

News in Focus: Supreme court not comfortable to accept apology of Baba Ramdev in spurious advertisement case

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BIOTECH EXPRESS

Guest Article: Unlocking Rice Bran's Healing Potential: Functional Food for Nutritional Security

Event Report: AI Days 2024 Wraps Up With Focus on Life Sciences and Collaboration

BioScientist: Highlights of work of Prof. Chittaranjan Kole

Editorial: Did they buy your health through electoral bonds, in COVID too?



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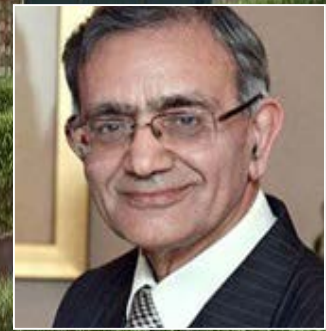
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दवा Test में Fail कंपनियों के Electoral Bond लेने का खेल

Editorial

Did they buy your health through electoral bonds, in COVID too?

BY Kamal Pratap Singh

Now “unconstitutional” electoral bonds scheme which was launched by BJP to take donations from corporate or individuals for political parties funding has gained much heat after supreme court order to SBI and EC. Twitter (now X) is now full of allega-

tions that the money was taken either as extortion or bribe to favor their corporate friends or blackmailing enemies. In this article we will see what biotech/pharma and allied companies are involved in this list. And what gains they were expecting by donating their



ELECTORAL BOND पर एक और बड़ा खुलासा!

BBC हिन्दी

दवा टेस्ट में फ़ेल वो फ़ार्मा कंपनियां,
जिन्होंने ख़रीदे करोड़ों के इलेक्टोरल बॉन्ड



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money to Electoral bonds. Before going into details let's see these two tweets in hindi first -

In the list though there are several names (more than 60 companies/individuals) but special coverage has been made on Adar Poonawalla from Serum Institute, Kiran Mazumdar Shaw from Biocon, Krishna Ella from Bharat Biotech, Piramal Enterprises, Sun Pharma Laboratories Limited, Torrent Pharmaceuticals Limited, Zydus Healthcare Limited, Yashoda Super Speciality Hospital etc. During analysis it was found that some donations were perfectly made during COVID crisis. Some companies would pay crores of rupees but they were not able to afford a website. Now Opposition leaders including Rajya Sabha MP

Kapil Sibal are seeking legalities to constitute SIT to probe the matter and including PM-CARES too in this investigation. If this is done we can imagine how the layers of corruption will be erupted.

According to our analysis, around 63 biosciences entities (Table) or individuals involved in pharma, biotech, agriculture, supply chain, diagnostics etc. business purchased electoral bond of around Rs 1500 crore revealed by data released by the Election Commission.

Now let see in detail which companies donated and how they got benefitted. But it is important to point out here that this article does not target any single political party. Funding has been given to several na-

tional and regional political parties by pharma and biotech companies.

Going forward we will also get to know about the pandemic related funding because not only Indian govt but almost all countries pushed draconian pandemic lockdown and health measures including vaccination without any concrete proof that virus is indeed harmful. And we can see that even though it was much hyped, countries like Sweden neither lockdown their people nor did they vaccinate against COVID-19. Now, people all over the world are blaming Bill gates and organizations like Blackrock for making this pandemic horrible for their personal gains. Bill Gates has been accused of funding medical research and forceful vaccination in return like he did for his computer antivirus business when he was accused of making computer viruses and selling antivirus.

During the pandemic when everyone became doctor several medicines were suggested like remedesvir, pantajali coronil, indigeneous vaccine etc. and none of us took action against these pharma companies who made significant gains by selling medicines that were not shown effective against COVID virus. For instance **Azithromycin** was touted for COVID 19 but in real antibiotics only work against bacteria, not viruses. But the non scientific news media did not showed this.

Significantly, during the pandemic the government in every country pushed for indigenous manufacturing of APIs, giving financial support to companies who manufacture it through its production-linked incentive scheme. And that is where this game was played for gains.

Though several videos and articles are circulating in media but this article has unique information about

दवा टेस्ट में फ़ेल वो फ़ार्मा कंपनियां, जिन्होंने ख़रीदे करोड़ों के इलेक्टोरल बॉन्ड



Serum Institute which did not directly paid through electoral bonds but did so using other companies. Interestingly, pandemic added a wealth of USD 10 billion in company's account which jumped from USD 13 billion to USD 23 billion in just 1 year. Serum institute made USD 13 billion in 60 years but made USD 10 billion in just 1 year because it had monopoly of COVID vaccine in pandemic in India. Cyzachem Pvt Ltd and Sez Biotech Services Pvt Ltd which share common director with Serum Institute paid Rs 3 crore through electoral bonds. Interestingly, these two companies has paid up capital of Rs. 12,503,700,000 and Rs. 1,150,951,000 but they are unable to afford a website for public information about their operations. Earlier they donated to BJP govt Rs 50 crore through other means but the date coincided with the date of

TABLE 1: List of Pharma and healthcare companies which donated to electoral parties through electoral bonds. Though there can be several dates but only first date of donation has been mentioned.

S.No.	Name of Company/ Individuals	Donated Amount	Website	Date of First Donation	Paid Up Capital	State
	Pharma					
1	Torrent Pharmaceuticals Limited	77.5 Cr	Yes	May-29	Rs. 1,692,227,200	Ahmedabad
2	Yashoda Super Speciality Hospital - Hyderabad	162 cr	Yes	Apr-22	Rs. 182,976,400	Hyderabad
3	Natco Pharma Ltd	76 cr	Yes	Oct-19	Rs. 365,114,330	Hyderabad
4	Dr.Reddy's Laboratories Ltd	69 cr	Yes	Jul-22	Rs. 832,789,625	Hyderabad
5	PIRAMAL CAPITAL + PIRAMAL ENTERPRISES + PIRAMAL PHARMA	48 Cr	Yes	Apr-22	Rs. 477,327,400	Maharashtra
6	Aurobindo Pharma Limited	55 Cr	Yes	Jul-22	Rs. 585,938,609	Hyderabad
7	Cipla Ltd	39.2 cr	Yes	Nov-22	Rs. 1,614,478,116	Maharashtra
8	Divi's Laboratories	55 Cr	Yes	Jul-13	Rs. 530,937,160	Hyderabad
9	Sun Pharma Laboratories Limited	31.5 Cr	Yes	Apr-19	Rs. 2,399,334,970	Maharashtra
10	Hetero Drugs Limited	30 Cr	Yes	Apr-22	Rs. 34,500,000	Hyderabad
11	Hetero Labs Limited	25 Cr	Yes	Jul-23	Rs. 2,770,560,000	Hyderabad
12	HETERO BIOPHARMA LIMITED	5 cr	Yes	Oct-23	Rs. 1,500,500,000	Hyderabad
13	Premchand Godha + Ipca Labs	14 Cr	Yes	Apr-19	Rs. 253,704,218	Maharashtra
14	Msn Pharmachem Pvt Ltd	26 cr	Yes	Nov-23	Rs. 45,000,000	Hyderabad
15	Mankind Pharma Limited	24 cr	Yes	Nov-22	Rs. 400,588,000	Delhi
16	Eugia Pharma Specialities Limited	15 cr		Nov-23	Rs. 6,210,086,930	Hyderabad
17	Apl Healthcare Limited subsidiary of Aurobindo Pharma Limited	10 cr	NO	Nov-23	Rs. 2,160,000,000	Hyderabad
18	Ajanta Pharma Ltd + Rajesh Mannalal Agrawal+ Smriti Agrawal	19 Cr	Yes	Oct-22	Rs. 256,250,310	Maharashtra
19	Intas Pharmaceuticals Limited	20 cr	Yes	Oct-22	Rs. 1,147,670,490	Ahmedabad
20	Zydus Healthcare Limited	29 cr	Yes	Oct-22	Rs. 216,174,200	Ahmedabad
21	Lupin Limited	18 cr	Yes	Jan-23	Rs. 910,192,314	Maharashtra
22	Bharat Biotech International Limited	10 cr	Yes	Jan-24	Rs. 150,746,140	Hyderabad
23	Micro Labs Ltd	9 cr	Yes	Nov-22	Rs. 243,604,000	Bangalore
24	Glenmark Pharmaceuticals Ltd	9.58 cr	Yes	Nov-22	Rs. 282,168,156	Maharashtra
25	Alembic Pharmaceuticals Limited	10.20 cr	Yes	Nov-22	Rs. 393,126,248	Ahmedabad
26	Alkem Laboratories Limited	10.7 cr	Yes	Nov-22	Rs. 239,130,000	Maharashtra
27	Usv Private Ltd	10 cr	Yes	Nov-22	Rs. 953,194,700	Maharashtra

TABLE 1 Continues..

28	Kiran Mazumdar Shaw (Biocon)	6 cr	Yes	Apr-23	Rs. 6,003,000,000	Bangalore
29	Chiron Behring Vaccines Pvt Ltd (Bharat Biotech)	5 cr	NO	Jan-24	Rs. 100,000,000	Maharashtra
30	Biovet Pvt Ltd (Bharat Biotech)	5 cr	NO	Jan-24	Rs. 320,867,000	Bangalore
31	India Glycols Ltd	3 cr	Yes	May-19	Rs. 309,615,000	Uttarakhand
32	Cyza Chem Private Limited	1.5 cr	NO	Oct-19	Rs. 1,150,951,000	Pune
33	Sez Biotech Services Pvt Ltd	1.5 cr	NO	Oct-19	Rs. 12,503,700,000	Pune
34	Biological E	5 cr	Yes	Jul-23	Rs. 49,500,000	Hyderabad
	Medical supplies					
1	Horizon Medical Supplies	4 cr	No	Oct-23	Not Available	
2	Lakshmi Medicals	5 cr	No	Apr-22	Not Available	Hyderabad
3	Dheeraj Medicals	17 cr	No	Apr-22	Not Available	Hyderabad
	Labs					
1	Tridentchempharlimited	5 cr	No	Jul-22	Rs. 373,166,660	Hyderabad
2	Honour Lab Ltd	20 cr	Yes	Apr-22	Rs. 50,000,000	Hyderabad
3	Hazelo Lab Private Ltd	12.5 cr	No	Jul-22	Rs. 50,000,000	Hyderabad
4	Hindys Lab Private Ltd	10 cr	No	Jul-22	Rs. 110,000,000	Hyderabad
5	Selmar Lab Private Ltd	10 cr	No	Sep -22	Rs. 45,169,050	Hyderabad
6	Dasami Lab Private Ltd	2.5 Cr	No	Oct-23	Rs. 1,100,000,000	Hyderabad
7	Dr Healthtech	80 lkhs	No	Jan-22	Incorporated on October 2021 NOW Dissolved	Rajasthan
8	Maithri Laboratories (Pvt) Ltd	2 Cr	Yes	Nov-22	Rs. 14,200,000	Hyderabad
9	Msn Laboratories Pvt Ltd	10 Cr	Yes	Nov-23	Rs. 52,000,000	Hyderabad
	Alchol/ Spirit Companies					
1	Monalisa Bottling Industries Pvt Ltd	10.65 Cr	No	Jan-21	Rs. 7,200,000	West Bengal
2	Purulia Bottling Pvt Ltd	4.26 Cr	No	Jul-21	Rs. 5,000,000	West Bengal
3	K.D. Liquor Fertilizer Private	3.5 Cr	No	Jul-21	Rs 290.05 lakhs	West Bengal
4	Ramesh Agarwal C S Bottling	7.5 Cr	No	Jul-21	Rs. 100,000	West Bengal
5	Hk And Sons Bottling Plant Private Limited	70 lkhs	No	Jul-21	Rs. 400,000	West Bengal
6	Laxmi Industrial Bottling Plan	6.4 Cr	No	Jul-21	Not Available	Bihar
7	Prakash Distillery & Chemical Co (P) Lt D	2 Cr	No	Jul-21	Rs. 3,834,000	West Bengal
8	Galaxy C.S. Bottling Plant	4.7 Cr	No	Oct-21	Not Available	West Bengal

vaccine approval. SII receive at least Rs 3000 crore from govt for ramping up production of COVID vaccine. It came to attention when names of SATISH Hanumant Deshpande and Sunder Lata Anand Kavitar were found as director in companies associated with Poonawalla group. And share directorship with Cyrus Soli Poonawalla, Zavareh Soli Poonawalla and Adar Cyrus Poonawalla.

Another maker of COVID vaccine i.e. Hyderabad-based vaccine manufacturers **Bharat Biotech(BB)** and three other firms related to it donated Rs 25 crore. Bharat biotech's COVAXIN was second vaccine that was approved for COVID 19. Interestingly BB also received at least Rs 1500 crore from ruling govt. for ramping up the production of vaccine which it used to buy companies and expanding manufacturing facilities in Bangalore. The other three companies associated with BB including RCC Nutra Fill Private Limited – which manufactures microbiology media – purchased bonds worth Rs 5 crore, Chemical products manufacturer Biovet Private Limited bought bonds for Rs 5 crore and Chiron Behring Vaccines Pvt Ltd. purchased bonds worth Rs 5 crore.

The third company **Biological E** which got approval for COVID vaccine CORBEVAX donated Rs 5 crore, also figure in the list.

The fourth COVID vaccine manufacturer which got approval was **Zydus Healthcare Limited** and interestingly it is also in the list of electoral bond donors. Zydus donated a whopping amount of Rs 29 crore for political funding. In 2021, the Bihar drug regulator had declared a batch of remdesivir medicines manufactured by the Gujarat-based company as spurious after traces of bacterial endotoxin were found in them. Several patients were reported to have suffered adverse drug reactions from the medicines. But the Gujarat drug regulator did not collect samples of these batches for further testing and nor did it initiate any action against the manufacturing unit of Zydus.

Biocon Chief **Kiran Mazumdar Shaw** paid ₹ 6 crore through electoral bonds. During analysis it was found that the date of donation coincides with the date of approval of its insulin drug without phase 3 trial. It came to attention to whole India when a senior of-

ficial of the Central Drugs Standard Control Organisation(CDSCO) and a Biocon Biologics executive were arrested in June in an alleged bribery case. The bribe was allegedly for favourably recommending the file of Insulin Aspart Injection to the Subject Expert Committee (SEC) meeting in May 18 for waiving the phase 3 clinical trial. Biocon too tried to introduce its repurposed novel biologic ALZUMAb® (Itolizumab) for COVID-19 patients. The drug was heavily criticized because its Phase 2 clinical trial was done in just 30 patients but touted as magical drug.

So we can see that almost every Indian COVID vaccine manufacturing company donated to political parties. Now let see what happened with other pharma and healthcare companies.

Yashoda Super Speciality Hospital emerged as the primary purchaser in the healthcare and pharma bond market, acquiring bonds of ₹162 crore. Interestingly, Yashoda Hospital faced scrutiny from the Income Tax Department in December 2020.

Following closely behind was **Dr Reddy's Laboratories**, purchasing 80 bonds also valued at ₹1 crore each, totaling ₹80 crores, as reported by CNBC TV18. Dr. Reddy's Laboratories also encountered tax-related actions in November 2023. Specifically, Dr. K Nagender Reddy of Dr. Reddy's Laboratories was targeted over allegations of tax evasion.

Now so popular because of arrest of Delhi CM Arvind Kejriwal, it came to attention that pharma companies play by other means also. On 10 November 2022, the Enforcement Directorate (ED) arrested P Sarath Chandra Reddy, the director of **Aurobindo Pharma**, in connection with its money laundering case into alleged irregularities in the Delhi government's liquor policy. Five days later, on 15 November, Aurobindo Pharma donated electoral bonds worth Rs 5 crore. Then, in May 2023, the Delhi High Court granted bail to Reddy on medical grounds. Aurobindo Pharma then made another set of donations—worth Rs 25 Crore—in November 2023, five months after becoming an approver in the ED case. Now Sarath Chandra Reddy is free but Delhi CM is behind the bars along with his other two ministers and probably with some other associates.

TABLE 2: List of Other Bioscience companies and companies which would have benefitted by lockdown, like online education platforms and logistic companies which were open when whole world was in lockdown.

S.No.	Name of Company	Amount Donated
	Agri Industries	
1	Asian Agri Genetics Limited	4.5 Cr
2	Swal Corporation Limited	5 Cr
3	United Phosphorus India Llp	50 cr
4	Sri Sai Bio Organics	4 Cr
5	Nimbha Biotech Private Limited + Ilabs	2 cr
	Logistics	
1	Harmesh Rahul Joshi - OM FREIGHT FORWARDERS EUROPE LIMITED	10 cr
2	Rahul Jagannath Joshi-OM FREIGHT FORWARDERS EUROPE LIMITED	10 cr
3	Infrastructure Logistics Pvt Ltd	4 Cr
4	Bird Worldwide Flight Services Indi	2 Cr
	Online Education	
1	Srichaitanya Students Facility Management Pvt Ltd	10 Cr

Hetero Labs and Hetero Healthcare bought electoral bonds for Rs 39 crore in April 2022. In the preceding 10 months, the Maharashtra Food and Drug Administration issued six notices issued to the Hyderabad-based company for substandard drugs. At least three of them pertained to Remdesivir, an antiviral drug widely used to treat COVID-19, that helped Hetero expand its business during the pandemic. **Hetero Pharma** also faced I-T action in 2021, after the department found unaccounted income to the tune of ₹550 crore during raids against the group.

Drug firm **Divi's Laboratories**, which also faced I-T search operations between February 14 and 18, 2019, under Section 132 of the Income Tax Act, to figures on the list. It bought bonds worth ₹55 crore.

Torrent Pharma bought electoral bonds worth Rs 77.5 crore between May 2019 till January 2024. The Gujarat-based company's antiplatelet medicine Deplatt-150 had failed the salicylic acid test and was declared substandard by the Maharashtra Food and Drug Administration in 2018. In October 2019, the

United States Food and Drug Administration issued a warning to the firm for repeated quality-related failures at its manufacturing unit. Such a notice attracts inspection by Indian authorities and could lead to the suspension of a company's manufacturing licence. However, the Gujarat government did not take any action against the pharmaceutical company.

Cipla received four show-cause notices for its drugs between 2018 and 2022. Since 2019, it has purchased bonds worth Rs 39.2 crore. In August 2018, its RC cough syrup failed to meet standards during an inspection. Then it purchased bonds worth Rs 14 crore the next year. In July 2021, it received notices twice for its remdesivir medicine, Cipremi. Like Hetero, Cipremi was found to have less than the required quantity of remdesivir in it. Cipla bought bonds worth Rs 25.2 crore in November 2022 and then everything was all right.

Intas Pharmaceutical bought 20 crore worth of bonds in October 2022. In 2020, the company's Enapril-5 tablet had failed the dissolution test by the

Maharashtra FDA.

Glenmark received five notices for its substandard drugs between 2022 and 2023. Four of these were issued by the Maharashtra Food and Drugs Administration, which flagged its blood pressure regulating medicine Telma as substandard, mostly failing a dissolution test. The pharmaceutical company purchased Rs 9.75 crore of electoral bonds in November 2022.

IPCA Laboratories Limited bought bonds worth Rs 13.5 crore between November 2022 and October 2023. In October 2018, its anti-parasitic medicine, Lariago, had lower than required chloroquine phosphate levels and was found substandard.

Another pharma giant, **Sun Pharma**, was reported in May 2019 as being under the scanner for alleged tax evasion of service tax. On May 8, the company purchased electoral bonds worth Rs 10 crore, after having bought Rs 21.5 crore on April 15, 2019.

Msn Pharmachem Pvt Ltd, Msn Laboratories Pvt Ltd, Msn Organics Pvt Ltd made 38 donations amount to total Rs 38 crore. The Income Tax Department conducted raids on the premises of MSN Pharma and its offices in 2021.

Mankind Pharma Limited made 30 donations, total Rs 24.6 crore. The Income Tax Department on May 11 conducted raids on the premises of Mankind Pharma over allegations of tax evasion.

This is not all in the table you can see there are other companies which made profits during pandemic like spirit companies because alcohol based sanitizers were supplied more than water in organizations, logistic companies which moved drugs and other things and online education platforms because all educational institutes were closed during the pandemic.

Conclusion

What can we understand from this bond game is that even the health of citizens is at stake which should be the top priority of any government. As we could

see COVID 19 which was called the medical emergency of century has made many companies billionaire even though the mortality rate was less than 1 % from the virus but the whole population was inoculated forcefully. Though the vaccination was voluntary but every citizen was called by higher authorities and some were grabbed and vaccinated by police officials and healthcare workers. The companies are producing substandard drug or may be doing cost cutting by putting half salt but charging higher and higher rates for profits. They are not paying taxes but can come clean by bribing government.

It is also understood that Electoral bond scam was a shock for many of the pharma companies and several questions have been raised in public domain. Not everyone did it for gains, some are victims too.

Event Report

AI Days 2024 Wraps Up With Focus on Life Sciences and Collaboration

The AI Days 2024 workshop, organized by Swecha with FABA as a knowledge partner, concluded with a focus on the vast potential of AI across various sectors, particularly life sciences. The two-day event also marked a new chapter with Swecha joining FABA as a Startup Member.

Collaboration for Societal Advancement

Swecha's inclusion in FABA signifies a collaboration between open-source philosophy, life sciences, and healthcare innovation. This partnership highlights a shared commitment to using technology for social good and building a future where AI fosters global well-being.

Highlights of AI Days 2024

The workshop explored the impact of AI on FinTech, education, and the creative industry. A key highlight was the launch of the first Telugu AI Voice Assistant, showcasing Swecha's dedication to technological inclusivity. Dr. Sirisha Velampalli's talk on "Enhancing Education with AI" explored how Machine Learning, Natural Language Processing, and Computer Vision can revolutionize learning experiences.

The Life Sciences track emerged as a cornerstone, offering a platform for experts to discuss Blockchain in healthcare and the role of AI in drug discovery, personalized medicine, and genomic data analysis.

The Life Sciences track was inaugurated by Dr. Ratnakar Palakodeti, who set the tone for the discussions. Following him, luminaries like Dr. Thangaraj, Dr. Venkataraman, and Nirnith Devireddy delved into genomics, Blockchain, and computational biology with AI.

Panel Discussion: A Convergence of Minds

The highlight of the Life Sciences track was a panel discussion titled "The Rise of Artificial Intelligence in BioPharma," moderated by Dr. Ratnakar Palakodeti. The panel featured experts who offered insights into the integration of AI in bio-pharma, covering the ethical, practical, and innovative dimensions of AI in healthcare.

FABA expressed their gratitude to all the speakers, participants, and the Swecha team for making AI Days 2024 a success. They look ahead to the combined efforts making a lasting impact in the years to come, with AI and collaboration driving societal advancement and global well-being.





BioScientist

Highlights of work of Prof. Chittaranjan Kole, an Indian scientist who did Outstanding research and Giving International Leadership towards Climate Resilient Agriculture

Climate change and global warming are adversely affecting all spheres of life on the planet, specifically agriculture, health and environment. They are directly impacting human health through air pollution, diseases, malnutrition etc.; and leading to stratospheric ozone depletion; desertification and land degradation; biodiversity loss and ecosystem degradation; altered precipitation; and melting down of mountain top glaciers, etc.

The indirect adverse effects include increase in pest and disease incidence, weed infestation, severe heat

waves and drought, storm, floods and waterlogging, freshwater decline for irrigation, UV irradiation, impaired photosynthesis and loss of labor, etc. The global temperature has risen by 0.2-0.3°C from 1980 to 2000, with a projected increase of 1.1-5.4°C by 2100. Global warming and climate change are leading to increase in greenhouse gases also. For example, carbon-di-oxide concentration in the air has increased from 280 ppm in 1970's to 414 ppm in 1991. Methane concentration is now 1800 ppb. In fact, its concentration has doubled over 1900 to 2000. Concentration of nitrous oxide is now 334 ppb whereas its concentra-



tion never exceeded 280 pp in the last 8 lakh years. All these interrelated factors severely impact agricultural productivity. Global warming and climate change are causing an estimated reduction in production by 12-15% in the major cereal crops. It adds to the need of 70% increase in food production to feed the projected population of 9.7 billion by 2050. The governments, policy makers and scientists all over the world are now seriously thinking over this serious challenge. But Prof. Chittaranjan Kole had foreseen this problem twelve years ago while working as a Visiting Professor in the Clemson University, USA. Here is the roadmap of his activities.

Prof. Kole Founded the “International Climate-Resilient Crop Genomics Consortium (ICRCGC, icrcgc.org)” in 2011 as its Principal Coordinator and acting as its President now. Since then, he has been coordinating the activities on genetics, genomics, breeding and participatory research towards adaptation to

climate change and mitigation of its impact together with global scientists, policy makers and funding agencies and recommending action plans for the future on behalf of ICRCGC.

Prof. Kole has already organized 28 workshops (Chaired 26 and Co-chaired 2) on “Climate Change and ICRCGC” during the International Conference on the Status of Plant and Animal Genome Research since 2012 to 2024. He has monitored speech of about 180 speakers from nearly 20 countries including Australia, Austria, Brazil, Canada, France, Germany, India, Italy, Japan, Jordan, Kenya, Malaysia, Mexico, Morocco, Nigeria, Philippines, South Africa, UK, and USA; some of them representing the leading CGIAR organizations (IRRI, CIMMYT, ICRISAT, IITA, ICARDA), funding agencies (BMGF, Eversole Associates, IAEA, USAID) and policy making bodies (BecA-ILRI Hub).

Prof. Kole also co-chaired the workshop on “Global Problems Require Global Solutions” with Dr. David Bergvinson of BMGF during the International Conference on the Status of Plant and Animal Genome Research in 2012 and monitored speeches of 4 speakers from USA, Philippines and China.

Prof. Kole chaired a Special International Workshop on “Genomics and Breeding of Climate Resilient Crops for Future Food Security” in the 6th International Crop Science Congress held at Bento Gonsalves, Brazil, in August 2012 and monitored speeches of 4 speakers from Australia, Italy & USA. He acted as the Theme Leader of Climate Change in the FAO Symposium on “The Role of Agricultural Biotechnologies in Sustainable Food Systems and Nutrition” and chaired the 1st Parallel Session on “Facing the Challenges of Climate Change: Adaptation of the Crop and Forestry Sectors” held at Rome during in February 2016. He monitored speeches of 6 speakers from USA, Canada, France, Italy, Kenya, and Philippines [<http://www.fao.org/webcast/home/en/item/4032/icode/>]

In these workshops the scientists from different countries deliberated on the use of genetic resources to develop plant varieties for adaptation to climate change scenarios by using different genomic resources and biotechnological strategies, techniques and tools.

Prof. Kole led a group of 40 scientist members of ICRCGC from 13 countries including Australia, Brazil, China, Columbia, India, Italy, Japan, Malaysia, Nigeria, Philippines, Sweden, UK and USA to draft the White Paper on “Application of genomics-assisted breeding for generation of climate resilient crops: Progress and prospects” (Frontiers in Plant Science 6, 563; 2015; Citation 71) as guide to scientists, policy makers and funding agencies for preparation of action plans on future research and its funding on climate change.

Prof. Kole has acted as Plenary Speaker, Key Note Speaker, Chair Person for a large number of International and National Symposia in India and abroad and created awareness on global warming and climate change and recommended means for climate change

adaptation and mitigation.

As an individual scientist Prof. Kole pioneered researches on genetics and genomics of climate resilient crops. He mapped climate-smart genes controlling white rust, winter survival, freezing tolerance, flowering time and 22 abiotic and biotic stress related heterologous cloned genes in oilseed Brassicas followed by their comparative genetics; late blight in tomato; green leafhopper in rice, and blackleg resistance in canola, etc. for developing genome plasticity

As an academician, Prof. Kole edited two books on “Genomic and Breeding for Climate-Resilient Crops” (ISBN 978-3-642-37044-1 and ISBN 978-3-642-37047-2) with 26 chapters authored by 84 member-scientists of ICRCGC from 16 countries including Australia, Brazil, China, France, Germany, India, Italy, Japan, Kenya, Nigeria, Netherlands, Philippines, Sweden, UK, USA and Zimbabwe published by Springer in 2013 with foreword by 5 legendary scientists including Prof. M. S. Swaminathan. These books are being used by scientists, policy makers and funding agencies as text book or references copies. Later on he has edited 5 books on “Genomic Designing of Climate-Smart Crops” (ISBN 978-3-319-93381-8, ISBN 978-3-319-93536-2, ISBN 978-3-319-96932-9, ISBN 978-3-319-97945-8, ISBN 978-3-319-97415-6) for Springer Nature with chapters on cereal, oilseed, pulse, fruit and vegetable crops.

Prof. Kole has introduced a number of new concepts in a number of international conferences on behalf of ICRCGC since 2012 such as C5 (Combating Climate Change: Call of the Century), I3 (Innovation-Incubation-Implementation), FNEE (Food-Nutrition-Energy-Environment) Security, Genomic Designing; Translational Genomics, Shuttle Genomics, Designed Agriculture, etc.

Prof. Kole was Vice Chancellor of Bidhan Chandra Krishi Viswa Vidyalaya during 2012 to 2015 and presently Chairman of the Prof. Chittaranjan Kole Foundation for Science and Society.



Supreme court not comfortable to accept apology of Baba Ramdev in spurious advertisement case

The Supreme Court on recently said it was not inclined to accept the apology tendered by Baba Ramdev and Patanjali Ayurved Managing Director Acharya Balkrishna in response to notices asking to show cause as to why contempt of court proceedings should not be initiated against them for allegedly flouting its directions. The apex court, however, gave them a last opportunity to file fresh responses.

The court was upset about an advertisement issued by the company on December 4, 2023, after it had assured the court on November 21, 2023 that it would not make any “casual statements claiming medicinal efficacy or against any system of medicine”.

A bench of Justices Hima Kohli and Ahsanuddin Amanullah, which pulled them up in the matter, final-



provisions of the Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954, and making statements critical of allopathy, the bench had on March 19 sought the personal presence of Acharya Balkrishna and Baba Ramdev before it. The duo had appeared before the court on Tuesday.

In the affidavit filed in response to the notice, Acharya Balkrishna said he “regrets that the advertisement in question which was meant to contain only general statements inadvertently included the offending sentences... The same was bona-fide and added in routine course by the media department of the...Company,” he said, adding “the personnel of the media department of the...Company were not cognizant of the order dated 21.11.2023.”

Appearing for Balkrishna and the company, Senior Advocate Vipin Sanghi accepted that there was a mistake, but it did not convince the court. “But what did you do in November? What engages us is what you did and how you conducted yourself after you give an undertaking to this court in November. The whole thing follows from then — lapse by you, lapse by your company, and lapse by the third proposed contemnor (Baba Ramdev) who is the co-founder and promoter of the same brand. Conducting press conference the next day. You were all cognizant of the court proceedings. You can’t feign ignorance. That’s the point,” the court said.

Balkrishna’s affidavit had also said that the Drugs and Magic Remedies (Objectionable Advertisements) Act was passed when scientific evidence was lacking in Ayurveda research.

Justice Kohli also took exception to this and said, “Even today, one of the statements made by you in your so-called unqualified apology is that the Act itself is archaic. So shall we assume that every Act which is archaic shall not be implemented or enforced

ly agreed to give one more chance following Solicitor General Tushar Mehta’s intervention.

The bench, which perused an affidavit filed by Balkrishna, took exception to it shifting the blame to the company’s media department. “We are not willing to accept such an explanation... Your media department is not a standalone island in your office is it... that it wouldn’t know what is happening in the court proceedings? And proceedings of such a serious nature. So your apology is not persuading this court really to accept it. We think it’s more of a lip service,” said Justice Kohli.

Hearing a plea by the Indian Medical Association (IMA) accusing the company of allegedly violating



Image source: <https://newsable.asianetnews.com/india/baba-ramdev-acharya-balkrishna-tender-unconditional-apology-in-supreme-court-over-misleading-advertisements-ajr-sbodjb>

in law? An Act remains an enactment, which has to be enforced as a law of the land till it remains on the statute book”.

As Sanghi agreed, Justice Kohli added, “For you to then say that there is scientific research and and therefore... When there is an Act that governs the field, how can you violate it with such impunity? That all your advertisements are in the teeth of that Act. And to top it all and that’s adding insult to injury, that you had given an undertaking to this court, a solemn undertaking, and you violate it with impunity!”

Sanghi replied, “There has been a lapse.”

“Therefore, be ready for the follow-up consequences is all we are saying. We are not willing to look at this apology which is perfunctory in every respect,” said Justice Kohli. Sanghi said the company’s motive was not commercial benefit, but Justice Kohli reminded that “you are a commercial organisation”.

Justice Amanullah added that such comments are for public consumption. “You are here for contemnor. Restrict yourself to that. You can’t take this grandstanding. We will not give you this platform...that you are serving the nation. Please do not”.

Appearing for Ramdev, Senior Advocate Balbir Singh also expressed his unconditional apology and said the response affidavit was ready but was not filed as it was felt that he should personally apologise to the court first before filing any reply.

Justice Amanullah, however, said the apology “is not coming from the heart”.

“You are representing somebody who is in the teeth of an order of the court. And being a co-founder of the same organisation, we refuse to believe that he wasn’t well aware of the consequences that will flow in the teeth of an undertaking given to this court by the managing director of the company,” said Justice Kohli.

The judge added, “For you to...hold a press conference in 24 hours shows that you were cognisant (of the court order)... And despite that you floated it... And after two months, you come out with the advertisements...which also portray you as a promoter... How do you explain this?”

Balbir Singh said, “I’m not trying to defend any position. There is a wrong and we are not defending it.”

About the press conference, he said, “That’s not the way the court order should have been taken. I completely apologise. We have realised that there’s a mistake which should not have been committed.”

“Not just the Supreme Court, every court in this country, when an order is passed, has to be obeyed in letter and spirit...,” responded Justice Kohli.

The IMA sought to direct the Centre, Advertising Standards Council of India (ASCI), and the CCPA (Central Consumer Protection Authority of India) to take action against such advertisements and campaigns to promote the Ayush system by disparaging the Allopathic system.

Back in August 2022, the Supreme Court’s Bench led by CJI Ramana issued notice to the above authorities, including Patanjali Ayurved Ltd (the company co-founded by Baba Ramdev.).

Previously, on November 21, 2023, the Court reprimanded Patanjali Ayurved for continuing to publish misleading claims and advertisements against modern systems of medicine. Justice Amanullah went on to issue a stern warning of imposing a cost of Rs 1 Crore in case such advertisements are continued.

“All such false and misleading advertisements of Patanjali Ayurved have to stop immediately. The Court will take any such infraction very seriously, and the Court will also consider imposing costs to the extent of Rs. 1 crores on every product regarding which a false claim is made that it can “cure” a particular disease,” Justice Amanullah orally said

Following this, the counsel for Patanjali Ayurved as-

ured that they would not publish any such advertisements in the future and would also ensure that casual statements are not made in the Press. The Court recorded the undertaking in its order.

Given that Patanjali Ayurved continued to publish misleading advertisements regarding medicinal cures, the Court issued notice to Patanjali Ayurved and Acharya Balakrishna (Managing Director of Patanjali) to show cause why action should not be taken against them for the contempt of court.

This direction was coupled with restraining Patanjali Ayurved from advertising or branding its products which are meant to address the diseases/disorders specified in the Drugs and Magic Remedies (Objectionable Advertisements) Act 1954 in the meantime.

Unlocking Rice Bran's Healing Potential: Functional Food for Nutritional Security

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Rice bran and its nutritional composition

Rice, also known as (*Oryza sativa* L.) is the second most important staple food after corn globally. It is a significant source of carbohydrates, protein, vitamins, and minerals. Undoubtedly, rice holds immense influence in Asia, where its cultivation and consumption have shaped societies for millennia. According to 2021-22 statistics from FAOSTAT, global polished rice production reached a staggering 507.90 million metric tons, emphasizing the crop's pivotal role in feeding the world's population. The rice milling process involves two fundamental procedures. The first one is the removal of the husk to produce brown rice, while the second one is the removal of the bran layer from brown rice, resulting in polished (or white) rice.

The milling process involves eliminating the germ and a part of the endosperm, resulting in broken kernels and powdery substances. (Fig. 1). The milling process produces a primary product, which is milled rice, and several

secondary products, including the husk, germ, bran layer, and broken kernels. Ideally, the milling process should yield 20% husk, 8-12% bran (based on the degree of milling), and 68-72% milled or white rice (depending on the variety). It is worth noting that rice by-products contain more nutrients than polished rice. The following sentence provides an overview of the composition of various rice by-products: Brown rice contains the highest concentration of non-starch components in its bran fraction, while milled rice (endosperm) is richest in starch (Table 1).

The embryo, aleurone layer, and sub-aleurone layer contain a high concentration of lipid bodies, resulting in the highest energy level in bran, followed by brown rice and then milled rice.

Brown rice contains more protein compared to milled rice due to the presence of higher protein levels in its bran. Brown rice also has higher levels of crude fat, crude ash, crude fiber, and total dietary fiber, which are concentrated in the bran fraction.

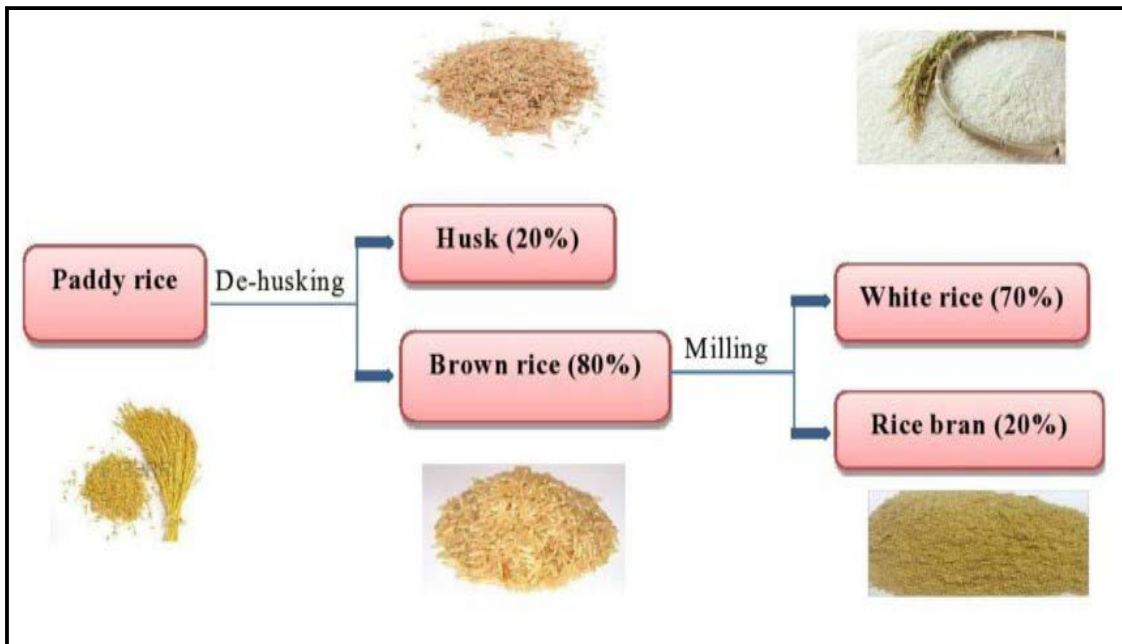


Fig. 1 Steps involved in milling of rice to obtain rice bran.

Health benefits of rice bran

Rice bran, constitutes not more than 9% of the total weight, yet it has sparked interest among researchers due to its great nutritional value, bioactive compounds and substantial health advantages (Fig. 2). Studies have also unveiled the effective role of rice bran to counter various diseases like cancer, tumor, cardiovascular diseases hypocholesterolemia, hypo-allergenicity and hypolipidemic effects (Park *et al.*, 2017). Rice bran contains tocopherols and oryzanols as its primary antioxidants, with oryzanols exhibiting 10 times more antioxidant activity than tocopherols, and tocotrienols demonstrating 40-60 times greater anti-

oxidant power than tocopherols. In addition to being a vital component of baby food, the protein found in rice bran is devoid of gluten, soybeans, and lactose, making it a non-allergic and healthier food supplement (Zheng *et al.*, 2019). Plant sterols present in rice bran may provide nutritional assistance in the treatment of conditions such as alopecia, hypercholesterolemia, diabetes, hepatitis C, herpes, allergies, chronic tiredness etc. (Sharif *et al.*, 2014). Rice bran is not only effective in reducing low-density lipoprotein, commonly referred to as “bad” cholesterol, but it also increases high-density lipoprotein, or “good” cholesterol, and lowers overall serum cholesterol levels. The nutraceuticals derived from rice bran’s

Table 1 Nutritional composition of rice milling by-products

Nutrient/100g	Husk	Brown rice	Bran	Milled rice
Moisture (g)	14	14	14	14
Ash (g)	13-21	1.0-1.5	6.6-9.9	0.3-0.8
Crude protein (g)	2.0-2.8	7.1-8.3	11.3-14.9	6.3-7.1
Total lipids (g)	0.3-0.8	1.6-3.1	15.0-19.7	0.3-0.7
Total dietary fiber (g)	66-74	2.9-4.4	19-29	0.7-2.7
Carbohydrates (g)	22-34	73-87	34-62	77-89
Sugars (g)	0.6	0.7-1.9	5.5-6.9	0.1-0.5
Energy (KJ)	1110-1300	1480-1610	1670-1990	1460-1560

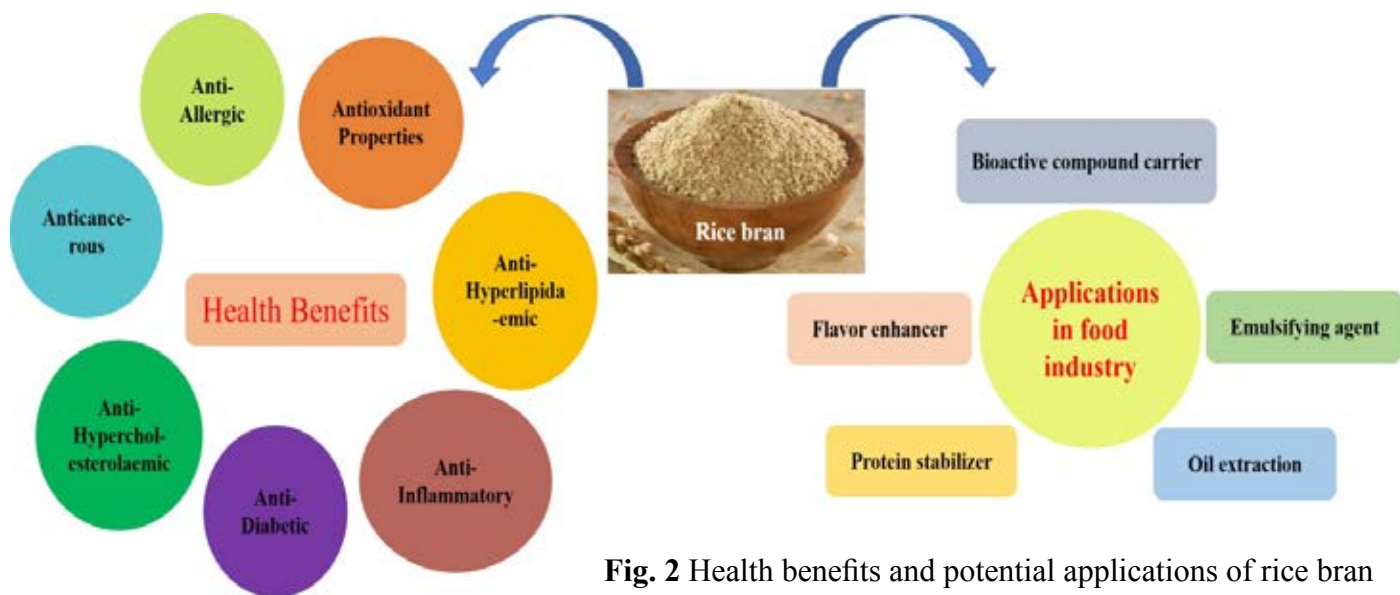


Fig. 2 Health benefits and potential applications of rice bran

soluble fiber portions are effective against type I and type II diabetes (Qureshi *et al.*, 2002). A diet high in heat-stabilized rice bran benefits bacterial variety and richness in the gut, supports microbial metabolism, modifies stool metabolite profiles, and helps colorectal cancer survivors avoid chemotherapy (Sheflin *et al.*, 2017). The dietary fiber in rice bran eliminates pollutants, facilitates stoma passage, and maintains an ideal pH, thereby avoiding colon cancer. Fermented rice bran and its extracts have recently been found very effective in reducing inflammation. Tocotrienols in bran oil reduces the inflammatory milieu in the pancreas, as well as inhibit tumor formation (Punia *et al.*, 2021). Lutein and zeaxanthin in rice bran are responsible for improved vision and a reduced risk of cataracts. Rice bran has vitamin E and inositol hexaphosphate, which help to remove calcium from the blood and bones (Das *et al.*, 2014). This keeps calcium from forming kidney stones.

Potential applications of rice bran in food industry

Each year, approximately 90% of the rice bran pro-

duced globally is utilized as a cost-effective feedstock for cattle and poultry, while the remaining portion is employed for the extraction of rice bran oil. Nowadays, people are increasingly focused on their personal health and nutrition, and are more conscious about what they eat.

Rice bran, which is highly nutritious, is commonly used as a food additive (Fig. 2). Rice bran added to supplement to foods, could be a potential technique for increasing overall nutritional value, and food experts are working on rice bran-added products. Rice bran protein, specifically deamidated protein hydrolysates, is rich in asparagine and glutamine. These compounds can be used to improve the flavor of soups, sauces, and poultry dishes. A freshly manufactured rice bran enriched biscuit with 10% rice bran protein concentrate proved more gratifying than a non-rice bran biscuit (Yadav *et al.*, 2011). Chicken coated with stabilized rice bran fibre prior to frying, it tends to absorb less fat. Additionally, the natural fat present in rice bran fibre can help carry flavours, enhancing the taste of the chicken. Rice bran oil sausages have desirable textural attributes as well as nutritional profile as compared to unsaturated fatty ac-

ids. Rice bran hemicellulose and defatted rice bran preparations possess significant potential in the food industry, especially in the development of functional foods such as functional bakery products (Hu et al., 2009). In the food industry, rice bran finds its application in the production of meat emulsions and batter mixes. (Tuncel *et al.*, 2014). Supplementation of rice bran for development of functional foods also implemented for development of various products including pasta enriched with anthocyanin-rich black rice bran (Sethi *et al.*, 2020), rice bran enriched porridge (Calvo-Castro *et al.*, 2019), and biscuits with soluble dietary fiber from defatted rice bran (Jia *et al.*, 2020). Rice bran is ideal for producing baked goods such as muffins, cookies, crackers, breads, pancakes, and pastries due to its protein content. By adding rice bran to bread and cookies, the amount of lysine, protein, and dietary fiber rose according to the amount of supplementation. The content of nutritional parameters, comprising protein efficiency ratio (PER), biological value, and net protein utilization (NPU), was found to be higher in chapters that contained processed rice bran.

Conclusion and recommendations

Rice bran possesses significant potential to be transformed into nutritious food items, thereby contributing to food security in the country. Numerous health benefits are associated with consuming rice bran, and conducting *in vivo* studies can help establish a comprehensive database that promotes nutritional security. Although a comparative analysis of the shelf life achieved through different stabilization techniques has not been conducted at this time, it is an intriguing area of research that could lead to more effective supplementation of rice bran in various food systems. By investigating the shelf life of rice bran stabilized with different techniques, researchers can identify the most suitable method for enhancing the shelf life of rice

bran and predict its potential for use in different food systems. This could ultimately result in the development of healthier and more sustainable food products. Though rice bran has the potential to improve health outcomes, studies on the effects of its daily consumption are lacking. To determine the health benefits of rice bran protein and its hydrolysates, additional research on both animal models and human subjects is necessary. Furthermore, future research should focus on developing RBP-enriched food products that are healthy and acceptable to consumers at an economical cost.

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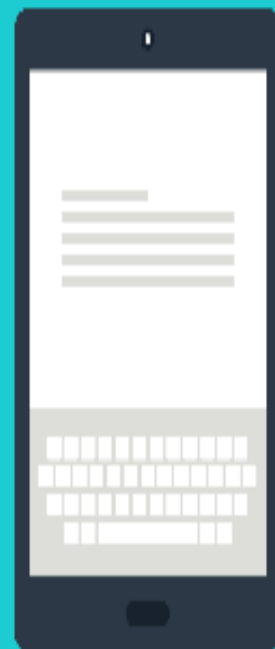
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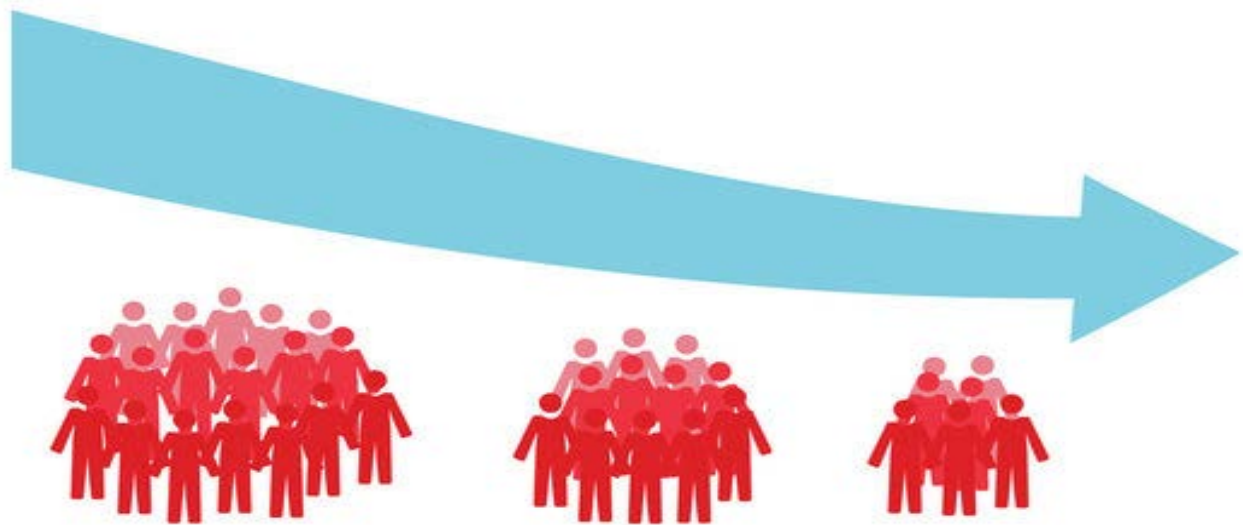
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Featured News

Global population to decline for several years ahead, study finds



21 MARCH 2024

A significant study released Wednesday by the US-based Institute For Health Metrics and Evaluation (IHME) and published in The Lancet journal forecasts a global shift towards declining populations by the end of this century.

According to the research, the fertility rate in half of all countries is already below the level needed to maintain their current population sizes.

The comprehensive analysis utilised extensive data on birth rates, mortality, and fertility trends to

predict future demographic changes. Findings suggest that by 2050, the populations of three-quarters of all countries will experience a decrease.

This trend is expected to expand significantly, with projections indicating that by the year 2100, 97 percent of 204 countries and territories analysed will see their populations shrink.

The study highlights a major demographic shift, with developing nations currently experiencing baby booms, while more affluent

countries face declining birth rates. Only six countries — Samoa, Somalia, Tonga, Niger, Chad, and Tajikistan — are anticipated to have fertility rates above the replacement level of 2.1 births per female by the end of the century.

They pointed out several limitations of the models, particularly a lack of data from many developing nations. Teresa Castro Martin, a researcher at the Spanish National Research Council not involved in the study, also emphasised that these are just projections.

Healthcare innovation in India to double, \$60 billion opportunity by 2028



India's healthcare innovation landscape is poised for a significant leap, with its market potential expected to double to approximately \$60 billion by FY 2028.

Pharma services and healthtech are anticipated to drive about 80% of this growth, maintaining their positions as the largest segments in the market, according to the findings of 'Healthcare Innovation in India' report by Bain & Company and HealthQuad.

This growth will be driven by rising consumerization of health, reconfigurations to the global healthcare value chain, a deepening of Indian scientific and technological expertise, and regulatory tailwinds.

The overall Indian healthcare market, valued at about \$180 billion in FY 2023, is projected to grow at approximately 10-12% CAGR to reach \$320 billion by FY 2028. Healthcare innovation is a rapidly growing segment currently valued at \$30 billion and accounts for 15% of the overall market. It has almost doubled over the last three years, with 55% of the market size led by exports. This segment is dominated by pharma services (CDMO, CRO, pharma IT) and healthtech with vaccines and biotech, and medtech emerging as green shoots.

The Indian pharma services account for approximately 50% of the healthcare innovation market, valued at \$16 billion in FY 2023, with 85%-90% of

revenue driven by exports. The CDMO segment saw the highest growth, driven by global supply chains shifting away from China and improvement in capacity, capability, and quality by Indian players.

Pharma IT also showed robust growth, led by growing global price pressures and demand for omnichannel transformation. International pharma companies are setting up technology 'innovation hubs' and global capability centers (GCCs) driven by India's growing technological expertise. Pharma services is expected to reach \$30 billion by FY2028.

Japan To Ban COVID Vaccinated People From Donating ‘Tainted Blood’



KENAI THERAPEUTICS

Kenai Therapeutics Announces
\$82 Million Series A Financing
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Allogeneic Cell Therapies
for Neurological Diseases

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21 MARCH 2024

A team of top Japanese scientists have urged the government to immediately outlaw the COVID mRNA shots and prohibit anybody who has taken the vaccine from giving blood. According to a report by The Daily Exposé, the researchers said that “the health injuries caused by genetic vaccination are already extremely serious, and it is high time that countries and relevant organizations take concrete steps together to identify the risks and to control and resolve them,” they said.

Many countries around the world, not just Japan, have reported that so-called genetic vaccines, such as those using modified mRNA encoding the spike protein and lipid nanoparticles as the drug delivery system, have re-

sulted in post-vaccination thrombosis and subsequent cardiovascular damage, as well as a wide variety of diseases involving all organs and systems, including the nervous system.

In the conclusion of their study into the blood of the “vaccinated”, the authors wrote: The impact of these genetic vaccines on blood products and the actual damage caused by them are unknown at present. Therefore, in order to avoid these risks and prevent further expansion of blood contamination and complication of the situation, we strongly request that the vaccination campaign using genetic vaccines be suspended and that a harm-benefit assessment be carried out as early as possible.

As we have repeatedly stated, the

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

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

Nobel Prize winner Thomas Südhof retracts study



7 MARCH 2024

Neuroscientist Thomas Südhof, who won the 2013 Nobel Prize in Physiology or Medicine, has retracted a 2023 study after he and his colleagues reanalyzed the raw data.

The paper, which was published in the Proceedings of the National Academy of Sciences, was marked with an editorial expression of concern by the journal on 17 October 2023, as *The Transmitter* reported last year. The paper has been cited three times, according to Google Scholar.

The retracted paper analyzed excitatory synapse number and neurotransmitter release in mouse hippocampal neurons missing a presynaptic cell-adhesion molecule called neurexin-2.

Südhof, professor of molecular and cellular physiology and neurosurgery at Stanford University, received the Nobel Prize for some of his previous work on neurexin proteins.

The authors retracted the study “because re-analysis of the original raw data for Figs. 2, 4 and 6 revealed that, although our analyses of the original data are supportive of the conclusions of the paper, unresolvable differences exist between these raw data and the published data source file that cannot be corrected by a simple erratum,” according to the 5 March retraction notice.

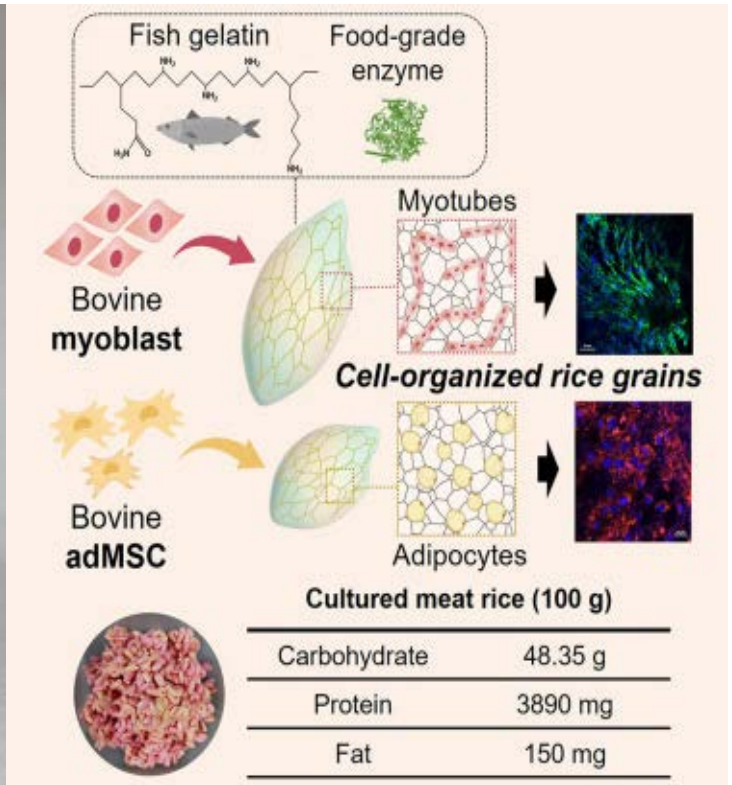
Included in the retraction is a link to the Stanford Digital Repository, where the authors have posted the raw data from the paper along with

an accompanying abstract further stating that there are “innumerable errors” with the original data source file.

The retraction was first noted on PubPeer in a post by a commenter using the pseudonym “Actinopolyspora biskrensis.” Other commenters on the forum previously raised data integrity concerns almost immediately after the study was published last year.

This is the second PNAS study by a Nobel Prize winner retracted in 2024. In February, molecular biologist Gregg Semenza retracted a 2012 paper because of data integrity concerns.

Scientists develop cultured beef rice with meat protein



3 March 2024

Scientists from Yonsei University developed cultured beef rice, rice grains with animal muscle and fat cells inside. The findings of their study published in *Matter* show that cultured beef rice has 8% more protein and 7% more fat than regular rice.

Animals need biological scaffolds to grow tissues and organs. The researchers used rice grains as a solid scaffold to house animal-derived cells. After coating the rice grains with fish gelatin, cow muscle and fat stem cells were seeded into the rice and allowed to grow in a petri dish from nine to 11 days, according to a study published

in the journal *Matter* this week.

The final result was a “cell-cultured beef rice” that had 8% more protein and 7% more fat than regular rice — it also turned out “firmer” and “brittler” than normal rice, scientists found.

According to the team, cultured beef rice could significantly reduce its carbon footprint at a cheaper price once commercialized. Sohyeon Park, the first author of the study, says, “Now I see a world of possibilities for this grain-based hybrid food. It could one day serve as food relief for famine, military ration, or even space food.”

Although the product is not yet ap-

proved for consumers, the hope is that it could become a more environmentally sustainable protein option.

Researchers said the main ingredients meet food safety requirements and have a low risk of triggering food allergies.

Beefy rice is the latest variation in the expanding “lab-grown” meat sector.

Last year, for the first time, U.S. regulators approved the sale of chicken made from animal cells. Globally, more than 150 companies are focusing on meat from cells, the Associated Press reported in June.

Scientists develop Transgenic Cow that Generates Milk With Human Insulin



March 21, 2024

For the first time, scientists genetically altered a brown bovine cow in Brazil and discovered human insulin and proinsulin, an insulin precursor, in the “transgenic” cow’s milk.

The results, published March 12 in *Biotechnology Journal* Trusted Source, indicate a potential solution for mass-produced insulin, but more research is warranted to confirm these findings. Caution around using genetically modified animals to advance human pharmacology is also needed.

Non-study author Brett M. Sansbury, Researchers utilized a process

called somatic cell nuclear transfer Trusted Source to create specialized embryos. The ultimate goal was to manipulate the mammary glands of the resulting offspring to produce specific proteins in their milk.

Researchers next attempted to impregnate the transgenic cow, but these attempts were unsuccessful. In the end, they hormonally induced the cow to produce milk.

After allowing for 21 days of lactation, researchers collected the milk for next 30 days. They then per-

formed tests, specifically western blotting and mass spectrometry, to evaluate the proteins present in the milk. They compared the results to those from non-transgenic milk.

The analysis’s results found proinsulin and insulin in the milk they evaluated from the transgenic cow.

The implications of these findings could make insulin more readily available, opening the door for further research that could improve diabetes treatments.

Latest Research

Enzymes from Invasive Weed Show Promise for Bio Cement Production

March 16, 2024

The prickly paddy melon weed, which costs the agricultural industry around \$100 million a year in lost grain yields, cattle deaths, and control measures, could turn into an unlikely money spinner as a source of urease enzymes to create bio cement and prevent soil erosion.

In a world-first study, researchers at the University of South Australia (UniSA) screened 50 native plants and weeds to find a cheaper and more environmentally friendly source for bulk producing of urease enzymes to strengthen soil.

Among the weeds tested, paddy melon ticked all the boxes and was almost as effective as soybean enzymes, which are more expensive and used primarily for food.

UniSA geotechnical engineer Professor Mizanur Rahman and his

students collected the paddy melon weed from roadsides in Port Pirie in South Australia. After crushing the seeds and extracting enzymes in a liquid form, they freeze-dried them to create a powdered, high-concentration cementation agent.

“Using this technique, we cut down the cementation time from one week to six hours,” says Prof Rahman.

Individual plants can yield 50 or more paddy melons, each containing up to 200 viable seeds. Taking into consideration the time taken to harvest, extract the seeds and turn them into a powder, the UniSA researchers estimated a 75% saving compared to lab-grade enzyme production costs.

Plant-based urease enzymes are becoming a popular alternative to cement, lime or artificial soil binders because they are natural and



not damaging to the environment. One kilogram of cement produces one kilogram of carbon dioxide, making the construction industry one of the highest CO2 emitters.

“Compared to the production of commercial enzymes, paddy melon enzymes are cheaper, more sustainable, and more efficient than other enzymes used to cement and stabilise soils.

“Not only have we found a natural alternative to other commercial enzymes, but we could solve a very expensive problem for the agricultural industry by harvesting these weeds, reducing the availability of seeds for spreading, preserving biodiversity and growing paddy melon as a commercial crop.”

Clinical trial shows rheumatoid arthritis drug could prevent disease

February 12, 2024

Results from a Phase 2b clinical trial, published in *The Lancet* by researchers led by King’s College London, provides hope for arthritis sufferers after it was shown that the biologic drug abatacept reduces progression to this agonising chronic inflammatory disease.

Rheumatoid arthritis affects half a million people in the UK and develops when the body’s immune system attacks itself, causing joint pain, swelling and significant disability. The disease most commonly begins in middle age, but much younger age groups can be afflicted, and until now there is no cure or prevention.

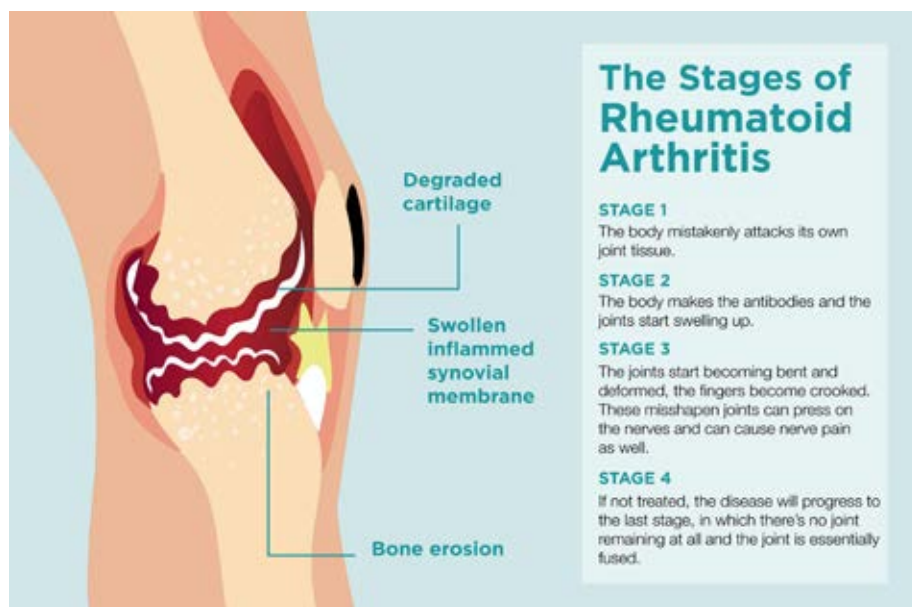
Abatacept is currently used as an effective second or third line treatment for people living with established rheumatoid arthritis and is given by weekly injections at home or in hospital via a drip.

Researchers from King’s College London recruited 213 patients at high risk of the disease to understand whether a year-long treatment of the biologic drug could be used to prevent progression to rheumatoid arthritis. They recruited men and women over the age of 18 with early symptoms such as joint pain but no joint swelling, and treated half with the drug and

half with a placebo every week for a year. The study drug was then stopped, and study participants monitored for a further 12 months.

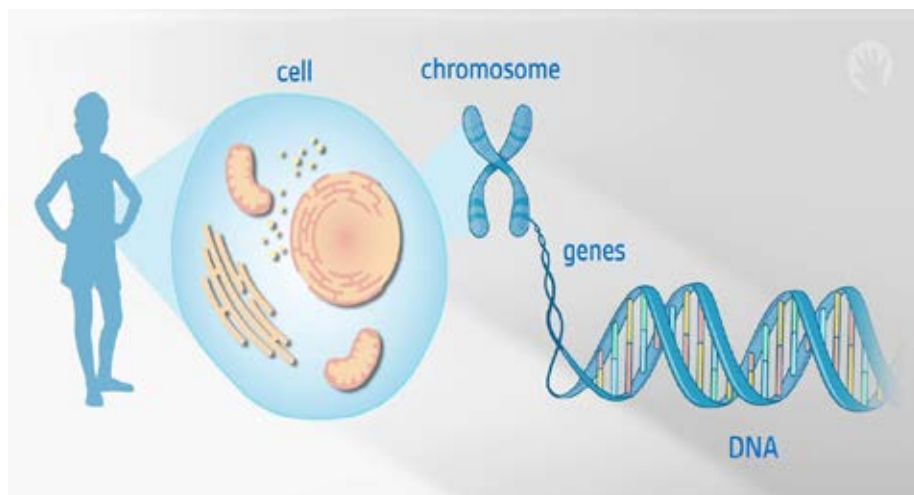
After twelve months of treatment, 6% of patients treated with abatacept had developed arthritis compared to 29% in the placebo arm. By 24 months, the differences were still significant, with a total of 25% progressing to rheumatoid arthritis in the abatacept arm compared to 37% in the placebo arm.

Rheumatologist Professor Sir Ravinder N Maini FRS FMedSci FRCP, who was not involved in the research, said: “Professor Cope and colleagues from King’s College, London, in collaboration with researchers in the UK and Netherlands, have published the results of an exciting clinical trial in *The Lancet*, which demonstrates that it is now possible to prevent the onset of RA, a disease that remains incurable despite great advances in its treatment in the recent past.



New tools reveal how genes work and cells organize

April 2, 2024



Researchers from Aarhus University and the Italian Institute of Technology have discovered how certain proteins can attach to special structures in RNA, called G-quadruplexes. Additionally, they have developed computational tools capable of predicting these protein-RNA interactions. The newfound ability to predict these interactions can help future work in understanding molecular pathways in the cell and pave the way for developing drugs targeting these RNA G-quadruplex binding proteins, that are found to be involved in disease such as cancer.

Proteins binding to RNA are important in many processes in the cell and can mediate a range of biological functions. A specialized

structure in both DNA and RNA, the G-quadruplex, are regulatory elements involved in gene expression in both DNA and RNA. In the present work the researchers use theoretical predictions and molecular biology experiments to show that many chromatin-binding proteins bind to RNA G-quadruplexes. With this information they

can classify proteins based on their potential to bind RNA G-quadruplexes.

The study uses a combination of experimental identification of RNA G-quadruplex-binding proteins and computational methods to build a prediction tool that identify the probability that a protein binds to RNA G-quadruplexes. The findings show that predicted proteins show a high degree of protein disorder and hydrophilicity, suggesting an involvement in both transcription and phase-separation into membrane-less organelles.

Ulf Ørom's group has previously shown that RNA-DNA dual binding proteins are likely to have an involvement in the DNA damage response, linking DNA and RNA

binding properties to a number of proteins. In the new study, the researchers expanded the knowledge of RNA-binding proteins to identify RNA G-quadruplex binding proteins.

Familial Alzheimer's disease transferred via bone marrow transplant in mice

March 28, 2024

Familial Alzheimer's disease can be transferred via bone marrow transplant, researchers show March 28 in the journal *Stem Cell Reports*. When the team transplanted bone marrow stem cells from mice carrying a hereditary version of Alzheimer's disease into normal lab mice, the recipients developed Alzheimer's disease -- and at an accelerated rate.

The study highlights the role of amyloid that originates outside of the brain in the development of Alzheimer's disease, which changes the paradigm of Alzheimer's from being a disease that is exclusively produced in the brain to a more systemic disease. Based on their findings, the researchers say that donors of blood, tissue, organ, and stem cells should be screened for Alzheimer's disease to prevent its



inadvertent transfer during blood product transfusions and cellular therapies.

“This supports the idea that Alzheimer’s is a systemic disease where amyloids that are expressed outside of the brain contribute to central nervous system pathology,” says senior author and immunologist Wilfred Jefferies, of the University of British Columbia. “As we continue to explore this mechanism, Alzheimer’s disease may be the tip of the iceberg and we need to have far better controls and screening of the donors used in blood, organ and tissue transplants as well as in the transfers of human derived stem cells or blood products.”

To test whether a peripheral source of amyloid could contribute to the development of Alzheimer’s in the brain, the researchers transplanted bone marrow containing stem cells from mice carrying a familial version of the disease -- a variant of the

human amyloid precursor protein (APP) gene, which, when cleaved, misfolded and aggregated, forms the amyloid plaques that are a hallmark of Alzheimer’s disease. They performed transplants into two different strains of recipient mice: APP-knockout mice that lacked an APP gene altogether, and mice that carried a normal APP gene.

In this model of heritable Alzheimer’s disease, mice usually begin developing plaques at 9 to 10 months of age, and behavioral signs of cognitive decline begin to appear at 11 to 12 months of age. Surprisingly, the transplant recipients began showing symptoms of cognitive decline much earlier -- at 6 months post-transplant for the APP-knockout mice and at 9 months for the “normal” mice.

“The fact that we could see significant behavioral differences and cognitive decline in the APP-knockouts at 6 months was surprising but also intriguing be-

cause it just showed the appearance of the disease that was being accelerated after being transferred,” says first author Chaahat Singh of the University of British Columbia.

In mice, signs of cognitive decline present as an absence of normal fear and a loss of short and long-term memory. Both groups of recipient mice also showed clear molecular and cellular hallmarks of Alzheimer’s disease, including leaky blood-brain barriers and buildup of amyloid in the brain.

Observing the transfer of disease in APP-knockout mice that lacked an APP gene altogether, the team concluded that the mutated gene in the donor cells can cause the disease and observing that recipient animals that carried a normal APP gene are susceptible to the disease suggests that the disease can be transferred to health individuals.

Because the transplanted stem cells were hematopoietic cells, meaning that they could develop into blood and immune cells but not neurons, the researchers’ demonstration of amyloid in the brains of APP knockout mice shows definitively that Alzheimer’s disease can result from amyloid that is produced outside of the central nervous system.

Finally the source of the disease in mice is a human APP gene demonstrating the mutated human gene can transfer the disease in a different species.

In future studies, the researchers

plan to test whether transplanting tissues from normal mice to mice with familial Alzheimer's could mitigate the disease and to test whether the disease is also transferable via other types of transplants or transfusions and to expand the investigation of the transfer of disease between species.

“In this study, we examined bone marrow and stem cells transplantation. However, next it will be important to examine if inadvertent transmission of disease takes place during the application of other forms of cellular therapies, as well as to directly examine the transfer of disease from contaminated sources, independent from cellular mechanisms,” says Jefferies.

Researchers discover a mechanism that could improve platinum-based cancer therapy

March 27, 2024

Researchers have identified a protein that, when targeted, enables cisplatin-resistant cancer cells to become responsive to treatment. Cisplatin, and other similar platinum drugs, are incredibly effective

at killing rapidly growing cancer cells, which is why they have been used in treating cancers for over 45 years. However, these drugs are non-targeted and can cause debilitating toxic side effects, resulting in a diminished lifestyle, and patients in poor health are deemed ineligible for use.

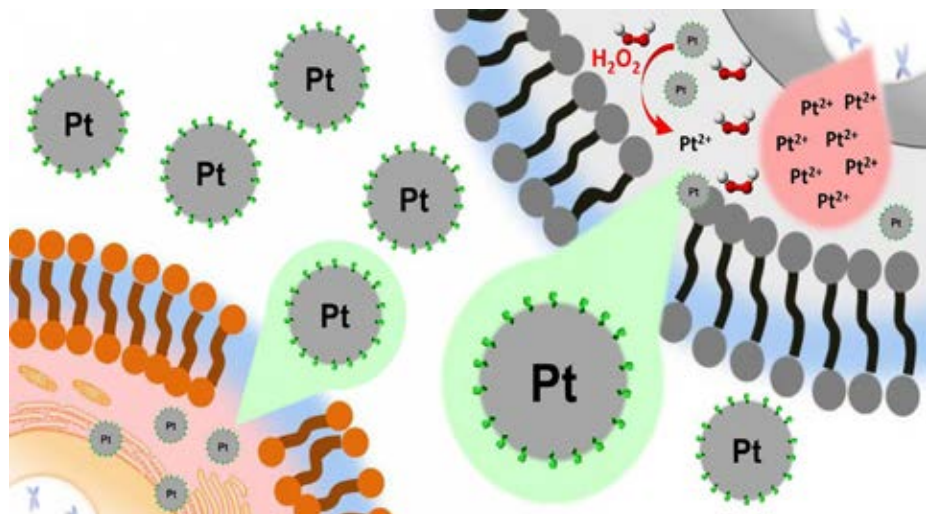
In a study, published today in *Cancer Research*, a journal of the American Association for Cancer Research, researchers say they have discovered that the protein puromycin-sensitive aminopeptidase (NPEPPS) plays a role in regulating response to platinum chemotherapy in patients with bladder cancer.

“We found that this protein is a driver in resistance to platinum therapy. If we remove it experimentally or pharmacologically, we can re-sensitize the cancer cells to their pre-resistant level of response,” says James Costello, PhD, co-corresponding author and associate professor at the University of Colorado Anschutz Medical Campus.

Costello and co-authors aimed to understand why most bladder cancer patients do not respond well to platinum-based drug regimens. By identifying the role NPEPPS plays, researchers were then able to genetically disrupt the function of NPEPPS, ultimately making cancer cells more responsive to platinum drugs.

“Our multi-omic assessment, including the use of tiny organoids derived from patients' bladder cancer samples, yielded findings that could make this effective treatment an option for many more patients,” said Dan Theodorescu, MD, PhD, director of Cedars-Sinai Cancer, the PHASE ONE Foundation Distinguished Chair at Cedars-Sinai and co-corresponding author of the study.

Theodorescu added that the approach is an example of how precision medicine is leading the change in how cancer is treated by defining cancer vulnerabilities such as NPEPPS that can be targeted with small molecules and used in com-



bination with cisplatin. Indeed, the Theodorescu and Costello laboratories are doing just that.

“This novel therapeutic approach could allow the administration of lower platinum drug doses, potentially decreasing debilitating side effects while also making platinum-based therapies more effective,” says Costello, also with the CU Cancer Center. He points to next steps in utilizing this new approach in hopes of expanding its use to other cancers.

Researchers invent AI model to design new superbug-fighting antibiotics

March 22, 2024

Researchers at McMaster University and Stanford University have invented a new generative artificial intelligence model which can design billions of new antibiotic molecules that are inexpensive and easy to build in the laboratory.

In a new study, published today in the journal *Nature Machine Intelligence*, researchers report they have developed a new generative AI model called SyntheMol, which can design new antibiotics to stop the spread of *Acinetobacter baumannii*, which the World Health Organization has identified as one

of the world’s most dangerous antibiotic-resistant bacteria.

Notoriously difficult to eradicate, *A. baumannii* can cause pneumonia, meningitis and infect wounds, all of which can lead to death. Researchers say few treatment options remain.

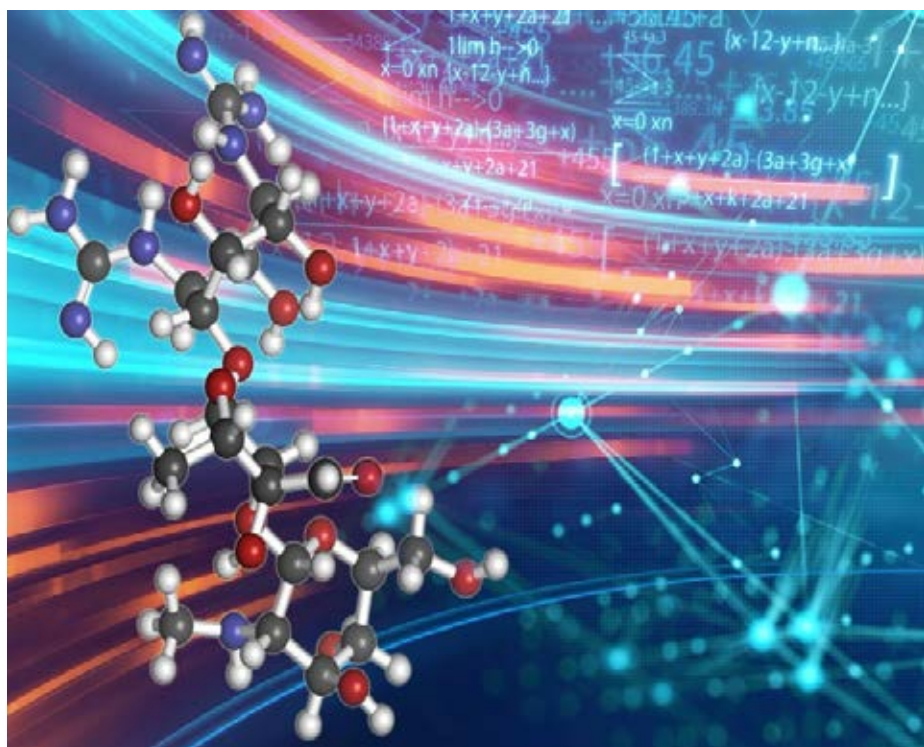
“Antibiotics are a unique medicine. As soon as we begin to employ them in the clinic, we’re starting a timer before the drugs become ineffective, because bacteria evolve quickly to resist them,” says Jonathan Stokes, lead author on the paper and an assistant professor in McMaster’s Department of Biomedicine & Biochemistry, who conducted the work with James Zou, an associate professor of biomedical data science at Stanford University.

“We need a robust pipeline of antibiotics and we need to discover them quickly and inexpensively. That’s where the artificial intelligence plays a crucial role,” he says.

Researchers developed the generative model to access tens of billions of promising molecules quickly and cheaply.

They drew from a library of 132,000 molecular fragments, which fit together like Lego pieces but are all very different in nature. They then cross-referenced these molecular fragments with a set of 13 chemical reactions, enabling them to identify 30 billion two-way combinations of fragments to design new molecules with the most promising antibacterial properties.

Each of the molecules designed by this model was in turn fed through



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another AI model trained to predict toxicity. The process yielded six molecules which display potent antibacterial activity against *A. baumannii* and are also non-toxic.

“Synthemol not only designs novel molecules that are promising drug candidates, but it also generates the recipe for how to make each new molecule. Generating such recipes is a new approach and a game changer because chemists do not know how to make AI-designed molecules,” says Zou, who co-authored the paper.

Scientists extract genetic secrets from 4,000-year-old teeth

March 27, 2024

Researchers at Trinity College Dublin have recovered remarkably preserved microbiomes from

two teeth dating back 4,000 years, found in an Irish limestone cave. Genetic analyses of these microbiomes reveal major changes in the oral microenvironment from the Bronze Age to today. The teeth both belonged to the same male individual and also provided a snapshot of his oral health.

The study, carried out in collaboration with archaeologists from the Atlantic Technological University and University of Edinburgh, was published today in journal *Molecular Biology and Evolution*. The authors identified several bacteria linked to gum disease and provided the first high-quality ancient genome of *Streptococcus mutans*, the major culprit behind tooth decay.

The sampled teeth were part of a larger skeletal assemblage excavated from Killuragh Cave, County Limerick, by the late Peter Woodman of University College Cork. While other teeth in the cave showed advanced dental decay, no cavities were visible on the sampled teeth. However, one tooth produced an unprecedented amount of *S. mutans* DNA, a sign

of an extreme imbalance in the oral microbial community.

The researchers also found that other streptococcal species were virtually absent from the tooth. This indicates the natural balance of the oral biofilm had been upset -- mutans had outcompeted the other streptococci leading to the pre-disease state.

The team also found evidence to support the “disappearing microbiome” hypothesis, which proposes modern microbiomes are less diverse than those of our ancestors. This is cause for concern, as biodiversity loss can impact human health. The two Bronze Age teeth produced highly divergent strains of *Tannerella forsythia*, a bacteria implicated in gum disease.

“These strains from a single ancient mouth were more genetically different from one another than any pair of modern strains in our dataset, despite the modern samples deriving from Europe, Japan and the USA,” explained Iseult Jackson, a PhD candidate at Trinity, and first author of the study. “This represents a major loss in diversity and one that we need to understand better.”

Very few full genomes from oral bacteria have been recovered prior to the Medieval era. By characterising prehistoric diversity, the authors were able to reveal dramatic changes in the oral microenvironment that have happened since.



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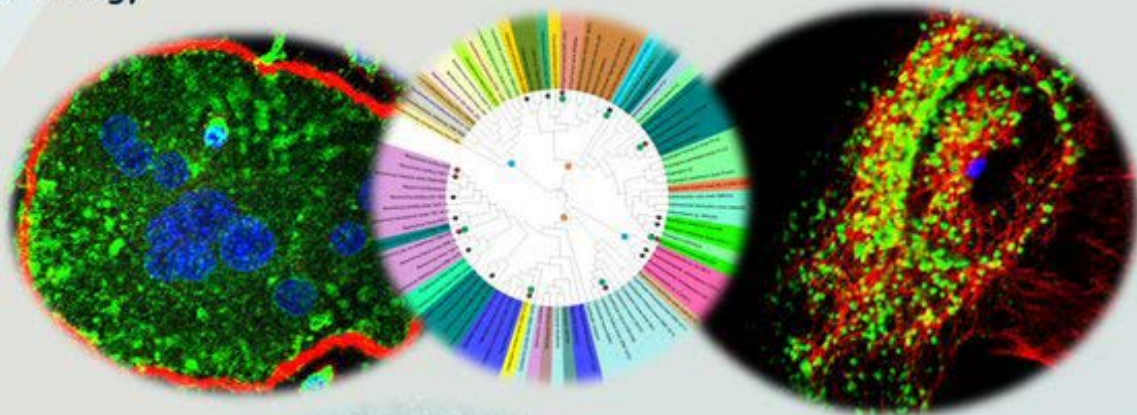
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10. Physics

S. No.	Faculty Position(s)	Department
1	Assistant Professor	All departments, viz., <ul style="list-style-type: none">• Biosciences and Bioengineering
2	Associate Professor	<ul style="list-style-type: none">• Chemical Engineering• Chemistry• Civil & Infrastructure Engineering
3	Professor	<ul style="list-style-type: none">• Computer Science and Engineering• Electrical, Electronics and Communication Engineering• Humanities, Economics, Arts and Rural Technologies• Mathematics• Mechanical, Materials and Aerospace Engineering• Physics

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Cell Biology, Biochemistry and Metabolomics, Bioinformatics, Structural Biology.

THE AREAS MENTIONED ARE ONLY INDICATIVE AND NOT EXHAUSTIVE. THE INSTITUTE IS OPEN TO RECEIVING APPLICATIONS FROM OUTSTANDING CANDIDATES WITH SPECIALIZATION IN THESE AND OTHER RELATED AREAS.

LAST DATE FOR APPLICATION: 1700 HRS (INDIAN STANDARD TIME) ON 30th APRIL, 2024.



SUMMER SCHOOL “BIOMANUFACTURING-2024” School of Biotechnology Jawaharlal Nehru University, New Delhi



ABOUT THE PROGRAMME

The summer school is intended to train and motivate graduate/doctoral students to pursue careers in biomanufacturing. Over a period of two weeks, the summer school program aims to nurture the students to gain exposure and hands-on training relevant to bioprocess optimization and development. The overall objective of the program is to create young and creative minds with a capacity to translate the bench-scale discoveries, ideas and innovations to commercial scale.

PROGRAMME SCHEDULE

Each day will feature one basic and one advanced lecture by distinguished scientist/faculty/person from industry followed by hands-on laboratory training. The topics include biomolecular / bioassay / biomaterials analytical methods; up-scaling biomass production (shake flask to bench-top bioreactor); development of different medium for high cell density culture, medium engineering, design of bioreactor and 3D culture.

ELIGIBILITY

Bachelors/Masters/Ph.D in Biotechnology, Microbiology, Pharmaceutical, Biochemistry, and any other allied field of Life Sciences

Number of Seats: 20

APPLICATION PROCESS

- Programme Fee: ₹10,000 (includes registration kit, lunch and tea)
#Accommodation will be available on request at reasonable charges.
- Download the SSP-2024 application form from SBT Home page (<https://www.jnu.ac.in/sbt>)
- Fill the application form and attach the required documents
- Scan the complete document as a single .pdf file name titled “Your name_SSP2024”
- Email the scan copy in a single .pdf file to: dean_sbt@jnu.ac.in
- Mention the Email subject as: “SSP2024 Application”

IMPORTANT DATES

Last date for Application: April 30, 2024

Confirmation of selection: May 5, 2024

Programme Commencement: May 20, 2024

Duration: Two weeks (May 20-31, 2024)

Coordinator: Prof. Kashyap Kumar Dubey

Co-coordinator: Dr. Arvind Pratap Singh

We welcome students from all colleges/universities/institutions from all regions of the country



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National Agri-Food Biotechnology Institute (NABI) Mohali



Applications are invited for a
Workshop on

“Genome editing mediated by CRISPR/Cas9: tools,
experimental design and its applications”

23-26 April 2024

With an aim to bring together researchers planning to work in the area of genome editing technologies, under the banner of **National Genome Editing and Training Centre (NGETC)**, National Agri-Food Biotechnology Institute (NABI) announces a workshop on “Genome editing mediated by CRISPR/Cas9: tools, experimental design and applications” from 23-26 April 2024. An extensive 4-day workshop has been planned to provide a detailed information, hands on training and discuss the application of this tool in wide array of life sciences. The workshop will provide a platform to young academicians, students and post-docs to start their work in the area of genome editing. The workshop will cover major topics that will include but not limited to sessions including editing by using CRISPR/Cas9 tool. The workshop will have expert lectures and hands on training for design, testing and validation of guide-RNA, delivery methods and discussion on the applications of genome editing.

Applications are invited by young faculties, students and post-docs, and industry persons who are trying to establish this tool in their lab to address the fundamental questions. The workshop will also provide an appropriate platform for the inception of innovative ideas, exchange different viewpoints and also provide impetus to develop a network of collaborations among the researchers.

Important Information:

Application Submission last date (more details @ www.nabi.res.in)	:	5 th April 2024
Intimation of the selected candidates	:	8 th April 2024
Registration fees	:	Rs. 10,000 (Students) Rs. 12,000 (Faculty) Rs. 18,000 (Industry person)

Workshop Director : Prof. Ashwani Pareek
Workshop Coordinators : Dr. Vikas Rishi
Dr. Ajay K Pandey
Dr. Siddharth Tiwari
Dr. Nitin Singhal
Dr. Rita Sharma

Venue:
National Agri-Food Biotechnology Institute
Sector 81 (Knowledge city)
Mohali 140306 Punjab
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