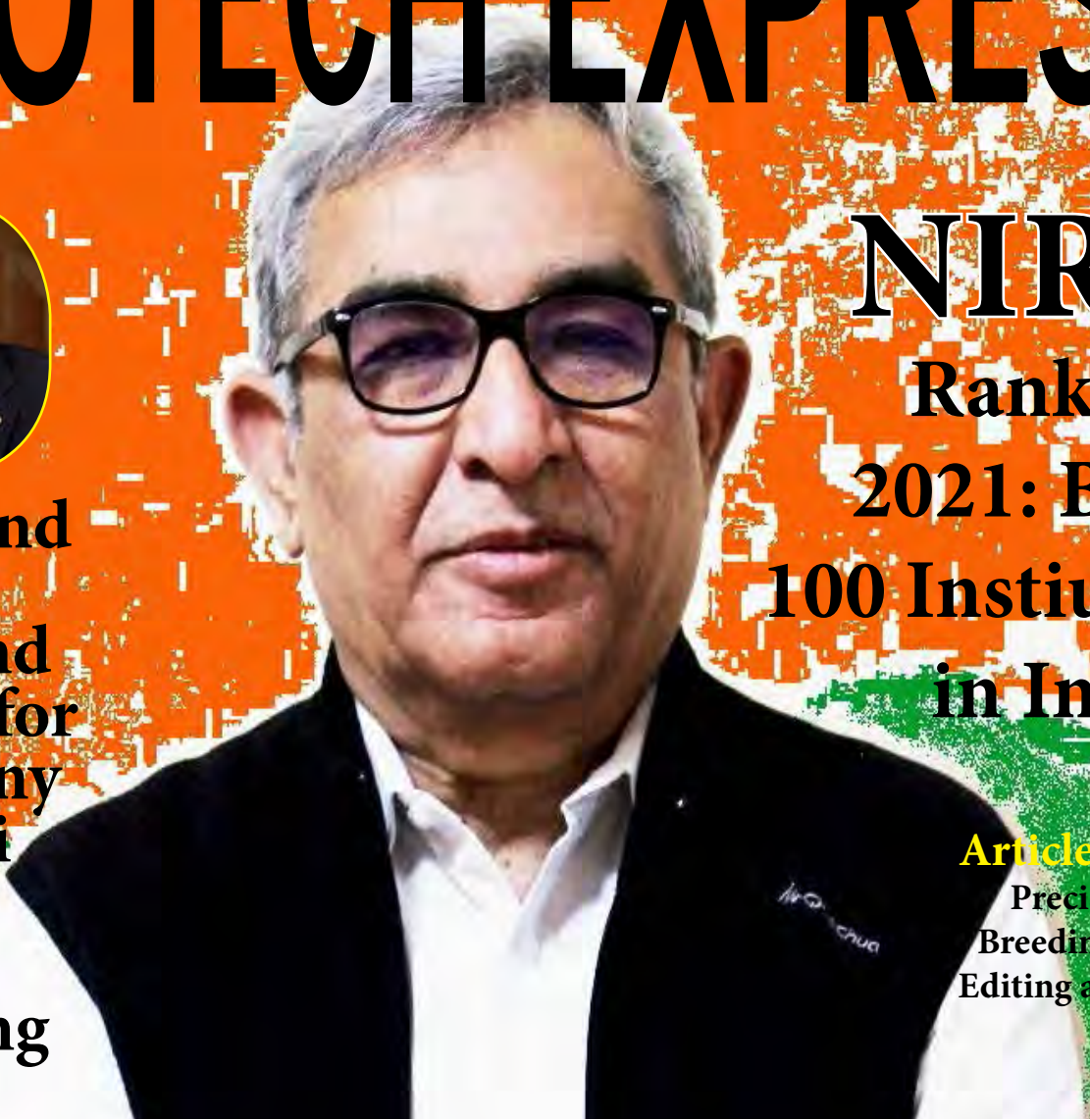


# BIOTECH EXPRESS



**Sen Rand Paul demand prison for Anthony Fauci over CoV funding**



**NIRF**  
**Ranking**  
**2021: Best**  
**100 Institutes**  
**in India**

**Article report:**  
Precision Crop  
Breeding by Base  
Editing and Prime  
Editing

**Prof Ashok Pandey, tops the**  
**"Webometrics Ranking"**  
**based on h-index from India**  
**in Biotechnology**

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The Monthly magazine of Biotechnology



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## Articles

**Editorial:** Senator Rand Paul demand prison for Anthony Fauci over CoV funding | p10

**Editorial:** Prof Pandey, tops the list of “Webometrics Ranking” based on h-index from India in Biotechnology | p08

**Tribute:** Dr S. Ramachandran: Architect of Indian Biotechnology | p14

**Guest Article:** Precision Crop Breeding by Base Editing and Prime Editing | p16

**Editorial:** Best 100 Instiutes in India: NIRF Ranking 2021 | p20



# BIOTECH EXPRESS

## Featured Biotech News | p28

- ▶ Supreme Court tells Centre to include suicides of Covid-19 positive patients among Covid deaths
- ▶ Covid death or not: Prodded by Supreme Court, Centre issues rules
- ▶ ICRISAT awarded 2021 Africa Food Prize
- ▶ Did NIH Improperly Delete COVID-19 Data At Request Of Chinese Researchers? Senators Want Answers
- ▶ Japan suspends 1.63 million Moderna doses over contamination
- ▶ Mandaviya launches first commercial batch of Covaxin made in Ankleshwar
- ▶ Bharat's Intranasal Vaccine Speeds into Phase II on Heels of Strong Data
- ▶ Elizabeth Holmes' Theranos trial back in session after COVID scare
- ▶ JNU Prof Files Defamation Suit Against Journalists, Seeks Rs 50 Lakh in Damages
- ▶ Poonawalla of Serum Institute among World's Top Life Sciences Billionaires

## Bio Controversies | p58

Two sites that claim to sell authorships on scientific papers WHO Covid database has many 'dodgy journals', 70 papers are by Indians

# News...

Volume 9 Issue 98 September 2021

## Regular Biotech News | p40

- ▶ Pfizer Brings in Fresh Face for Chief Business Innovation Officer Spot
- ▶ Sanofi \$1.9 Billion Kadmon Acquisition CDC was never prepared for a crisis like COVID-19, Gottlieb says
- ▶ Having SARS-CoV-2 once confers much greater immunity than a vaccine
- ▶ University of Louisville study finds mask mandates did not slow spread of COVID-19
- ▶ French scientist Didier Raoult who pushed unproven Covid drug may be forced from post
- ▶ Mechanism underlying most common cause of epileptic seizures revealed
- ▶ A novel gene involved in male infertility: ZFP541 identified
- ▶ Breast milk of mothers who received COVID-19 vaccine contains antibodies that fight illness
- ▶ COVID-19 nasal vaccine candidate effective at preventing disease transmission, study shows
- ▶ Exposure to tobacco smoke in early life is associated with accelerated biological aging, study finds
- ▶ New research finds gender differences in fear and risk perception during COVID-19

## Bio Notifications | p58

- ▶ Skill Development Programs of CSIR-IICB
- ▶ DBT-ILS Ph.D. programs
- ▶ ICGEB Arturo Falaschi Postdoctoral Fellowships
- ▶ Post of Director, NII
- ▶ RGCB Masters Degree in Biotechnology Admission 2021-2023

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## Prof Pandey, tops the list of “Webometrics Ranking” based on h-index from India in Biotechnology

Ronald C. Kessler, PhD who is the McNeil Family Professor of Health Care Policy at Harvard Medical School is ranked no.1, he has an h-index >300. From India, Prof Pandey, Biologist, tops the list with an h-index at 107.

Professor Pandey is currently Distinguished Scientist at Centre for Innovation and Translational Research, CSIR-Indian Institute of Toxicology Research (IITR), Lucknow, India and

Honorary Executive Director at the Centre for Energy and Environmental Sustainability- India. Formerly, he was Eminent Scientist at the Center of Innovative and Applied Bioprocessing (CIAB), Mohali and Chief Scientist & Head of Biotechnology Division at CSIR’s National Institute for Interdisciplinary Science and Technology (NIIST) at Trivandrum. His major research and technological development interests are in industrial and environmental biotechnology,

which span over biomass to fuels & chemicals, waste to wealth/energy, industrial enzymes, solid-state fermentation, etc.

Professor Pandey is Adjunct/Visiting Professor/Scientist in universities in France, Brazil, Canada, China, Korea, South Africa, and Switzerland and also in several universities several in India. He has ~1400 publications/communications, which include 16 patents, 87 books, 700 papers and

### Box: Google Scholar Citations: Methodology

Google Scholar is a **free** very large bibliographic database that it is especially useful for bibliometric purposes as it provides the number (and lists all of them) of citations received by the items included. Its current size is over 240 million unique documents, (many of them with links to openly available full-text versions). This is almost three times the current coverage of the paywalled competitors like WoS/Clarivate or Scopus/Elsevier. **GS Citations** is a tool for setting up author profiles of individuals and their publications as covered by GS. The «Webometrics Ranking of World Universities» is an initiative of the Cybermetrics Lab, a research group belonging to the Consejo Superior de Investigaciones Científicas (CSIC), the largest public research body in Spain. The data for this 14th edition was collected during the first week of March 2021.



Table: India's top 3 scientists in the list

Overall Rank	Area of specialization	Name of Scientist	Institute in India	h-index	Citations
453	Chemist	C N R Rao	Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore	157	122425
3496	Biotechnologist	Ashok Pandey	Indian Institute of Toxicology Research, Lucknow	107	50344
4311	Plant Biotechnologist	Rajeev K Varshney	ICRISAT, Hyderabad	102	41028

book chapters, etc. with h index of 100 and >45,000 citations (Gogglescholar). He has transferred several technologies to industries and has done industrial consultancy for about a dozen projects for Indian/international industries.

Prof Pandey is Editor-in-chief of Bioresource Technology, Honorary Executive Advisors of Journal of Water Sustainability and Journal of Energy and Environmental Sustainability, Subject editor of Proceedings of National Academy of Sciences (India) and editorial board member of several international and Indian journals.

Professor Pandey is the recipient of many national and international awards and honours, which include Distinguished Professor of Eminence with global impact in the area of Biotechnology, Precious Cornerstone University, Nigeria (2020), Highest Cited Researcher (Top 1% in the world), Clarivate Analytics, Web of Science (2019); IconSWM Life-time Achievement Award 2019, International Society for Solid Waste Management, KIIT, Bhubaneswar, India (2019); Yonsei Outstanding Scholar, Yonsei University, Seoul, Korea (2019), Highest Cited Researcher (Top 1% in the world; Top 10 in India), Clarivate Analytics, Web of Science (2018); Life-Time Achievement Award from the Biotech Research Society, India (2018); Life-Time Achievement Award from Venus International Research Awards (2018), Most Outstanding Researcher Award

from Career360 (2018), Life-Time Achievement Award from the International Society for Energy, Environment and Sustainability (2017); Academician of European Academy of Sciences and Arts, Austria (2015); Honorary Doctorate degree from Univesite Blaise Pascal, France (2007); Thomson Scientific India Citation Laureate Award, USA (2006); UNESCO Professor (2000); Raman Research Fellowship Award, CSIR (1995); GBF, Germany and CNRS, France Fellowships (1992) and Young Scientist Award (1989), etc. He is Fellow of various academies, which include Royal Society of Biology, UK (2016); International Society for Energy, Environment and Sustainability (2016); National Academy of Sciences, India (2012); Association of Microbiologists of India (2008), International Organization of Biotechnology and Bioengineering (2007) and the Biotech Research Society, India (2005).

Professor Pandey is Founder President of the Biotech Research Society, India ([www.brsi.in](http://www.brsi.in)); Founder & International Coordinator of International Forum on Industrial Bioprocesses, France ([www.ifbiop.org](http://www.ifbiop.org)), Chairman of the International Society for Energy, Environment & Sustainability ([www.isees.in](http://www.isees.in)), Editor-in-chief of Bioresource Technology (<http://ees.elsevier.com/bite/>), Honorary Executive Advisor of Journal of Energy and Environmental Sustainability ([www.jees.in](http://www.jees.in)), Journal of Systems Microbiology and Bio-

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Last but not the least; Prof Ashok Pandey is Advisory Member of Biotech Express Magazine Editorial Board along with Prof Sudhir Kumar Sopory, Prof K P Mishra, Prof Pallu Reddanna and Prof Ramareddy Guntaka.

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# Senator Rand Paul demand prison for Anthony Fauci over CoV funding

by Kamal Pratap Singh

U.S.A Senator Rand Paul (R-Ky.) intensified his criticism of Anthony Fauci, claiming that the nation's top infectious diseases expert lied to Congress about gain of function research in wuhan and should face a five-year prison sentence. The senator has claimed for months that Fauci, lied to Congress about whether the NIH funded gain-of-function research at the Wuhan Institute of Virology.

“It’s a felony punishable by five years in jail,” Paul said in an interview with Fox News. “I don’t think Biden Department of Justice will do anything with it, but ... it is very dangerous to have public officials who we need to have trust incoming and lying to us. But he has lied dozens of times including mask use or not and herd immunity. Usually, he tells us it’s for our own good.”

This is not the first time Senator Rand is criticizing Fauci for his different instances at different times in pandemics. According to him Fauci has lied several time but this time he took oath and lied to congress about origin of CoV funding and gain of function research for which he should be punished for 5 year prison.

Senator Rand who is a doctor(physician) also, is consistent to prove that “Not all are same” from the very beginning of pandemic, he gave examples of Sweden. He has said several time because of Dr Fauci’s speculative statements and actions as a national US Servicemen and NIH director, he held responsible for the decisions of the institute of international repute.

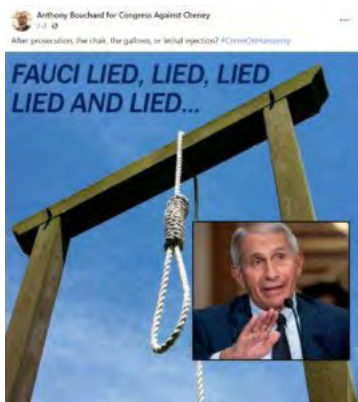
On September 7 2021, according to The Intercept news agency, the cur-

rent new evidence have emerged out after the report of the INTERCEPT that the Wuhan Institute of Virology and the nearby Wuhan University Center for Animal Experiment, along with their collaborator, the U.S.-based nonprofit EcoHealth Alliance, have engaged in what the U.S. government defines as “gain-of-function research of concern,” intentionally making viruses more pathogenic or transmissible in order to study them, despite stipulations from a U.S. funding agency that the money not be used for that purpose.

In May 2021, Fauci testified before Congress: “The NIH has not ever and does not now fund gain-of-function research in the Wuhan Institute of Virology.” The documents do not establish whether Fauci was directly aware of the work, though he could

read reports before taking oath. Paul says newly public documents revealing the extent of U.S. funding of coronavirus research in Wuhan, China and thus NIAID head Dr. Anthony Fauci lied during his previous testimony to Congress.

“The documents make it clear that assertions by the NIH Director, Francis Collins, and the NIAID Director, Anthony Fauci, that the NIH did not support gain-of-function research or potential pandemic pathogen enhancement at WIV are untruthful,” Rutgers University chemical biology professor Richard Ebright wrote in a AUG 14 Tweet.



There are many Americans who are being reluctant to Fauci advises now but only few of them are openly calling him a liar. Wyoming Sen. Anthony Bouchard (R-Cheyenne) is one such who posted a meme on his congressional campaign’s Facebook page accusing White House Chief Medical Advisor Dr. Anthony Fauci of lying and suggesting that Fauci should be executed after new evidences came. “After prosecution, the chair, the gallows, or lethal injection?” Bouchard wrote in the twitter post, which was accompanied by an image of Fauci superimposed over a hanging noose. He also sponsored legislation during

the 2021 legislative session to prevent vaccine mandates. In recent days, Bouchard travelled to Worland, according to Cowboy State Daily, to join protestors against a vaccine mandate issued by Banner Health, which operates a healthcare facility in the area. Bouchard defended his post Friday, describing Fauci’s actions as a “crime on humanity.”

Many more people have shown burst against fauci and several of them are quoting Fauci a liar and inhuman. Some of the views of American people who commented on the INTERCEPT articles are here (EXCERPTS):

1. This information should trigger the dismissal of Fauci, as well as a criminal referral for perjury before Congress. Fauci was the architect of this whole mess since he created the rules that prohibited gain of function research from occurring unless he said it was okay to do so, then took the research outside the US to circumvent the rules. Not sure that there have ever been greater deceptive criminals in the history of the world. This evil must stop.

2. The CDC, NIH, FDA have lost all credibility after the blatant politicization of the COVID virus. China (BIDEN) Joe continues to push FDA approval as proof the COVID vaccines are safe. A 2018 study by the Yale School of Medicine found that nearly a third of drugs approved by the FDA from 2001 through 2010 had major safety issues years after the medications were made widely available to patients. 71 of the 222 drugs approved in the first decade of the millennium were withdrawn, required a “black box” warning on side effects or warranted a safety announcement about new risks. It took a median of 4.2 years after the drugs were approved for these safety concerns to come to

light, the study found, and issues were more common among drugs that were granted “accelerated approval”, same is done for COVID vaccine so we can assume the longterm results.

3. Fauci’s job was to protect the US from a pandemic. He massively failed, yet Democrats applaud him and practically worship him. It is not President Trump or President Biden that should be crucified over this Pandemic, it is the career people running the CDC, NIH, etc. Numerous people at those organizations should have lost their jobs over this but as far as I know, not one government employee suffered any consequences.

***“New coronavirus existed in only 2 places in the world, in a remote cave 1,000 miles from Wuhan and in the lab at the Wuhan Institute of Virology now it is everywhere, thanks to Dr Fauci”***

4. Fauci was hired to create a virus protection plan, instead he created a virus that he can’t protect us from, then sends mix messaging everyday to ensure that the virus he funded decimates us, and therefore he gets more funding for the research. A jail cell would be the better location for Fauci, but you know that won’t happen.

5. At the very least, an 80-year-old still working for the government is ridiculous. You either are trying to hold on the power or money or both. You are not at the top of your game no



matter what you say. There are lots of things you can do if you want to still be involved as an unpaid consultant, but the very fact that he is still around over 50 years after finishing medical school speaks volumes. I don't even know if they HE had discovered viruses when he was in medical school.

6. We need to see charges brought against Fauci. An analogy is that Fauci is arguing that doing work on an automobile and calling it 'fixing a car' is not the same as specifically fixing the car's transmission, which should be categorized as another thing completely, such as working on 'directional effectiveness', and not classified as 'fixing the car'. Paul is right- Fauci is effectively playing verbal gymnastics by calling what they were doing as something other than 'gain of function'.

7. Unless you are stupid, one does not need to be a doctor to read what is clear. Fauci was behind the US dollars that went to the Chinese lab for research of animal to human virus transfer and that Fauci lied.

8. During Trump's state of the union speech, he was telling us how his economy has broken just about every record and that china was going backwards with theirs. Right after that, COVID hit. The dems and china got together and created this virus to throw world commerce way off balance to destroy Trump and nothing was going to stand in their way, including killing many many people. As if COVID wasn't enough, they went one step further and cheated in the elections to ensure Trump would not be president and his economy would not be the best in history.

9. "I have never lied before the Congress, and I do not retract that statement," Yet Fauci openly admits to ly-

ing to the public as he felt the citizens were not ready for the truth and he adjusted information to best fit his position. When a person openly admits he lies when it best serves his interests, why believe him when he says he was telling the truth before Congress? He has ZERO credibility and a proven history of lying.

10. Fauci and his colleagues get royalties from medical research and vaccine delivery systems that they created while employed by the federal government. His wife is a doctor and Chief of the Dept of Bioethics at the NIH and one of his daughters a software engineer employed with Twitter... so it's time to Drain the Swamp with less politically and financially driven federal employees.

11. Anyone with a third of a brain knows by now this virus was created for political warfare. The top democrat's have been protected by this virus from the beginning. To stay in control and power are the top reasons. It was all timed just right with the up and coming elections. And now with the variants that have been released, they are using the same game card for the 2021 elections to take full control. Once they remain in power for good you will see a new vaccine that will work like a charm against all variants. They will look like hero's that save the day, even though they created this.

12. He looks like an evil Nazi scientist..... and ever since he told us not to wear a mask because he didn't think the American people were important enough to save he has been completely discredited..... only an idiot would take any advice from this kind of liar.

13. As obvious as Fauci's lies are, Rand Paul seems to be the only one exposing Fauci for who he really is. I applaud him for that and I hope something comes of this, even though I

know nothing will. Thank you Senator Paul for pursuing the truth.

14. This is all just the "new normal." Apparently what the new normal means is that no one is held accountable for their own incompetence, lies, or the disastrous results of their actions. It is true of this administration from the top down.

15. Every other month there was an outbreak of Tuberculosis in Los Angeles California which happens to be 1,000 times worse than Covid. NEVER was there a mask mandate. NEVER were there distancing rules. NEVER were there travel restrictions. Bottom line, politics, politics, politics!

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5. <https://www.biotechexpressmag.com/will-dr-anthony-fauci-go-to-jail-for-lying-to-us-congress-toward-nih-funding-of-covid-research-in-wuhan-china/>

## Dr S. Ramachandran: Architect of Indian Biotechnology



Photo: Current PSA, G.O.I Prof K Vijayraghavan with Dr Ramachandran (on chair).

**Dr S Ramachandran was the Founder Secretary of the Department of Biotechnology (DBT) from 1986 for seven years. He has done many pioneering works at the time and established DBT and various networks to promote biotechnology in India.**

Dr S Ramachandran was the Founder Secretary of the Department of Biotechnology (DBT) from 1986 for seven years. He has done many pioneering works at the time and established DBT and various networks to promote biotechnology in India. Today India supply 45% of world's childhood vaccines.

Currently, it is very hard to find the information about Dr Ramachandran that has to be available for younger generation so to motivate and aspire from these early scientists and leaders who helped shape the situation of the country. Not much information was available on google too so after digging deep there comes an article from a very old magazine of biotech that is not operational today i.e. Biotech News whose Patrons were Dr M K Bhan and scientists of DBT. To Give tribute to this personality here we have compiled information from various sources to highlight his work and life as much as possible.

Dr. S. Ramachandran (Sep 9 1934-March 5, 2016) earned his bachelor degree from Tamil Nadu agriculture university in 1955 and Master from BHU in 1957. He then went to do PhD at University of Illinois in 1960 in Biochemistry. After 4 years in 1961 he returned to India and then joined Hindustan Antibiotics limited, Poona as a senior scientists and later became head of research in 1972. In 1977 he was appointed as CEO of Bengal Immunity Company Limited, GOI. In 1982 he was invited by planning commission whose member was Dr M S Swaminathan for the post of member secretary of newly made National Biotechnology Board. Soon he realized the need of separate department and in 1986 because of his efforts a new department of biotechnology was constituted and he was appointed as the first secretary. During his tenure, he initiated several programs in the field of immunization, tissue culture, aqua culture, academic and industrial training and information technology. Dr. S. Ramachandran, Founder

Secretary of DBT, laid the foundation for BTIS in the country during the Seventh Five Year Plan.

After his tenure in DBT, he assumed several international positions like Chairman, WHO Commission of Children Vaccine Initiative; Biotech Advisory Commission, Swedish Environmental Institute; Founding Member, Children Vaccine Program, Bill And Melinda Gates Foundation; Member Strategic Advisory Council Malaria Initiative, Bill And Melinda Gates Foundation etc.

He served as the chairman research council CSIR-CLRI and member research council CSIR-CDRI, CCMB, NCL, IMTECH and NIV. He was fellow of National Academy of Science, National Academy of Engineering, National Academy of Medical Science, National Academy of Science, United States and World Academy of Arts and Science.

Dr. S. Ramachandran was awarded the Padma Bhushan in 2011, the third highest civilian award given by the Government of India, for his contributions to Indian science. He shared the credit for the award with his colleagues in the field of biotechnology.



## Organising Institute: IIT Kharagpur

### GATE EXAMINATION

GATE is a national examination jointly conducted by IISc Bangalore and seven IITs (Bombay, Delhi, Guwahati, Kanpur, Kharagpur, Madras, Roorkee) under the aegis of Ministry of Education (MoE), Government of India. GATE examination is a Computer Based Test.

Qualifying in GATE examination is required for admission to Postgraduate Programs (Master's and Doctoral) with Ministry of Education (MoE) and other Government Scholarships/Assistantships, subject to fulfilling the admission criteria of the admitting institutes.

The GATE score is also used by some PSUs for their recruitment and by several other universities for their admission in India.

GATE 2022 score will remain valid for THREE YEARS from the date of announcement of results.

### ELIGIBILITY

A candidate who is currently studying in 3<sup>rd</sup> or higher year of any undergraduate degree program OR has already completed any government approved degree program in Engineering / Technology / Architecture / Science / Commerce / Arts.

GATE 2022 Examination will be conducted in selected cities and towns in India.

**Disclaimer:** GATE is NOT an admission ensuring examination. Qualifying in GATE examination does NOT guarantee admission / scholarship. Admission to any institute is fully dependent on the admitting institute's criteria for educational qualification. Similarly, GATE qualification does not assure a Public Sector Undertaking (PSU) job. GATE committee is NOT liable for any legal obligations related to admission / job.

### GATE 2022 PAPERS

Aerospace Engineering (AE)	Electrical Engineering (EE)	Naval Architecture & Marine Engineering (NM) *
Agricultural Engineering (AG)	Environmental Science and Engineering (ES)	Petroleum Engineering (PE)
Architecture and Planning (AR)	Ecology and Evolution (EY)	Physics (PH)
Biomedical Engineering (BM)	Geology and Geophysics (GG)	Production & Industrial Engineering (PI)
Biotechnology (BT)	Geomatics Engineering (GE) *	Statistics (ST)
Civil Engineering (CE)	Instrumentation Engineering (IN)	Textile Engineering and Fibre Science (TF)
Chemical Engineering (CH)	Mathematics (MA)	Engineering Sciences (XE)
Computer Science & Information Technology (CS)	Mechanical Engineering (ME)	Humanities and Social Sciences (XH)
Chemistry (CY)	Metallurgical Engineering (MT)	Life Sciences (XL)
Electronics and Communication Engineering (EC)	Mining Engineering (MN)	

\* These are new the papers introduced in GATE 2022.

A candidate may appear either in ONE or TWO subject papers. For candidates who choose TWO papers, the combination must be from the approved list of combinations and subject to the availability of infrastructure and date.

### APPLICATION FEE (PER SUBJECT)

Gender / Category	Regular Period (₹)	Extended Period (with late fee) (₹)
Female / SC / ST / PwD candidates	750/-	1250/-
All other candidates	1500/-	2000/-

### EXAMINATION DATES

5 <sup>th</sup> February 2022	12 <sup>th</sup> February 2022
6 <sup>th</sup> February 2022	13 <sup>th</sup> February 2022
<i>Dates mentioned are liable to change because of COVID-19 situation</i>	

### ONLINE APPLICATION & TIMELINE

For details and updates visit



<https://gate.iitkgp.ac.in>



Opening date of Online Registration	Monday, 30 <sup>th</sup> August 2021
Closing date of REGULAR Online Registration	Friday, 24 <sup>th</sup> September 2021
End of EXTENDED period for Online Registration (with late fee)	Friday, 1 <sup>st</sup> October 2021
Announcement of Results	Thursday, 17 <sup>th</sup> March, 2022





# CRISPR -CAS9

GENE EDITING TOOL



## Precision Crop Breeding by Base Editing and Prime Editing

Kutubuddin Molla<sup>a</sup> and K C Bansal<sup>b</sup>

<sup>a</sup>Scientist, Crop Improvement Division, ICAR-National Rice Research Institute, Cuttack, Odisha

<sup>b</sup>Former Director, ICAR-National Bureau of Plant Genetic Resources, New Delhi

**The recent review article in 'Nature Plants' by Indian scientists and others (Molla et al 2021) covers both the base editing and the prime editing technologies in a concise yet comprehensive way and gives the current status of base editors and prime editors in plants, technological developments in the field and their biological applications for crop improvement.**

**T**raditional plant breeding has been instrumental in increasing the food production by developing improved crop varieties since long. It involves crossing of parental lines and selection of individual plants with desired traits and improved plant characteristics. Selection is based mostly on yield as a parameter without the knowledge of genetic composition of the selected plants. Development of high yielding wheat and rice varieties which gave birth to Green Revolution around mid-1960s is an example of this approach. The advent

of molecular biology in 1970s and the development of DNA based molecular markers in 1980s facilitated screening of large breeding population for individual plants with desired genes and traits in a cost-effective manner. Marker assisted selection (MAS) thus permitted the identification of desired individual plants on the basis of genetic composition. This was followed by the identification of quantitative trait loci (QTLs) for complex agronomic traits governed by multiple genetic loci in several crop plants of agricultural and economic importance. Structural and function-

al genomics studies in crops such as rice, tomato, potato, etc. and other biological organisms led to the identification of causal genes and alleles related with key agronomic features. This became the basis of genetic engineering and consequently transgenic crops were developed with several improved traits like resistance to herbicide, nutritional quality improvement, resistance to insect and pathogens, etc.

Currently, we are witnessing the use of a versatile technology –CRISPR-Cas9 mediated genome editing



**Figure 1:** Different steps involved in developing genome edited crops via CRISPR-mediated genetic modification

with huge potential to accelerate crop improvement by facilitating targeted modifications of individual or multiple genes (Figure 1). The 2020 Chemistry Nobel Prize was awarded to the developers of this technology - Emmanuelle Charpentier and Jennifer Doudna. This novel technology has a tremendous promise for basic biological research, human therapeutics, agriculture and environmental sustainability. Consequently, we see a great opportunity ahead for another revolution in agriculture, particularly by developing smart crops with desired attributes to bring sustainability in crop production.

CRISPR is used to make a desirable change at a precise spot within the DNA of a plant. Scientists with this tool in their hand can remove or alter plants' own DNA for making them more useful. CRISPR is not the first method invented to change DNA. Spontaneous change in plant DNA is a natural process, that happens at a slow pace. Some changes result in the development of beneficial traits. When plant breeders learned the fact, they started trying to induce changes in DNA artificially in 1940s. Plant breeders have been using radiation like X-rays and gamma rays, and chemicals like alkylating agents to randomly modify plant's DNA. To see if the random changes cause the generation of any useful trait, the whole lot of radiation/chemical-treated

plants must be evaluated. According to a data by FAO, nearly 2500 plant varieties have been developed by radiation-induced DNA modification.

What are the advantages CRISPR-Cas system brings to the breeder's tool bag? CRISPR allows breeders to make changes precisely at a desired spot in the DNA instead of inducing random changes here and there. Additionally, it saves a great deal of efforts and time. CRISPR works by generating a cut at a targeted location in the DNA. Once the cut is recognized, plant cell often inadvertently introduces small changes while repairing the cut.

Today, scientists across the globe are engaged in improving crops for both consumers and growers. Rice with higher yield and bacterial disease resistance, rice that grow in less water, wheat with reduced gluten level, tomato with a special component that reduces blood pressure, soybeans with reduced unhealthy fats, bananas that can fight deadly virus and fungus or enriched with beta-carotene, non-browning mushroom, cassava with reduced neurotoxin and many more are the type of improvements that breeders rapidly achieve with CRISPR.

More recently, the invention of two powerful advanced genome editing technologies, base editing and prime editing, has further enhanced the

precision and the efficiency in generating edited plants with improved traits. The review article by Molla et al (2021) covers both the base editing and the prime editing technologies in a concise yet comprehensive way and gives the current status of base editors and prime editors in plants, technological developments in the field and their biological applications for crop improvement. If conventional CRISPR-Cas tools are like scissors to make DNA cut at a predefined position, base editing tools are like pencils to rewrite single DNA letter, and prime editing tools are like word processors that search for specific DNA sequence and precisely replace them. Together these two tools give us more power for precision breeding like never before.

In addition to the DNA present in the nucleus, plants also have DNA in their chloroplasts and mitochondria. Chloroplast DNA is crucial in plant's productivity, while mitochondrial DNA plays important role in generating hybrid crop varieties. Molla et al (2021) describes how base editing tool has been repurposed for modifying plants' chloroplast and mitochondrial DNAs. Base editors enhance mitochondrial and chloroplast genetic diversity, which could fulfill the long-sought desire of the breeders to enhance our food supply. It is desired that these tools are employed for developing high yielding and resilient

crop cultivars in the face of climate change. Moreover, these advanced technologies provide ample opportunities to improve crops with various complex agronomic traits. Examples of crop improvement by base editing and prime editing include, i) herbicide tolerance by modifying amino acids in enzymes that are targeted by herbicides, ii) improved nutrient composition by modifying biosynthetic pathway genes, splice sites or uORFs, iii) accelerated domestication by editing-domestication genes in wild relatives of crop species, iv) converting a susceptible allele into a disease resistant allele, v) reducing the time required for the removal of deleterious alleles, vi) yield increase by targeted modification of endogenous genes, and vi) increased nutrient uptake, transport and utilization for increasing resource input-use efficiency (Molla et al, 2021). Final plant varieties created with conventional CRISPR-Cas, base editing, or prime editing technologies are practically indistinguishable from that of traditional selective breeding or mutation breeding.

It is highly recommended that we develop integrated breeding strategies combining the traditional breeding methods with advanced genome editing tools for sustainable agriculture and for ultimately meeting the United Nations Sustainable Development Goals (SDGs-2030). Importantly, we need to create an enabling policy space for effective use of these technologies for crop improvement for the benefit of Indian agriculture.

## Reference

Molla, K.A., Sretenovic, S., Bansal, K.C. & Qi, Y. Precise plant genome editing using base editors and prime editors. *Nat. Plants* **7**, 1166–1187 (2021). <https://doi.org/10.1038/s41477-021-00991-1>

## About Authors



### Prof K C Bansal

Prof. Bansal obtained his doctoral degree from the Indian Agricultural Research Institute (IARI), New Delhi. He pursued advanced research from Harvard University, Cambridge, USA. Since his return from the USA, he served as Professor (Plant Biotechnology) at IARI; Coordinator, National Project on Transgenics in Crops; and Director, National Bureau of Plant Genetic Resources (ICAR), New Delhi. He was the first to get selected for the prestigious Norman Borlaug Chair (ICAR-National Professor) for crop improvement. Currently, Prof. Bansal is Secretary of the National Academy of Agricultural Sciences, and Member, Board of Directors, Global Plant Council. He is on the Editorial Board of Plant Biotechnology Journal (UK).

His research interests include genome engineering and functional genomics for enhancing abiotic stress tolerance in crop plants. Prof. Bansal has supervised over 20 doctoral students, and imparted training to over 500 scientists and scholars at national and international level. Many of his students got national level awards

like Jawaharlal Nehru best thesis award of the ICAR, National Young Scientist awards and the IARI Gold Medal. Prof. Bansal is a recipient of several awards, and is Fellow of the National Academy of Agricultural Sciences, and the National Academy of Sciences, India.



### Dr Kutubuddin Molla

Dr. Kutubuddin Molla is a scientist at the ICAR-National Rice Research Institute, Cuttack. He has obtained his Ph.D. from the University of Calcutta, Kolkata. Dr. Molla is the recipient of the prestigious Fulbright fellowship. He has done his post-doctoral research on genome editing at the Pennsylvania State University, USA, from 2017-2019. Dr. Molla has recently received the 'INSA Medal for Young Scientist-2020' award from the Indian National Science Academy, New Delhi. He is also the recipient of the AAAS/Science Program for Excellence in Science from the American Association for the Advancement of Science (AAAS), Washington D.C.

Dr. Molla has several publications in high impact factor journals. His research interests include precise genome editing, CRISPR-Cas system and other advanced editing technologies for crop improvement.







# Best 100 Institutes in India: NIRF Ranking 2021

The National Institutional Ranking Framework (NIRF) was approved by the MHRD and launched by Honourable Minister of Human Resource Development on 29th September 2015. This framework outlines a methodology to rank institutions across the country. The methodology draws from the overall recommendations broad understanding arrived at by a Core Committee set up by MHRD, to identify the broad parameters for ranking various universities and institutions.

The parameters broadly cover “Teaching, Learning and Resources,” “Research and Professional Practices,” “Graduation Outcomes,” “Outreach and Inclusivity,” and “Perception”.

NIRF is the first-ever effort by the government to rank higher education institutions (HEIs) in the country. Before NIRF’s launch in 2016, HEIs were usually ranked by private entities, especially news magazines. While participation in the NIRF was voluntary in the initial years, it was made compulsory for all government-run educational institutions in 2018.

Parameters	Category A institutions	Category B institutions
Teaching, learning and resources (TLR)	0.30	0.30
Research, professional practice and collaborative performance (RPC)	0.30	0.20
Graduation outcome (GO)	0.15	0.25
Outreach and inclusivity (OI)	0.15	0.15
Perception (PR)	0.10	0.10

The idea of NIRF has its roots in the global rankings. The union government and government-run HEIs were

quite upset about their standing in QS World University Rankings and the Times Higher Education World University Ranking. During the Winter Session of Parliament in 2015, the then Education Minister Smriti Irani had attributed their poor performance in global league tables to subjective ranking methodology. “This is primarily because of the criteria used by these agencies for ranking, which depend a lot on the perception of a select group of persons,” she had said in Parliament.

To counter this, India decided to emulate the Chinese example. When China encountered the same problem about two decades ago, they responded with a university ranking system of their own. The

Shanghai Rankings, done by the Shanghai Jiao Tong University, was born out of this in 2003. Nine Chinese universities and three from India (Indian Institute of Science (IISc), IIT Kharagpur and IIT Delhi) made it to the top 500 in the first edition of the Shanghai Rankings.

India too decided to start its own rankings, with parameters that would be more suitable to the Indian context. There was one big difference, though. While the Shanghai Rankings were international in character from the first year itself, the NIRF only ranked Indian HEIs. The long-term plan was to make it an international league table.

Table: List of top 100 most prominent institutes of India out of approximately 700 overall institutions (not included colleges, please see the exclusion list for more details through reference).

Rank	Name of Institute	Location	Score
1	Indian Institute of Technology Madras	Chennai	86.76
2	Indian Institute of Science	Bengaluru	82.67
3	Indian Institute of Technology Bombay	Mumbai	82.52
4	Indian Institute of Technology Delhi	New Delhi	81.75
5	Indian Institute of Technology Kanpur	Kanpur	76.5
6	Indian Institute of Technology Kharagpur	Kharagpur	75.62
7	Indian Institute of Technology Roorkee	Roorkee	71.4
8	Indian Institute of Technology Guwahati	Guwahati	69.26
9	Jawaharlal Nehru University	New Delhi	66.61
10	Banaras Hindu University	Varanasi	63.1
11	Calcutta University	Kolkata	61.45
12	Amrita Vishwa Vidyapeetham	Coimbatore	59.87
13	Jamia Millia Islamia	New Delhi	59.54
14	Jadavpur University	Kolkata	58.93
15	Manipal Academy of Higher Education	Manipal	58.91
16	Indian Institute of Technology Hyderabad	Hyderabad	58.53
17	University of Hyderabad	Hyderabad	57.67
18	Aligarh Muslim University	Aligarh	57.38
19	University of Delhi	Delhi	56.03
20	Savitribai Phule Pune University	Pune	55.83
21	Vellore Institute of Technology	Vellore	55.39
22	Bharathiar University	Coimbatore	55.38
23	National Institute of Technology Tiruchirappalli	Tiruchirappalli	54.97
24	Indian Institute of Science Education & Research Pune	Pune	54.47
25	Anna University	Chennai	54.42
26	Indian Institute of Technology (Indian School of Mines)	Dhanbad	53.88
27	Institute of Chemical Technology	Mumbai	53.76
28	Indian Institute of Technology-BHU	Varanasi	53.74
29	Birla Institute of Technology & Science -Pilani	Pilani	53.32
30	Indian Institute of Technology Indore	Indore	53.22
31	Indian Institute of Technology Ropar	Rupnagar	52.89

# Guest Article

32	National Institute of Technology Karnataka	Surathkal	52.88
33	Indian Institute of Technology Gandhinagar	Gandhinagar	52.77
34	Mysore University	Mysuru	50.49
35	Indian Institute of Science Education & Research Kolkata	Mohanpur	50.48
36	Homi Bhabha National Institute	Mumbai	50.42
37	Siksha `O` Anusandhan	Bhubaneswar	50.34
38	Panjab University	Chandigarh	50.31
39	Kalinga Institute of Industrial Technology	Bhubaneswar	50
40	Indian Institute of Science Education & Research, Mohali	Mohali	49.58
41	National Institute of Technology Rourkela	Rourkela	49.27
42	Shanmugha Arts Science Technology & Research Academy	Thanjavur	49.15
43	Amity University	Gautam Budh Nagar	48.87
43	Kerala University	Thiruvananthapuram	48.87
45	Thapar Institute of Engineering and Technology	Patiala	48.83
46	Indian Institute of Engineering Science and Technology	Shibpur	48.7
47	University of Madras	Chennai	48.66
48	Andhra University, Visakhapatnam	Visakhapatnam	48.65
49	Saveetha Institute of Medical and Technical Sciences	Chennai	48.63
50	Indian Institute of Science Education & Research Bhopal	Bhopal	48.57
51	Indian Institute of Technology Patna	Patna	47.67
52	Mahatma Gandhi University	Kottayam	47.62
53	S.R.M. Institute of Science and Technology	Chennai	47.3
54	Visvesvaraya National Institute of Technology	Nagpur	46.98
54	Delhi Technological University	New Delhi	46.98
56	JSS Academy of Higher Education and Research	Mysuru	46.95
57	Alagappa University	Karaikudi	46.79
58	Indian Institute of Technology Bhubaneswar	Bhubaneswar	46.78
59	National Institute of Technology Warangal	Warangal	46.69
60	King George`s Medical University	Lucknow	46.65
61	Sathyabama Institute of Science and Technology	Chennai	46.6
62	Osmania University	Hyderabad	46.57
62	Gujarat University	Ahmedabad	46.57
64	Jamia Hamdard	New Delhi	46.46
65	Cochin University of Science and Technology	Cochin	46.02
66	Banasthali Vidyapith	Banasthali	45.89
67	Gauhati University	Guwahati	45.87
68	Symbiosis International	Pune	45.65
69	Koneru Lakshmaiah Education Foundation University (K L College of Engineering)	Vaddeswaram	45.64
70	Tata Institute of Social Sciences	Mumbai	45.63
71	National Institute of Technology Durgapur	Durgapur	45.36



72	Malaviya National Institute of Technology	Jaipur	45.29
73	Tezpur University	Tezpur	45.22
74	Kalasalingam Academy of Research and Higher Education	Srivilliputtur	45.07
75	Bharath Institute of Higher Education & Research	Chennai	44.81
76	University of Kashmir	Srinagar	44.64
77	Chandigarh University	Mohali	44.62
78	Dr. B. R. Ambedkar National Institute of Technology	Jalandhar	44.53
79	Sri Ramachandra Institute of Higher Education and Research	Chennai	44.4
80	Dr. D. Y. Patil Vidyapeeth	Pune	44.19
81	Lovely Professional University	Phagwara	43.95
82	Indian Institute of Technology Mandi	Mandi	43.93
83	Madurai Kamaraj University	Madurai	43.75
84	Shiv Nadar University	Dadri	43.6
85	Guru Nanak Dev University	Amritsar	43.21
86	PSG College of Technology	Coimbatore	43.14
87	Pondicherry University	Puducherry	43.1
88	Motilal Nehru National Institute of Technology	Prayagraj	43.04
89	Sri Sivasubramaniya Nadar College of Engineering	Kancheepuram	42.94
90	North Eastern Hill University	Shillong	42.79
90	Bharathidasan University	Tiruchirappalli	42.79
92	Sri Venkateswara University	Tirupati	42.78
93	National Institute of Technology Silchar	Silchar	42.68
94	SVKM's Narsee Monjee Institute of Management Studies	Mumbai	42.56
95	Calicut University	Malappuram	42.42
96	Mumbai University	Mumbai	41.79
97	Visva Bharati	Santiniketan	41.74
98	Sardar Vallabhbhai National Institute of Technology	Surat	41.72
99	Guru Gobind Singh Indraprastha University	New Delhi	41.43
100	Datta Meghe Institute of Medical Sciences	Wardha	41.1

Reference: <https://www.nirfindia.org/nirfpdfcdn/2021/flipbook/index.html#p=6>



# Notice

**INSTITUTE OF LIFE SCIENCES**  
**(An Autonomous Institute under the Dept. of Biotechnology,**  
**Ministry of Science & Technology, Govt. of India)**  
**Nalco Square, Bhubaneswar 751023, India**

Advt. No.: 39/2021

Date: 03.09.2021

Institute of Life Sciences (ILS), Bhubaneswar, an autonomous Institute of the Department of Biotechnology, Ministry of Science & Technology, Government of India engaged in advanced research invites applications from Indian nationals for **Ph.D. programs**. The name of the faculties who are interested in taking students through regular Ph.D. program of ILS are listed below with their research interest. The applicants are strongly encouraged to visit ILS webpage for detailed information regarding the research area of the respective faculties.

Name of the Faculty	Research Area
Dr. Sandip K. Mishra, Scientist-F	Investigations of downstream targets of Estrogen related receptor beta in <b>Breast cancer</b>
Dr. P.V. Ramchander, Scientist-E	Identification and characterization of genes/mutations in <b>Human genetic disorders</b>
Dr. Gulam Hussain Syed, Scientist-E	<b>Virus Host Interactions</b> and viral disease pathogenesis
Dr. Amol Suryawanshi, Scientist-E	Understanding Cancer and Viral disease biology through <b>Clinical proteomics</b>

**Essential Qualification:**

- Candidates should have passed their M.Sc./ M.Tech./ M.Pharm./ M.V.Sc. or equivalent qualification in life sciences and allied subjects (Biochemistry/ Biotechnology/ Genetics/ Microbiology, etc.) with minimum of 60% marks (or equivalent grade point). Candidates awaiting final results may also apply, however, if shortlisted, they have to produce their final mark sheet on the date of the interview, failing which they will not be interviewed.
- Candidates should have also qualified in CSIR/UGC-JRF or DBT-JRF or DBT-BINC-JRF or UGC-RGNF or ICMR-JRF. If the original certificate is not available, the candidate has to provide a photocopy of the original admit card and the declared result page, along with the application. Candidates with mark sheet can also apply, however, they have to submit their results at the time of interview.
- The candidate should be below 28 years in age, as on last date of application. An age relaxation of five years in the case of SC/ST/women/PH candidates and three years in the case of OBC candidates will be given (as per Govt. of India rules).

**Application Fees:** Applicants are required to pay a **non-refundable** application fee of Rs.500/ through online payment mode as per details. Beneficiary name: Director, Institute of Life Sciences, Bhubaneswar, Account No: 450502010006285, Bank: Union Bank of India, Chandrasekharpur, Bhubaneswar; IFS Code: UBIN0545058. SC/ST/Physically challenged candidates are exempted from payment.

**Fellowship:** The fellowship and other emoluments will be as per the guidelines of the funding agencies - SERB/DST/DBT/CSIR/ICMR and as revised from time to time.

**To and fro bus/rail fare by the shortest route limited to sleeper class will be paid to all the candidates appearing for the interview.**

The application form can be downloaded from ILS website ([www.ils.res.in](http://www.ils.res.in)). Duly filled application along with self-attested copies of all relevant certificates and copy of proof of payment should be send to **The Academic Section, Institute of Life Sciences, Nalco Square, Bhubaneswar – 751023 Odisha** with the subject line “**Application for Ph.D. Program**” on or before **5<sup>th</sup> October 2021**.

Director, ILS reserves the right to withdraw the procedure without assigning any reasons thereof.

**List of candidates selected for the interview will be published in the Institute website ([www.ils.res.in](http://www.ils.res.in)).**

**Important dates:**

- Last date of receiving applications: **5<sup>th</sup> October 2021**.
- Date of display of short-listed candidates for interview and other instructions in the Institute website: **7<sup>th</sup> October 2021**.
- Date of interview: **28<sup>th</sup> October 2021**.

# ICGEB Arturo Falaschi Postdoctoral Fellowships

**Closing Dates for Applications: 30 SEPTEMBER 2021**

ICGEB offers competitive Postdoctoral Fellowships in Life Sciences to highly motivated scientists wishing to pursue postdoctoral research in a world-class scientific environment. The Fellowships comprise a very competitive package including stipend, health insurance and additional benefits. The most successful fellows will also be eligible, upon completion, to apply for ICGEB Early Career Research Grants to support their own research programmes as young PIs upon return to an ICGEB Member State.

## **Guidelines for Application**

Applicants should contact the ICGEB Group Leader/PI of their choice with a motivation letter, to determine availability of laboratory space and to define the research project proposal that will form an integral part of the application. Please note that the written statement from the ICGEB Group Leader you have contacted and who is willing to support your project is mandatory to apply.

Applicants must be nationals of an ICGEB Member State and may not apply for fellowships to be undertaken in their country of origin, unless they have been working abroad for, at least, the last 3 years and at the time of application. Applicants should hold a recent PhD in Life Sciences or have at least 3 years research experience. Preference is given to candidates below the age of 35.

Financial support      Duration: 2 years with the possibility of a 1-year extension. Monthly stipend: Trieste (Italy): Euro 2,000, New Delhi (India): US\$ 1,590, Cape Town (South Africa): ZAR 18,750.

Documents to be uploaded      Please note that you will be requested to upload the following documents (pdf files):

- (i) Your full CV
- (ii) Academic records (PhD degree certificate, issued by the degree-granting University and bearing the official seal/s and signatures, to be submitted in the original language accompanied by an official English translation of each document).
- (iii) Written Statement from the ICGEB Group Leader
- (iv) A valid identification document (passport or identity card)
- (v) English Certificate (TOEFL, Cambridge or similar). This document is not requested when scholastic education has been undertaken in English.

Selection      All submitted applications will be transmitted to the respective ICGEB Liaison Officer in the country of which you are a national for endorsement. Endorsement is a fundamental requirement for the Fellowship to be awarded. The ICGEB Fellowships Selection Committee will evaluate complete and endorsed applications received by the closing date. The main criteria for selection include scientific excellence of the project, the qualities of the candidate's CV and potential benefit for the home country. The candidates will be notified of the outcome by e-mail as soon as possible following the closing date for applications.

Starting Date      New Delhi, India: 1 February 2022



## NATIONAL INSTITUTE OF IMMUNOLOGY

(An Autonomous Research Institute of the Department of Biotechnology)

Aruna Asaf Ali Marg, New Delhi - 110067

### Post of Director, NII

Applications are invited from eminent scientists (Indian Citizens) having proven scientific record in areas such as immunology/cell biology/molecular biology/disease biology, and possessing excellent leadership ability, for the post of Director, NII, New Delhi on deputation (including short term contract). The position of Director offers a unique opportunity for the individual in providing strong and visionary leadership to the institution.

He/she shall be the Principal Executive/Chief Executive of the Institute and shall be responsible for leading and nurturing the core multi-disciplinary research faculty, developing policies, fostering collaboration with scientific, medical and engineering partner institutions, developing mechanism for collaborations with industry, recruitment of appropriate faculty and management of the extramural activities including supporting research resource units in other Institutes and other duties as may be required for proper administration of the affairs of the Institute. The Institute encourages creation of knowledge and benefit sharing related to IPR.

#### How to apply / nominate

Complete applications (7 copies) strictly as per the format available on DBT and NII's website: <http://dbtindia.gov.in> and [www.nii.res.in](http://www.nii.res.in) respectively with a passport size photograph fixed at the space shown in the format along with testimonials including list of publications indicating impact factors should be sent to Shri Subodh Kumar Ram, Under Secretary, Room No. 619, 6th Floor, Department of Biotechnology, Block-2, CGO Complex, Lodhi Road, New Delhi-110003, superscribing the cover "Application for the Post of Director, National Institute of Immunology (NII), New Delhi" so as to reach within 30 days from the date of publication of this advertisement in Employment News. The closing date for candidates residing abroad, Andaman & Nicobar and Lakshadweep Islands, States / Union Territories in the North-Eastern region, Sikkim, Union Territory of J&K, Union Territory of Ladakh, Lahaul and Spiti districts of Himachal Pradesh, Pangi sub-division of Chamba District of Himachal Pradesh will be 45 days. The soft copy of the application may also be sent by e-mail to [aipsu.dbt@nic.in](mailto:aipsu.dbt@nic.in) and [subodh.ram.dbt@nic.in](mailto:subodh.ram.dbt@nic.in). Nominations by distinguished experts may also be considered, depending upon merit and the area of expertise. Eminent experts and distinguished scientists may also kindly nominate potential candidates for the position both by post and by email at the above mentioned address.

**Last Date: September 30, 2021**

This detailed advertisement and format of application is available both at DBT's and NII's website(s) viz. <http://dbtindia.gov.in> and [www.nii.res.in](http://www.nii.res.in) respectively.

# RGCB Masters Degree in Biotechnology: Admission 2021-2023

RGCB launched in July 2019, a highly innovative MSc Biotechnology Program with three unique specializations - Disease Biology, Molecular Diagnostics & DNA Profiling and Genetic Engineering. The MSc program of RGCB is affiliated to the Regional Centre for Biotechnology an "Institution of National Importance" providing education, training and research established by the Department of Biotechnology, Government of India under the auspices of the United Nations Educational, Scientific and Cultural Organization or UNESCO, a specialized agency of the United Nations (UN) based in Paris.

## ELIGIBILITY FOR ADMISSION

All candidates must have a valid GAT-B score [<https://dbt.nta.ac.in/>].

Students with valid GAT-B score must also have 60% aggregate marks (or an equivalent grade point average) in Bachelor's degree in any branch of Science, Engineering, or Medicine are eligible to apply. Students from the SC, ST, OBC (non-creamy layer), and PWD categories shall be given a relaxation of 5% aggregate marks. Students in the final year of their qualifying degree program are also eligible to apply provided that they produce a proof of having secured the required marks in their undergraduate degree program at the time of admission. Also please upload the previous semester/year marksheet of your Bachelor degree. The final selection of the students will be done based on the GAT-B Cutoff rank/Score fixed by RGCB for each category.

## Specialization

Disease Biology  
Genetic Engineering  
Molecular Diagnostics & DNA Profiling

## Duration and Description of the Course

The RGCB Masters Degree in Biotechnology will be for two years inclusive of four semesters.

## Stipend

All Students admitted to the MSc program shall receive the RGCB stipend of ₹ 6000 per month for the first year and ₹ 8000/- for the second year of the MSc program.

## NUMBER OF SEATS and Curriculum

Total Number of Students admitted: Upto 20

The first two semesters will be common to all students.

Specialization will be in the third and fourth semester.

Students can opt for the concerned specialization after passing second semester examination.

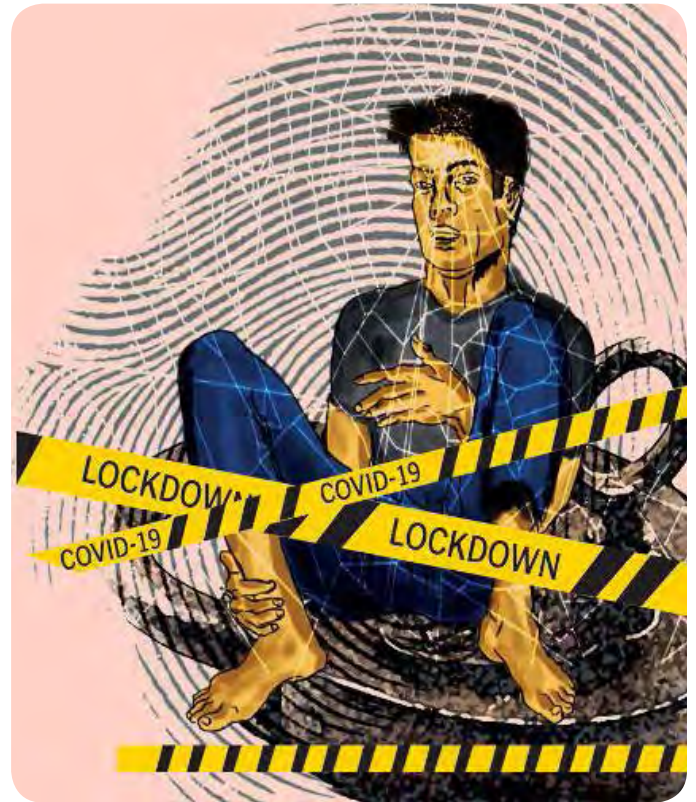
Final allocation of specialization will be on the basis of marks scored.

## ADMISSION PROCEDURE

Applications are to be submitted online.

CONTACT: [mvc@rgcb.res.in](mailto:mvc@rgcb.res.in), 0471-2529-653, 0471-2529-655

# Featured Biotech News



## Supreme Court tells Centre to in- clude suicides of Covid-19 positive patients among Covid deaths

September 13, 2021

The Supreme Court on Monday asked the Union Government to reconsider its guidelines that excluded suicides from Covid-19 death certificates. Justice M.R. Shah said that it is prima facie of the view that such suicide cases of Covid positive patients be treated as Covid deaths. The Centre assured the court it would re-examine the issue.

The division bench led by Justice M.R. Shah and Justice A.S. Bopanna expressed satisfaction with the Centre's decision on Covid-19 death certificates for granting compensation but said 3-4 issues need to be sorted including that of suicides of Covid positive patients which needed to be brought within the Covid ambit.

The Apex Court wanted to know how will the state government implement the Covid guidelines. It sought clarification from the government on the constitution of district committees for redressal of cases. "When will it be formed and which certificate will the family members have to put in front of the committee as evidence?"

***Justice M.R. Shah said that it is prima facie of the view that such suicide cases of Covid positive patients be treated as Covid deaths.***

It is pertinent to note that on the matter of compensation to the deceased Covid-19 patients, the Supreme Court had asked the government to mention death from coronavirus on the death certificate issued to those who died of the virus. For this, it has been said in the guidelines from the government that if the patient is confirmed to be corona positive in the Covid test or any examination done in the hospital, then the cause of death will be written corona in the death certificate on his death. The next hearing of this case will be on September 23.



# Covid death or not: Prodded by Supreme Court, Centre issues rules

September 12, 2021

Deaths occurring due to poisoning, suicide, homicide, accidents etc will not be treated as Covid-19 deaths even if the virus infection is an accompanying condition, say the guidelines.

The Union Health Ministry and Indian Council of Medical Research (ICMR) have jointly come out with guidelines for issuing “official document” in case of Covid-related deaths.

As per these guidelines, submitted by the Centre to the Supreme Court in a case seeking compensation for Covid deaths, those cases that are diagnosed through an RT-PCR/ Molecular Test/ Rapid Antigen Test, or that have been clinically determined in a hospital or an in-patient facility by a physician while one is admitted there, will be recognised as Covid cases.

Even though an ICMR study shows Covid-19 deaths occur within 25 days of a person testing positive, the guidelines say, the government has decided to consider deaths occurring “within 30 days from the date of testing or from the date of being clinically determined as a Covid-19 case... as deaths due to Covid-19 even if the death takes place outside the hospital/ in-patient facility”. This is being done “to make the scope (of the provision) broader and more inclusive”.

Besides this, “Covid-19 cases which are not resolved and have died either in hospital settings or at home,



and where a Medical Certificate of Cause of Death... has been issued to the registering authority as required under Section 10 of the Registration of Birth and Death Act, 1969, will be treated as a Covid-19 death”.

As per the guidelines, in case a family is not satisfied with the cause of death given in the municipal certificate, the state or Union territory must set up a committee consisting of officials, medical experts and subject experts.

Applications for issuing the official document and redressal of grievances are to be disposed of within 30 days of submission, say the guidelines.

# ICRISAT awarded 2021 Africa Food Prize

## ICRISAT awarded "Africa Food Prize 2021"

**Dr Jacqueline d'Arros Hughes**  
Director General, ICRISAT



**The award, that includes a \$100,000 prize, celebrates those changing the reality of farming in Africa from a struggle practice to a business that lifts communities out of poverty.**

August 10, 2021

The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) has been awarded the 2021 Africa Food Prize, for work that has improved food security across 13 countries in sub-Saharan Africa.

ICRISAT, a CGIAR Research Center, is a non-profit, non-political public international research organization that conducts agricultural research for development in Asia and sub-Saharan Africa with a wide array of partners throughout the world.

Between 2007 and 2019, ICRISAT led a collaboration of partners to deliver the Tropical Legumes Project. The project, undertaken together with the International Center for Tropical Agriculture (CIAT) and International Institute of Tropical Agriculture (IITA), developed 266 improved legume varieties and almost half a million tons of seed for a range of legume crops, including cowpeas, pigeon peas, chickpea, common

bean, groundnut, and soybean.

These new varieties have helped over 25 million smallholder farmers become more resilient to climate change, as well as pest and disease outbreaks.

Accepting the award, Dr. Jacqueline d'Arros Hughes, ICRISAT Director General, said the Institute's work spanned the entire value chain, from high-end genomics to markets and agri-business in dryland cropping systems.

The Africa Food Prize recognizes outstanding African individuals and institutions leading efforts in the following areas: transformation of Africa's food systems; promotion of sustainable agricultural practices; support for smallholder farmers to raise incomes; resilience in the wake of climate change impacts; and access to high quality agricultural inputs, knowledge, and equipment.

# Did NIH Improperly Delete COVID-19 Data At Request Of Chinese Researchers? Senators Want Answers



September 16, 2021

U.S. Sens. Chuck Grassley (R-Iowa), Marsha Blackburn (R-Tenn.) and Roger Marshall (R-Kan.) sent a follow-up letter to the National Institutes of Health (NIH) demanding answers to questions that may shed light on data relating to the origins of the COVID-19 pandemic and NIH's COVID-19 data retention policies.

This push for answers comes amid reports that Chinese researchers requested some data be deleted from NIH-controlled databases. In part, the senators wrote “[o]n June 28, 2021, we wrote to you requesting answers to seven questions pertaining to the NIH’s role and responsibility with respect to the Sequence Read Archive (SRA) relating to COVID-19 data. On September 8, 2021, your office provided a response that failed to fully and completely answer all seven questions and failed to provide the requested records.”

**Partial SARS-CoV-2 sequences from early outbreaks in Wuhan were removed from a US government database by the scientists who deposited them.**

The senators went on to say “[a]s we have made clear to you, Congress has a constitutional responsibility to engage in oversight of the executive branch and the executive branch has an obligation to Congress and the American people to substantively respond. In light of our responsibility and your obligation in that regard, we are reposing the unanswered questions from our June 28, 2021, letter.”

With more than 650,000 American lives lost and trillions of taxpayer dollars spent to support the American people, businesses and the economy during the COVID-19 pandemic, the public deserves to know what their government knows about the origins of this global illness and the research data that it possesses.

Source: <https://www.grassley.senate.gov/news/news-releases/did-nih-improperly-delete-covid-19-data-at-request-of-chinese-researchers-senators-want-answers>



# Japan suspends 1.63 million Moderna doses over contamination



August 26, 2021

Japan has suspended the use of 1.63 million doses of Moderna's COVID-19 vaccine after reports of contamination in several vials, drugmaker Takeda and the health ministry have said.

Takeda Pharmaceutical Company, which is in charge of sales and distribution of the Moderna shot in Japan, on Thursday said it had "received reports from several vaccination centres that foreign substances have been found inside unopened vials".

"Upon consultation with the health ministry, we have decided to suspend the use of the vaccine" from three whole batches.

Contaminants were seen inside vials from one of the three batches, but officials suspended the use of vials from the two others as a precaution, said top government spokesman Katsunobu Kato.

**"The origin of this manufacturing incident may be in one of ROVI's manufacturing lines," the statement noted.**

"We have not received reports of health problems stemming from the foreign object," he told reporters. "But we are asking people to consult their physicians if they experience any abnormality."

Japanese media said the three batches were all produced in Spain at the same time.

# Mandaviya launches first commercial batch of Covaxin made in Ankleshwar



August 29, 2021

Union Minister for Health and Family Welfare and Chemical and Fertilizer Shri. Mansukh Mandaviya today released the first commercial batch of COVAXIN from Chiron Behring Vaccines facility of Bharat Biotech in Ankleshwar, Gujarat. Shri C R Patil, MP, Navsari, Shri Ishwar-sinh Patel, MLA, Ankleshwar, Shri. Dushyant Patel, MLA and Dr. Krishna Ella, Chairman & Managing Director, Bharat Biotech were also present at the event.

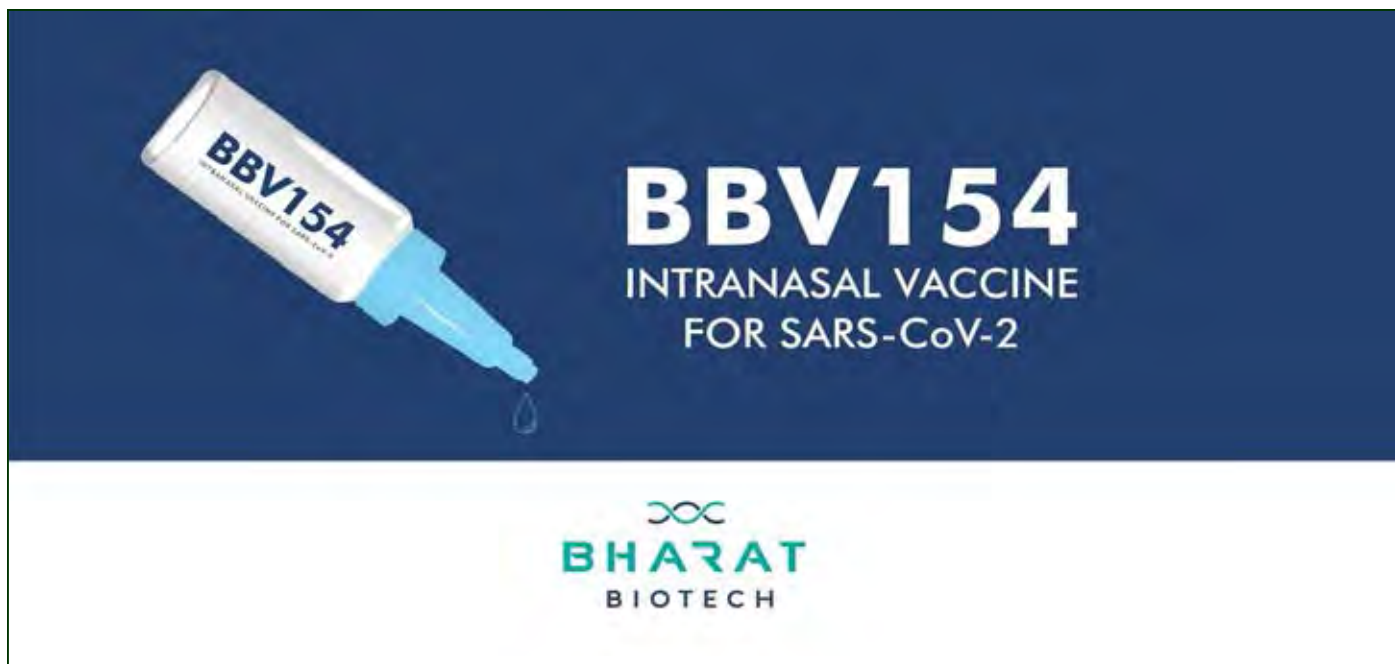
Speaking at the inauguration, Shri. Mansukh Mandaviya said that due to the Hon'ble Prime Minister's vision, India was able to develop its first indigenous vaccine. He remarked that India is running one of the largest Vaccination programs in the world and it was made possible due to the development of these indigenous vaccines.

The National Covid-19 Vaccination Programme has been successfully going on across all states and Union Territories since 16th January, 2021, he added

Dedicating the release of the first batch of COVAXIN from Ankleshwar facilities to the Nation, the Union Health Minister said that it is a landmark moment in the journey of India's fight against COVID-19. The increase in the production capacity of COVID-19 Vaccines would give further impetus to the pace of Vaccination in India. He added that it is a matter of great pride for us that the research and production of vaccines of two companies Bharat Biotech and Zydus Cadila took place in India. He also informed that the Ankleshwar plant has a manufacturing capacity of more than 1 crore doses per month starting today.

**we are now marching towards the goal of annualized capacity of ~ 1.0 billion doses, Dr Krishna Ella, CMD, Bharat Biotech, said**

# Bharat's Intranasal Vaccine Speeds into Phase II on Heels of Strong Data



**Bharat Biotech's intranasal COVID-19 vaccine candidate is expected to enter the Phase II portion of a Phase II/III study within the next few weeks. This marks the second vaccine against the novel coronavirus developed by the India-based company.**

Sep 10, 2021

It's a significant milestone for intranasal formulations. The nod from India's Health Authority makes Bharat's BBV154 candidate the first intranasal vaccine in development for COVID-19 in the country.

Phase I data from the intranasal formulation, is promising. Not only was the vaccine candidate well-tolerated, but the medication also blocks viral entry into the body. Full details of the study will be presented at a later date.

The company has suggested that an intranasal formulation of the vaccine provides a broad immune response at the site of infection, the mucus membranes of the nasal passages.

There is a school of thought that this type of administration will provide a stronger immune response than intramuscular injections currently used in multiple vaccines, including Bharat's Covaxin, a whole virion inactivated COVID-19 vaccine, which has already been authorized in India. This is essential for blocking infection within an individual and the ability to transmit the virus.

The intranasal approach Bharat is taking with its second COVID-19 vaccine candidate is also one unsuccessfully attempted by Maryland-based Altimimmune. In June, the company announced its intranasal vaccine candidate, dubbed AdCOVID, fell short in a Phase I study.



# Elizabeth Holmes' Theranos trial back in session after COVID scare



September 18, 2021

Erika Cheung, a former Theranos lab worker turned whistleblower, detailed how the company manipulated data in order to pass quality control in her testimony in the fraud trial of Holmes. She testified that Theranos employees would delete up to two of six data points in a test to achieve the desired result, CNN reported.

To investors, Elizabeth Holmes promoted a blood-testing device that could accurately diagnose a myriad of conditions with a single drop of blood. These boasts helped her raise hundreds of millions of dollars for her company, but the boasts were empty, and they made some employees of the now-defunct company uncomfortable.

During Cheung's testimony, the government presented charts that included data from 2014 showing approximately 25% of tests conducted on the Theranos technology failed quality control. That fail rate

was drastically different compared to devices that had already been approved by the U.S. Food and Drug Administration, which were far more accurate. The former employee testified that those approved devices rarely failed.

**Elizabeth Holmes, the founder and CEO of disgraced blood testing company Theranos, is being tried for 12 charges of wire fraud and conspiracy to commit wire fraud. The trial is expected to last through December.**

Although her testimony appears damaging to Theranos, the Holmes defense team highlighted Cheung's limited experience with testing due to that having been her first industry job. The legal team presented its own charts that indicated the company disclosed when data was removed from sets to demonstrate accountability.

Additionally, Holmes' legal team noted that the data was never approved by the former CEO, but by lab administrators. Part of the Holmes defense strategy is to demonstrate that it was the lab director and not the chief executive officer of Theranos who decided the accuracy and reliability of tests.

# JNU Prof Files Defamation Suit Against Journalists, Seeks Rs 50 Lakh in Damages



This article was originally written on on-line platform the wire and appeared on September 18, 2021.

On August 4, 2021, Mohana Basu of The Print reported that almost a dozen papers coauthored by a scientist at the Jawaharlal Nehru University, New Delhi, who was also an assembly poll candidate for the Bharatiya Janata Party in the West Bengal assembly polls earlier this year, had been flagged for potential manipulation.

Eleven papers coauthored by Gobardhan Das, a professor of molecular medicine, have been flagged on the independent peer-review platform PubPeer over the last two months. Basu had written in her report: “Das ... is the corresponding or main author of eight of these papers and a co-author for the rest. Ved Prakash Dwivedi, a researcher at the Delhi-based International Centre for Genetic Engineering and Biotechnology, is a co-author of five of the 11 papers. Anand Ranganathan, a professor at the same JNU centre” – the Special Centre for Molecular Medi-

cine – is a co-author of three of the 11 papers, among others.”

Basu reported for The Print that Das believed that he was being targeted on PubPeer for his political affiliation, and quoted Dwivedi saying that the issues raised on the platform were being dealt with there itself. But since Basu’s article was published, she has been named in a lawsuit by Das alleging (civil) defamation, along with The Print’s editor Shekhar Gupta, independent journalists Priyanka Pulla and Saba Naqvi, and the Twitter company.

Both Pulla and Naqvi have been named because they published tweets about Basu’s report and the reviewers’ comments published in PubPeer.

The civil suit, a copy of which The Wire Science has seen, has been filed at the Patiala house court, New Delhi, and is dated August 31, 2021. It says that Das believes he “is at the receiving end of a conspiracy to discredit him and his work at the behest of certain envious co-professionals”.

**The affidavit names Gobardhan Das as the plaintiff and Shekhar Gupta, Mohana Basu, Priyanka Pulla, Saba Naqvi and Twitter, Inc. as defendants.**

Through the suit, Das is seeking Rs 50 lakh as “damages for the loss of reputation” and a permanent injunction against Shekhar Gupta, Mohana Basu, Priyanka Pulla and Saba Naqvi “to cease the publication of articles, tweets, etc. that

are palpably defamatory” against Das.

With the lawsuit, Gobardhan Das is now in the company of many other scientists, and in fact authors of research reports in general, around the world who have clashed with journalists over questions about the former’s work and integrity.

# Poonawalla of Serum Institute among World's Top Life Sciences Billionaires

Sep 03, 2021



The business magazine recently released its 35th annual list of billionaires, which featured a record-breaking 2,755 names. The life sciences industry was well-represented, with a handful of names featured in the top 100. Here's a look at the top 10 billionaires including Cyrus Poonawalla from India.

1. Jiang Rensheng and family: Jiang Rensheng came in at No. 69 on the Forbes list with a net worth of \$24.4 billion. Rensheng serves as chairman of Chongqing ZFSW Biological Products.

2. Li Xiting: Although Li Xiting sits in spot No. 82 on Forbes' list of the world's richest people, he holds the title of Singapore's richest person with a whopping net worth of \$21.5 billion. Xiting is founder and chairman of medical device supplier Shenzhen Mindray Bio-Medical Electronics.

3. Zhong Huijuan: Zhong Huijuan is the richest woman

in the life sciences industry, landing in spot No. 89 on the Forbes list with a net worth of \$19.7 billion. Huijuan chairs Chinese drug-maker Hansoh Pharmaceutical.

4. Xu Hang: With a net worth of \$19.5 billion, Xu Hang wound up in spot No. 92. Hang is co-founder and serves as non-executive director of medical device company Mindray Medical International.

5. Sun Piaoyang: Sun Piaoyang was the last life sciences billionaire to sneak into the top 100 on Forbes' list, landing a few spots below his wife, Zhong Huijuan. Piaoyang ended up in spot No. 96 with a net worth of \$18.9 billion. He became head of formerly state-led Jiangsu Hengrui Medicine in 1990.

6. Seo Jung-jin: Seo Jung-jin's net worth of \$14.2 billion put him in spot No. 145 on Forbes' list of the world's wealthiest people. Jung-jin cofounded biopharmaceutical company Celltrion.

7. Cyrus Poonawalla: Cyrus Poonawalla founded Serum Institute of India, the world's largest vaccine maker. This accomplishment helped land him in spot No. 169 of the Forbes list with a net worth of \$12.7 billion. The company produces over 1.5 billion vaccine doses each year.

8. Cen Junda: He technically fits in list because of his investments. Junda sits in spot No. 189 on the Forbes list with a net worth of \$11.6 billion. A large part of his fortune stems from his shareholding in Hansoh Pharmaceutical Group.

9 and 10. Twin brothers round out the top 10 life sciences billionaires of the year. Andreas and Thomas Struengmann tied in spot No. 200 on Forbes' list. The brothers sold generic drugmaker Hexal to Novartis in 2005 for roughly \$7 billion.



Celebrating the 75<sup>th</sup> Year of Indian Independence



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# Indian Independence Movement & the Role of Science

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विज्ञान प्रसार  
VIGYAN PRASAR

# Biotech News

## Aamir Malik

*Executive Vice President, Chief  
Business Innovation Officer*



### **Pfizer Brings in Fresh Face for Chief Business Innovation Officer Spot**

September 01, 2021

Pfizer Chief Executive Officer Albert Bourla tapped Aamir Malik to serve as the company's chief business innovation officer. Malik will succeed John Young, who is retiring after 34 years at the company.

Malik begins his new role on Aug. 30. He will be responsible for overseeing Pfizer's strategy, business development, portfolio management, pipeline prioritization, and formation of new business ventures. Additionally, he will be responsible for advancement of "innovative access partnerships" with payers and governments around the world. The retiring Young is expected to work with Malik in order to ensure a smooth transition.

Malik most recently served as managing partner at McKinsey & Company. There, he was responsible for the company's U.S. operations. Prior to that role, Ma-

lik helmed the company's Global Pharmaceuticals & Medical Products practice.

Bourla lauded Malik. He said the incoming CBIO will play an important role on the executive committee as Pfizer enters a new era of innovation, which includes the "pursuit of both cutting-edge science and opportunities."

Bourla said Malik has 25 years of experience developing advanced growth strategies. He also has experiencing guiding mergers and acquisitions, as well as initiating high-impact programs that are designed to not only improve the lives of patients, but also the performance of life sciences companies.

"Let me take this opportunity to thank John for his incredible career at Pfizer and for his exemplary leadership, dedication, and passion for helping patients and advancing our purpose, which has had a huge impact on our business. We wish him all the best in his retirement," Bourla said in a statement.



## Sanofi \$1.9 Billion Kadmon Acquisition

September 08, 2021



The executive transition comes at a time when Pfizer is riding high following the full approval of its COVID-19 vaccine from the U.S. Food and Drug Administration (FDA) and its \$2.26 billion acquisition of Trillium Therapeutics.

Pfizer snapped up the Toronto-based company for its checkpoint inhibitor candidates, TTI-622 and TTI-621, which block the signal-regulatory protein alpha (SIRP alpha)-CD47 axis. Both drug candidates are expected to serve as checkpoint inhibitors in hematological cancers.

Earlier this year, Pfizer also acquired San Diego-based Amplyx Pharmaceuticals to gain that company's lead antifungal compound Fosmanogepix (APX001). Amplyx has been assessing Fosmanogepix as a front-line treatment against invasive fungal infections, including the deadly candida auris. Pfizer snapped up Amplyx in order to boost its response capabilities to other infectious diseases.

Sanofi is intent on investing more into its transplant operations through a \$1.9 billion merger deal with Kadmon Holdings, another biopharma company that develops therapies for diseases with large unmet medical needs.

The acquisition expands Sanofi's General Medicines core assets and highlights the addition of Rezurock (belumosudil) to its transplant portfolio. In July, the U.S. Food and Drug Administration approved Rezurock as a treatment for chronic graft-versus-host disease (cGVHD) for adults and pediatric patients aged 12 years and older who have had at least two lines of systemic therapy but failed on both occasions.

Chronic graft-versus-host disease is an illness that develops in about 50 percent of patients who have been transplanted with stem cells from a mismatched related donor or a matched unrelated donor. It is different from acute GVHD and is not a complication for patients transplanted with their own stem cells. Patients diagnosed with this cGVHD are commonly placed on long-term immunosuppressive medicines and treatment could take months to years.

In a statement, Sanofi said it will work closely with regulatory authorities to ensure that those who are suffering from cGVHD will have access to Rezurock as early as possible to increase their chances for suc-



cess. Kadmon is also developing the drug for the treatment of diffused cutaneous systemic sclerosis and is currently overseeing an ongoing Phase II clinical trial on the product.

“We are thrilled to add Kadmon’s Rezurock to our well-established transplant portfolio. Our existing scale, expertise, and relationships in transplant create an ideal platform to achieve the full potential of Rezurock, which will address the significant unmet medical needs of patients with chronic graft-versus-host disease around the world,” said Olivier Charmeil, executive vice president of General Medicines at Sanofi.

Most cGVHD treatments act as immunosuppressants, but Rezurock is not limited to being just that. It is designed to rebalance the immune system by blocking the ROCK2 pathway in a way that could reduce symptoms of fibrosis and inflammation. However, its drug literature says that it has the potential to be hepatotoxic. Patients taking Rezurock are, thus, advised to have their livers checked monthly throughout the course of the treatment. The drug also might affect fertility in both men and women.

The acquisition of Kadmon values the company at around \$1.9 billion, with shareholders expecting to receive \$9.50 per share in cash upon completion of the deal, which is still pending due process, shareholder approvals, and regulatory approvals.

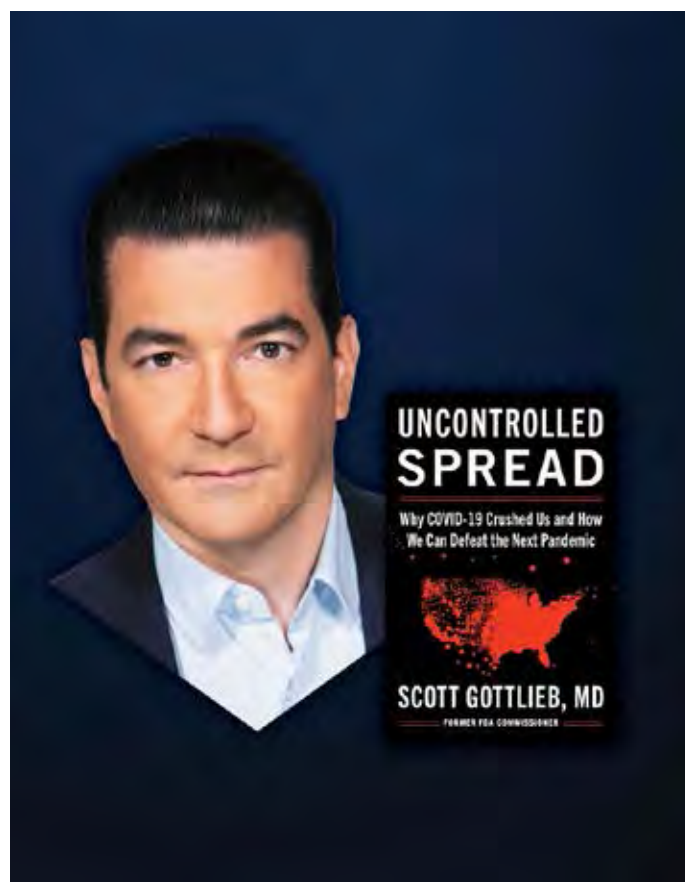
“We are excited that Sanofi has acknowledged the value of Rezurock and the deep potential of our pipeline. By leveraging Sanofi’s global resources and long-standing expertise in developing and commercializing innovative medicines, Rezurock is now well positioned for global accessibility, faster,” commented Harlan Waksal, M.D., president and chief executive officer of Kadmon.

The addition of Rezurock to Sanofi’s assets strengthens its transplant portfolio, specifically its General Medicines core asset arm, which is currently known for two products: Thymoglobulin (anti-thymocyte globulin), a broad immunosuppressive and immunomodulating agent, and Mozobil (plerixafor), a hematopoietic stem cell mobilizer.

Thymoglobulin is a T-cell-depleting agent taken as prophylaxis for acute organ rejection, while Mozobil is typically used as part of treatment for multiple myeloma and Non-Hodgkin’s lymphoma. Both are registered for the mentioned indications in over 65 countries.

## CDC was never prepared for a crisis like COVID-19, Gottlieb says

September 18, 2021



Former FDA Commissioner Scott Gottlieb said in a recent interview with CBS News that the CDC was never prepared to handle a crisis on the scale of COVID-19, and that the U.S. government suffered from “a failure of vision” since the start of the pan-

demic. The agency thought to be the gold standard for public health is better equipped for data analysis than decisive action, he said.

“I think it’s very difficult for an agency to have this self-awareness that they don’t have the capacity to respond the way they’re being asked,” Gottlieb said in an interview with Margaret Brennan, moderator of “Face The Nation” and CBS News’ chief foreign affairs correspondent. “And I think it’s very difficult for an agency to self-organize differently in a setting of a crisis.”

Gottlieb, who led the FDA from 2017 to 2019, is the author of the new book, “Uncontrolled Spread: Why COVID-19 Crushed Us and How We Can Defeat the Next Pandemic,” which comes out September 21. The book includes criticism of the CDC, and Gottlieb says the agency couldn’t meet the moment when a crisis came.

“They’re not a logistical organization. CDC has a very retrospective mindset,” Gottlieb said. “It’s a high-science organization that does deep analytical analysis of data that’s oftentimes out of sync to when the decisions need to get made.”

The CDC faced consistent criticism through the first year of the pandemic for its mixed messaging on guidance for masking and testing. Gottlieb knocked the agency for failing to quickly develop tests, look for asymptomatic spread and use the correct models to project where the pandemic would go. He also said there was a lack of data to back up public health decisions, leading to further mistakes.

His criticisms echo similar comments from former White House COVID task force members, including Dr. Deborah Birx and former Deputy National Security Adviser Matt Pottinger.

Under the Biden administration, the CDC has continued to fall short on communication of its policies. New guidance in May that Americans no longer needed to wear masks in many situations set off national confusion, and it came soon before the Delta variant led to many mitigation efforts coming back.

Gottlieb acknowledged that no agency alone would have had the operational capability to respond to a crisis as severe as COVID-19.

“We needed an all-of-the-above approach,” he said. “We need to get the public health labs stood up. We needed to simultaneously get the clinical labs stood up, labs inside hospitals. And we needed to get private manufacturers developing test kits that can go in every commercial lab around the country.”

“That needed to happen in January [2020],” he added. “Now, CDC should have raised their hand and said, ‘We really don’t have this.’”

Gottlieb, who serves on Pfizer’s board of directors, cited the Operation Warp Speed partnership that developed the COVID vaccines as an example of successful collaboration. That effort brought together teams of scientists and regulators in both government and private industry, and the Defense Department helped scale up manufacturing and distribution.

It’s the kind of cooperation that was needed much earlier, he said. “We needed to do that at day one. We need to get FEMA and the DOD engaged with the CDC in trying to organize a national level response, and that was a failure of political leadership,” Gottlieb said. “There were a lot of people who were good political leaders who wrongly assumed the CDC had this mission,” he added.

## Having SARS-CoV-2 once confers much greater immunity than a vaccine, Israel study

August 30, 2021

Israelis who had an infection were more protected against the Delta coronavirus variant than those who had an already highly effective COVID-19 vaccine.



## ISRAEL GOES MASKS FREE

### GLIMPSES OF CELEBRATION AMID PANDEMIC



The study demonstrates the power of the human immune system, but infectious disease experts emphasized that this vaccine and others for COVID-19 nonetheless remain highly protective against severe disease and death. And they caution that intentional infection among unvaccinated people would be extremely risky. “What we don’t want people to say is: ‘All right, I should go out and get infected, I should have an infection party,’” says Michel Nussenzweig, an immunologist at Rockefeller University who researches the immune response to SARS-CoV-2 and was not involved in the study. “Because somebody could die.”

The researchers also found that people who had SARS-CoV-2 previously and received one dose of the Pfizer-BioNTech messenger RNA (mRNA) vaccine were more highly protected against reinfection than those who once had the virus and were still unvaccinated. The new work could inform discussion of whether previously infected people need to receive both doses of the Pfizer-BioNTech vaccine or the similar mRNA vaccine from Moderna. Vaccine mandates don’t necessarily exempt those who had a SARS-CoV-2 infection already and the current U.S. recommendation

is that they be fully vaccinated, which means two mRNA doses or one of the Johnson & Johnson adenovirus-based vaccine. Yet one mRNA dose might be enough, some scientists argue. And other countries including Germany, France, Italy, and Israel administer just one vaccine dose to previously infected people.

The study, conducted in one of the most highly COVID-19-vaccinated countries in the world, examined medical records of tens of thousands of Israelis, charting their infections, symptoms, and hospitalizations between 1 June and 14 August, when the Delta variant predominated in Israel. It’s the largest real-world observational study so far to compare natural and vaccine-induced immunity to SARS-CoV-2, according to its leaders.

The new analysis relies on the database of Maccabi Healthcare Services, which enrolls about 2.5 million Israelis. The study, led by Tal Patalon and Sivan Gazit at KSM, the system’s research and innovation arm, found in two analyses that never-infected people who were vaccinated in January and February were, in June, July, and the first half of August, six to 13 times



more likely to get infected than unvaccinated people who were previously infected with the coronavirus. In one analysis, comparing more than 32,000 people in the health system, the risk of developing symptomatic COVID-19 was 27 times higher among the vaccinated, and the risk of hospitalization eight times higher.

“The differences are huge,” says Thålin, although she cautions that the numbers for infections and other events analyzed for the comparisons were “small.” For instance, the higher hospitalization rate in the 32,000-person analysis was based on just eight hospitalizations in a vaccinated group and one in a previously infected group. And the 13-fold increased risk of infection in the same analysis was based on just 238 infections in the vaccinated population, less than 1.5% of the more than 16,000 people, versus 19 reinfections among a similar number of people who once had SARS-CoV-2.

No one in the study who got a new SARS-CoV-2 infection died—which prevented a comparison of death rates but is a clear sign that vaccines still offer a formidable shield against serious disease, even if not as good as natural immunity. Moreover, natural immunity is far from perfect. Although reinfections with SARS-CoV-2 are rare, and often asymptomatic or mild, they can be severe.

## University of Louisville study finds mask mandates did not slow spread of COVID-19

This study by researchers at the University of Louisville finds that state mask mandates did not help slow COVID-19 transmission.

The analysis compares COVID-19 case growth rates in 33 states that imposed statewide mask mandates on or before August 2, 2020, with states that imposed mask mandates after this date, and with states that

didn't have mask mandates at all.

The researchers found that case growth was not significantly different between mandate and non-mandate states at low or high transmission rates. In addition, differences between minimum and maximum case growth were similar among early, late, and no mandate states, and surges from minimum to maximum growth occurred at similar rates.

The data suggest that mask use is a poor predictor of COVID-19 growth at the state level, the researchers conclude. The findings do not support the hypothesis that COVID-19 transmission rates decrease with greater public mask use.



The researchers calculated total COVID-19 case growth and mask use for the continental United States with data from the Centers for Disease Control and Prevention and Institute for Health Metrics and Evaluation. The researchers estimated post-mask mandate case growth in non-mandate states using median issuance dates of neighboring states with mandates.

According to them, earlier mask mandates were not associated with lower total cases or lower maximum growth rates. Earlier mandates were weakly associated with lower minimum COVID-19 growth rates. Mask use predicted lower minimum but not lower max-

imum growth rates. Growth rates and total growth were comparable between US states in the first and last mask use quintiles during the Fall-Winter wave. These observations persisted for both natural logarithmic and fold growth models and when adjusting for differences in US state population density.

In conclusion, the researchers did not observe association between mask mandates or use and reduced COVID-19 spread in US states.

## French scientist Didier Raoult who pushed unproven Covid drug may be forced from post

August 30, 2021



The French scientist who promoted the discredited

hydroxychloroquine treatment for Covid-19 backed by Donald Trump faces being pushed out of the infectious diseases institute he founded, amid concerns from key members over its role in feeding conspiracy theories and an investigation by regulators into its clinical studies.

Didier Raoult has built a worldwide following throughout the pandemic for his support of the malaria drug despite its failure in randomised control trials. Multiple studies, including by the Recovery trial and the World Health Organisation, have found hydroxychloroquine to be ineffective in treating Covid-19.

University professors must retire at the age of 68 in France. Raoult turned 69 in March, and so from 31 August will no longer be eligible to continue his post as a researcher and medical practitioner at the University of Aix-Marseille and Marseille University Hospitals.

## Mechanism underlying most common cause of epileptic seizures revealed

August 26, 2021

An interdisciplinary team studying neurogenetics, neural networks, and neurophysiology at KAIST has revealed how dysfunctions in even a small percentage of cells can cause disorder across the entire brain.

The work builds on a previous finding, also by a KAIST scientists, who found that focal cortical dysplasia was caused by mutations in the cells involved in mTOR, a pathway that regulates signaling between neurons in the brain.

“Only 1 to 2% of neurons carrying mutations in the mTOR signaling pathway that regulates cell signaling



plasia, the researchers injected adenosine to replace the levels lowered by the protein. It worked and the neurons became less excitable. “We demonstrated that augmentation of adenosine signaling could attenuate the excitability of non-mutated neurons,” said Professor Se-Bum Paik from the Department of Bio and Brain Engineering.

The effect on the non-mutated neurons was the surprising part, according to Paik. “The seizure-triggering hyperexcitability originated not in the mutation-carrying neurons, but instead in the nearby non-mutated neurons,” he said. The mutated neurons excreted more adenosine kinase, reducing the adenosine levels in the local environment of all the cells. With less adenosine, the non-mutated neurons became hyperexcitable, leading to seizures.

“While we need further investigate into the relationship between the concentration of adenosine and the increased excitation of nearby neurons, our results support the medical use of drugs to activate adenosine signaling as a possible treatment pathway for focal cortical dysplasia,” Professor Lee said.

Journal Reference:

Non-Cell Autonomous Epileptogenesis in Focal Cortical Dysplasia. *Annals of Neurology*, 2021; 90 (2): 285  
DOI: 10.1002/ana.26149

## A novel gene involved in male infertility: ZFP541 identified

August 24, 2021

A new gene that controls the completion of meiosis in spermatogenesis has been discovered. Until now, details of the mechanism that inactivates the expression of genes involved in the meiotic program during spermatogenesis had not been clarified. The researchers believe that this may lead to an advancement in reproductive medicine, like identifying causes for in-

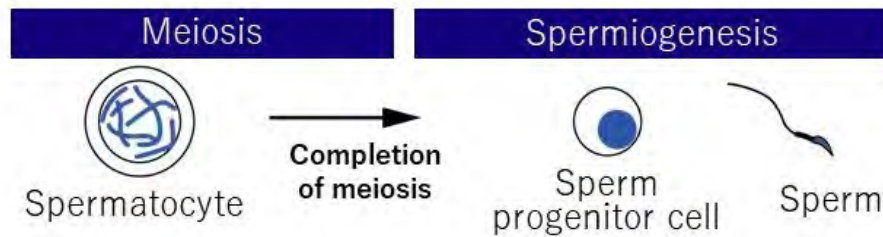
in the brain have been found to include seizures in animal models of focal cortical dysplasia,” said Professor Jong-Woo Sohn from the Department of Biological Sciences. “The main challenge of this study was to explain how nearby non-mutated neurons are hyperexcitable.”

Initially, the researchers hypothesized that the mutated cells affected the number of excitatory and inhibitory synapses in all neurons, mutated or not. These neural gates can trigger or halt activity, respectively, in other neurons. Seizures are a result of extreme activity, called hyperexcitability. If the mutated cells upend the balance and result in more excitatory cells, the researchers thought, it made sense that the cells would be more susceptible to hyperexcitability and, as a result, seizures.

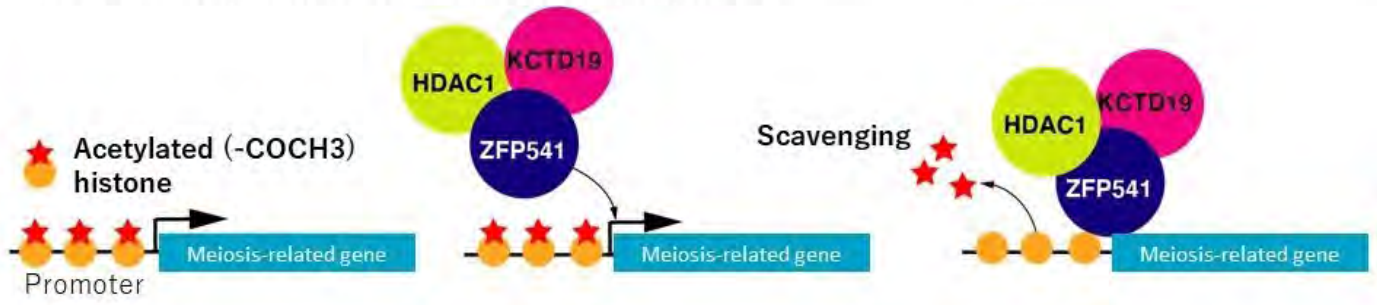
“Contrary to our expectations, the synaptic input balance was not changed in either the mutated or non-mutated neurons,” said Professor Jeong Ho Lee from the Graduate School of Medical Science and Engineering. “We turned our attention to a protein overproduced by mutated neurons.”

The protein is adenosine kinase, which lowers the concentration of adenosine. This naturally occurring compound is an anticonvulsant and works to relax vessels. In mice engineered to have focal cortical dys-





## Completion process of the meiotic prophase



fertility from azoospermia or spermatogenic defects. Professor Ishiguro's group at Kumamoto University's Institute of Molecular Embryology and Genetics (IMEG) previously discovered MEIOSIN, a gene that switches on meiosis and causes hundreds of genes involved in sperm and egg formation to activate simultaneously. Among them, many genes have functions that are still not fully understood. In their work to ascertain these functions, the researchers selected the ZFP541 gene to analyze in detail.

When the function of the ZFP541 gene in mice was eliminated using genome editing, male germ cells started meiosis but died in the process resulting in infertility since no sperm were produced. A detailed analysis of the testes of those mice revealed that the ZFP541 gene plays an essential role in the regulation of meiosis and is an important gene involved in sperm production.

Furthermore, ZFP541 is expressed in late meiotic prophase and binds to the regulatory regions (called promoters) of many meiosis-related genes. It is known that acetylated histones are present in the regulatory region of promoters as a marker for sustained activation of gene expression.

Through mass spectrometry analysis, researchers

found that ZFP541 binds to an unknown protein called KCTD19 and an enzyme called HDAC1 that has been shown by previous studies to remove acetyl groups from histones. These results show that ZFP541 and HDAC1 together eliminate the histone acetyl group, inactivate the expression of meiosis-related genes, and complete meiosis.

"This research is a follow-up to our discovery of MEIOSIN published in February of 2020 and reveals part of the function of a gene under the control of MEIOSIN whose function is still unknown," said Dr. Yuki Takada, who led the study.

"Although these results were verified in mice, ZFP541 is also known to exist in humans. There are many cases of infertility in humans where the cause is unknown, but we expect that this result will contribute to the elucidation of the pathogenesis of infertility, especially those related to sperm dysplasia."

Journal Reference:

Meiosis-specific ZFP541 repressor complex promotes developmental progression of meiotic prophase towards completion during mouse spermatogenesis. *Nature Communications*, 2021; 12 (1) DOI: 10.1038/s41467-021-23378-4

## **Breast milk of mothers who received COVID-19 vaccine contains antibodies that fight illness**

August 24, 2021



The breast milk of lactating mothers vaccinated against COVID-19 contains a significant supply of antibodies that may help protect nursing infants from the illness, according to new research from the University of Florida.

For the study, researchers recruited 21 lactating health care workers who had never contracted COVID-19. The research team sampled the mothers' breast milk and blood three times: before vaccination, after the first dose and after the second dose.

“We saw a robust antibody response in blood and breast milk after the second dose -- about a hundred-fold increase compared with levels before vaccination,” said Lauren Stafford, a doctoral student in Larkin’s lab.

“These levels are also higher than those observed after

natural infection with the virus,” said Vivian Valcarce, M.D., a resident in the UF College of Medicine’s department of pediatrics, division of neonatology. Valcarce and Stafford share primary authorship of the study’s findings.

Journal Reference:

Detection of SARS-CoV-2-Specific IgA in the Human Milk of COVID-19 Vaccinated Lactating Health Care Workers. *Breastfeeding Medicine*, 2021; DOI: 10.1089/bfm.2021.0122

## **COVID-19 nasal vaccine candidate effective at preventing disease transmission, study shows**

September 15, 2021



Navin Varadarajan, University of Houston M.D. Anderson Professor of Chemical and Biomolecular Engineering, and his colleagues, are reporting in *iScience* the development of an intranasal subunit vaccine that provides durable local immunity against inhaled

pathogens.

“Mucosal vaccination can stimulate both systemic and mucosal immunity and has the advantage of being a non-invasive procedure suitable for immunization of large populations,” said Varadarajan. “However, mucosal vaccination has been hampered by the lack of efficient delivery of the antigen and the need for appropriate adjuvants that can stimulate a robust immune response without toxicity.”

To solve those problems, Varadarajan collaborated with Xinli Liu, associate professor of pharmaceuticals at the UH College of Pharmacy, and an expert in nanoparticle delivery. Liu’s team was able to encapsulate the agonist of the stimulator of interferon genes (STING) within liposomal particles to yield the adjuvant named NanoSTING. The function of the adjuvant is to promote the body’s immune response.

“NanoSTING has a small particle size around 100 nanometers which exhibits significantly different physical and chemical properties to the conventional adjuvant,” said Liu. “We used NanoSTING as the adjuvant for intranasal vaccination and single-cell RNA-sequencing to confirm the nasal-associated lymphoid tissue as an inductive site upon vaccination. Our results show that the candidate vaccine formulation is safe, produces rapid immune responses -- within seven days -- and elicits comprehensive immunity against SARS-CoV-2,” said Varadarajan.

A fundamental limitation of intramuscular vaccines is that they are not designed to elicit mucosal immunity. As prior work with other respiratory pathogens like influenza has shown, sterilizing immunity to virus re-infection requires adaptive immune responses in the respiratory tract and the lung.

The nasal vaccine will also serve to equitably distribute vaccines worldwide, according to the researchers. It is estimated that first world countries have already secured and vaccinated multiple intramuscular doses for each citizen while billions of people in countries like India, South Africa, and Brazil with large outbreaks are currently unimmunized. These outbreaks and viral spread are known to facilitate viral evolution leading to decreased efficacy of all vaccines.

Journal Reference:

Single-dose intranasal vaccination elicits systemic and mucosal immunity against SARS-CoV-2. *iScience*, 2021; 24 (9): 103037 DOI: 10.1016/j.isci.2021.103037

## Exposure to tobacco smoke in early life is associated with accelerated biological aging, study finds

August 26, 2021



At the cellular level, ageing is a continuous process that starts early in life, and which can be measured thanks to of epigenetic clocks. Epigenetic clocks use the levels of DNA methylation in certain regions of the genome to infer biological aging of a person.

In this study, the team led by Bustamante investigated for the first time the association between the early-life exposome (83 prenatal exposures and 103 in early



childhood) and the epigenetic age of 1,173 children between 6 and 11 years of age from the Human Early Life Exposome (HELIX) project, based on six birth cohorts in six European countries, including Spain, and coordinated by ISGlobal researcher Martine Vrijheid.

After selecting the best suited epigenetic clock for the study and adjusting for multiple factors, the research team found that exposure to maternal tobacco smoke during pregnancy was associated with an acceleration in epigenetic ageing. Regarding the postnatal exposome, the analysis showed association with two exposures: parental smoking and indoors levels of black carbon, an air pollutant which results from the incomplete combustion of fuels (and is indirectly measured by particulate matter absorbance or PM<sub>2.5</sub>).

“The positive association between epigenetic age acceleration and exposure to tobacco smoke during pregnancy and early childhood go in line with previous results obtained in the adult population,” says Bustamante. The epigenetic modifications could affect pathways involved in inflammation, toxin elimination, and cell cycle, with a subsequent impact on health.

Journal Reference:

The early-life exposome and epigenetic age acceleration in children. *Environment International*, 2021; 155: 106683 DOI: 10.1016/j.envint.2021.106683

## New research finds gender differences in fear and risk perception during COVID-19

August 25, 2021

New research suggests that men and women worry about the impact of COVID-19 in far different ways. For example, men are more likely to be concerned

about financial consequences from COVID-19 while women report greater fear and more negative expectations about health-related outcomes.

The researchers, Sheryl Ball and Alec Smith, conducted an online survey in April 2020 to measure emotions, behaviors and expectations connected to gender and the pandemic. The study was published in *Frontiers in Psychology* earlier this month.

“We found that women reported a higher fear of the health risks of COVID-19 than men. Men expressed more fear about the economic implications of the pandemic than women,” said Smith.

In the initial days of the pandemic, Ball and Smith were interested in how the COVID-19 pandemic would change people’s economic preferences -- things like how willing someone is to take a financial risk or to trust someone. Previous research shows that women are often less willing to take risks than men.

“The average person is probably less afraid of COVID-19 now than in April 2020,” said Ball. “The reason we believe this is that we originally collected data in the beginning, middle and end of April 2020, and we found that fear decreased substantially even during that month. We expect that it has continued to decrease since then.”

“The big takeaway from our research is that people have economic as well as health care concerns about the pandemic,” said Smith. “We know that preventative measures like mask wearing are effective. We think that messages that encourage people to take these preventative measures might want to emphasize not only the health consequences and benefits, but also the economic benefits.”

Journal Reference:

Gender Differences in Fear and Risk Perception During the COVID-19 Pandemic. *Frontiers in Psychology*, 2021; 12 DOI: 10.3389/fpsyg.2021.689467

# Bio Controversies

## Two sites that claim to sell authorships on scientific papers

August 29, 2021

Two years ago, we reported on a website based in Russia that claimed to have brokered authorships for more than 10,000 researchers. (Apparently, neither our coverage nor a cease-and-desist letter from Clarivate Analytics had any effect on the site's operations.)

And now, we bring you news of what look like two very similar sites — one out of Iran, and one out of Latvia.

The site in Iran, Teziran.org, claims to offer a variety of services, from help with immigration issues to

scientific training. What caught our eye in particular was a section of the site (pictured above) that lists a number of “articles ready for acceptance” — at least by Google Translate:

ISI Collaborative Article Printing or ISI Collaborative Paper Printing is one way to help researchers who are having difficulty doing their research; Also, researchers who do not have sufficient expertise to write an article and, for example, are not fluent in English or specialized editing; Or people who do not have the facilities (space, tools,



**Several of the articles had already been published. When we tried to verify that authorship of the listed papers were ever in fact for sale, however, we found what appears to be a very different story.**

workshop, etc.) to do the research they want completely and sufficiently; Or those who do not have the necessary knowledge to collect data and do not know the research method completely, and many other researchers with various issues. This group of people can use the ISI collaborative article printing method and contribute to the writing of the article as possible.

Several of the articles had already been published. When we tried to verify that authorship of the listed papers were ever in fact for sale, however, we found what appears to be a very different story.

The corresponding authors of two of the papers denied ever having offered to sell authorships on the site. Both said our requests for comment were the first they'd heard of Teziran.org. We're keeping them anonymous, since they don't appear to have done anything wrong, but here's a sampling of their comments:

I do not know why my paper is listed there. I never bought this paper from anyone or sold this paper to anyone! I am very angry about this.

I have just called Teziran.org and pretended that I need the papers and asked them about some in-

formation about the papers. Even they did not know that what the contents of the papers were about.

The site blamed the listing on a different author, who, it turns out, had asked at one point to be removed from the manuscript because two other authors had added collaborators he could not vouch for. The author said, however:

I do not know why the paper was put on tezblog.org, it is pathetic if anyone did that.

The corresponding author of another paper listed on the site told us: [W]e have never had any contact and relation with Teziran.org and it was an unknown illegal source for us. In the next few days, we want to complete a complaint and go to court.

After one member of one of those authorship teams contacted Teziran.org, the entire list of papers disappeared. Teziran.org has not responded to our requests for comment.

Over in Latvia, Science Publisher Company also claims to offer authorships for sale:

As one of the largest providers of scientific publications, SIA Sci-

ence Publisher offers its services to publish ready-made articles on a wide variety of topics. You can buy an author's position or an entire article. Initially, our finished articles are designed for a team of six authors. By purchasing an entire article, you can increase the number of contributors for that article. Co-authors can also make their suggestions and corrections to the text of the article.

The company lists dozens of articles whose authorships they say are up for grabs, with fees starting at \$650 USD. Science Publisher Company did not respond to our requests for comment, either.

## WHO Covid database has many 'dodgy journals', 70 papers are by Indians

August 30, 2021

Hundreds of research papers, including at least 70 from India, which have been published in predatory or dodgy journals have ended up in the World Health Organization's global repository of Covid science publications. The WHO is now investigating these papers.



The agency maintains a list of 'Global literature on coronavirus disease', which features over three million papers from across the world.

In the beginning of this month, an independent researcher spotted that dozens of research papers in this list were published in three 'hijacked journals' or publications that appear to 'impersonate' a legitimate journal.

According to Anna Abalkina, a research fellow at Freie Universität Berlin, as many as 383 papers from three hijacked journals were included in the database.

"Ten appeared in the hijacked version of *Linguistica Antverpiensia*, 169 in the fraudulent edition of the *Turkish Journal of Computer and Mathematics Education (TURCOMAT)*, and 204 were published in the compromised version of the *Annals of the Romanian Society for Cell Biology*," Abalkina wrote in the *Retraction Watch* article.

*Retraction Watch* is a blog that tracks news on scientific journals, focussing on retractions, research related misconduct and other news related to academia that may affect the integrity of science research.

Hijacked journals may impersonate publications by taking over the domain name of a journal that has been discontinued or by creating a

similar-looking domain name.

In some cases, such as *TURCOMAT*, the original journal is only available in the print version. The hijacked version, however, publishes papers online for a fee.

Usually, such papers are published without a peer review or editing.

ThePrint looked through the repository and found at least 70 papers that originated from India.

**According to Anna Abalkina, a research fellow at Freie Universität Berlin, as many as 383 papers from three hijacked journals were included in the database. Retraction Watch is a blog that tracks news on scientific journals, focussing on retractions, research related misconduct and other news related to academia that may affect the integrity of science research.**

Several of the papers do not contain the contact details of the authors, while others do not have the name of the university. It is possible that several of the researchers were duped into getting their papers published in the predatory journals.

Among the papers featured in the 'hijacked journals' was one by Dr J. Yogapriya, Dean of Research and Development at the Kongunadu College of Engineering and Technology in Tamil Nadu.

When ThePrint contacted her, she was unaware that she had published her article in a hijacked journal. "It was a simple paper that I wrote, and my friend helped me publish in a rush. The university requires us to publish in Scopus-indexed journals, and the *TURCOMAT* was one such journal," she said.

The Scopus index is one of the world's top databases for peer-reviewed and legitimate journals.

"It is used as a marker of quality by academia. It means that the minimum criteria of the journal is met, but it is not a guarantee of the quality of the journal," said Soumyadeep Bhaumik, co-Head of the Meta-research and Evidence Synthesis Unit at George Institute for Global Health in New Delhi, who serves on the editorial board of multiple global health journals.

The UGC-CARE List — a list of journals approved by the University Grants Commission in India — does mention journals indexed by Scopus.

# BRSI Upcoming Event



## 18<sup>th</sup> BRSI Convention

The 18<sup>th</sup> Convention of the Society will be held as the International Conference on Biotechnology for Resource Efficiency, Energy, Environment, Chemicals and Health (BRE3CH-2021) during December 1-4, 2021 at Dehradun.

The event will be jointly organized by the CSIR-Indian Institute of Petroleum, Dehradun, Uttarakhand, India in association with the International Bioprocessing Association, France; the Centre for Energy and Environmental Sustainability (CEES)-India; CDC Jaipur and International Solid Waste Association (India chapter).

The event will be held at IIP, Dehradun. Prof Sudhir Sopory, President of the BRSI is the conference chair and Prof Huu Hao Ngo, University of Technology Sydney, Australia; Prof Claude Gilles Dussap, Universite Clermont Auvergne, France and Prof Samir Khanal, University of Hawaii, USA are conference international chairs. Dr Debashish Ghosh is the convener of the conference, Dr T Bhaskar is the Chairman of the local organizing committee, and Dr P Binod, COE, BRSI, Dr Bhavya Balahurumurthy, CSIR-IIP, Dehradun and Dr Kamlesh Choure, AKS University, Satna are its co-convener.

Details can be found at <https://www.bre3ch2021.in/>

### Important Dates

01 July, 2021  
Abstract Submission Opens  
31 August, 2021  
Abstract Submission Closes  
10 September, 2021  
Acceptance Notification  
15 October, 2021  
Registration at Normal Rates  
31 October, 2021  
Registration Cancellation

Booking of Accommodation  
Registration may close earlier if  
maximum numbers of participants  
have been reached

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