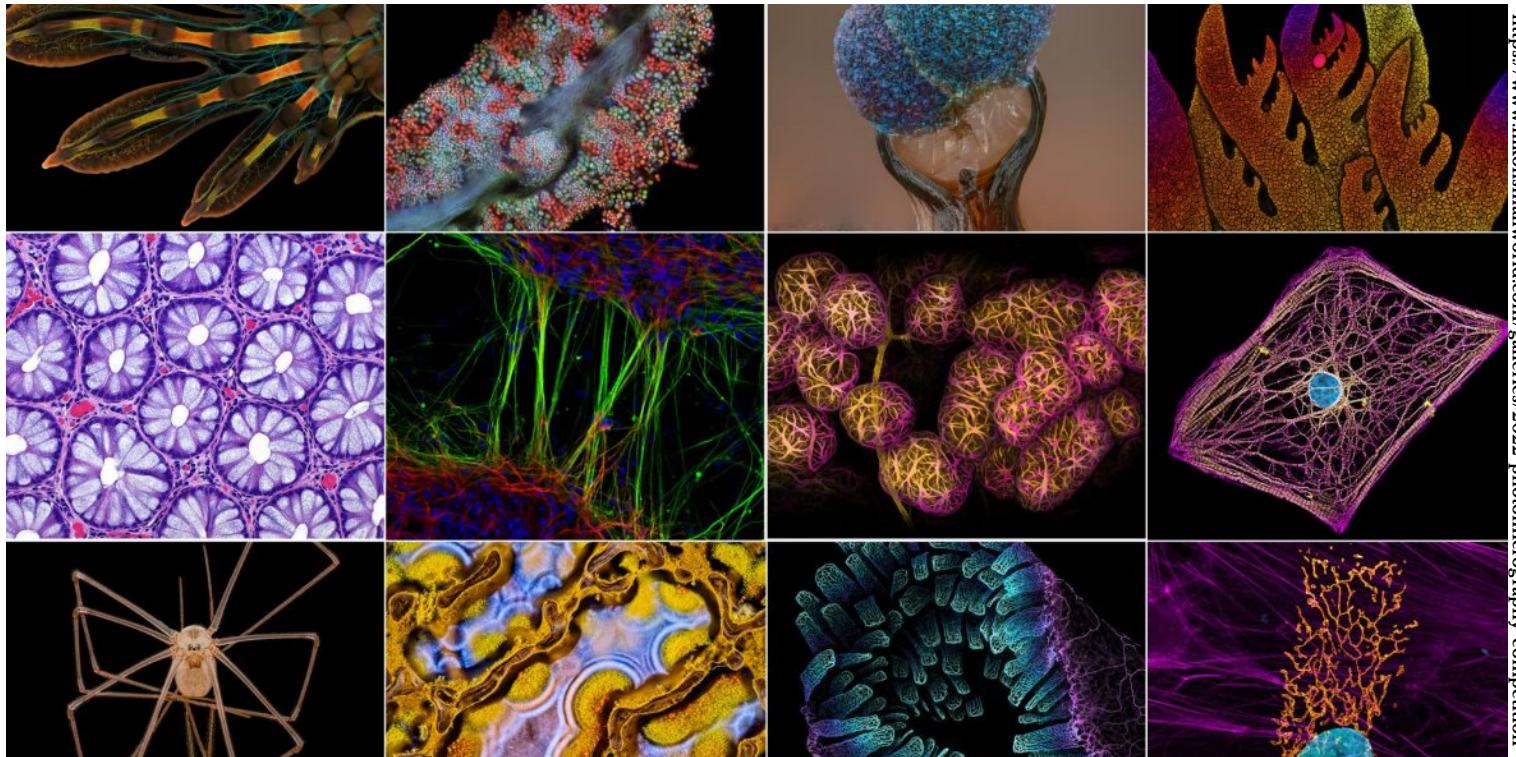


Synapse

OFFICIAL E-NEWSLETTER OF DEPT. OF BIOTECHNOLOGY
RAMA DEVI WOMEN'S UNIVERSITY



Nikon's Science 2022 Photomicrography Competition
<https://www.nikonsmallworld.com/galleryes/2022-photomicrography-competition>

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EDITOR'S Desk



Homo sapiens meaning "wise man" is the only surviving species of the genus Homo. The nature of evolution of human-the so-called super animal has always been a mystery. Thanks to the significant findings by paleo geneticist Prof. Svaante Paavo, we now know the nature of our origin and the way forward. This issue celebrates the 2022 Nobel Prize winner Svante Pääbo's research on human evolution. Also, many congratulations to Ms R Divya for receiving the Voice of BT award and Ms Bijayalaxmi Mahanty for receiving the best research scholar award.

Dr. Sujata Mohanty took over as the new Head, Dept. of Biotechnology on 2nd September 2022 after the completion of tenure of present head Dr. Raj Kumar Joshi. Speaking on the occasion, Dr. Mohanty said "It's a privilege and pleasant duty to lead the dept. The dept. is one of the bright spots of the university. My priority would be to strengthen the physical infrastructures including development of tissue culture and cell culture laboratories and green house facility. Also, the student upskilling and placement would be prioritized."



Department Activities

ROSALIND FRANKLIN SEMINAR SERIES



DR. SHAKTI SHANKAR MOHANTY
DIRECTOR - SUD-BEV CONSULTING PVT LTD

Dr. Mohanty discussed about the trends in brewing and malting science and the various aspects of Beer and beverages manufacturing. He gave insights into the process of Beer production which involves malting, milling, mashing, extract separation, hop addition and boiling, removal of hops and precipitates, cooling and aeration, fermentation, separation of yeast from young beer, aging, maturing, and packaging. Dr. Mohanty discussed about the equipment used in a beverage industry such as bottle cleaner, a conveyer and types of liquid filling machine. He also talked about bottle fermented beers with non-Saccharomyces yeast species, to the use of special malts or specific adjuncts, hop varieties, water quality, etc. which lead to a lot of new possibilities for modulating flavour and other sensory properties of beer, reaching to new consumers and improving one of the oldest fermented beverages.

BIOSPECTRUM : THE BIOTECHNOLOGY INDUSTRY INTERACTION SERIES



DR. BIRENDRANATH BANERJEE
MANAGING DIRECTOR OF InDNA LIFE SCIENCES PVT. LTD

Dr. Banerjee discussed and interacted with the students about DNA : The code of life, importance of precision medicine (Predict, Prevent, Personalize and Participate), DNA damage and repair, genetic disorders and various biomarkers which help in the detection of the disease in a susceptible person. Dr. Banerjee provided insights into InDNA : The first DNA based clinic in India and the various services provided by it, such as detection of cancer (OroDx, RecurinDx), Digital Kartotyping, non-invasive Liquid biopsy to detect cancerous cells and SpeNome tests to test infertility. He spoke about the ongoing research in the InDNA regarding drugs such as Trastuzumab and Crizotinib for Breast cancer and Oral Carcinoma respectively. Dr. Banerjee motivated the students to adapt a healthy lifestyle to prevent to bring out the best in genes, promote healthy ageing and mitigate the risk of cancer and other disorders.

Achievements

STUDENT ACHIEVEMENTS

- PhD Research Scholar Miss Bijayalaxmi Mahanty was awarded the best research scholar in Science by the Indian Institute of Public Administration for active participation in Research.
- R.Divya of PG 2nd year was awarded the third prize in Voice of BT debate competition (east zone) conducted by Novozymes and ABLE India at KIIT University on 21st October 2022.
- 2 students Kendre Sandhya Rani (PG batch 2021-2023) and Jagatjita Malick (UG batch 2017-2020) have qualified CSIR Net June 2022 JRF and LS respectively.
- Miss Sikha Mohapatra (PG batch 2020-2022) has been placed as a project assistant in OUAT, Bhubaneswar.



Dr. Raj Kumar Joshi with his PhD scholar Miss Bijayalaxmi Mahanty.

ANNUAL ALUMNI MEET 2022

Dept. of Biotechnology organised an alumni meet on 12th November 2022. Students from previous batches and all the faculties attended the event. Interaction between alumni and teachers was wonderful, as was the cultural program and discussion about the flourishing Biotechnology department.



Miss Bijayalaxmi Mahanty receiving the Best Research Scholar Award.



Miss R Divya receiving the Voice of BT Award.

Science Stories

A new weapon against antibiotic-resistant bacteria

A team from the University of Geneva (UNIGE) has discovered that edoxudine, an anti-herpes molecule discovered in the 60s, weakens the protective surface of *Klebsiella* bacteria and makes them easier to eliminate for immune cells.

Klebsiella pneumoniae causes many respiratory, intestinal and urinary tract infections. Due to its resistance to most common antibiotics and its high virulence, some of its strains can be fatal for 40% to 50% of infected people. There is an urgent need to develop new therapeutic molecules to counter it. "Since the 1930s, medicine has relied on antibiotics to get rid of pathogenic bacteria," explains Pierre Cosson, professor in the Department of Cell Physiology and Metabolism at the UNIGE Faculty of Medicine, who led this research.

For more details, go to : <https://phys.org/news/2022-11-weapon-antibiotic-resistant-bacteria.html>

From cell walls to photosynthesis: How does manganese get to where it needs to go in plants?

The protein BICAT3 is one of the most important manganese distributors in plants. If defective, this can have devastating effects on a plant's growth; its leaves grow significantly smaller and it produces fewer seeds than usual. A team led by Martin Luther University Halle-Wittenberg (MLU) has recently uncovered a transport pathway for manganese in plants and the role that BICAT3 plays in this process. The results could lay the groundwork for improved crop growth.

For more details, go to : <https://academic.oup.com/plphys/advance-article/doi/10.1093/plphys/kiac387/6673155>



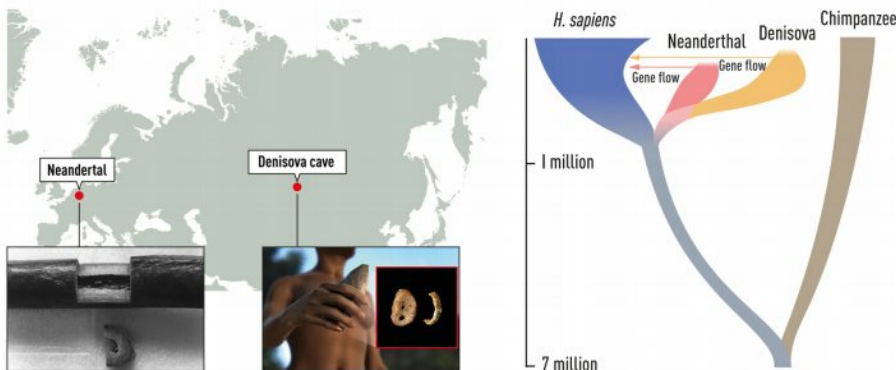
The team coupled a fluorescent protein to BICAT3 to track its activity in the plant. The blue spots. Credit: Uni Halle / Jie He

Human Evolution - A Nobel Prize Winning Effort

The 2022 Nobel Prize for Physiology or Medicine has been awarded to Swedish geneticist Svante Pääbo for his research in the field of genomes of extinct hominins and human evolution.

"Thanks to Svante Pääbo's discoveries, we now understand that archaic gene sequences from our extinct relatives influence the physiology of present-day humans. One such example is the Denisovan version of the gene EPAS1, which confers an advantage for survival at high altitudes and is common among present-day Tibetans. Other examples are Neanderthal genes that affect our immune response to different types of infections," the academy's citation read.

For more details, go to : <https://www.nobelprize.org/prizes/medicine/2022/press-release/>



Phylogenetic tree showing the evolution and relationship between Homo sapiens and the extinct hominins. The phylogenetic tree also illustrates the gene flows discovered by Pääbo. Source : Press release: The Nobel Prize in Physiology or Medicine 2022



Winner of Nobel Prize in Physiology or Medicine 2022 : Svante Pääbo

DENGUE VACCINE NEARS DEBUT

While Takeda's dengue fever vaccine Qdenga isn't the biopharma industry's first immunization against the deadly infection, the drugmaker is hoping its launch can avoid the pitfalls of an earlier rollout. Last month, after more than a decade of research, Takeda's dengue fever vaccine finally nabbed its long-awaited first approval. Authorities in Indonesia blessed the vaccine in people 6 to 45 years of age after years of testing in Asia and Latin America.

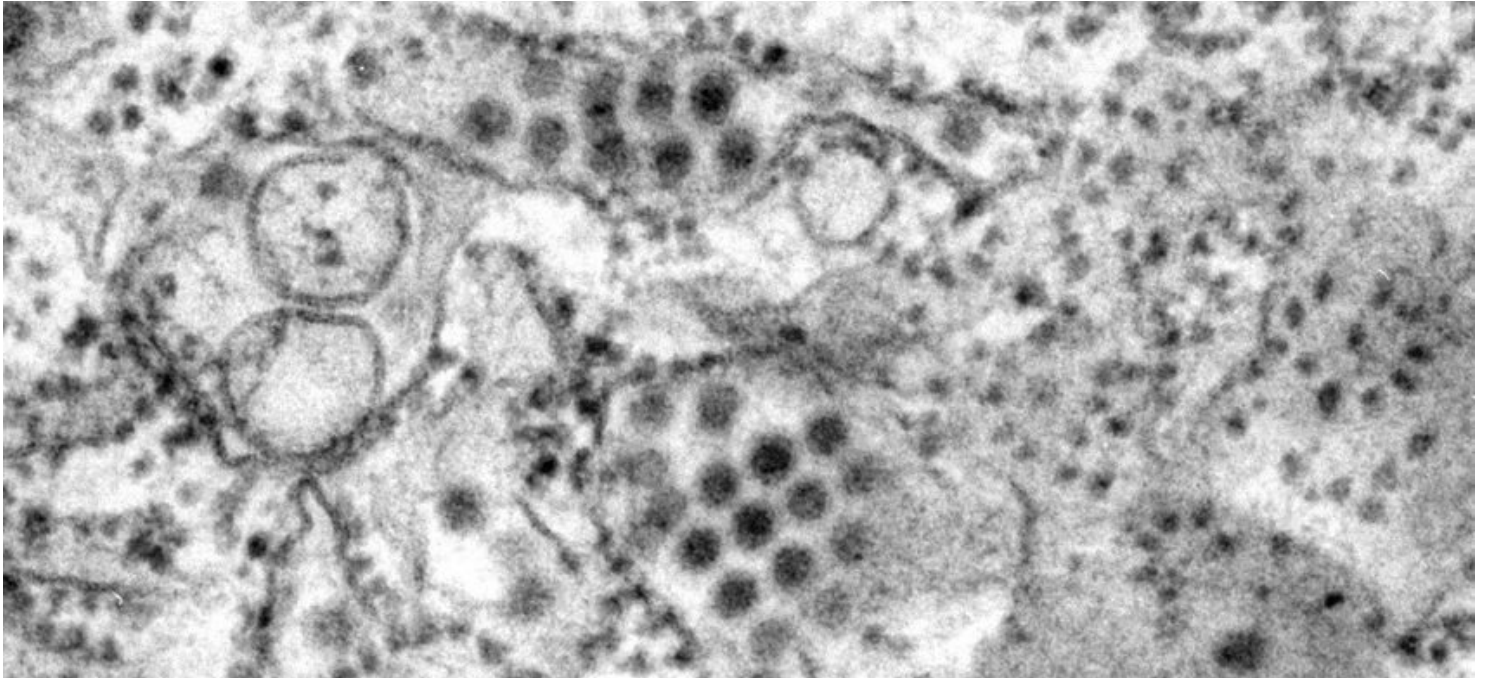
Before the company can distribute the shot, there are a "few steps" yet to be completed, program head Derek Wallace recently told Fierce Pharma. Takeda's contract manufacturer in Germany has an inventory ready for launch, he said.

Takeda expects other approvals soon. The company has a "very ambitious" regulatory strategy and is seeking parallel approvals in multiple endemic countries, Wallace said. At the same time, officials with the European Medicines Agency are also reviewing the shot.

Despite the best efforts of health authorities across the globe, dengue fever remains a serious concern. Back in 2019, the World Health Organization named it one of the top ten public health threats, a list that included HIV and climate change.

Dengue has made its way to 120 countries and is one of the primary causes of hospitalization in children in "much of the world," Wallace said.

For more details, go to : <https://www.fiercepharma.com/vaccines/watershed-moment-takeda-first-dengue-fever-approval-after-over-decade-research>



The world is still feeling the burden of mosquito-borne dengue. After Sanofi's dengue vaccine ended in disaster, Takeda aims to pick up the pieces. (CDC/Frederick Murphy)

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