

SAR COV2 Transmission

- The transmission of SARS-CoV-2 through the air has been studied at various places around the world.
 - Researchers led by those at CSIR-Centre for Cellular and Molecular Biology (CCMB), Hyderabad, and Tata Institute for Genetics and Society (TIGS), Bengaluru carried out a study to get further insight into the transmission characteristics of the novel coronavirus in the air in hospital settings and in residential areas and public places.
 - The researchers detected the virus even 20-25 feet away from infected persons.
 - “This means it is in the air for quite some time. That is why this study confirms that this virus is spreading through air. It is not only with close proximity but also it can hang in the air for quite some time in the droplets.
 - The study further observes that in a closed space, physical distancing alone is not helpful, because the virus borne on droplets can travel up to 20-25 feet.
- antibiotics for human health, according to a study published in The Lancet Microbe journal.
 - The largest genome analysis of Salmonella Typhi (S. Typhi) also shows that resistant strains almost all originating in South Asia have spread to other countries nearly 200 times since 1990.
 - The researchers noted that typhoid fever is a global public health concern, causing 11 million infections and more than 1,00,000 deaths per year.
 - Antibiotics can be used to successfully treat typhoid fever infections, but their effectiveness is threatened by the emergence of resistant S. Typhi strains.
 - The authors traced the presence of genes conferring resistance to macrolides and quinolones, which are among the most critically important antibiotics for human health.

THE HINDU

Drug-resistant

- The bacteria causing typhoid fever is becoming increasingly resistant to some of the most important

Types of Diabetes

- The International Diabetes Foundation estimates that 537 million people across the world are afflicted with diabetes. The site in the United States points out that over 37 million people (about 10%) in the United States are diabetic.

There are two types of diabetes

- Type 1 and Type 2. Types of diabetes
Type 1 is generally genetic in origin and is easier handled by taking the molecule insulin.
- Injection of insulin helps your body use the sugar in your blood for the energy it needs, and then store the rest in the liver and other organs for future use.
- Type 2 diabetes, which does not need insulin injection, is largely lifestyle-based and is seen more among people in the urban areas than in rural populations.
- Type 2 diabetes is age-related; it often develops at the age of 45 and beyond. Type 1 diabetes is largely genetic in nature, while Type 2 depends on the lifestyle of the individual.

THE HINDU

Black Death

- The Black Death, the biggest pandemic in our history, was caused by the bacterium *Yersinia pestis* and lasted in Europe between the years 1346 and 1353.
- Despite the pandemic's immense demographic and societal impacts, its origins have long been elusive.
- Researchers have now obtained and studied ancient *Y. pestis* genomes that trace the pandemic's origins to

Central Asia come from Central Asia, close to Lake Issyk Kul, in what is now Kyrgyzstan.

THE HINDU

Polar bear and climate change

- An isolated population of 27 polar bears has been discovered in southeast Greenland, which is free of sea ice for the most part of the year.
- Polar bears typically need sea ice to survive, so the discovery is raising hopes that some polar bears might survive in the absence of ice.
- They have adapted to hunting on glacial mélange.
- Ice mélange refers to a mixture of sea ice types, icebergs, and snow without a clearly defined flow that forms from shearing and fracture at the ice front.
- Ice mélange is commonly the result of an ice calving event where the ice breaks off the edge of a glacier.



THE HINDU

COP 15 and CBD

- The United Nations (UN) has announced that a pivotal summit to finalize a new global agreement on protecting the environment will go ahead in December this year, after a two-year delay due to the COVID-19 pandemic.
- The 15th Conference of the Parties to the United Nations Convention on Biological Diversity will move from Kunming in China to Montreal, Canada.

About CBD

- The Convention on Biological Diversity (CBD) is the international legal instrument for "the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising out of the utilization of genetic resources" that has been ratified by 196 nations.
- Its overall objective is to encourage actions, which will lead to a sustainable future.
- The conservation of biodiversity is a common concern of humankind. The Convention on Biological Diversity covers biodiversity at all levels: ecosystems, species, and genetic resources.
- It also covers biotechnology, including through the Cartagena Protocol on Biosafety.

- In fact, it covers all possible domains that are directly or indirectly related to biodiversity and its role in development, ranging from science, politics, and education to agriculture, business, culture, and much more.
- The CBD's governing body is the Conference of the Parties (COP). This ultimate authority of all governments (or Parties) that have ratified the treaty meets every two years to review progress, set priorities, and commit to work plans.
- The Secretariat of the Convention on Biological Diversity (SCBD) is based in Montreal, Canada.
- Its main function is to assist governments in the implementation of the CBD and its programs of work, organize meetings, draft documents, coordinate with other international organizations and collect and spread information. The Executive Secretary is the head of the Secretariat.

THE HINDU

Why high rainfall in Assam?

- How has the monsoon been so far this year?
- The country received 2% less rain this year than it usually does between June 1 and June 23 every year.

- The total rainfall was brought down by 34% over central India and 15% over peninsular India compared to the 32% more received by the east and northeast and 7% more by northwest India.
- During the monsoons, whenever moisture-laden southerly or south-westerly winds from the Bay of Bengal hit the region's east-west oriented mountain ranges, state shall Pradesh, Assam, and Meghalaya receive more rainfall in comparison to other states of the north-eastern region.
- Meteorologists said the recent episode of heavy rainfall underlined the presence of the east-west trough in the lower levels of the atmosphere over the region and the incursion of large-scale moisture due to strong southerly and south-westerly winds from the Bay of Bengal.
- Assam's valleys experience both excessive and insufficient rainfall from time to time "due to ecological and climate differences from one place to another".
- Climate change is said to have increased the water and surface temperature of the Arabian Sea and the Bay of Bengal by up to 2 degrees, causing the frequent formation of low-pressure areas and cyclonic circulations, resulting in heavy rains.
- A recent study by the Indian Institute of Technology, Guwahati said aerosols, including black carbon, released by biomass burning, influence the western part of northeast India close to the Indo-Gangetic Plain the most.
- Rising black carbon emissions, it said, lead to a decrease in low-intensity rainfall while pushing up severe rain in the pre-monsoon season in northeast India.

What are the factors determining rainfall patterns?

- Assam, which receives rainfall beyond the June-September monsoon phase, does not always get above-normal or excess rain.
- But this year, according to the IMD, it received 41% above normal rainfall during the pre-monsoon season (March to May), and it has received 71% more than normal rainfall up to June 25.

THE HINDU
