

## Proposed Miyapur-Patancheru Metro corridor could have double-decker flyover-cum-rail viaduct

Hyderabad: The proposed Metro Rail corridor from Miyapur to Patancheru (around 13 km), could have a double-decker flyover-cum-Metro viaduct at Gangaram for a stretch of 1.2 km.

As the National Highways are working on a long flyover of about 1.2 km at Gangaram, the Metro Rail authorities will check the feasibility of jointly constructing a double-decker flyover-cum-Metro viaduct for this length. This two-level planning could be necessitated in view of the relatively narrow stretch and presence of underground/overhead utilities on both sides of the road and a big religious structure on the right side in this stretch. Meanwhile, for the Miyapur – Patancheru corridor, the Metro viaduct is proposed to be built by and large in the central median of NH except at BHEL Junction. At the under-construction flyover at the Junction, Metro alignment will be taken to the left side of the flyover, duly integrating the proposed BHEL Metro station with the TGSRTC bus stop. In the last couple of days, the Hyderabad Airport Metro Ltd (HAML) MD NVS Reddy along with HAML engineering team and GC (SYSTRA) engineering experts has inspected Miyapur – Patancheru and LB Nagar-Hayatnagar Metro Phase-II corridors, and Mailardevpally-Aramghar-New High Court spur line which are on the National Highways. The meeting with NH officials sought to address the engineering challenges due to the presence of existing flyovers and new flyovers under construction in these routes.

The LB Nagar-Hayatnagar Metro Phase-II corridor (around 7 km) will be built as an extension of the existing Metro viaduct at LB Nagar Jn between the two existing flyovers with alignment in the central median. From Chintalkunta to Hayatnagar, the alignment will be in the left side service



road in view of the four new flyovers being constructed by NH authorities. The location of some of the six proposed Metro stations in this corridor will be slightly readjusted in such a way that they can be accessed easily from both sides of the NH. In

the Mailardevpally and New High Court spur line (over 5 km), the Metro alignment will initially be on the left side of the PVNR Expressway at Aramghar. It will then be taken to the right side (Agriculture University side) at a suitable location between

PVNR Expressway and the Agriculture University flyover. Engineer in Chief R&B (NH Incharge) I. Ganapathi Reddy, SE, NH, P. Dharma Reddy, HAML Chief Project Manager B. Anand Mohan, and others participated.

## Luxettipet Govt degree, PG college turns ray of hope for financially weak students

Mancherial: While a few government degree colleges are struggling to protect their existence due to decline in admissions year by year, a state-run Model Degree and PG College-Luxettipet has become a ray of hope for economically weak students who were till now forced to migrate to Karimnagar, Warangal and Hyderabad cities for pursuing quality higher education. The Government Degree College was established on the premises of the existing intermediate college in Luxettipet in 2008. It was selected as a Model Degree College under Rashtriya Uchchatar Shiksha Abhiyan (RUSA) scheme in 2015. An academic building

and separate hostels for boys and girls were constructed on a sprawling 9.3 acres of land near the town spending Rs 12 crore sanctioned under the initiative in 2017. "The institution is a boon for the rural students from the surrounding districts as quality education with holistic development provided by a dedicated team of qualified and experienced faculty," Dr Jai Kishan Ojha, principal of the college told 'Telangana Today.' Around 1,200 students from diverse backgrounds are pursuing higher education hailing from 10 erstwhile districts of Telangana, and two neighboring states Kerala and Odisha, he added.

While offering various conventional

degree and post-graduation courses since inception, the institute saw a paradigm shift in the admissions as well the courses offered after moving into permanent building in 2019. It is now offering a four-year long Integrated Teacher Education Programme (ITEP). It was among 42 colleges to have introduced the course across the country. The students are admitted on the basis of a national level test conducted by National Testing Agency (NTA). According to the principal, the institute has spacious classrooms, well equipped science labs, a library with a good number of academic books and subscription of magazines, an air-conditioned com-

puter lab with power backup, smart classrooms and virtual classroom making it a model college in real sense for students from rural parts of the state. Similarly, students are encouraged to participate in literary, cultural and sports events at all levels. The students won at district and state level in competitions over an electoral awareness programme and cash prize of Rs 40,000. The career-oriented counselling, lectures by external peers, study tours, research projects and other curricular programs are organized for the convenience of students. The institute applied for autonomous status from University Grants Commission (UGC).

# The problem of special packages



Coalition politics is back at the Union level in a substantial way. The Bharatiya Janata Party is dependent on the Janata Dal (United) of Bihar and the Telugu Desam Party of Andhra Pradesh for its parliamentary majority. This is in contrast to 2014 and 2019, when de facto single-party governments came to office. With single-party majority becoming a thing of the past, demand for State-specific discretionary grants, or 'special packages', are back with a bang in public discussion. The positive aspect of single-party dominance being tempered by the presence of coalition partners that can act as a check if unitary trends surge cannot be underestimated. Nevertheless, this is the time to test the hypothesis that when single-party dominance at the Union level fades, federal tendencies bloom and when a single-party majority under a strong leader at the Union level prevails, federal tendencies wilt.

If a healthy federal structure is to be nurtured, the fiscal boundaries, principles of assignment of taxes, and the basis for grants have to be transparent and objective. A federal setup can be asymmetric in a country that is characterised by linguistic, cultural, and economic diversity. But issues of asymmetry should be addressed by means of constitutional provisions that have both transparency and stability. The Constitution has provisions that address the issues of specific States, or States that have a special status with regard to certain matters mentioned in the Constitution. These provisions are covered, for instance, in Articles 371A to H (Article 370 for the erstwhile State of Jammu and Kashmir, of course, is abrogated). Purely discretionary

On the contrary, special packages are purely discretionary. They may be need-based, but the need is not the proximate reason for granting a special package, which is an additional grant under Article 282, which falls under 'Miscellaneous Financial Provisions'. More often than not, they are the result of the bargaining power of some State-level political parties that can tilt the scales of parliamentary majority. What does this augur for the health of our federal set-up? That the outcome of an election can determine the fiscal distribution of national resources to a State or States goes against the grain of fiscal federalism (or, more correctly, of federal finance). Some States may be justified in their demands for funds, but allocation has to be through the mechanism of the Finance Commission. The Commission is constituted by the President every five years or earlier to make recommendations regarding the distribution of a share of taxes collected by the Union to the States, and how this is to be distributed among the States, as per Article 280; and disbursement of grants to States in need of assistance, as provided in Article 275. The 16th Finance Commission, which is already in existence, cannot be bypassed solely on account of partisan political exigencies. When the same political party is in power at the Union and State levels, it is called a 'double-engine sarkar'. The main engine has lost the power to run on its own and the owners of smaller engines that are needed to pull the train along are making their own demands. While individual States may well need special packages, process is of the utmost importance. How have these events impacted the political and fiscal relations between the

Union and the States? The first issue here is the extent to which our polity is federal. The Constitution has been famously described as having a quasi-federal framework. C.H. Alexandrowicz, however, disputed this description in his work *Constitutional Developments in India (1957)*, stating that in situations other than an Emergency, it assumes a federal character. The Supreme Court has made the succinct observation that our polity is amphibian — it can assume unitary and federal characters depending on whether or not there is an Emergency under Articles 352 and 356 in force (*State of Rajasthan and Others v Union of India, 1977*).

Be that as it may, it is often argued that the prevailing political environment crucially determines whether federal tendencies bloom or wilt. Keeping this proposition in mind, the hypothesis stated above can be put to test. How fiscal distribution is done is cardinal in the test of whether or not federalism is strong. In the recent past, some States raised concerns about their share in the divisible pool of Union taxes facing a decline. Tax distribution is formula-

based, and it is for the 16th Finance Commission to address this issue and undertake the delicate task of balancing the interests of the States inter se, and with those of the Centre.

The focus here is on grants, in the disbursement of which scope for discretion is wider. In our constitutional framework, the primary task of recommending grants to States in need of assistance is that of the Finance Commission, until Parliament makes legislation in this regard. But the fact now is that the flow of discretionary grants to the States through Article 282 have far overtaken (by almost a factor of four) that of the grants recommended by the Finance Commissions. Acceding to demands for special packages which are raised by State-based parties, holding the key to parliamentary majority, will weaken the foundations of fiscal federalism, as it will result in diverting national resources away from other States, which too may have pressing needs. If this is allowed to happen, we will see the paradox of federal tendencies wilting instead of blooming when single-party dominance fades.

## EFLU signs MoU with IIM Raipur

Hyderabad: The city-based English and Foreign Languages University (EFLU), Tarnaka campus has entered into Memorandum of Understanding with Indian Institute of Management (IIM), Raipur, to facilitate translation of the teaching cases of the IIM, Raipur, into the Chinese, Arabic, French, and Spanish languages by the EFLU. The MoU was signed by IIM, Raipur,

Director, Prof. Ram Kumar Kakani, and EFLU, Vice Chancellor (Actg) Prof. Surabhi Bharati in a special event at the EFLU campus on Monday. On the occasion, Prof. Ram Kumar Kakani said that the MoU would help internationalise the huge repository of the teaching cases of the IIM Raipur through their translation into foreign languages.

# Act now or face extinction soon

Much has been written about the year 2023 and all the temperature records it broke. The latest State of the Climate report by the World Meteorological Organisation (WMO) confirmed that the year was the warmest on record, with the global average near-surface temperature at 1.45 °C above the pre-industrial baseline, and that it was the warmest 10-year period on record. Every day of the year, nearly one-third of the global ocean was gripped by a marine heatwave; by the end of 2023, over 90% of the ocean had experienced heatwave conditions; extreme ice melt in western North America and Europe drove the global set of reference glaciers to the largest loss of ice; and Antarctic sea ice extent was by far the lowest. The report, however, has made it clear that the crisis is much more than about high temperatures. The crisis has become “The defining challenge that humanity faces”, WMO secretary-general Celeste Saulo said, as witnessed by the growing food insecurity, population displacement, and biodiversity loss it has brought about. The number of food-insecure people has more

than doubled from 149 million before the pandemic to 333 million in 2023. Weather hazards continued to trigger displacement, and raise the costs of food production with farmlands destroyed. While some of these parameters, updated after the pandemic and with two wars raging on, may not be the direct result of climate extremes, the sudden spikes have been triggered by these extremes.

Temperatures will continue to rise for many years to come, WMO warned, with concentrations of three main greenhouse gases showing a continued rise after reaching record levels in 2022. The report also highlighted the unusual warming in areas such as the Northeast Atlantic, which did not correspond to typical patterns of warming associated with El Niño, and has puzzled scientists. But there is a glimmer of hope: Renewable energy capacity additions increased by almost 50% from 2022 driven by solar radiation, wind and water cycle. The report is just a confirmation — a document for history books — of what humanity faced all of last year. It needs to be



seen as a “Red Alert” for a society facing a threat to its existence as changes to the fundamental Earth systems speed up. It is also a now constant reminder of the urgent need to cut emissions drastically. UN section

retary general António Guterres rightly said the records are “chart-busting” — the Y-axes for several scales were extended this year to accommodate the higher values set last year. Whether this rhetoric spurs action is to be seen.

## Do rising methane levels herald a climate feedback loop?

The end of an ice age is a fearsome and complex thing. Ice sheets collapse; ocean currents shift; weather patterns are thrown awry; low-lying land is inundated. Each change triggers more change, mostly in a way that makes the world warmer still.

Such “terminations” are visible in the geological record. When ice ages end, says Euan Nisbet of Royal Holloway, University of London, a sudden rise in airborne methane levels “is the bellwether, right at the beginning of [the] changes. The melting of the ice takes thousands of years. But the atmospheric change can be...a matter of decades.” And when Dr Nisbet looks at today’s atmospheric data, he sees something that looks worryingly termination-like. At the end of an ice age, as the world begins to warm, its tropical wetlands spread. The microbes that live in those wetlands produce methane as a waste product, so more wetlands means more methane in the air. And because methane is itself a powerful greenhouse gas, that drives further warming in turn. Even as delegates to the COP28 climate conference consider ways to cut human methane emissions, Dr Nisbet worries that the Earth’s natural systems may be churning out more and more of the gas. Methane levels are certainly rising. Over the 40 years during which the gas’s level in the atmosphere has been monitored, it has grown by about 17%, in two distinct stages. In the first, strong annual growth slowed until, in the early 2000s, it stopped altogether. But around 2006 it began growing again—and the rate is accelerating. The evidence that wetlands might be to blame comes from the type of methane being emitted. Meth-

ane is made of four atoms of hydrogen atoms and one of carbon. That carbon atom can be either the “light” isotope, with six neutrons in its nucleus, or the heavy isotope, which has seven. Methane-making bacteria find the lighter sort easier to handle. The methane they produce is therefore lighter than methane from fossil fuels or forest fires, another major source of the gas. And over the past 15 years, the methane in the atmosphere has indeed become lighter.

That is suggestive, but not conclusive. Accounting for the methane in the air is tricky. An academic collaboration called the Global Methane Budget (GMB) produces two tallies. One bottom-up estimate adds the emissions of all known sources. Another top-down one works backwards from the methane levels in the air and tries to calculate emissions on the ground consistent with it. In the most recent budget, published in 2020, the two approaches disagreed significantly. The total calculated from known sources was 30% higher than the number derived from the atmosphere.

The GMB concluded that the rise in methane since 2006 was a mix of more fossil-fuel sources and more microbial ones. Many of those microbes, it suggested, might be living in landfills and the stomachs of cattle, two environments that human efforts are expanding. And methane from such sources is isotopically similar to methane that comes from wetlands. But more recent, detailed studies which analyse the isotopic data in more detail have pushed the consensus away from farming and rubbish dumps and towards swamps. In 2021 a group of researchers

analysed improved satellite and ground observations and concluded, in a paper published in Atmospheric Chemistry and Physics, that 35% of the post-2006 increase came from wetlands. A more recent estimate by Dr Nisbet and colleagues puts the contribution at 45%. Those may even be underestimates. One way that methane is taken out of the atmosphere is through reactions with chlorine ions over the ocean, a process that preferentially targets the lighter sort of methane. A paper published in June suggests that interactions between dust and sea spray over the Atlantic may mean there is more chlorine out there than modellers previously thought. If so, the shift towards microbial methane sources may be even more pronounced than the lightness of the methane in the atmosphere suggests. And it is not just rising temperatures that could boost methane production from wetlands. Records from ice cores show that, at the end of the most recent ice age, the level of carbon dioxide in the air and the lightness of atmospheric methane were closely correlated. The obvious explanation is that carbon dioxide makes plants grow more vigorously. (It is, after all, what they eat.) And faster growth means more dead vegetable matter for methane-making bacteria to eat in turn. Human-caused carbon dioxide emissions are having a similar fertilising effect on today’s vegetation, though whether that is part of today’s methane story remains to be seen.

More data may help clarify things. New satellite and airborne measurements should make it easier to say from whence and in what quantities the light methane is coming. Xin Lan, a carbon-cycle scientist



at the University of Colorado at Boulder, and one of Dr Nisbet’s co-authors, thinks that looking at isotopes of hydrogen as well as carbon may make it possible to distinguish between methane produced by swamp microbes from that made by bugs in cow guts and landfills. Fieldwork may reveal to what extent wetland emissions are being driven by the run-off of artificial fertilisers, which can be cut more easily than climate change can be reversed. If those data support Dr Nisbet’s hypothesis, and a warming world really is producing more and more methane, that would raise several uncomfortable questions. Will the process accelerate? Or will something limit the growth of the wetlands? Will efforts to cut man-made methane emissions be able to counteract rising emissions of the natural sort, in a sort of climatic Red Queen’s race? If not, and the process continues, how much methane could it add? The spike at the end of the last ice age saw methane levels rise from 400 parts per billion to 700ppb. Is it reassuring that the increase in man-made emissions from the Industrial Revolution to the turn of the century has dwarfed that, pushing levels from 700ppb to 1,800ppb? Or should one instead think of straws and camels’ backs?

# A debate on the most romantic songs in Hindi cinema

Some days ago, at an informal dinner, after everyone had discussed the ongoing elections to the hilt, one guest suddenly changed the subject. She asked, "What, according to each of you, is the most romantic song in a Hindi film?" There was one brave friend who responded, but others protested. "How can one choose only one?" came one argument. It was agreed then that everybody would name five choices. This was easier said than done. Hindi films are so replete with romantic songs that choosing only five songs took my friends much longer than they thought. Each pick was strongly contradicted by someone else, and new suggestions were trashed by others. It seems everybody had some favourites, not only on the merit of the artistic efforts involved but for very personal reasons of experience. Naturally, no consensus could be reached. The next day I gave some serious thought to this question. My choices were influenced by melody, picturisation, actors and situation, but above all, the lyrics. I finally came up with my own top choices, which I am taking the courage to put here, fully aware that as some of the choices in that evening, these can be as vehemently trashed by readers. But the debate is interesting — and revealing — and so I am sticking my neck out, putting on a helmet for my safety, and going ahead anyway!

**Chauthvin ka Chand (1960):** Sung by Mohammad Rafi. Music by Ravi. Lyrics by Shakeel Badayuni. Film: Chauthvin ka Chand, starring Guru Dutt and Waheeda Rehman. **Ab kya misaal dun main tumhare shabab ki (1962):** Sung by Mohammad Rafi. Music by Roshan. Lyrics by Majrooh Sultanpuri. Film: Aarti, starring Pradeep Kumar and Meena Kumari. **Tum apna ranj-o-gham, apni pareshani mujhe de do (1964):** Sung by Jagjit Kaur. Music by Khayyam. Lyrics by Sahir Ludhianvi. Film: Shagun, starring Kamaljeet and Waheeda Rehman. **Yeh nayan da're da're, yeh jaam bhare hue (1964):** Sung and composed by Hemant Kumar. Lyrics: Kaifi Azmi. Film: Kohraa, starring Biswajeet and Waheeda Rehman. **Chhupaa lo yun dil me pyaar mera (1966):** Sung by Hemant Kumar and Lata Mangeshkar. Music director: Roshan. Lyrics: Majrooh Sultanpuri. Film: Mamtaa, picturised on Ashok Kumar and Suchitra Sen. **Lagja gale ke phir ye haseen raat ho na ho (1964):** Sung by Lata Mangeshkar. Music: Madan Mohan. Lyrics: Raja Mehdi Ali Khan. Film: Woh Kaun Thi, starring Sadhana, Manoj Kumar. **Jalte hain jiske liye (1959):** Sung by Talat Mehmood. Music: SD Burman. Lyrics: Majrooh Sultanpuri. Film: Sujata, showing Sunil Dutt singing for Nutan on a landline phone. **Phoolon ke rang se, dil ki kalam se. (1970):** Sung by Kishore Kumar. Music: SD Burman. Lyrics: Neeraj. Film: Prem Pujari, starring Dev Anand. **Yeh dekh ke dil jhooma, li pyaar ne angdayi, deewana hua badal (1964):** Sung by Mohammad Rafi and Asha Bhonsle. Music: OP Nayyar. Lyrics: SH Bihari. Film: Kashmir ki Kali, starring Shammi Kapoor



and Sharmila Tagore.

**Abhi na jao chhod kar (1961):** Sung by Mohammad Rafi and Asha Bhonsle. Music: Jaidev. Lyrics: Sahir Ludhianvi. Film: Hum Dono, picturised on Dev Anand and Sadhana.

**Aye meri zohra jabeen, tujhe maloom nahin (1965):** Sung by Manna Dey. Music: Ravi. Lyrics: Sahir Ludhianvi. Film: Waqt, starring Balraj Sahni and Achala Sachdev. **Aap ki haseen rukh par aaj naya noor hai (1966):** Singer: Mohammad Rafi. Music: OP Nayyar. Lyrics: Anjaan. Film: Baharen Phir Bhi Aayengi, starring Dharmendra. **Maula Mera Maula (2007):** Singer: Roop Kumar Rathod. Music: Mithoon. Lyrics: Sayeed Qadri. Film: Anwar, picturised on Siddharth

Koirala, Nauheed Cyrusi. **Tujhe kay bataoon main dilruba (1958):** Singer: Mohammad Rafi. Lyrics: Majrooh Sultanpuri. Music: Madan Mohan. Film: Aakhri Daao, starring Nutan and Shekhar. I can anticipate some reactions to the above choices. Except for one, there are no recent films. I am sure there are equally romantic songs in the current generation of cinema, but my choice is influenced by the era that shaped me. My only defence is that the compositions of older films had a combination of melody and words that are difficult to find today. My choices do suffer from selectivity, but while I accept that there are far more songs out there that are worthy of inclusion, I would like to hear whether

people don't like the songs in the list above or radically disagree with the merit of their inclusion. I invite readers to write about their own choices.

The number should not exceed 14. Depending on your feedback — which I welcome — perhaps we can come to some consensus about what songs should be included in the list of the most romantic songs of Hindi films. Pavan K Varma is author, diplomat, and former Member of Parliament (Rajya Sabha). Just Like That is a weekly column where Varma shares nuggets from the world of history, culture, literature, and personal reminiscences. The views expressed are personal. Continue reading with HT Premium Subscription

## Threads launches fact-checking program to combat false content

New Delhi: After relying on Instagram and Facebook's networks for several months, Meta-owned Threads has rolled out its own fact-checking programme to rate false content on the platform. Instagram head Adam Mosseri announced this new development in a post on Threads on Wednesday.

"FYI we recently rolled out the ability for our third-party fact-checking partners to review and rate false content on Threads," Mosseri wrote. "Previously, we matched near-identical false content on Threads based on what was fact-checked on Facebook and Instagram. Now fact-checkers can rate Threads content on own," he added.



# Liquid nitrogen in foods draws Tamil Nadu's ire, yet again

A week ago, a video of a child screaming went viral on social media. There were visuals of adults spewing white smoke from their mouth and nose. What the child said was garbled in the video, but it was soon apparent that the child had consumed a food item infused with liquid nitrogen. Television channels and online media took up the issue. The Tamil Nadu government issued an advisory banning the use of liquid nitrogen in food and warned of stringent action against violators.

In May 1991, The Hindu reported that a London-based company developed a system to improve the quality and shelf life of food. It introduced droplets of liquid nitrogen in the packaging on the production line. Since nitrogen's volume expands 700-times when it evaporates, it displaces the oxygen in the food pack, preventing microbial action and preserving the freshness. The technique was useful in packing coffee, potato crisps, peanuts and peanut butter, milk products, cheese, and dried potatoes, the article said. As with every novelty, some chefs also experimented with liquid nitrogen to make food more interesting. In 2016, a few upmarket restaurants and eateries in Chennai and elsewhere used liquid nitrogen to entice customers.

The trend caught up in other parts of the country. In August 2017, the then Union Environment Minister Harsh Vardhan said

in Rajya Sabha that the government would investigate the addition of liquid nitrogen in food and drinks served in some restaurants. He was responding to an incident in Gurgaon a few months prior, when a man drank a cocktail with liquid nitrogen at a pub and ended up with a perforation in his stomach. Six months ago, in Tiruchirappalli, a vendor's shop was sealed after authorities found liquid nitrogen in food, the designated food safety officer of the city said.

Liquid nitrogen in cancer care "Liquid nitrogen, an inert, colourless, odourless cryogenic fluid has traditionally been used in the management of many benign precancers and cancers since the 1960s," Arvind Krishnamurthy, professor and head of surgical oncology at the Adyar Cancer Institute, said. "This form of treatment is generally used to manage cancers wherein conventional surgery is not possible or can be used as an adjunct to conventional surgery." The procedure involves using the element at a very cold -196 degrees C to freeze and destroy cancer cells. "The treatment is scientifically described as cryotherapy. It can also be used to obtain biopsies from cancer tissues for further molecular analysis. Another application is to use it as cryo-adhesion to remove foreign bodies," he explained. "During this treatment, liquid nitrogen or any other cooling agent is brought in proximity/contact with the cancerous tissue through several techniques, i.e. open spray, cone, dipstick or tweezer.



Liquid nitrogen is subsequently pumped to freeze and immediately left to thaw. This process of freezing and thawing is repeated several times to [kill] the cancer cells, largely due to formation of intracellular ice crystals, which will eventually swell, blister, and crust out," Dr. Krishnamurthy added. Cryotherapy has been attempted to treat many cancers, including those of skin, bone, breast, cervical, eye, kidney, liver, lung, and prostate. "Liquid nitrogen should be handled by trained professionals with proper protective gear preferably in a controlled lab or industry, as improper han-

dling or consumption of liquid nitrogen can cause severe damage to the skin, mucous membranes, and internal organs," the surgeon said. A day after the viral video, the Tamil Nadu Food Safety Department cited the Food Safety and Standards Regulations, and the Drug Administration department issued a circular on the use of liquid nitrogen.

The substance can only be used to preserve packaged food, the circular explained. The department also warned of stringent action, including fine and legal proceedings, if it is used for other purposes.

## Can mumps affect adults?

In recent months, there has been a significant increase in mumps cases in city hospitals. This is a major change from the past, when there were very few cases reported each year, The Indian Express previously reported. Experts believe this spike is likely due to a decrease in vaccination rates caused by the Covid pandemic. The majority of hospitalised patients are children between the ages of six and seven. While it's commonly associated with childhood, this does beg the question: Can mumps affect adults?

According to Dr Rajeev Gupta, Director – Internal Medicine at the CK Birla Hospital, Delhi, adults can contract mumps too, especially if they haven't been vaccinated or haven't received the full course of vaccinations during childhood. In fact, adults who haven't been vaccinated are more susceptible to complications from mumps compared to children, he added.

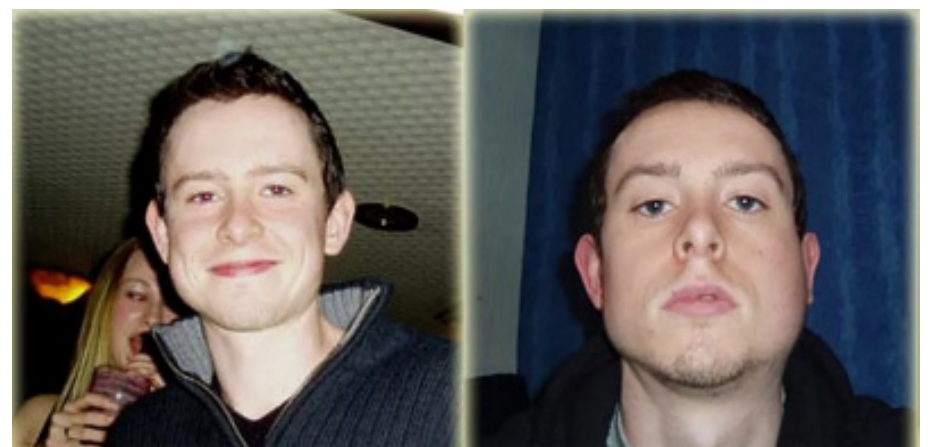
How is mumps different in adults?

According to Dr Shilpa Kulkarni, Consultant – ICU at Ruby Hall Clinic, Wanowrie, in adults, mumps can present with similar symptoms to those seen in children, such as fever, headache, muscle aches, tiredness, and loss of appetite, in addition to acute parotitis (acute, painful

swelling of the parotid glands, which are located beneath the ear pinna). However, she added that adults may also experience more severe complications, including swelling of the testicles (orchitis) in males, which can lead to infertility, as well as inflammation of the ovaries (oophoritis) in females. "Adults are also more likely to experience complications such as meningitis or encephalitis, which can be serious and even life-threatening. Therefore, it's crucial for adults to ensure they're up-to-date with their vaccinations to protect themselves from mumps and its potential complications," Dr Gupta told indianexpress.com in an interaction. Festive offer mumps, mumps outbreak Though less common, mumps can also cause polyarthritis, pancreatitis, or aseptic meningitis, he added. (Source: Wikimedia Commons)

How does mumps spread?

Mumps spreads through contact with saliva and respiratory secretions. This means you can catch it by sharing utensils, cups, or other personal items with someone infected, or by being close to someone who's coughing or sneezing. Close contact in crowded environments, such as schools, universities, or work-



places, can also elevate the risk of transmission, Dr Gupta said. Furthermore, compromised immune systems, stress, or fatigue may lower your body's defense mechanisms, potentially increasing susceptibility. To reduce your risk, ensure you are vaccinated, practice good hygiene, avoid close contact with infected individuals, and stay away from crowded environments during outbreaks.

What is the treatment and cure?

Mumps treatment primarily aims to manage symptoms, as no antiviral medications specifically target the mumps vi-

rus. The typical approach to treatment involves alleviating pain, reducing fever, and promoting overall comfort while the body combats the infection. Over-the-counter pain relievers such as ibuprofen or acetaminophen are often used to reduce fever and ease the discomfort caused by swollen salivary glands. Staying hydrated is crucial, so drinking plenty of fluids is recommended, especially if there's a loss of appetite or fever. Getting sufficient rest helps the body recover more quickly, and applying warm or cold compresses to the swollen areas can provide additional relief.

# How jumping genes and RNA bridges promise to shake up biomedicine

The year was 1948. It had only been about half a century since scientists had rediscovered Gregor Mendel's work on inheritance in pea plants. This year, a scientist working on the genetics of the maize plant would challenge the then prevailing concept that genes are stable and arranged in an orderly manner on the chromosome. Barbara McClintock at the Carnegie Institution found that some genes were able to move around within the genome. These genes were called mobile elements or transposons. Prof. McClintock also made another significant observation: depending on where the mobile elements were inserted, they had the ability to reversibly alter gene expression. She used corn kernels' colours as a surrogate to understand hereditary characteristics, and this way figured out transposons moved about in the genome of the maize plant. She was awarded the Nobel Prize in Physiology or Medicine in 1983 for this work. Between 1948 and 1983, researchers found transposons in an array of life-forms, including bacteriophages, bacteria, plants, worms, fruit flies, mosquitos, mice, and humans. They were nicknamed 'jumping genes'.

'Sleeping beauty' transposon The discovery of transposons revolutionised our understanding of genetics, in particular their role in enabling nature's wondrous diversity. Transposons influence the effects of genes by turning 'on' or 'off' their expression using a variety of epigenetic mechanisms. They are thus rightly called the tools of evolution, for their ability to rearrange the genome and introduce changes. More than 45% of the human genome consists of transposable elements. Just as they create diversity, they also create mutations in genes and lead to diseases. However, most of the transposons have themselves inherited mutations and have become inactive, and thus can't move around within the genome. Over the years, researchers have attempted to resurrect inactive transposons from the genomes of the animal kingdom, hoping that the results will be useful in biomedical applications like genetic correction to cure a disease or for gene therapy.

For example, in 1997, researchers studied the genomes of fish and reconstructed a transposon called 'sleeping beauty' at the molecular level. This transposon became dormant in vertebrates millions of years ago. The researchers elegantly reprogrammed the synthetic avatar to work in human cells. In future, a similar synthetic transposon inspired by nature may be able to turn off a problem gene or over-express another to accentuate some desirable characteristic. Researchers have already discovered several naturally occurring vertebrate transposons and continue to look for more. RNA-guided transposons On June 26, Nature published a paper by researchers at the University of California, Berkeley, and the Arc Institute in the U.S. describing a new RNA-guided gene editing system. This tool builds on an older discovery: that one of the genes in the IS110 family of bacterial transposons contains the instructions for cells to make



an RNA molecule with two loops. Scientists found this RNA could bind to two pieces of DNA, rather than the usual one piece, and form a bridge between them. This is a very useful ability. In the new study, the researchers used the bridge RNA to edit the DNA. The two loops of the RNA can independently bind to two separate pieces of DNA. One of the loops identifies the target site in the genome that needs to be altered. The other loop specifies the DNA to be inserted in its place. Each loop is independently programmable, which means researchers can mix and match any target and donor DNA sequences of interest. In their paper, they reported that in *Escherichia coli* bacteria, the bridge RNA had more than 60% insertion efficiency (i.e. ability to introduce a desired gene) and a 94% specificity (ability to target the intended location on the genome). Boon for synthetic biology In a separate paper published on the same day, researchers from the University of Tokyo described the structural and molecular mechanisms of genome modification guided by bridge RNA. The researchers used cryo-electron microscopy to study the IS110 transposons. They found that it works as a dimer — a complex compound formed by bonding two copies of a simpler compound. One copy binds to the target DNA and the other binds to the donor DNA, bridged by the bridge RNA. This alternative form of genome-editing has many advantages. CRISPR-mediated editing sometimes leaves small bits of nucleotides added/deleted during the repair process. DNA recombination mediated by bridge RNA on the other hand makes a clean cut, making the edit specific and tidy. Equally importantly, the latter can facilitate the addition, deletion or inversion of DNA sequences of virtually any length. Researchers can exploit this feature by inserting any desirable genetic cargo — such as a functional copy of a faulty, disease-causing

gene — into any location on a genome. Such an ability spells a big boon for synthetic biology, where entire sets of genes need to be inserted or removed from organisms. Similarly, the technique can be used to manage, or even treat, a wide variety of genetic diseases: a functional copy of a gene can be replaced in a given genomic location. Researchers may also be able to treat chromosomal inversions or deletions, which are currently beyond the reach of any of the editing tools we have. As

Prof. McClintock said in her Nobel Prize lecture in 1983: "Unquestionably we will emerge from this revolutionary period with modified views of components of cells and how they operate, but only, however, to await the emergence of the next revolutionary phase that again will bring startling changes in concepts." The authors are senior consultants at the Vishwanath Cancer Care Foundation and adjunct professors at IIT, Kanpur and the Dr. D.Y. Patil Medical College, Hospital and Research Center, Pune.

## City-based Pulsus group announces AI-based pharma IT Hub at Ameenpur

Hyderabad: Hyderabad-based Pulsus Group has announced the creation of an AI-based Pharma Healthcare IT Hub in Ameenpur, Sangareddy at an estimated cost of Rs 300 crore. The project will catalyze the healthcare and IT landscape, generating a significant economic impact by creating an estimated 50,000 jobs, the company in a press release said. The project details were announced by Dr. Srinubabu Gedela, CEO and MD of Pulsus Group, at the recently held 73 IPC Congress, an annual event of Pharmacists in Hyderabad.

Early estimates suggest the hub to generate 10,000 direct positions within the hub itself and an estimated 40,000 indirect jobs through supporting industries and services. "This AI-powered hub will be aligned with IPC congress theme "Role of Indian Pharma: For Global Wellbeing". By integrating the most advanced AI, we aim to streamline processes, enhance precision in drug development, and improve patient outcomes," Dr Srinubabu said. Located within the designated IT/ITeS



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Zone in Ameenpur, the hub has benefited from infrastructure and connectivity. The key features of the project include innovative AI to enrich all aspects of pharma, from research and development to healthcare delivery and generate a sizable number of jobs, providing substantial employment opportunities for local residents.

# SEBI's uniform charge structure for market infrastructure institutions | Explained

The story so far: Markets regulator, the Securities and Exchange Board of India (SEBI) on Monday instructed stock exchanges and other market institutions to levy "uniform and equal" charge structure for all its members, irrespective of the nature of the transaction. The directive was bad news for stockbrokers since it is expected to potentially guide towards a regime entailing higher broking charges from stockbrokers. On Tuesday, scrips of Geojit Financial fell 7% at close on BSE, Motilal Oswal 3.1%, 5Paisa about 3.5% and SMC Global Securities 2.6%. The directions take effect from October 1. What is the context of the directions? Stock exchanges impose certain charges on stockbrokers for carrying out transactions on their platform. In turn, stockbrokers recover these charges from their clients (or end customers).

SEBI observed that market institutions adhere to volume-based charge structures for the same. In other words, the charges levied are based on slabs that are segregated based on the volume of the transaction(s) undertaken. Thus, the greater the volume a broker generates, the lesser their transaction fee to the exchange. The same mechanism also works in the U.S. housing NASDAQ and NYSE. Additionally, SEBI also observed that the related entities recover these charges on a daily basis whereas the exchanges receive aggregate charges from the stockbrokers on a monthly basis. The mechanism, as observed by SEBI, has resulted in aggregate charges collected by brokers being higher than the charges paid to the exchange – exhibiting a discrepancy between daily and monthly volumes. The regulator also held concerns about an incorrect or misleading disclosure being made to the client about the charges levied by the exchange. Furthermore, it believes, the charge structure of the exchanges could also create a hindrance for them to impart "equal and fair access" to all market participants. Therefore, with the directive it proposes to create a "level playing field between members" irrespective of their size or the volume of their transactions. So, what has SEBI directed? To address the paradigm, SEBI has directed exchanges and other market institutions to levy a "uniform and equal" charge structure for all their members (in this context, stockbrokers). The structure must not be differentiating based on the volume or activities of the member.

The regulator has further sought charges recovered from the end client must be "true to label". That is, if a stock exchange institutes certain charges on the end client from brokers, it would be the former's prerogative to ensure that they receive the same amount only. Additionally, SEBI has sought that due consideration be given to existing per unit charges (on transactions) levied by the exchanges. This is to ensure that the end clients are able to benefit from reduced charges – starting from the unit basis itself.

What repercussions are we looking at?

The difference between the amount paid and charged from their customers

forms an essential revenue stream for stockbrokers. The direction is expected to directly impact this paradigm. However, the impact could potentially not be the same across the board. It would vary as per the entity's dependence on this stream of revenue. Some may possess alternative streams as well. For perspective, Nithin Kamath, CEO and Founder of Zerodha explained in a blog that Zerodha earns about 10% of its revenue as this difference. On similar lines, Geojit Financial in a communication to BSE informed the difference income in FY 2023-24 amounted to Rs 40 lakhs – constituting 0.067% of the total income and 0.22% of profit before tax. Satish Menon, Executive Director at Geojit Financial told The Hindu that 80% of the company's brokerage income comes from cash markets. "We are of the view that SEBI circular will have an impact on discount brokers, and we can expect an increase in the brokerage rates offered by discount brokers," he observed. About Zerodha, Mr Kamath wrote in the blog that the range increased from about 3% to the present state because of the increase in revenue from options trading. "Today, 90% of our



revenue from these rebates come from option trading alone. With the new circular, brokers will no longer earn these rebates (difference amount)," he said. The CEO also held that they may have to "probably let go of the zero-brokerage structure" on equity trading. His blog explained that Zerodha was able to provide zero broker-

age on equity because it subsidised equity investments with revenue from the F&O trading activity. "This structure could now potentially change. As a business, we may have to introduce a brokerage fee for equity delivery investments, which is currently free, or/and increase F&O brokerage," he stated.

## The Congress has no room for complacency

The Congress-led United Democratic Front (UDF) delivered an impressive performance in the 2024 Lok Sabha elections in Kerala. It won 18 seats — just one short of the 19 seats it had won in the 2019 elections — out of the total 20 seats. In 2019, its success was attributed to the massive protest in Kerala against the Supreme Court order allowing women of all ages to enter the Lord Ayyappa temple at Sabarimala, as well as the candidacy of Congress leader Rahul Gandhi in Wayanad. This time, the strong anti-incumbency sentiment against the ruling Left Democratic Front (LDF) government, led by the Communist Party of India (Marxist), helped the UDF. In 2019, the Congress leadership believed that the UDF would regain power in the Assembly polls in 2021. They assumed that anti-incumbency against the LDF government would suffice for the coalition. However, this did not happen, largely because of the party's complacency.

On the other hand, the LDF won thanks to its various social security measures, its distribution of food kits through ration shops post-COVID-19, and the successful experiment of a rainbow coalition of 11 constituents. The Left made history by winning the 2021 Assembly polls in the State, disrupting the nearly four-decade alternation of power between the LDF and UDF. Chalking out a plan

Though the Assembly elections are still two years away, the Congress has begun to chalk out a plan. The party has announced its national general secretary, Priyanka Gandhi Vadra, as the candidate for the Wayanad bye-election after her brother, Mr. Gandhi, vacated the seat to retain the Rae Bareilly constituency. The bye-election is expected to coincide with the bypolls in the Palakkad and Chelakkara

Assembly seats, which were vacated by Shafi Parambil from the Congress and K. Radhakrishnan from the CPI (M), respectively, after their win in the Lok Sabha elections. The UDF will have to contend not just with its traditional rivals, but also with the Bharatiya Janata Party (BJP)-led National Democratic Alliance, which has emerged as a formidable force in the Lok Sabha polls by securing 19.25% of the votes and winning the Thrissur constituency.

Shaken by its electoral debacle, the CPI(M) has begun to carry out corrective measures both within the party and government. These rectifications may prompt Chief Minister Pinarayi Vijayan, who has faced criticism for his style of governance, to reshuffle the portfolios in Cabinet and introduce measures to monitor the bureaucracy. The CPI(M) leadership has realised that its poor showing in the Lok Sabha elections stemmed primarily from the arrogant attitude of its party leaders. Other factors that contributed to its woes were the State's financial crisis, the LDF's failure in delivering existing welfare schemes and providing dearness allowance for teachers and government employees, as well as delays in paying lakhs of pensioners. CPI(M) State unit secretary M.V. Govindan pointed to the influence of capitalist tendencies on party cadres as a factor contributing to the LDF's defeat. The serious allegations against the Chief Minister and his daughter, the frequent man-animal conflicts, and campus violence made matters worse for the party. Moreover, the CPI(M)'s attempt to woo the Samastha Kerala Jem-iyathul Ulama, a powerful body of Muslim scholars with ties to the Indian Union Muslim League, backfired. It not only failed to yield results but also led



to an erosion of Hindu votes, particularly in south Kerala. The Congress should be equally wary, as the BJP is set to tighten its grip in the State by focusing on 40 of the 140 Assembly seats. The induction of George Kurian from the Syro-Malabar community into the Modi Cabinet will certainly reinforce the BJP's efforts to appeal to Christians. It is also crucial for the UDF to recognise that most of its sitting MPs were elected not based on their performance, but as a consequence of a negative vote against the LDF government. The CPI(M) continues to retain a solid vote bank, and the Left ecosystem in Kerala has not withered away. To sustain momentum leading up to the 2026 Assembly polls, the UDF leadership needs to draw inspiration from the INDIA bloc at the national level and assert itself strongly as an opposition to the CPI(M) in Kerala.

# Ambitious AFI looking to shake up the status quo of Indian athletics



Neeraj Chopra's success in Tokyo 2020 led to an explosion of interest across the country in javelin throw, a sport that for many Indians for many years was one of those fringe events that happened on the sidelines of the more glamorous races on the track. Proving that an increase in number corresponds to quality, Indian athletics now has several javelin throwers either among the world's best or knocking the doors at the top level – across age groups. The success has also spurred the Athletics Federation of India's (AFI) ambitions, which now plans to broad-base the entire sport across the country. Expanding its horizons

Post the Paris Olympics, the AFI has planned to completely restructure its training and competition modules, possibly allowing more freedom and opportunities to athletes in both. This includes doing away with centralised national camps, grading the training centres and academies and increasing regional events for easy access to competitions. "See, when you have one national camp, you can only have a maximum of 120-130 athletes, across events. But a lot of athletes say they do not wish to leave their personal coaches or training bases and come to the national camps even though they might get better facilities. We have even invited athletes to bring their own coaches to the national camp but they still don't want to. We also know why they don't want to come to camps. So we have decided to tell the athletes, 'do whatever you want to, train wherever you want

to, with whichever coach you want. The relay teams will be an exception since they need to train together. One way the AFI is looking to revamp its operations is by streamlining and grading all the training centres in the country on the basis of the facilities available. At the same time, AFI president Adille Sumariwalla insisted, there will continue to be single training bases for specific events with dedicated coaches – both Indian and foreign – with athletes having access to them regardless of being a 'national camper' or not. It is also looking at spreading the competition calendar and adding more regional events to ensure more competition

"Of course, it makes keeping track of their progress and an eye on whether they stay clean more difficult. But even now, many of them are reluctant to travel and many don't. This way we will have more training centres and be able to cater to many more athletes who wish to avail top-level facilities, we are looking at at least 650-700 athletes in the national set-up," AFI president Adille Sumariwalla said in an exclusive interaction with The Hindu. One way the AFI is looking to do so is by streamlining and grading all the training centres in the country on the basis of the facilities available. These will include the existing government set-ups at the various Centres of Excellence – both central and state – the privately managed ones including the likes of Army Sports Institute, the Reliance Foundation and JSW's Inspire Institute of Sports and the likes of

standalone academies like the PT Usha School or the Anju Bobby Foundation.

"We have prepared a detailed criteria of more than 30 parameters to rank the facilities from grade A to E. These include the equipment available, accommodation, coaching facilities, personnel, track, sports science facilities, recovery and rehabilitation and much more. Registering them all will help us keep track of the activities and grading them will also provide an incentive to those ranked below to improve because their funding will be directly according to their rank," Sumariwalla explained. At the same time, he insisted, there will continue to be single training bases for specific events with dedicated coaches – both Indian and foreign – with athletes having access to them regardless of being a 'national camper' or not. "Thiruvananthapuram will remain our main centre for sprints. Bengaluru will remain the centre for middle-distance running and jumps. Patiala will continue to be the centre for throwers. Those who want to can always come and train there. I can confidently say that there is no better facility than our camps – in terms of physios, food, equipments, masseurs, everything. There will continue to be a national chief coach and a High Performance Director – for seniors and juniors – and their job will be to monitor everything, control, get feedback and help create a training microcycle. We are simply trying to spread better facilities with access to more people," he added. Access to better coaches The decentralisation of train-

ing, he said, will also help more athletes access and train with the foreign coaches, both contracted with the federation and private centres. A case in point is the newly crowned 100m champion Gurindervir Singh, who is not a national camper. Gurindervir revealed after the race that he had spoken to James Hillier, athletics director of Reliance Foundation, who had invited him to train at their high performance centre in Odisha post Olympics. Hillier, in fact, has been quite popular here – he was even seen assessing and giving tips to a local kid who approached him on the eve of the Inter-State Championships. "Just a kid, he came up and asked if I could look at him so why not?" Hillier had shrugged.

"This is the kind of thing we are looking at. Otherwise only the national campers have access to foreign coaches. Now we will have event-specific coaches based in certain centres and any athlete can approach them. The coaches will also travel to other centres regularly," Sumariwalla said. The only pre-condition is that every coach has to be registered with the federation – including the foreign coaches and those employed with the private academies. "Athletes always get penalised but coaches rarely do. Why should they get away? Mentioning the coach will be mandatory for every athlete at every competition, "We are giving them the freedom to train as they like. But we are also telling them, 'we will get after you, we will be tracking you."