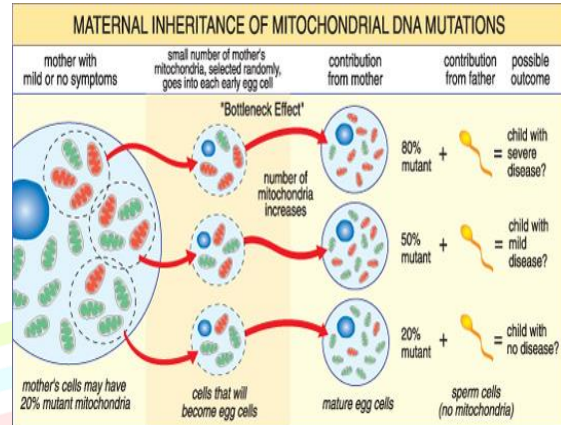
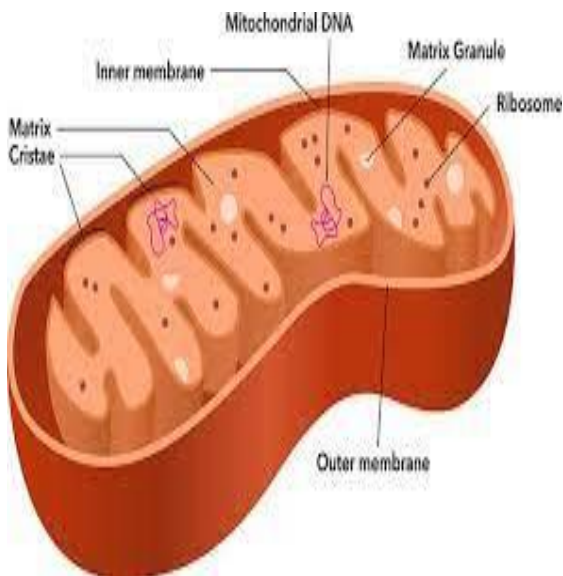
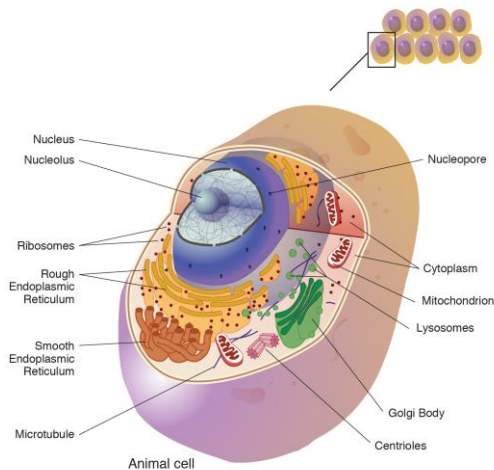


Mitochondrial disorder

- In a world first, six children with rare disorders caused by deletions in the genomes of their mitochondria the cellular compartments essential for energy generation have been successfully treated with donor mitochondria from their mothers.
- Doctors transferred healthy mitochondria into the children's haematopoietic stem cells, which give rise to blood cells.

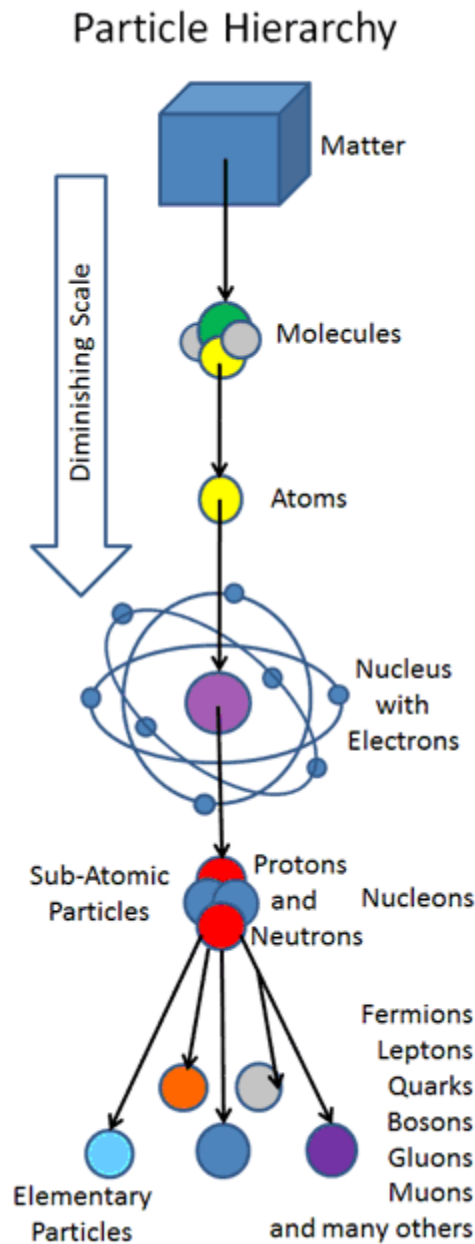


THE HINDU

LHC and elementary particles

- The Large Hadron Collider (LHC) is the world's largest and highest-energy particle collider and the largest machine in the world.
- It was built by the European Organization for Nuclear Research (CERN) between 1998 and 2008 in collaboration with over 10,000 scientists and hundreds of universities and laboratories, as well as more than 100 countries.
- It lies in a tunnel 27 kilometres (17 mi) in circumference and as deep as 175 metres (574 ft) beneath the

France–Switzerland border near Geneva.



- Broadly speaking, elementary particles are classified into the particles called baryons which include protons, neutrons and their antiparticles the antiprotons etc.
- The “middle mass” particles, roughly speaking, are called the mesons and they include members such as the K and B particles.
- You then have the leptons, which include the electron and its cousins the muon and tau particles, and the antiparticles.
- At a still smaller scale, there are tiny particles called quarks and gluons.
- There are six flavours of quarks: up, down, truth, beauty, charm, and strange. They too have antiquarks associated with them.
- In this particle zoo, while the baryons are made up of combinations of three quarks, the mesons contain two quarks, more accurately a quark and antiquark pair, and the leptons are truly fundamental and are thought to be indivisible.

	LEPTONS		QUARKS	
Mass Particles	Electron Responsible for electricity and chemical reactions. It has a charge of -1. All ordinary particles belong to this group.	Electron Neutrino Particle with no electric charge, and possibly no mass. Billions fly through your body every second. It has no electric charge.	Up It has an electric charge of +2/3. Protons contain 2, neutrons contain 1.	Down It has an electric charge of -1/3. Protons contain 1, neutrons contain 2.
Force Particles	Muon It is heavier than the electron. It lives for two tenths of a second. It has a charge of +1.	Muon Neutrino Created along with muons when some particles decay. It has no electric charge.	Charm Discovered in 1974. It is heavier than the Up. It has a charge of +2/3.	Strange Discovered in 1963. It is heavier than the Down. It has a charge of -1/3.
	Tau Heavier still. It is extremely unstable. It was discovered in 1975. It has a charge of +1.	Tau Neutrino Discovered in 2000. It has no electric charge.	Top Heavier still. Discovered in 1995. Electric charge +2/3.	Bottom Heavier still, measuring bottom quarks is an important test of electroweak theory. Discovered in 1977. Electric charge -1/3.
	Gluons Carriers of the strong force. These particles transmit the four fundamental forces of nature. Gravitons have so far not been discovered.	Photons Particles that make up light. They carry the electromagnetic force. Felt by quarks and gluons. Electricity, magnetism and chemistry are all the result of electromagnetic force.	Intermediate vector bosons Carriers of the weak force. Felt by quarks and leptons. Some forms of radioactivity are the result of the weak force.	Gravitons Carriers of gravity. Felt by all particles with mass. All the weight we experience is the result of the gravitational force.

ANTIMATTER: Each particle also has a mirror image.

Recent Study

- An intriguing anomaly in data gathered by the Large Hadron Collider (LHC) that raised hopes of a new elementary particle has turned out to be a fluke.
- In 2014, LHC scientists at CERN, Europe’s particle physics laboratory

near Geneva, Switzerland, discovered that some massive particles decay more often into electron positron pairs than into muon antimuon pairs.

- This imbalance defied the standard model of physics, which predicts both pairs to occur with roughly the same frequency.

THE HINDU

Voting of migrants

What is the EC's proposal for RVMs?

- In its 2015 order on a plea seeking voting opportunities for domestic migrants, the Supreme Court directed the EC to explore remote voting options.
- A committee of the poll panel had considered remote voting options such as proxy voting, postal ballots, Internet voting, and early voting but did not recommend any of these methods citing various reasons.
- The EC has come up with a prototype for a Multi-Constituency Remote Electronic Voting Machine (RVM) for migrant voting, a modified version of the existing EVM model.
- The EC says the RVM can handle multiple constituencies (up to 72) from a single remote polling booth.

- The voter will have to register (online/offline) for a remote voting facility within a pre-notified time with the concerned Returning Officer (RO) of their home constituency.

- Once the voter is verified and marked eligible for remote voting, a multi-constituency remote polling station will be set up in the area of their current residence.

- The RVMs will have the same security system and voting experience as the EVM, with the modification of an electronic ballot display with candidates and symbols instead of a fixed ballot paper sheet.

- When the voter scans his/her constituency card in the presence of the Presiding Officer at the station, their respective constituency and candidate list will appear on the RVM display.

- As for counting the votes, the electronic system will also count and store the votes for each candidate in a constituency.

What are the hurdles?

- Multiple Opposition parties have already expressed their concerns.
- The Congress has said that the use of the proposed remote voting mechanism could "seriously undermine the trust in the electoral

system,” urging the EC to first restore it through “transparency and via honest engagement with the Opposition’s concerns.”

- The EC itself has mentioned some procedural challenges that it is seeking stakeholder suggestions on, like how to define a migrant voter with respect to retaining registration at the original place, whether they are staying away for a longer duration at their “ordinary residence” and or are temporarily absent.
- Other issues include of placing remote voting in the electoral concept of territorial constituencies or demarcated areas in States for equal representation of voters.
- Other issues include the implementation of the Model Code of Conduct (MCC) in remote areas, ensuring secrecy of voting, and appointing polling agents at remote voting booths.

THE HINDU

The Investor Education and Protection Fund (IEPF)

- The Investor Education and Protection Fund (IEPF) will launch an outreach program soon to create awareness of cryptocurrencies and online gaming.

- The need for the outreach is based on the observation that both crypto assets and online gaming (that extends to gambling and betting) are still being promoted in a risky manner despite the recent turmoil in the sector.

What is IEPF?

- The Investor Education and Protection Fund (IEPF) is managed by the IEPF Authority, which was set up in 2016 under the provisions of Section 125 of the Companies Act, 2013.
- The Authority is entrusted with the responsibility of administration of the IEPF, which, besides promoting awareness among investors, makes refunds of shares, unclaimed dividends, matured deposits and debentures, and so on to rightful claimants.
- As for investment education, the idea is to reach out to household investors, housewives, and professionals alike in rural and urban areas and teach them the basics.
- Focus areas include primary and secondary capital markets, various saving instruments, and instruments for investment.

What about online gaming?

- The Ministry of Electronics and Information Technology (MeitY) has been appointed the nodal industry for online gaming in India; for e-sports, the nodal agency is the Department of Sports, under the Ministry of Youth Affairs and Sports.
 - A proposed framework for Central regulation by MeitY is expected to address issues faced by the sector.
 - For instance, there is confusion about the definitions of a 'game of chance' like fantasy games, and a 'game of skill', a term which has been used in the Public Gaming Act (1867) but has not been spelled out.
 - 'Game of skill', while the element of chance cannot be entirely ruled out, it is the 'element of skill' (mental or physical skill of the user) that plays a dominant role in determining the outcome of the game rather than pure chance.
 - She pointed out that "a glance at the rulings of the Supreme Court and several High Courts clearly establish 'Games of Skill' as legitimate business activities protected under Article 19(1)(g) of the Indian Constitution.
 - These rulings have also emphasised a clear distinction between 'Games of Skill' and 'Games of Chance'.
- Despite these court rulings, online skill games have faced restrictions in a few States due to addiction, financial losses and the thin line between skill and chance."

THE HINDU
