countermeasures** such as diagnostics, therapeutics and vaccines.
 - Pathogens **have been shared bilaterally** between countries: A process that **can be sluggish and deny the benefits** to some.
- This will ensure the **timely sharing of epidemiological and clinical data** as well as **biological materials**.
- The move will help **contribute to the establishment of an international exchange system** for novel coronavirus SARS-CoV-2 and other emerging pathogens.

Pathogens

▪ Definition:

- A pathogen is **a biological agent that causes disease or illness**. [Zoonotic pathogen](#) refers to pathogens naturally transmitted between animals and humans.

▪ Types of Pathogens:

◦ Virus:

- Viruses are made up of a piece of genetic code, such as DNA or RNA, and protected by a coating of protein. Viruses invade host cells within the body. They then use the components of the host cell to replicate, producing more viruses.
- **Examples of diseases caused by viruses:** Chickenpox, [Flu \(influenza\)](#), [Covid-19](#),

[Human immunodeficiency virus \(HIV/AIDS\)](#), **Mumps**, [measles](#) and [rubella](#).

- **Bacteria:**

- Bacteria are microorganisms made of a single cell. They are very diverse, have a variety of shapes and features, and have the ability to live in just about any environment, including in and on the body.
- **Examples of diseases caused by bacteria:** Cholera, [Leprosy](#), [Tuberculosis](#), [Plague](#), Syphilis, [Anthrax](#) etc.

- **Fungi:**

- Fungi can be found just about everywhere in the environment, including indoors, outdoors, and on human skin. They cause infection when they overgrow.
- **Examples of Fungal Infection:** [Mucormycosis](#), [White Fungus](#), Yellow Fungus.

- **Parasites:**

- Parasites are organisms that behave like tiny animals, living in or on a host and feeding from or at the expense of the host. Though parasitic infections are more common in tropical and subtropical regions, they can occur anywhere.
- **Diseases caused by Parasite:** [Malaria](#), African trypanosomiasis, babesiosis, [leishmaniasis](#), and toxoplasmosis etc.

- **Antimicrobial Resistance:**

- It is the [resistance](#) acquired by any microorganism (bacteria, viruses, fungi, parasite, etc.) against antimicrobial drugs (such as antibiotics, antifungals, antivirals, antimalarials, and anthelmintics) that are used to treat infections.

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