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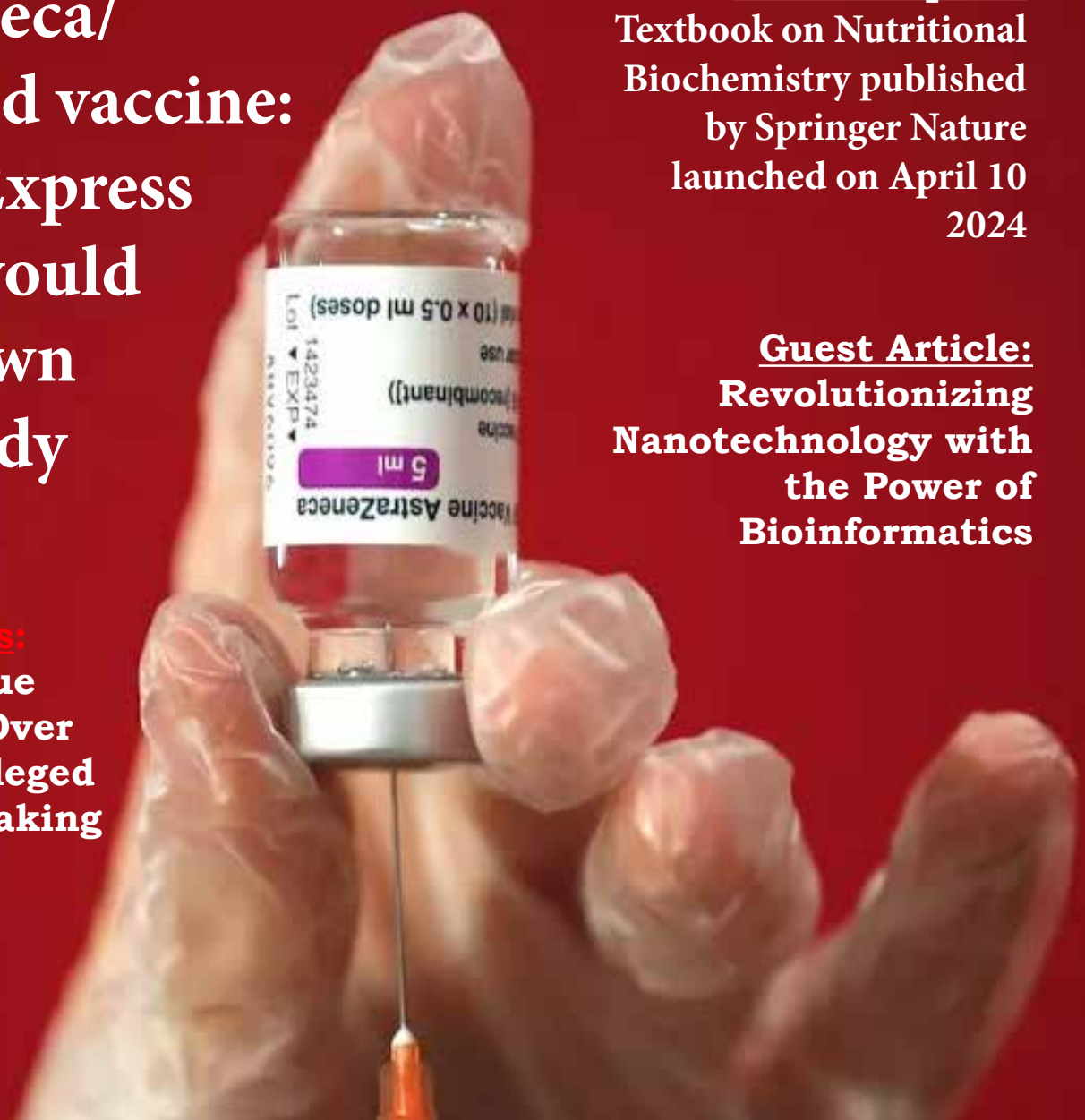
# BIOTECH EXPRESS

## Blood Clots due to AstraZeneca/ Covishield vaccine: Biotech Express readers would have known this already

**Event Report:**
Textbook on Nutritional Biochemistry published by Springer Nature launched on April 10 2024

**Guest Article:**
Revolutionizing Nanotechnology with the Power of Bioinformatics

**Featured News:**
Parents To Sue AstraZeneca Over Daughter's Alleged Death After Taking Covishield



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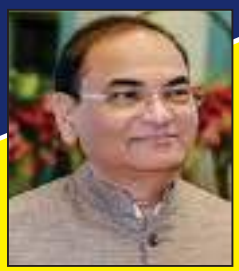




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# Editorial


# Blood Clots due to AstraZeneca/Covishield vaccine: Biotech Express readers would have known this already

By Kamal Pratap Singh, Managing Editor, Biotech Express

Finally, AstraZeneca has accepted in UK court that it's vaccine could have caused blood clots in rare cases. The word rare here has been cautiously used to show that the numbers of events are negligible.

In court documents from February, AstraZeneca denied that "TTS is caused by the vaccine at a generic level". However, it admitted to the possibility of TTS as a result of its vaccination in "very rare cases".

Biotech Express probably is the only magazine around the world which has covered all news of adverse events and draconian measures adopted to vaccinate even when it was for emergency use and COVID 19 mortality was less than 1%. This is evident from the timeline of articles that can be searched using keywords "Covishield" on the website www.biotechexpressmag.com

ASTRAZENECA, the pharmaceutical giant which is the second highest taxpayer in UK virtually became a household name during the Covid-19 pandemic. When sued in a class action over claims that its vaccine, developed with the University of Oxford, caused death and serious injury in dozens of cases has admitted that its COVID-19 vaccine could cause rare side effects, including blood clots and low platelet count termed as TTS (Thrombosis with Thrombocytopenia Syndrome).

Although COVID vaccine manufacturers have contesting these claims from a long time, the court submission marks the first time ASTRAZENECA has admitted that the vaccine can cause side-effects.

According to the Council for International Organisations of Medical Sciences, "very rare" side effects are those reported in less than 1 in 10,000 cases.

The scientists have named blood clots after vaccine as Vaccine Induced Thrombosis with Thrombocytopenia (VITT) on which research was started immediately after the jab was released. The earliest case of VITT came to light in year 2020 itself in India and in UK.

In India a Chennai volunteer for the third phase of the Covid Oxford vaccine trials dose on October 1, 2020 immediately alleged of adverse effects and suffering from neurological and psychological issues as a result of taking the dose. He asked for 5 Crore compensation but SII in return filed a Rs 100-crore defamation suit and called the volunteer's allegations "malicious and misconceived".

In UK, Fifty-one cases have been lodged in the High Court, with victims and grieving relatives seeking damages estimated to be worth up to £100 million. The first case was lodged last year by Jamie Scott, a father of two, who was left with a permanent brain injury after developing a blood clot and a bleed on the brain that has prevented him from working after he received the vaccine in April 2021. The hospital called his wife three times to tell her that her husband was going to die.

Kate Scott, Mr Scott's wife, told the Telegraph: "The medical world has acknowledged for a long time that VITT was caused by the vaccine. It's only AstraZeneca who have questioned whether Jamie's condition was caused by the jab. "It's taken three years for this admission to come. It's progress, but we would like to see more from them and the Government. It's time for things to move more quickly.

She added, "I hope their admission means we will be able to sort this out sooner rather than later. We need an apology, fair compensation for our family and other families who have been affected. We have the truth on our side, and we are not going to give up."

**Lawyers argue that the AstraZeneca-Oxford vaccine is "defective" and that its efficacy has been "vastly overstated"**

Lawyers representing families suing the drugs company argue that the vaccine was not as safe as individuals were entitled to expect. They are suing the firm under the Consumer Protection Act 1987.

Mr Scott's lawyers have argued that he suffered "personal injuries and consequential losses arising out of his sustaining vaccine induced immune thrombosis with thrombocytopenia (VITT) as a result of his vaccination on 23 April 2021, with the AstraZeneca Covid-19 vaccination".

Lawyers argue that the AstraZeneca-Oxford vaccine is "defective" and that its efficacy has been "vastly overstated" – claims AstraZeneca strongly denies. Lawyers for the claimants argue that VITT is a subset of TTS, although AstraZeneca does not appear to recognise the term.

AstraZeneca vaccine was used in India under the brand name Covishield which has raised concerns on this too. Covishield was developed by the British-Swedish company in collaboration with Oxford University, and produced by the Serum Institute of India for India. It was

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# VACCINE LINKED TO LOW PLATELET COUNT

- In India, the **vaccine** was manufactured and supplied under the name **'Covishield'** by **Serum Institute of India (SII)**
- **AstraZeneca**, the manufacturer, acknowledged a connection between the **vaccine** and **TTS**, a medical condition characterised by **low platelet levels** and formation of **blood clots**
- A **PIL filed in Supreme Court this week sought compensation** for individuals severely disabled or deceased due to the side effects of **Covid vaccines administered during the pandemic**

More than 175cr doses of Covishield have been administered in India

- Additionally, it calls for **strict guidelines** and **regulations** to prevent the **circulation** and **advertising** of **fake** or **counterfeit vaccines**, with the **committee overseeing** these measures being led **by a retired Supreme Court judge**

# COVISHIELD
# Heart Attack,
# AstraZeneca
# 1st time adm

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By- Ankit Agrav




SEVERE ALLERGY AND ANAPHYLAXIS SEEN IN OVER 15% OF HOSPITALISED

# Heart Attack and Brain Stroke Main Causes of Death after Jab

Updates

Teena.Thacker@timesgroup.com

New Delhi: Heart attacks and brain strokes have been the two main causes of hospitalisation and death for Covid-19 vaccine recipients, the expert group investigating the serious adverse events after immunisation has found.

Of the 79 people who have died after taking the vaccines, more than 50% had heart attacks and brain strokes. Out of the 273 hospitalised and recovered, more than 15 % had severe allergy and anaphylaxis, the group found.

"Of those who have died more than 50% had heart attacks and brain strokes. Out of those who were hospitalised and who recovered about 20%, too, had heart attack and brain stroke. More than 15% had severe allergy and anaphylaxis and all of them recovered," NK Arora, member, National Task Force on Covid told ET.

Arora said the strategy of observing the people who had been vaccinated for 30 minutes had paid dividends. "The cases of anaphylaxis could be handled precisely because of this practice. If they were not observed the situation could have been worse," he said.

The government panel investigating serious adverse events arising after vaccinations has found 'temporal' association of deaths to the vaccine (deaths followed soon after vaccination) but discovered no causal relationship. The evidence so far also does not link jabs to blood clots.

As on March 13, the National Adverse Events Following Immunisation (NAEFI) committee has examined 412 total cases of severe adverse events including 79 deaths.

Niti Ayog member VK Paul on Wednesday reiterated that Covishield is safe. "There is no signal whatsoever. Covishield is safe and we want to tell people to proceed with the speed that is required. We want to ensure that there is no risk of blood clots-related complications that were suspected," he said on Wednesday.

Over a dozen public health experts and scientists had written to the Union health minister and senior officials asking the government to undertake complete, time-bound and transparent investigation of all deaths and other serious adverse events following Covid-19 vaccination.

These experts have called for a thorough investigation over serious adverse effects arising from Covid-19 vaccines.

### Reeling Under Effects

Out of those hospitalised and recovered over 15% had severe allergy, anaphylaxis

**Strategy of half-an-hour observation after vaccination in India is key**

NAEFI committee has examined 412 total cases of severe adverse events including 79 deaths

**Evidence so far also does not link jabs to blood clots**

**Experts have concluded that Covishield is safe and no event of thrombosis has been found**

### People Aged 45 & Above Account For Most Deaths

NEW DELHI People aged 45 and above account for about 88% of all Covid-19 deaths in India making them the most vulnerable section, the Union health ministry said on Wednesday, a day after the government opened up vaccinations for all those in the age bracket from April 1.

Addressing a press conference, Union health secretary Rajesh Bhushan said the case fatality rate in the age group is 2.85% as against an overall national average of 1.37%. "About 88% of all Covid-19 deaths in the country are taking place in the age group of 45 years and above," he said, adding that this is the reason behind allowing their vaccination from April 1. – PTI

widely administered in over 150 countries.

In the months after the rollout, the potentially serious side effect of the jab was identified by scientists. It was then recommended that under-40s be offered an alternative jab because the risk of the AstraZeneca vaccine outweighed the harm posed by Covid.

Lawyers representing families suing the drugs company argue that the vaccine was not as safe as individuals were entitled to expect. They are suing the firm, based in Cambridge, under the Consumer Protection Act 1987.

Mr Scott's lawyers have argued that he suffered "personal injuries and consequential losses arising out of his sustaining vaccine induced immune thrombosis with thrombocytopenia (VITT) as a result of his vaccination on 23 April 2021, with the AstraZeneca Covid-19 vaccination".

Scientists first identified a link between the vaccine and a new illness called vaccine-induced immune thrombocytopenia and thrombosis (VITT) in March 2021.

Then, in March 2021, the European countries France, Germany, Italy, Netherlands, Denmark, Norway, Iceland, Austria, Estonia, Bulgaria, Romania, Estonia, Lithuania, Luxembourg, and Latvia **temporarily paused the use of the AstraZeneca vaccine** after a few cases of blood clotting were reported.

The following month, the World Health Organisation (WHO) said TTS was being reported in some cases after vaccinations with Covishield and Vaxzevria (which was the other trade name for AstraZeneca's vaccine).

## Withdrawl

AstraZeneca has announced that the vaccine is being removed from markets for commercial reasons. It further stated that the vaccine is no longer being manufactured or supplied, having been superseded by updated vaccines that combat new variants.

The application to withdraw the vaccine came into effect on May 7.

The vaccine can no longer be used in the European Union following the company's decision to withdraw its "marketing authorisation".

Similar applications will be submitted in the UK and other nations in the coming months that have given the go-ahead to the vaccine, known as Vaxzevria.

AstraZeneca has insisted that the decision to withdraw the vaccine is not related to the case or admission that it can cause TTS and termed the timing a pure coincidence, according to The Telegraph report.

## Dangers

A range of symptoms are associated with TTS, including breathlessness, pain in the chest or limbs, pinhead-size red spots or bruising of the skin in an area beyond the injection site, headaches, numbness in body parts, etc. TTS could mean a restriction in the flow of blood due to clotting.

The website of Johns Hopkins Medicine says, "Thrombosis can block the blood flow in both veins and arteries. Complications depend on where the thrombosis is located. The most serious problems include stroke, heart attack, and serious breathing problems."

In 2023, the WHO incorporated vaccine-induced immune thrombotic thrombocytopenia (VITT) into its classification of TTS.

## Science of VITT

Eichinger was among the first to notice the clotting disorder, a strange combination of blood clots—which can be dangerous, and potentially fatal, if they block blood flow to the brain or lungs—and a counter-intuitive deficiency of cell fragments called platelets that promote clotting. The clots also appeared in unusual parts of the body, such as the brain and abdomen, rather than in the legs, where most deep-vein blood clots form.

This rang alarm bells for Eichinger, who had previously encountered a similar phenomenon in a few people who had been treated with the blood-thinning drug heparin. Heparin is normally used to prevent clotting, but in very rare cases can trigger a syndrome called heparin-induced thrombocytopenia (HIT), which causes blood clots together with low platelet levels.

By 22 March, the EMA had assembled 86 reports of people who had experienced blood clots in the brain or abdomen within two weeks of receiving a dose of the Oxford–AstraZeneca vaccine. Some of these cases have been confirmed to bear the hallmarks of HIT, even though these people had not received heparin.

In just two and a half years, doctors and scientists around the world have begun to unravel the secrets of VITT. They found a protein called platelet factor 4 (PF4). In the course of infection, many people make antibodies that stick to PF4 as part of the immune response, but these antibodies usually stick weakly. In VITT, antibodies form that can stick to PF4 like superglue.

The antibodies in VITT glue PF4 molecules together, forming large structures known as "immune complexes". These complexes bind to and activate small cells called platelets that are vital for blood clotting. Normally, platelets float around in the blood in an inactive state, but once activated they spread out, get very sticky, and spew out hundreds of different chemicals.

In VITT, platelets are strongly activated and this causes blood clots. The blood clots commonly affect the veins surrounding the brain, which is a very unusual and rare site for clots. Many people with VITT reported excruciating headaches, which continue to affect survivors.

Billions of platelets get used up in these clots, leading to low numbers of platelets in the blood. In some patients, this led to serious bleeding and nearly one in four died. Many survivors are also have life-long, disabling symptoms.

There are some theories about why clots in the brain happen more in patients with VITT. These include the speed of blood flow, and the stickiness of PF4 and antibodies to the blood vessels.

Canadian scientists showed that patients whose antibodies stick to PF4 the strongest are most likely to get clots in the brain.

Their findings were published in the international journal Science Advances which confirmed PF4 can bind to adenoviruses. Both the AstraZeneca and Johnson & Johnson vaccines use an adenovirus to carry spike proteins from the coronavirus into people to trigger a protective immune response.

When both vaccines showed the ultra-rare side effect of VITT, scientists wondered whether the viral vector had some part to play. Another important clue was that neither the Moderna nor Pfizer vaccines, made from an entirely different technology called mRNA vaccines, showed this effect.

The team used a technology called CryoEM to flash-freeze preparations of ChAdOx1, the adenovirus used in the AstraZeneca vaccine and bombard them with electrons to produce microscopic images of the vaccine components. In particular, the team detailed the structure and receptor of ChAdOx1, which is adapted from chimpanzee adenovirus Y25 – and how it interacts with PF4. They found that ChAdOx1 has a strong negative charge. This means the viral vector can act like a magnet and attract proteins with the opposite, positive charge, like PF4.

Although adenoviral vaccines have saved millions of lives, they have fallen out of favour in developed countries because of the risk of VITT. However, these vaccines are still widely used in low-income countries.

**Conclusion**

So in this article, we took a look how the COVID vaccine which had serious side effects starting from the trial was inserted in us and now after two years when the grieving families

went to court the companies are now accepting the adverse events.

We all are also aware of the fact that the adverse event reporting was not appropriate and thus large number of cases went unnoticed. Even after that if we see AEFI data it has been reported from the starting that Covishield had caused clot problems. The first case of neurological problem came in 2021 when clinical trials were started.

So, what we can do next is to check our body for clots by a recognized doctor and sue these companies if any serious events have been faced by anyone. Because people are now approaching courts for compensation and if one needs support then the government and vaccine companies can be made liable for the same.

This is not the first or last article about COVID-19 vaccines, we have more information that can benefit general public so keep reading Biotech Express and stay updated for biotech news.

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# Guest Article

# Revolutionizing Nanotechnology with the Power of Bioinformatics

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**Abstract:**

We currently reside amid a profound technological revolution that is reshaping the global landscape. Evident transformations encompass a wide spectrum of facets within our daily lives, encompassing fields such as transportation, healthcare, and communication. As per the timeless adage, what was once considered science fiction in the past has now become a reality in the realm of science. Today, we are witnessing an expansive augmentation of our capacities across diverse scientific domains, which include chemistry, biology, physics, and engineering. This expansion encompasses endeavours such as enhanced space exploration, the construction of smart cities, the establishment of new manufacturing hubs, and the advancement of artificial intelligence and quantum technologies. The swift tempo at which technological advancement is occurring is conspicuous, but much of the underlying, imperceptibly small agents of change, known as nanotechnologies, are playing a pivotal role in catalyzing this revolution. While nanotechnology boasts a multitude of applications, this paper focuses on three specific realms within nanotechnology that are leading the way toward our future. This article provides insight into "Nanobioinformatics".

Keywords: Nano-bioinformatics, nanoscale, structural analysis, pharmaceuticals, carcinoma

**Introduction:**

A multifaceted zonal area labelled as bioinformatics encompasses, amid other disciplines, genetics, computer science, mathematics, molecular biology, and statistics. To resolve data-intensive, challenging biological queries, computational approaches and methods are employed. The biggest challenges are comprehending biological systems at the level of molecules and making deductions from evidence. To gain insight into the structure makeup and functionality of an array of biological macromolecules, bioinformatics is at the cutting edge of structural biology.

Nanotechnology is referred to as "investigation and technology development at the micro (atomic) and macro (molecular) scales with dimensions of approximately 1-100 nm spectrum, aimed at gaining a fundamental comprehension of events and substances at the nanoscale, and to create and use systems, structures, and devices that have unique characteristics and functions attributed to their small size." The following description was put forth by the National Science and Technology Council (US) in 2000.

Nanotechnology offers a lot of potential applications and uses in an array of industries, spanning agriculture, electronics, food production, telecommunications, and biotechnology as well as genetics, exploration and development of oil and its production, satellite navigation, and pharmaceutical manufacture, to mention a few. This revolutionary technology swiftly became beneficial, and multiple investigations are now being conducted with the intent of creating new tools and procedures that would increase its popularity throughout the relevant disciplines. This pursuit has resulted in the ongoing work in nano-bioinformatics, an interdisciplinary field of study and a branch of informatics that is broadly defined as the conscientious application of informatics techniques and tools to the analysis, architectural construction, and development of systems on a broad spectrum of nanomaterials, which include the physical-chemical and environmental attributes as well as their interactions with one another, associations within them, and potential uses across a specific field.

**Nanotechnology Meets Bioinformatics**

Bioinformatics and nanotechnology are called nanobioinformatics. It is an interdisciplinary field that involves the application of information science and technology to research, design, modeling, simulation, communication, and analysis of nanoscale biological systems. However, certain questions ought to be addressed so that developments and investigations can be done methodologically.

1. Which biological macromolecular elements are particularly suited for use in the field of engineering?

2. To perform the intended work function, how can the functioning of the macromolecular parts be tapped and co-ordinately conducted?

To address the first query, the creation of a unique bioinformatics framework, which enables the search through biological information to hunt for the microscopic-level biomolecular constituents that could potentially be employed as components in a system with coordinated complexity, provides the solution to the first question. The second query has an unambiguous link to the further development of nanotechnology. Managerial excellence in both nanotechnology and bioinformatical tools is essential to develop a wide range of technologies and applications associated with them.

**Applications in Medicine and Healthcare**

In the past two decades, the use of molecular diagnostics for detecting human diseases has grown exponentially, paving the way for the creation of cutting-edge technology for molecular testing and treatments. Nanotechnology can be used for molecular imaging and therapy to improve the efficacy and toxicity profiles of chemotherapeutic agents. Understanding the process of interaction between nanoparticles and biological systems (various tissues and organs) depending on in vivo physiological situations is now a key issue in biomedical nanotechnology. Hence, the ultimate goal is to overcome the inherent constraint to ensure that nanoparticles are delivered to damaged sectors of tissues or organs.

**Harnessing Bioinformatics for Biomarker Exploration**

| Sl.no | Bio-informatics Tools | Functionality | Reference |
|---|---|---|---|
| **1** | ILOOP | Experimental design of a microarray (two-channel) | Gentleman et al., 2004 |
| **2** | MAGMA | Incorporates the normalization procedures in statistics into an application for usability and reproducibility | |
| **3** | GEPAS (Gene Expression Profile Analysis Suite) | Function with steps including data normalization, feature selection, and class prediction | Medina et al., (2005) |
| **4** | CARMA (Comprehensive R and Bioconductor-based web) | Microarray analysis | Michiels et al., 2005 |
| **5** | GenePattern 2.0 | | Reich, M. et al. (2006). |
| **6** | GOEAST | Gene Ontology (GO) database | Zheng et al., 2008 |
| **7** | GoMiner, GOStat, AmiGO, BiNGO and | | Frijters et al., 2008; Edgar et al., 2002; Brazma et al., 2001 |
| **8** | Array express | Automated packages to mine gene expression data from large repositories | Parkinson, H. et al. (2006) |
| **9** | Gene Expression Omnibus (GEO) | | Ivliev, A. et al. (2008) |
| **10** | Gene Trial Express & Taverna | Workflow application for feature selection | Shi, L. et al. (2006) |
| **11** | omni BioMarker | The program uses a number of processes, including normalization, feature selection, biological interpretation, validation, and clinical prediction, to identify biomarkers. | Phan et al., (2013) |

Based on microarray data, biomarkers were examined employing bioinformatics tools with algorithms that are autonomously available. At present, algorithms based on supervised or affiliated learning have been included in bioinformatics applications for the analysis of transcriptome or microarray data in various clinical settings. For instance, two online programs used for analyzing two-channel microarrays are MAGMA along with ILOOP (Interoven loop).

**Synergizing Bioinformatics in the Age of DNA Nanotechnology and Synthetic Biology:**

The integration of fabricated biosystems using the components of nucleic acids is meticulously done by bioinformatics. Nadrian Seeman invented DNA nanotechnology more than two decades ago. It centres on the very foreseeable molecular processes that distinguish between complementary

| Sl.no | Bioinformatic tool | Purpose | reference |
|---|---|---|---|
| 1 | Intramers | Nanodevices should promote the intramolecular folding of single strands | Elbashir et al. (2001) |
| 2 | Universal RNAi-based logic evaluator | computational tools are being developed to support RNA-based nano-construction | Rinaudo et al., (2007) |
| 3 | Riboswitches (natural structures of RNA aptamer and it is being incorporated into the transcripts of mRNA) | Regulation of gene expression in bacteria | Szostak et al., (2001) |
| 4 | Artificial ribo regulators | 1. Eukaryotes<br>2. prokaryotes | 1. Seeman, (1982)<br>2. (Forster and Church 2006) |
| 5 | microRNAs (regulatory RNA, major components in the machinery of natural RNA interference (RNAi)) | logical computations in vivo | Chen & Seeman, 1991; Gates, T., & Hinkley, J. (2004) |

DNA strands. Nucleic acid-based nano construction is the "bottom-up" approach employed in the contemporary scientific period to document some of the complexity in biological self-organization. Locating a DNA sequence that assembles spontaneously into a structural framework with a predefined thermal equilibrium is done using DNA nanotechnology, and the assembly is guided by the method of the annealing process. For instance, query with the dynamic balance of the protein filaments that make up the cytoskeleton is maintained by the continual construction and dismantling of ATP or GTP molecules. To elaborate, it is necessary to have control over the assembly sequence in both spatial and temporal patterns while creating complicated structures.

Molecular devices based on nucleic acids, such as RNA or DNA, can be implemented in vivo in one of two very different ways: (i) chemically altering nanodevices before packaging and delivery, or (ii) transfecting cells with synthetic genes that contain the instructions for those nanodevices' operation.

**Nanotechnology and Bioinformatics Applications for Understanding Biological Systems**

There are many applications for studying biological systems using either the Bioinformatics or Nanotechnology approaches, but combining the two yields only a few instances of extremely useful applications, including (i) Positive feedback gene amplifier (Gates et al., 2005) and (ii) Programmable structure (Gogonea et al., 2001).

**Positive feedback gene amplifier**

A positive feedback gene amplifier is a type of gene circuit that uses positive feedback to regulate gene expression. Positive feedback is a mechanism in which the output of a system amplifies the input, leading to an increase in the output. In a positive feedback gene amplifier, the output of the system is used to activate the input, leading to an amplification of the output signal. This type of gene circuit has potential applications in the fields of bioinformatics

and nanotechnology for individualized cancer treatment, molecular detection, biosensing, and molecular diagnostics.

**Programmable Structure**

The straightforward approach involves integrating nanodevices and computers based on nucleic acids into a biological system, whether natural or synthetic. At the start, biological cells produce an RNA nanodevice through the process of transcription. Next, gene regulatory mechanisms can be harnessed to oversee the precise timing of nanodevice production. As an example, naturally synthesized RNA, like microRNA or RNA transcribed from manipulated genes, can be harnessed to propel this process. Ultimately, the concepts of DNA nanotechnology and DNA computing can be utilized to create novel strategies for governing the transcription and translation processes within genes.

**Design and modeling of nanomaterials**

Bioinformatics is being used to design and model nanomaterials, allowing researchers to predict their properties and behaviour before they are synthesized. This technology allows researchers to optimize the design of nanomaterials for specific applications, such as drug delivery and imaging.

**Design and modelling of nanorobots:**

Bioinformatics is being used to design and model nanorobots, allowing researchers to predict their behaviour and effectiveness before they are synthesized. This technology allows researchers to optimize the design of nanorobots for specific applications, such as drug delivery and tissue engineering.

**Conclusion:**

In conclusion, the combination of bioinformatics and nanotechnology has opened up new opportunities for addressing environmental challenges through the development of advanced technologies for molecular diagnosis and therapy. The application of bioinformatics in nanotechnology has led to the development of nanoinformatics, positive feedback gene amplifiers, computational biology and bioinformatics, and programmable riboregulators. These tools have potential applications in the identification of biomarkers for individualized cancer treatment, molecular detection, biosensing, and molecular diagnostics. It will be vital over the next decade to focus on how nanoscale science and engineering can improve understanding of nature, generate breakthrough discoveries and innovation, and build materials and systems by nanoscale design. The economic and medical value generated by nanotechnology is expected to increase, and ways need to be found to protect nanotechnology workers from exposure to nanomaterials.

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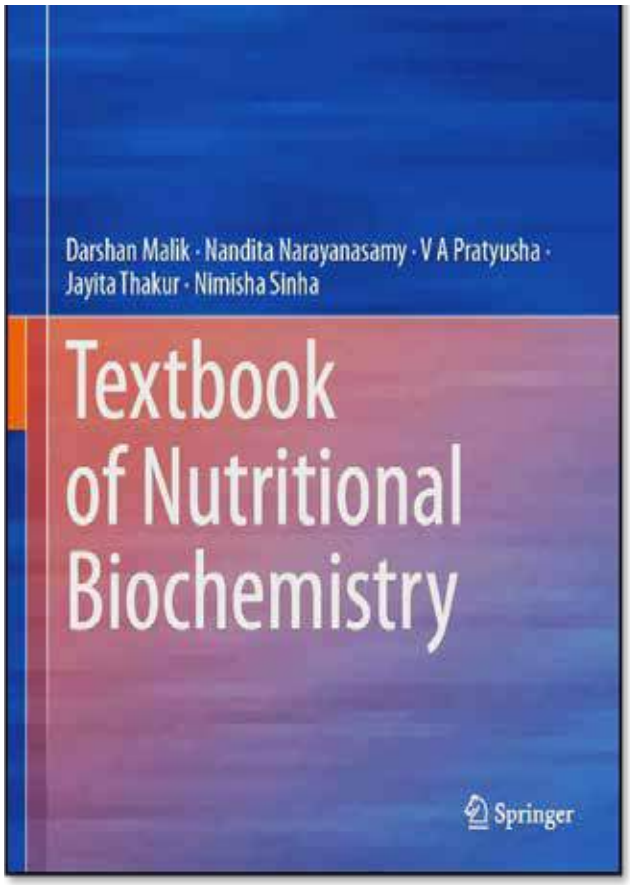
BioEvent

# Textbook of Nutritional Biochemistry published by Springer Nature launched on April 10, 2024

The "Textbook of Nutritional Biochemistry" published by Springer Nature, was launched on April 10, 2024 in the University of Delhi South Campus.

The textbook is written by the teachers of the University of Delhi for the students of the universities; namely Prof. Darshan Malik (Shivaji College), Dr. Nandita Narayanasamy (Sri Venkateswara College), Dr. V. A. Pratyusha (Shaheed Rajguru College of Applied Sciences for Women), Dr. Jayita Thakur (Shivaji College) and Dr. Nimisha Sinha (Sri Venkateswara College).

The event was graced by dignitaries like Padma




Hardcover ISBN: 978-981-19-4149-8
ttps://doi.org/10.1007/978-981-19-4150-4

Shri Prof. S. K. Sopory, former VC, JNU; Prof. Shri Prakash Singh; Director, South Campus; Prof. K C Bansal, former director, NBPGR, Prof. R. S. Sangwan, founder VC, AcSIR and Dr. Naren Aggarwal, Editorial Director, Springer Nature. Various eminent scientists and illustrious personalities like Padma Shri Shovana Narayan were also present for the momentous occasion.

This textbook aims at providing an in-depth understanding of the relationship between diet, nutrients, health, diseases, and drug treatment. This book builds concepts from the very basics of food chemistry to advanced biochemical perspective, making it equally useful to beginners and advanced readers alike. Additionally, the textbook also covers topics of current interest like nutraceuticals, food, and nutrient interactions; the newly emerging field of the human microbiome, its interdependence on diet and human health as well as the public health concerns which is a looming burden of non-communicable diseases. Due to the interdisciplinary nature of the book, it would be beneficial to students of various courses like Biochemistry, Biomedical Sciences, Biological Sciences, Life Sciences, Home Science; Nutrition and Dietetics, Clinical Nutrition and Dietetics, and Nursing under the NEP syllabi. This book is already listed in the syllabi of multiple courses of the University of Delhi under the NEP and is being introduced in other universities as well. The textbook is available on all leading online and offline platforms worldwide.

# Featured News

## Parents To Sue AstraZeneca Over Daughter's Alleged Death After Taking Covishield


MAY 03, 2024

Days after AstraZeneca acknowledged that its COVID vaccine can lead to a rare blood clot side effect, the parents of a young woman who allegedly died after being given Covishield are planning to sue the British pharma giant and world's largest vaccine maker.

The development comes after AstraZeneca admitted in the UK court that their vaccine can cause rare side effects that can lead to blood clots and low platelet count.

Notably, while AstraZeneca developed the COVID-19 vaccine, it was manufactured in India by the Serum Institute of India (SII) under the name 'Covishield'. The vaccine was widely administered in the country. However, SII is yet to comment on this matter. Reacting on AstraZeneca admission, Venugopalan Govindan, who lost his 20-year-old daughter Karunya in 2021, said the admission was "too late" and came after "so many lives have been lost".

Taking to X, he wrote, "The Serum Institute should have stopped the vaccine supply after the 15 European countries had restricted its usage over deaths from blood clots." He said the grieving parents are fighting for justice in various courts, but are not getting a hearing.

As we have repeatedly stated, the health injuries caused by genetic vaccination are already extremely serious, and it is high time that countries and relevant organisations take concrete steps together to identify the risks and to control and resolve them.

– Concerns regarding Transfusions of Blood Products Derived from Genetic Vaccine Recipients and Proposals for Specific Measures, Jun Ueda, Hideyuki Motohashi, Yuriko Hirai, Kenji Yamamoto, Yasufumi Murakami, Masanori Fukushima, Akinori Fujisawa, Non-peer reviewed version published 15 March 2024.

# Scientists Develop Biofortified Rice with High VitB1 Content Without Affecting Yield

April 17, 2024

A team of scientists from the University of Geneva (UNIGE), ETH Zurich, and Taiwan's National Chung Hsing University (NCHU) have successfully increased the Vitamin B1 content of rice grains, a significant achievement in the fight against vitamin B1 deficiency, which is associated with a rice-based diet.

Rice is a staple food for half the world's population, particularly in the tropical countries of Asia, South America, and Africa. But rice grains are low in vitamin B1, and processing such as polishing reduces it even further, taking 90 percent with them. The research team specifically targeted the nourishing tissues of the rice grain and succeeded in increasing its vitamin B1 content, without compromising agronomic yield.

The scientists generated rice lines expressing a gene that sequesters vitamin B1 in the endosperm tissues. The rice was grown in glasshouses, harvested, and the grains polished. The research team found that the vitamin B1 content of rice from these lines increased.

The lines were then seeded in an experimental field in Taiwan and grown for several years. The characteristics analyzed were plant height, number of stems per plant, grain weight, and fertility. The NCHU team observed that the level of vitamin B1 in rice grains multiplied by 3 to 4 in the modified lines even after the polishing stage.

"Most studies of this type are carried out with glasshouse grown crops. The fact that we have been able to grow our lines under real field conditions, that the expression of the modified gene is stable over time without any of the agronomic characteristics being affected, is very promising," enthuses Wilhelm Gruissem, Professor emeritus at ETH Zurich and Distinguished Chair Professor and Yushan Fellow at NCHU. A 300-gram bowl of rice from this crop provides around a third of the recommended daily intake of vitamin B1 for an adult. The next step towards the goal of biofortified plants with vitamin B1 will be to pursue this approach in commercial varieties. However, regulatory steps relating to biofortification by genetic engineering will have to be taken before these plants could be cultivated.

# Cureus reviewing paper on cancer alleged to plagiarize Lancet article

## Cureus reviewing paper alleged to plagiarize Lancet article

A 2022 paper in *Cureus* on causes of cancer around the world is under investigation by the journal following inquiries by Retraction Watch prompted by a reader's email.



The paper, "Causes of Cancer in the World: Comparative Risk Assessment of Nine Behavioral and Environmental Risk Factors," shares a title and figures with a 2005 paper in *The Lancet*. It also "follows the Lancet one on a sentence-by-sentence level while using tortured phrases," an anony-

April 6, 2024

A 2022 paper in Cureus on causes of cancer around the world is under investigation by the journal following inquiries by Retraction Watch prompted by a reader's email.

The paper, "Causes of Cancer in the World: Comparative Risk Assessment of Nine Behavioral and Environmental Risk Factors," shares a title and figures with a 2005 paper in The Lancet. It also "follows the Lancet one on a sentence-by-sentence level while using tortured phrases," an anonymous tipster told us.

As we've noted elsewhere in a report on the team that developed the phrase, "Tortured phrases are what happens to words that get translated from English into a foreign language, then back to English — perhaps by a computer trying to generate a scholarly publication for a group of unscrupulous authors."

Graham Parker, Cureus' director of publishing and customer success, told us to his knowledge, "the journal has not been contacted with any concerns regarding this article. Now that we are aware of a concern, we will examine both articles in question to see if any action is required."

Neither Khizer K. Ansari, the corresponding author of the Cureus paper and a student at Jawaharlal Nehru Medical College in Wardha, India, nor Majid Ezzati, the corresponding author of the article in The Lancet and a professor at Imperial College London, responded to requests for comment.

# Moolec Becomes First Molecular Farming Company to Achieve USDA Approval for Plant-Grown Animal Proteins


April 22, 2024

Moolec Science SA (NASDAQ: MLEC; "The company"), a Molecular Farming food-ingredient company, announced today that the Animal and Plant Health Inspection Service ("APHIS") of the U.S. Department of Agriculture ("USDA") has concluded its Regulatory Status Review ("RSR") for Moolec's genetically engineered ("GE") soybean Piggy Sooy™.

The USDA-APHIS RSR determines that Moolec's genetically engineered soybean, accumulating animal meat protein, is unlikely to pose an increased plant pest risk relative to non-engineered soybeans. Therefore, it is not subject to the APHIS regulation that governs the movement of organisms modified or produced through genetic engineering (as described in 7 CFR part 340).

This milestone reinforces Moolec's B2B go-to-market strategy for Piggy Sooy™ product, an innovative, functional, and nutritious ingredient. By adding a well-known animal meat protein (porcine myoglobin) to the standard soybean proteins, the company expects to provide food manufacturers with a unique ingredient that will have a positive carbon and water footprint.

Martin Salinas, Chief of Technology & Co-Founder at Moolec, enthusiastically announced: "We believe this milestone sets the stage for a revolution in the foodindustrial biotech landscape, paving the way for expedited adoption of Molecular Farming technology by other industry players. Also, this compelling advancement signifies a stride in enhancing our operational efficiency, transforming our methods of raw material sourcing, and optimizing our downstream crushing and processing operations."

In June 2023, the company announced that Piggy Sooy™ seeds had achieved high levels of expression of pork protein (up to 26.6% of the total soluble protein) and had patented their technology. The company clarifies that Piggy Sooy™ development is set to keep moving forward completing the necessary consultation with the United States Food and Drug Administration ("FDA"). Moolec declares to be engaged in the consultation process with the FDA, representing the next pivotal regulatory milestone preceding the commercial availability of Piggy Sooy™ ingredient.

# Chinese virologist who was first to share COVID-19 genome sleeps on street after lab

May 2024

The first person to publicly release the genome sequence of the virus that causes COVID-19 — virologist Zhang Yongzhen — seems to have resolved a public dispute with the Shanghai Public Health Clinical Center (SPHCC), Fudan University, China, which erupted last week.

According to social-media posts on Zhang's personal Weibo account, which have since been removed, the institute gave the research team two days to leave, but the SPHCC did not initially specify to where they should relocate. Later, Zhang said that officials told his team to move to a lab that did not have the necessary biosafety conditions to store its samples, which contain unknown pathogens. Zhang's lab is a biosafety level-3 laboratory.

Zhang said that he had been sleeping outside his lab, even in the rain. The social-media posts include photos of him lying under blankets.

Zhang told Nature on Monday that his situation was "terrible".

"You don't know what I have experienced," he said, but declined to comment further.

According to the social-media account of Chen Yanmei, a virologist at the SPHCC, and a member of Zhang's team, their students' incomplete experiments were now "impossible to save". Chen also posted that she was camping, but inside the lab. Chen, too, declined to be interviewed by Nature.

But by very early Wednesday morning, Zhang said in a post that a tentative agreement had been reached with the SPHCC to resume normal research activity in the lab. The post states that Zhang will work with the centre to relocate the laboratory and restart research.

# Australia's GM Regulator Approves Field Trial of GM Wheat and Barley


## This licence allows The University of Adelaide to undertake field trials with wheat and barley genetically modified for yield enhancement.

7 MARCH 2024

Australia's Office of the Gene Technology Regulator (OGTR) has issued license DIR 201 to The University of Adelaide, allowing the field trial of wheat and barley genetically modified (GM) for yield enhancement. The field trial will be conducted on one site in Light Regional Council in South Australia, with a maximum planting area of 2 hectares each year. The trial will run from May 2024 to January 2029.

The purpose of the field trial is to assess the performance of GM wheat and barley under field conditions in Australia. The GM wheat and barley grown in this field trial are not allowed in human food or animal feed.

The final Risk Assessment and Risk Management Plan (RARMP) concludes that this limited and controlled release poses negligible risks to people or the environment. However, as this is a field trial under limited and controlled conditions, license conditions have been imposed to restrict when and where the trial can take place, limit the size of the trial, and restrict the GM wheat and barley from spreading outside the trial sites.

# APHIS Grants Approval to Bioengineered Hemp and Other Crops

April 10, 2024

The US Department of Agriculture announced the approval of bioengineered hemp with boosted levels of medicinal ingredients and reduced psychoactive ingredients. The review of the Animal and Plant Health Inspection Service (APHIS) concluded that the improved hemp is unlikely to cause increased plant pest risk compared to other cultivated plants.

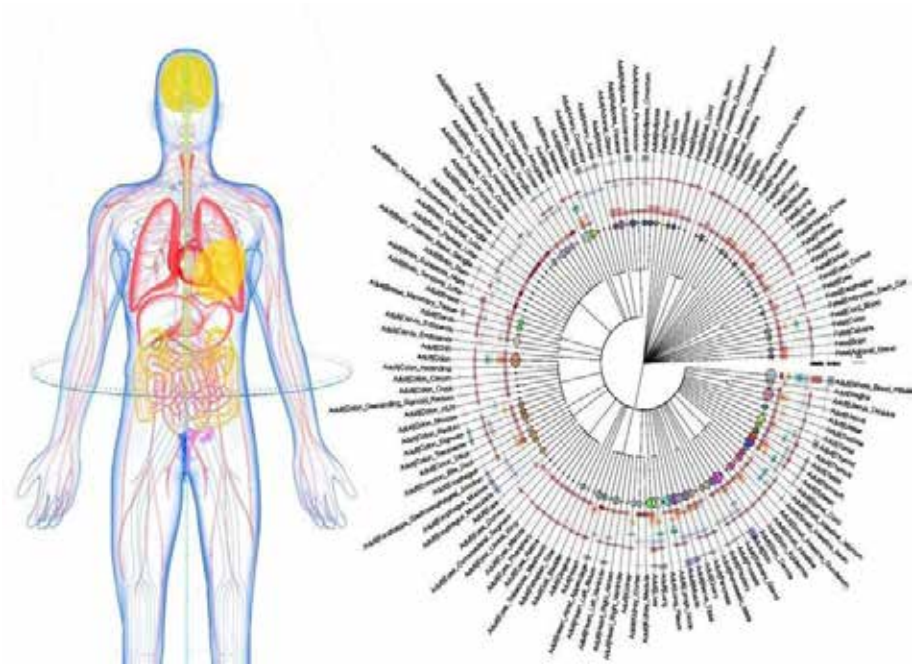
The bioengineered hemp, known as Badger G, was developed by scientists from the Wisconsin Crop Innovation Center at the University of Wisconsin. Badger G has increased concentrations of cannabigerol (CBG), a cannabinoid that is not widely regulated and shows therapeutic properties. It has been linked to showing medicinal benefits related to glaucoma, inflammatory bowel disease, and Huntington's disease. CBG is also one of the hemp compounds that is more expensive to produce compared to other cannabinoids. Aside from the CBG modification, the researchers used genetic knockout to prevent the plant from producing tetrahydrocannabinol (THC) and cannabidiol (CBD).

USDA-APHIS also granted approvals to other bioengineered crops, including two camelinas modified for improved seed oil quality, canola modified for herbicide resistance, canola and brown mustard modified for improved product quality and herbicide resistance, soybean modified for altered product quality, and potato modified for fungal resistance.

# Latest Research

## Advanced cell atlas opens new doors in biomedical research

April 25, 2024



Researchers at Karolinska Institutet have developed a web-based platform that offers an unprecedented view of the human body at the cellular level. The aim is to create an invaluable resource for researchers worldwide to increase knowledge about human health and disease. The study is published in Genome Biology.

Simultaneous measurement of numerous biomolecular variables, known as multi-omics, enables deep and comprehensive profiling of human biology. The new Single Cell Atlas (SCA) is based on analyses of thousands of human tissue samples from 125 different adult and fetal tissues. The researchers combined eight cutting-edge omics technologies, including single-cell RNA sequencing, whole-genome sequencing, and spatial transcriptomics to map and localise genes expressed in the tissue.

The platform provides unique insights into individual cell properties and their interactions within tissues. The extensive collection of data is freely accessible through the platform's website.

"The Single Cell Atlas not only saves time and resources but also fosters a collaborative environment for scientists from diverse fields, paving the way for new discoveries and innovations," says the study's first author Lu Pan, researcher at the Institute of Environmental Medicine, Karolinska Institutet, Sweden.

Looking ahead, the team plans to refine the SCA by introducing more detailed analyses and annual updates. These enhancements will fill gaps in tissue representation and expand the sample size, allowing for more precise research.

"The creation of the SCA marks a significant step forward in biomedical research," says the study's last author Xuexin Li, researcher at the Department of Physiology and Pharmacology (previously at the Department of Medical Biochemistry and Biophysics), Karolinska Institutet. "Our goal is to continually enrich the atlas, making it an invaluable resource for understanding human health and disease."

The research was done in collaboration with China Medical University and several other international collaboration partners in The Single Cell Atlas Consortium. The study was financed by Karolinska Institutet and the KI Network Medicine Global Alliance (KI NMA). Coauthor Volker Lauschke is CEO and shareholder of HepaPredict AB, co-founder and shareholder of PersoMedix AB, and discloses consultancy work for Enginzyme AB. The other authors declare that they have no competing interests.

# After 25 years, researchers uncover genetic cause of rare neurological disease

April 29, 2024

Spinocerebellar ataxia 4 is a devastating progressive movement disease that can begin as early as the late teens. Now, a multinational research team led by University of Utah researchers has conclusively identified the genetic difference that causes the disease, bringing answers to families and opening the door to future treatments.

Some families call it a trial of faith. Others just call it a curse. The progressive neurological disease known as spinocerebellar ataxia 4 (SCA4) is a rare condition, but its effects on patients and their families can be severe. For most people, the first sign is difficulty walking and balancing, which gets worse as time progresses. The symptoms usually start in a person's forties or fifties but can begin as early as the late teens. There is no known cure. And, until now, there was no known cause.

Now, after 25 years of uncertainty, a multinational study led by Stefan Pulst, M.D., Dr. med., professor and chair of neurology, and K. Pattie Figueroa, a project manager in neurology, both in the Spencer Fox Eccles School of Medicine at University of Utah, has conclusively identified the genetic difference that causes SCA4, bringing answers to families and opening the door to future treatments. Their results are published in the peer-reviewed journal Nature Genetics.

To pinpoint the change that causes SCA4, Figueroa and Pulst, along with the rest of the research team, used a recently developed advanced sequencing technology. By comparing DNA from affected and unaffected people from several Utah families, they found that in SCA4 patients, a section in a gene called ZFHX3 is much longer than it should be, containing an extra-long string of repetitive DNA.

Isolated human cells that have the extra-long version of ZFHX3 show signs of being sick -- they don't seem able to recycle proteins as well as they should, and some of them contain clumps of stuck-together protein.

"This mutation is a toxic expanded repeat and we think that it actually jams up how a cell deals with unfolded or misfolded proteins," says Pulst, the last author on the study. Healthy cells need to constantly break down non-function-

al proteins. Using cells from SCA4 patients, the group showed that the SCA4-causing mutation gums up the works of cells' protein-recycling machinery in a way that could poison nerve cells.

This work was performed in collaboration with researchers from University of Tübingen, University of Lübeck and Kiel University, University Hospital Hamburg-Eppendorf, and Veterans Administration Medical Center, Albany, NY.

# Microarray patches safe and effective for vaccinating children, trial suggests

April 29, 2024


The first study of the use of microarray patches to vaccinate children has shown that the method is safe and induces strong immune responses. The phase 1/2 randomized trial compared results from the measles and rubella vaccine delivered by a microarray patch, a small sticking plaster-like device with an array of microscopic projections that painlessly penetrate the skin and deliver the vaccine, or by conventional injection with a needle and syringe.

The trial, which involved 45 adults (18-40 years old), 120 toddlers (15-18 months old) and 120 infants (9-10 months old) in The Gambia, found giving the measles and rubella vaccine by a microarray patch induced an immune response that was as strong as the response when the vaccine was given by conventional injection.

Over 90% of infants were protected from measles and all infants were protected from rubella following a single dose of the vaccine given by the microarray patch. The measles and rubella vaccine used in the study has been given to many millions of children globally by conventional injection and is known to provide reliable protection.

The trial found no safety concerns with delivering the measles and rubella vaccine using a microarray patch.

The trial was led by researchers from the Medical Research Council (MRC) Unit The Gambia at the London School of Hygiene & Tropical Medicine (LSHTM) and supported by the US Centers for Disease Control and Prevention. The patch was developed and manufactured by Micron Biomedical Inc, who sponsored and supported all aspects of the trial. Funding came from the Bill & Melinda Gates Foundation. Results are published in The Lancet.

The researchers hope microarray patches could help to achieve the very high levels of population immunity required to control childhood diseases such as measles and rubella, with WHO recommending at least 95% two-dose measles vaccine coverage and rubella requiring 80% population immunity. Microarray patches have been determined to be the highest priority innovation for overcoming barriers to immunization in low-resource settings.

# Researchers identify over 2,000 genetic signals linked to blood pressure in study of over one million people

April 30, 2024

Researchers have discovered over a hundred new regions of the human genome, also known as genomic loci, that appear to influence a person's blood pressure. In total, over 2,000 independent genetic signals for blood pressure are now reported, demonstrating that blood pressure is a highly complex trait influenced by thousands of different genetic variants.

Researchers led by Queen Mary University of London and supported by the National Institute for Health and Care Research (NIHR) have discovered over a hundred new regions of the human genome, also known as genomic loci, that appear to influence a person's blood pressure. In total, over 2,000 independent genetic signals for blood pressure are now reported, demonstrating that blood pressure is a highly complex trait influenced by thousands of different genetic variants.

The study, published in Nature Genetics, is one of the largest such genomic studies of blood pressure to date, including data from over 1 million individuals and laying the groundwork for researchers to better understand how blood pressure is regulated.

To understand the genetics of blood pressure, the researchers combined four large datasets from genome-wide association studies (GWAS) of blood pressure and hypertension. After analysing the data, they found over 2,000 genomic loci linked to blood pressure, including 113 new regions. The analyses also implicated hundreds of previously unreported genes that affect blood pressure. Such insights could point to potential new drug targets, and help

to advance precision medicine in the early detection and prevention of hypertension (high blood pressure).

From these analyses, the researchers were able to calculate polygenic risk scores, which combine the effects of all genetic variants together to predict blood pressure and risk for hypertension. For example, these risk scores show that individuals with highest genetic risk have mean systolic blood pressure levels which are ~17 mmHg higher than those with lowest genetic risk, and a 7-fold increased risk of hypertension. Therefore, these polygenic risk scores can discriminate between patients according to their hypertension risk, and reveal clinically meaningful differences in blood pressure.

"This large study builds on over 18 years of blood pressure GWAS research. Our results provide new resources for understanding biological mechanisms and importantly new polygenic risk scores for early identification and stratification of people at risk for cardiovascular diseases" says Patricia Munroe, Professor of Molecular Medicine at Queen Mary University of London, also a senior author of the paper.

## Scientists discover the cellular functions of a family of proteins integral to inflammatory diseases

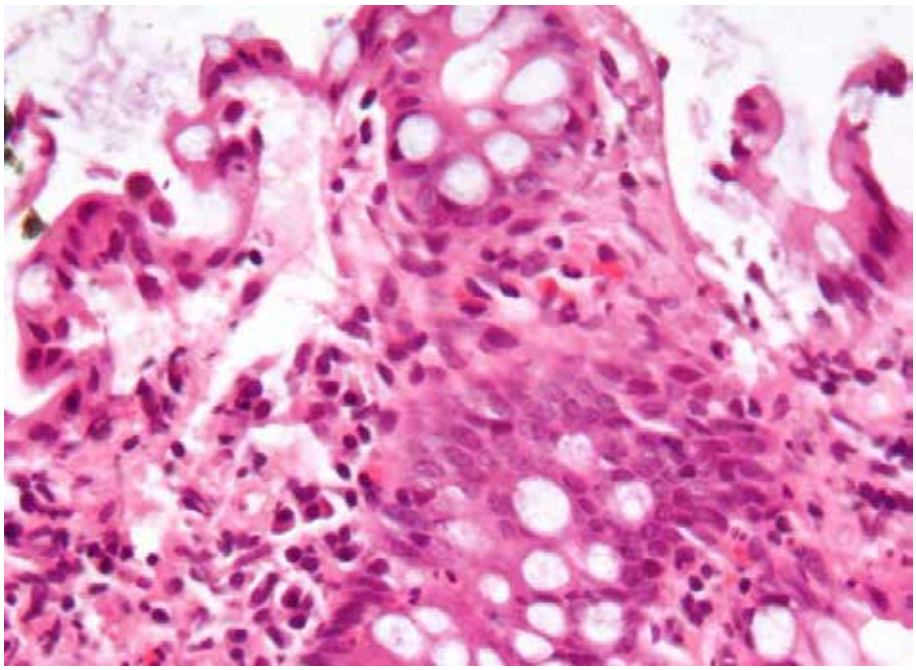
April 22, 2024

In a scientific breakthrough, Mount Sinai researchers have revealed the biological mechanisms by which a family of proteins known as histone deacetylases (HDACs) activate immune system cells linked to inflammatory bowel disease (IBD) and other inflammatory diseases.

This discovery, reported in Proceedings of the National Academy of Sciences (PNAS), could potentially lead to the development of selective HDAC inhibitors designed to treat types of IBD such as ulcerative colitis and Crohn's disease.

"Our understanding of the specific function of class II HDACs in different cell types has been limited, impeding development of therapies targeting this promising drug target family," says senior author Ming-Ming Zhou, PhD, Dr. Harold and Golden Lamport Professor in Physiology and Biophysics and Chair of the Department of Pharmacological Sciences at the Icahn School of Medicine at Mount Sinai. "Through our proof-of-concept study, we're unraveling the mechanisms of class II HDACs, providing essential knowledge to explore their therapeutic potential for safer and more effective disease treatments."

The Mount Sinai team focused specifically on class IIa HDACs, which exhibit more tissue-specific functions than class I HDACs, which act more broadly. Among the 18



histone deacetylases discovered to date in mammals, HDAC4 and HDAC7 -- both class IIa HDACs -- stand out for their roles in regulating the development and differentiation of Th17 cells. These cells are known for producing interleukin-17 (IL-17), a highly inflammatory cytokine associated with a spectrum of disorders, including IBD, multiple sclerosis, and rheumatoid arthritis. Given the strong correlation between excessive Th17 cell activity and human disease, scientists have focused on pharmacological or genetic interventions targeting HDAC4/7 to mitigate Th17 cell-mediated inflammation.

In their groundbreaking study, the Mount Sinai researchers delineated a previously unrecognized mechanism by which HDAC4 and HDAC7 operate independently yet cooperatively to govern Th17 cell differentiation and transcription. Transcription is the initial step of gene expression involving copying of the DNA sequence to generate RNA molecules; it is crucial for most biological processes.

"The role of class IIa HDACs in Th17 cells and inflammatory disease has been largely unexplored until now," notes lead author Ka Lung Cheung, PhD, Assistant Professor of Pharmacological Sciences at Icahn Mount Sinai. "Mechanistically, we've discovered that class IIa HDACs orchestrate both gene transcriptional activation and repression to steer the process of Th17 cell differentiation. This significant revelation deepens our comprehension of the previously ambiguous role of class IIa HDACs in biology and human disease."

As a critical aspect of their investigation, the research team found that a potent class IIa HDAC inhibitor, TMP269, influenced the differentiation of Th17 cells in a mouse model of ulcerative colitis. This pivotal discovery underscores the potential of pharmacological inhibition of class IIa HDACs as a promising therapeutic approach for addressing Th17-related inflammatory and autoimmune diseases, the study reported.

Expanding on this foundation of knowledge, researchers in the Zhou Lab and the Cheung Lab at Mount Sinai plan to concentrate on refining class IIa HDAC inhibitors with better efficacies for treating various types of Th17-mediated diseases.

# Study finds COVID-19 pandemic led to some, but not many, developmental milestone delays in infants and young children

April 22, 2024

Infants and children 5 years old and younger experienced only "modest" delays in developmental milestones due to the COVID-19 pandemic disruptions and restrictions, a study led by Johns Hopkins Children's Center finds.

In a report on the study that will be published April 22 in JAMA Pediatrics, investigators evaluated possible links between pandemic-related disruptions to everyday life and changes in developmental milestone screening scores. The data were from the Comprehensive Health and Decision Information System (CHADIS), a web-based screening platform caregivers use to complete surveys about their children's development. It is used by more than 5,000 pediatric practices in 48 U.S. states.

Using the Ages and Stages Questionnaire-3 (ASQ-3), a caregiver-completed measure of child development routinely collected as part of pediatric care, researchers say they found only small decreases in communication, problem-solving, and personal-social skills, and no changes in fine or gross motor skills among children in the study.

"We found, overall, that while there are some changes, the sky is not falling, and that is a really important and reassuring finding," says Sara Johnson, Ph.D., M.P.H., corresponding author of the study, director of the Rales Center for the Integration of Health and Education at Johns Hopkins Children's Center, and Blanket Fort Foundation professor of pediatrics at the Johns Hopkins University School of Medicine.

Numerous studies, the researchers say, found the COVID-19 pandemic and related lockdown restrictions disrupted the lives of many people, including families with young children. Everyday life and daily routines were upended, as schools and child care centers closed, many people began working from home and social contacts diminished. Many experienced increased stress, anxiety and social isolation due to these changes and activity cancellations.

Research has also shown the pandemic is linked to lower child health-related quality of life, increased mental health concerns, decreased sleep and increased risk of obesity. However, the impact of the pandemic on developmental milestones among young children in the U.S. remained unclear, in part because studies designed to address them were done outside the United States, or in small samples. In the new study, Children's Center researchers looked at the developmental milestone status of 50,205 children, ages 0 to 5 years, drawn from a sample of more than half a million children whose parents or caregivers completed the ASQ-3. The ASQ-3 assesses children's developmental milestones in five skill domains: communication, gross motor, fine motor, problem-solving and personal-social.

Researchers compared the children before and during the pandemic from 2018 to 2022 and found ASQ-3 score decreases in the communication (about 3%), problem-solving (about 2%) and personal-social (about 2%) skill domains. They found no changes in fine or gross motor skill domains. When looking specifically at infants 0-12 months old, similarly modest effects were observed, and there were only decreases in the communication domain (about 3%) and problem-solving domain (about 2%).

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**Venue :**
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# Events Calendar 2024

**Feb 16–17**
New Delhi

***GM and Genome Edited Crops***
*Promoting Agrobiodiversity Use for Sustainable Agricultural Development*

*Pharma Stability Masterclass*
**Management of Stability Studies**
*in Pharmaceutical Industry*

**Apr 12**
Online

**May 24**
Online

**Advances in DNA Analysis Technologies in Forensic Sciences**

**QbD in Clinical Trials**

**May 24**
Online

**Jun 14**
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Round-table Discussion
***Handling Nitrosamines and NDSRIs in Pharmaceuticals***

**CANNABiz 2024**

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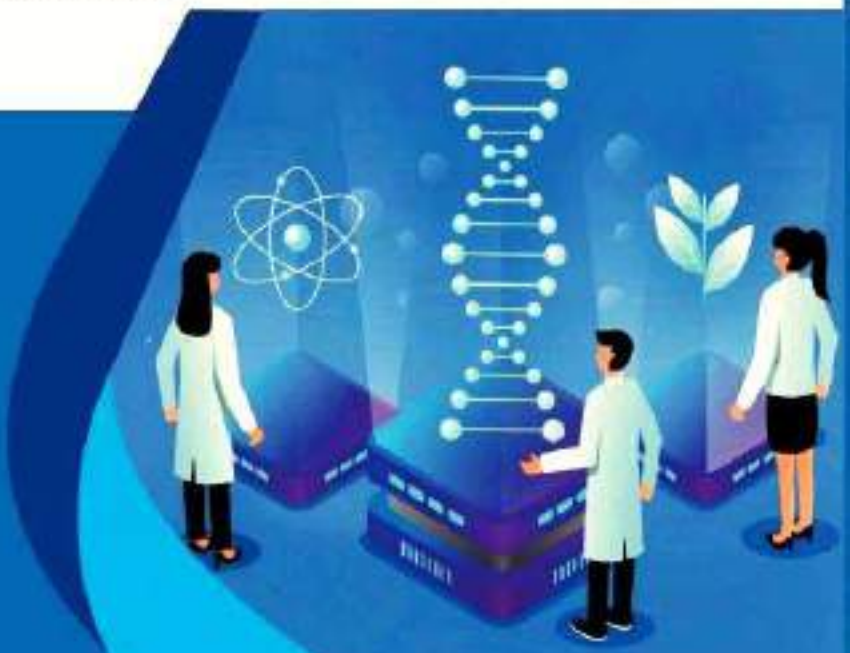

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**01.05.2024**

# JOINT CSIR-UGC NET EXAMINATION JUNE-2024

National Testing Agency (NTA) will be conducting the **Joint CSIR-UGC NET Examination June-2024,** which is a test to determine the eligibility of Indian nationals for 'award of Junior Research Fellowship and appointment as Assistant Professor', 'appointment as Assistant Professor and admission to Ph.D.' and 'admission to Ph.D. only' in Indian universities and colleges through **Computer Based Test (CBT)** mode.

**The schedule of Joint CSIR-UGC NET Examination June-2024, are as follows:**

| | |
|---|---|
| **Submission of Online Application Form** | 01.05.2024 to 21.05.2024 |
| **Last date for Payment of Fee** | 22.05.2024 to 23.05.2024 (upto 11:50 PM) |
| **Correction Window** | 25.05.2024 to 27.05.2024 |
| **Date/s of exam** | 25, 26 & 27th June, 2024 |
| **Mode of Exam** | Computer Based Test (CBT) |
| **Duration of the Exam** | 180 minutes (03 hours) |
| **Pattern of exam** | Objective Type with MCQ |
| **Medium of the Paper** | Bi-lingual (English and Hindi) |
| **Total Test Papers** | 1. Chemical Sciences<br>2. Earth, Atmospheric, Ocean and Planetary Sciences<br>3. Life Sciences<br>4. Mathematical Sciences<br>5. Physical Sciences |
| **Website** | https://csirnet.nta.ac.in / www.nta.ac.in |

Details of Course Code, Eligibility Criteria, Pattern of Question Paper, fee, etc. are available in the Information Bulletin hosted on the website https://csirnet.nta.ac.in.

Candidates can apply for **Joint CSIR-UGC NET June 2024** through the "Online" mode only through the website https://csirnet.nta.ac.in during the period specified above. The Application Form in any other mode will not be accepted.

Only one application is to be submitted by a candidate. In no circumstances candidates will be allowed to fill more than one Application Form. Strict action will be taken, even at a later stage, against such candidates who have filled in more than one Application Form.

Before applying for Joint CSIR-UGC NET Examination June-2024, candidates are advised to check the eligibility criteria as mentioned in the Information Bulletin carefully. The exam fee is also required to be paid online only through payment gateway using debit/credit cards, internet banking or UPI.

Candidates must ensure that the e-mail address and Mobile Number provided in the Online Application Form are their own or Parents/Guardians only as all information/ communication will be sent by NTA through e-mail on the registered e-mail address or SMS on the registered Mobile Number only.

For any queries or /clarifications, candidates can call NTA Help Desk at 011-40759000 or 011-69227700 write to NTA at csirnet@nta.ac.in.

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