Current Affairs 29th January 2024 by Saurabh Pandey

Laughing gull

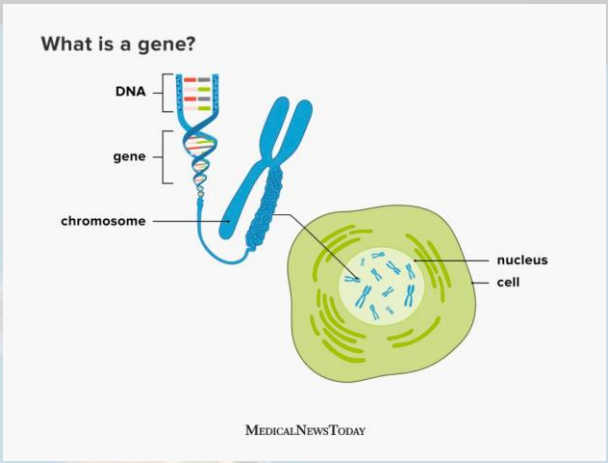
- **Laughing gull, a migratory bird from North America, has been sighted for the first time in the country at the Chittari estuary in Kasaragod district.**

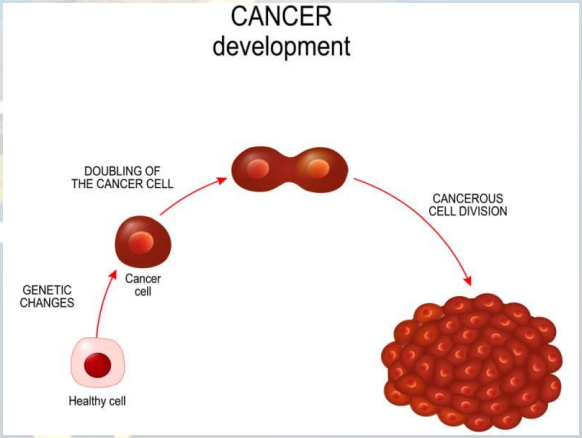
- **The laughing gull (*Leucophaeus atricilla*) is a medium-sized gull of North and South America.**
- **Named for its laugh-like call, it is an opportunistic omnivore and scavenger. It breeds in large colonies mostly along the Atlantic coast of North America, the Caribbean, and northern South America.**
- **The two subspecies are *L. a. megalopterus* which can be seen from southeast Canada down to Central America and *L. a. atricilla*, which appears from the West Indies to the Venezuelan islands.**

The Hindu

Genomic medicine

- **Cancer is a disease of the genome. It is caused by changes in genes that cause some cells to divide in an uncontrolled way.**
- **These changes can be inherited or acquired. Inherited genetic variants form the basis of many hereditary cancers, including breast and ovarian cancer.**





- **Advancements in genomic technologies have improved our understanding of the molecular underpinnings of cancer, which in turn have yielded a new generation of therapies that target molecular defects**
- **Such therapies are called precision oncology therapies. Their eligibility in a given setting is determined by molecular tests**
- **Of the 200 odd therapies the U.S. Food and Drug Administration has approved, almost a third have a DNA based test as a biomarker.**

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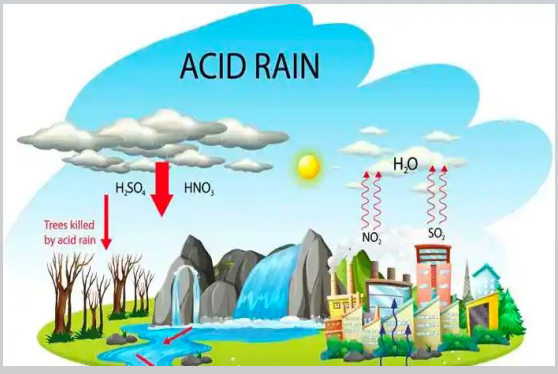
- And while scientists are discovering new biomarkers for cancers, the focus of late has been shifting to understanding how genomic tests could become the mainstay of cancer treatment in clinical settings.
- In the U.K. researchers sequenced and analysed the genomes of people with different types of cancers; the genomes came from blood and tumour tissues.
- Their analysis revealed details that the researchers have said can be applied in clinical settings to guide treatment strategies for cancer patients.

Terms - personalised /Genomic medicine

- Personalized medicine, also referred to as precision medicine, is a medical model that separates people into different groups with medical decisions, practices, interventions and/or products being tailored to the individual patient based on their predicted response or risk of disease.
- Genomic medicine is an emerging medical discipline that involves using genomic information about an individual as part of their clinical care (e.g. for diagnostic or therapeutic decision-making) and the health outcomes and policy implications of that clinical use.
- The Hindu

Acid rain



- Acid rain is rain that is acidic. When fossil fuels that contain sulphur are combusted, their emissions include sulphur dioxide (SO2).
- When such combustion happens at a higher temperature, like inside the engine of a car, the combustion products also include nitrogen oxide and nitrogen dioxide (collectively called NOx).
- Both SO2 and NOx are also produced naturally, such as when volcanoes erupt or when lightning passes through the atmosphere, but in and around cities, their principal source is the use of fossil fuels for transport and power generation.
- Once SO2 and NOx rise into the air, they react with water and oxygen molecules to produce sulphuric acid (H2SO4) and nitric acid (HNO3), both of which are corrosive.
- When these molecules dissolve in water droplets and the droplets precipitate, we have acid rain, acid snow, and even acid fog.
- The typical pH of acid rain is around 4.2-4.4. When acid rain flows into rivers and lakes, it can render the water inhospitable to some species; in soil, it destroys some bacteria.
- These effects can in turn adversely affect forests and other large ecosystems in complex ways.
- To mitigate these effects, coal power plants have been able to reduce the SO, content in their atmospheric emissions by more than 90% using flue gas desulphurization.
- Many governments around the world have also been working together to minimise acid rain; an example in Asia is the Acid Deposition Monitoring Network in East Asia (EANET).

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RBI'S guidelines on state guarantees

- A working group constituted by the Reserve Bank of India (RBI) made certain recommendations to address issues relating to guarantees extended by State governments.

What constitutes a 'guarantee'?

- A 'guarantee' is contingent liability of a State, processed by an accessory contract, that protects the lender/investor from the risk of borrower defaulting.
- They promise to be answerable for the debt, default or miscarriage of the latter.
- The entity to whom the guarantee is given is the 'creditor', the defaulting entity on whose behalf the guarantee is given is called the 'principal debtor' and the entity giving the guarantee (State governments in this context) is called the 'surety'.
- If A delivers certain goods or services to B and B does not make the agreed upon payment, B is defaulting and at the risk of being sued for the debt. C steps in and promises that s/he will pay for the default of B. This is a guarantee.
- The RBI working group's report notes that while guarantees are innocuous in good times, it may lead to significant fiscal risks and burden the State at other times.
- This may result in unanticipated cash outflows and increased debt. State governments are often required to sanction, and issue guarantees, on behalf of State owned enterprises, cooperative institutions, urban local bodies and/or other State governed entities, to respective lenders.

What about the definition of a guarantee?

- The Working Group has suggested that the term 'guarantee' should be used in a broader sense and include all instruments, by whatever name they may be called, if they create obligation on the guarantor (State) to make a payment on behalf of the borrower at a future date.

What about risk determination?

- The Group suggested that States assign appropriate risk weights (indicative of the holding the lender should ideally have to adjust the associated risk) before extending guarantees.
- The categorizations could be high, medium, or low risk. These must also consider records of defaults.
- Additionally, it deemed a ceiling on the issuance of guarantees as "desirable."

The Hindu

Encryption

What is encryption?

- Fundamentally, encryption is the act of changing some consumable information into an inconsumable form based on some rule.

What is E2E encryption?

- E2E is encryption that refers to particular locations between which information moves. Say you are chatting with your friend on a messaging app.
- When you send a message, it first goes to a server maintained by the company that built the app; based on its instructions, the server routes the message to your friend.

- **In this setup, two important forms of encryption are encryption in transit and E2E encryption.**
- **Encryption in transit means before a message is relayed from the server to you (or vice versa), it is encrypted.**
- **This scheme is used to prevent an actor from being able to read the contents of the message by intercepting the relay.**
- **In E2E encryption, the message is encrypted both in transit and at rest.**
- **One broad distinction is between symmetric and asymmetric encryption.**
- **In symmetric encryption, the key used to encrypt some information is also the key required to decrypt it.**
- **DES is a famous example of a symmetric encryption protocol.**
- **In asymmetric encryption, if the message "ice cream" is encrypted using the key "motorcycle", it can be decrypted using a different key that corresponds to "motorcycle" in a predetermined way.**
- **Asymmetric encryption will work as long as the private key and the correspondence between the public key and the private key are kept secret.**

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