

RESEARCH NEWSLETTER

RESEARCH CELL

2nd Floor, Department of Pharmacy,
Sumandeep Vidyapeeth, Piperia, Vadodara
(An Institution Deemed to be University U/S 3 of UGC Act 1956)

11th ISSUE

MARCH TO
JUNE,
2019

Dear all faculty members and researchers,

It is our pleasure to release the 11th issue of Research Newsletter. The theme of the present issue is **“INNOVATIONS IN HEALTHCARE”**.

In this issue, we addressed the information pertaining to innovations in the healthcare field. A noteworthy and interesting subject will surely bring new research avenues for our researchers and faculty to achieve research excellence and in designing innovative devices and concepts. Apart from that, this newsletter covers other information related to research and achievements of our faculty members.

Research Cell aims to promote research culture in all the constituent institutes of Sumandeep Vidyapeeth with active participation of all the researchers and faculty members.

We believe that the students, faculty and clinicians should step forward for designing and submission of research proposals based on hypothesis and produce some innovations leading to IPR generation.

Research Cell expects that this issue of newsletter will update our faculty and researchers. Suggestions are always welcome to make this communication more meaningful.

Dr. A.K Seth
Director Research



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INTRODUCTION

**CREATIVITY
IS THINKING
UP NEW THINGS.
INNOVATION
IS DOING
NEW THINGS.**

Health innovation comprises new and improved health policies, systems, products and technologies, and services and delivery methods that improve people's health and wellbeing.

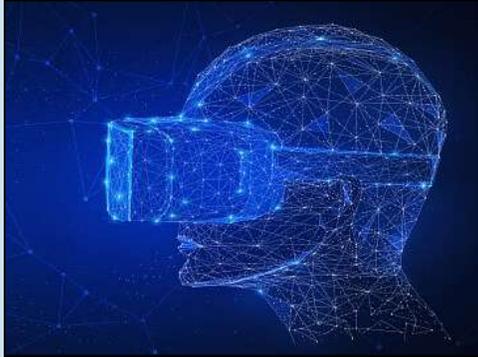
Health innovation responds to unmet public health needs, by creating new ways of thinking and working with a focus on the needs of vulnerable populations. It aims to add value in the form of improved efficiency, effectiveness, quality, sustainability, safety and/or affordability.

Health innovation can be preventive, promotive, curative and rehabilitative and/or assistive care. <https://www.who.int/topics/innovation/en/>

As biology and technology become ever more closely intertwined, new opportunities are emerging to improve healthcare through the use of innovative digital technologies. Some of the great strides by innovation teams in healthcare institute and industry offering an exciting field of innovation in healthcare. We live in an age in which technology is moving at a rapid pace, creating new fields and disrupting existing models and processes. New innovations in Pharma/dentistry/medical/nursing/physiotherapy can be extremely beneficial, helping the society to deal the health issues with more ease.

Steve Jobs predicted "**The biggest innovations of the 21st century will be at the intersection of biology and technology**", a movement referred to as **digital health or mHealth (mobile health)**. This forecast by the late Apple CEO appears to be on track as consumer technologies such as mobile phones and wearable devices are already beginning to revolutionize the wider health industry. These and other technologies are also proving to have great potential in pharmaceutical research and development, and are being adopted by pharma companies to assist in developing new drugs as well as improving patient outcomes and increasing patient access through reduced costs.

Innovation in Medical Sciences



VIRTUAL REALITY

The VR devices will also serve as a great aid for patients, helping with diagnosis, treatment plans and to help prepare them for procedures they are facing. It has also proved very useful in patient rehabilitation and recovery.

<https://www.proclinical.com/blogs/2019-2/top-10-new-medical-technologies-of-2019>



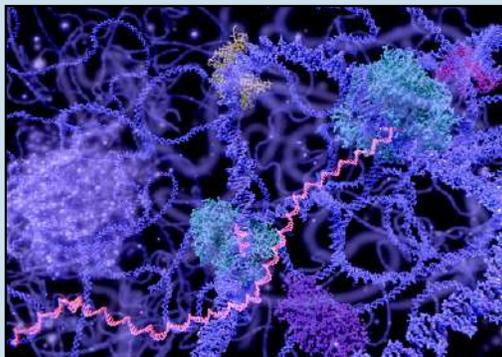
3-D PRINTING

3-D printing allows the user to create health products specific to the patient, including prosthetics, implants, and airway stents. 3-D printing also has applications in surgical planning, such as with heart surgery or even face transplant.

<https://www.mdlinx.com/internal-medicine/article/2972>

CRISPR

Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR) is the most [advanced gene-editing technology](#) yet. By modifying genes, some of the biggest threats to our health, like cancer and HIV, could potentially be overcome in a matter of years.

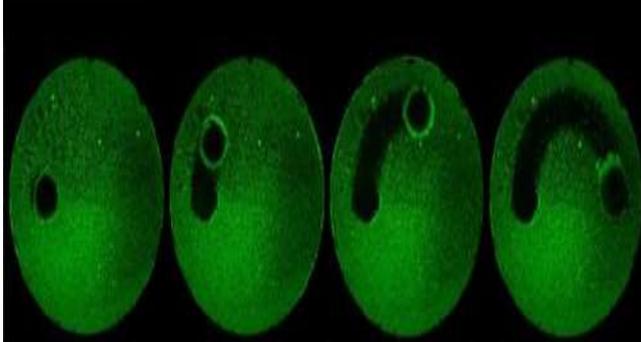


ROBOTIC SURGERY

Robotic approaches to surgery are less invasive and faster, and are often associated with improved clinical outcomes, such as decreased recovery time and reduced pain. These approaches also guide surgeons in the operating room.



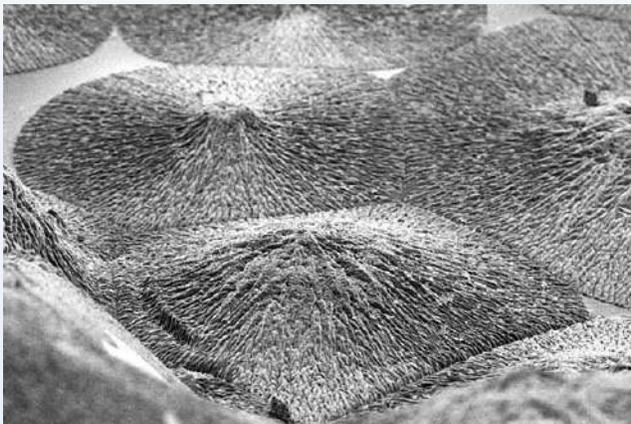
Innovation in Dental Sciences



Micro-robots cleared a glass plate of a biofilm, as shown in this time-lapse image.

A swarm of micro-robots, directed by magnets, can break apart and **remove dental biofilm, or plaque, from a tooth.** The innovation arose from a cross-disciplinary partnership among dentists, biologists, and engineers. University of P e n n s y l v a n i a
<https://www.sciencedaily.com/releases/2019/04/190425104323.htm>

- *Digital Impressions systems*
- *Improved implants*
- *Anaesthetic buffering*
- *Platelet rich plasma in oral surgery*
- *3D printing making digital physical*



Proteins Recruited to Build Synthetic Enamel for Dental Applications

The researchers were able to use proteins to manipulate mineralisation so that the precisely wanted material is produced and precisely at different scales. This is important because enamel has a hierarchical structure that changes as one looks at it from various distances.

<https://www.medgadget.com/2018/06/proteins-recruited-to-build-synthetic-enamel-for-dental-applications.html>



Self-Adhesive Drug-Eluting Patch to Treat Mouth Ulcers

Researchers at the University of Sheffield, UK and the Danish company **Dermtreat** have jointly developed an innovative patch, known as the Rivelin, to improve treatment for mouth ulcers.

<https://www.medgadget.com/2018/06/self-adhesive-drug-eluting-patch-to-treat-mouth-ulcers.html>

Innovation in Physiotherapy

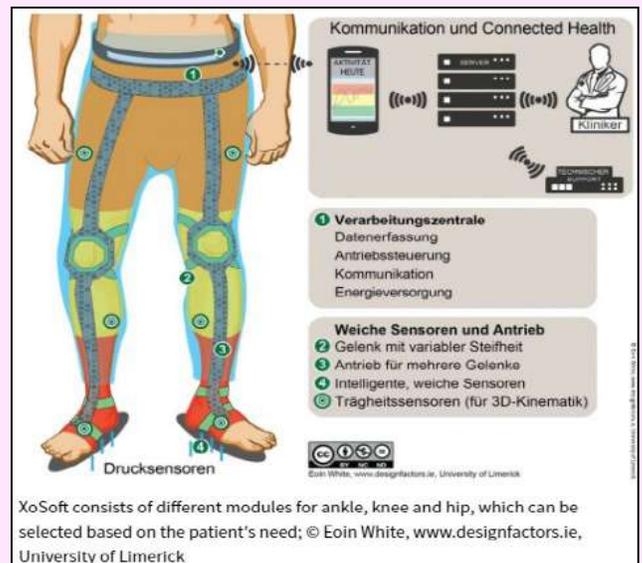
EKSO BIONIC SUIT

The Ekso bionic suit helps people who have been deadened to stand up and walk utilizing battery-controlled motors that work the legs to help the patient with moving. It was intended to help physical therapists who treat various patients in a brief period of time. This device enables individuals to relearn proper step pattern and trains them to walk again after paralysis.



XoSoft Project Wearable Intelligent Exoskeleton

After a stroke or as a result of aging, there are many situations when people are impaired in their walking ability and rely on a personal assistant or auxiliary aids and services. The XoSoft Project offers a solution: a soft exoskeleton that can be worn like a pair of leggings and stiffens or softens, depending on the situation.



REHABILITATION ROBOTS

Rehabilitation robots have been appeared to enhance the discovery of post-stroke impairment, which brings about better treatment for the patient. The robots don't supplant the physical therapist yet rather enable them to perform tasks that will profit patients.

Innovation in Pharmaceutical Sciences

Innovation represents the implementation of new or significantly improved products, services, or processes. The field of medicine is constantly evolving and scientists come up with innovative ways to improve the healthcare system to make it accessible to commoners as well as to bring down the cost of pharmaceuticals. Here are a few such medical innovations that have not only sparked a change in patient treatment, but are also eco-friendly and easily available.



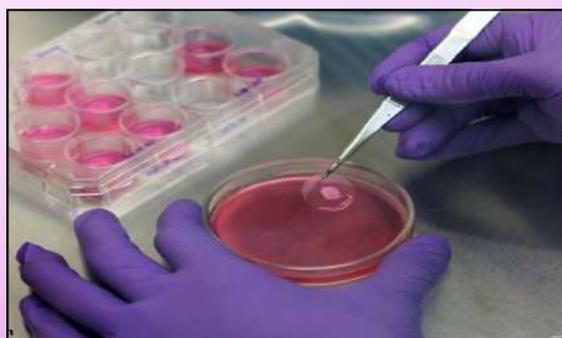
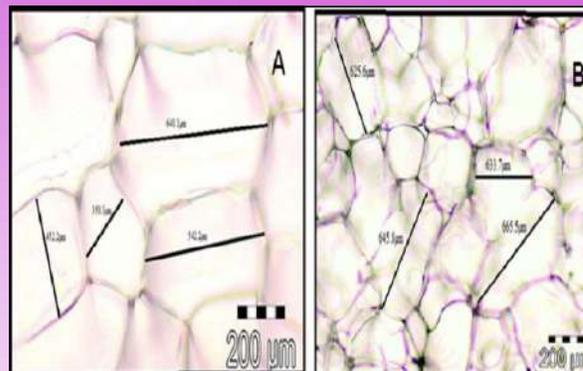
O2-Matic

A team from M.S. Ramaiah Institute of Technology including Nitin Hebbar, Aniruddh Jain, Ashish Sharma and others came up with an interesting idea named 'O2-Matic' is a low-cost method of producing oxygen (O₂) instantly for emergencies.

Bio-polymeric Anti-Microbial Wafers

D.V. Gowda, Sharon Fredric, Atul Srivastava, three researchers from JSS College of Pharmacy, Mysore found that topical antimicrobial compounds embedded in absorbent dressings can control infection of wounds and improve healing.

www.pdf.semanticscholar.org



Artificial Liver Tissue

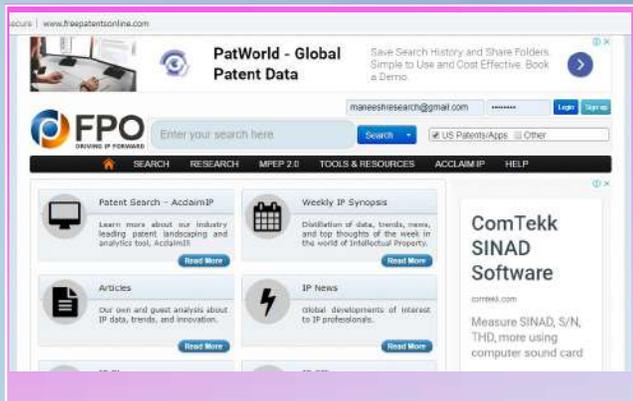
Three Bengaluru scientists developed such tissues that perform functions of the human liver, by using 3D bio-printing technology.

www.yourstory.com>2016/01

Come-up with innovative Ideas..... Here are few tools..

Every new thought is a sequence of cumulative knowledge, daily updates in day-to-day activities and aspiration towards learning. In the current scenario, each and every industry is updating for innovative concepts and products. Healthcare sector especially in priorities in every country.

Searching for patent applications in our field of interest can serve the best explore our true potential as an innovator and bring new ideas and concepts. Here we are sharing for Patent Search Engines



Free Patent Online

After registration (Free) to this site, anyone can get pdf version of all patents online. This can consider as the best site for reading all patent types in all the field, free of cost. It can best serve by searching important key words of your interest.

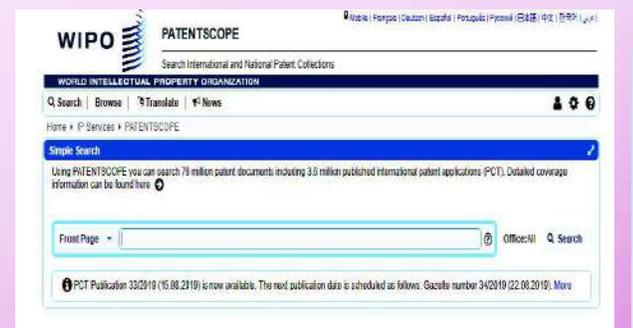
www.freepatentonline.com



ESPACENET

Espacenet is accessible to beginners and experts and is updated daily. It contains data on more than 110 million patent documents from around the world. Supporting information can help you understand whether a patent has been granted and if it is still in force

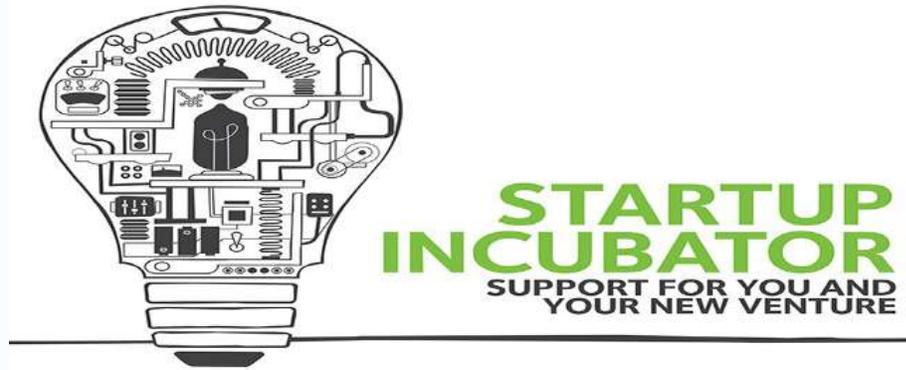
https://worldwide.espacenet.com/help?locale=en_EP&method=handleSearch&helpSearchQuery=advanced+search&Submit=Search



WIPO (patentscope)

Using PATENTSCOPE you can search 76 million patent documents including 3.6 million published international patent applications (PCT). Detailed coverage information can be found here .

<https://patentscope.wipo.int/search/en/advancedSearch.jsf>



A **startup incubator** is a collaborative program designed to help new startups succeed. Incubators help entrepreneurs solve some of the problems commonly associated with running a startup by providing workspace, seed funding, mentoring, and training. Startup incubators are usually non-profit organizations, which are usually run by both public and private entities.

<https://www.topmba.com/blog/what-startup-incubator>

https://www.startupindia.gov.in/content/sih/en/compendium_of_good_practices/incubationsupport.html

10 startups are redefining healthcare in India (<https://yourstory.com/2018/01/healthtech-startups-india>)

List of the most common services provided by business incubators:

- Help with business basics
- Networking opportunities
- Marketing assistance
- High-speed Internet access
- Accounting/financial management assistance
- Access to bank loans, loan funds and guarantee programs
- Help with presentation skills
- Connections to higher education resources
- Connections to strategic partners
- Access to angel investors or venture capital
- Comprehensive business training programs
- Advisory boards and mentors
- Management team identification
- Help with business etiquette
- Technology commercialization assistance
- Help with regulatory compliance
- Intellectual property management and legal counsel

<https://inc42.com/resources/top-20-startup-incubators-india/>

RESEARCH ARTICLES

Purposeful innovation: How startups are solving challenges plaguing Indian healthcare

It is important to nurture and support such indigenous innovation in these early days - as they can make India the MedTech innovation hub for global emerging markets.

ET CONTRIBUTORS | Apr 05, 2019, 11:53 AM IST



By **Siraj Dhanani**



The Indian MedTech sector is coming of age - as evidenced by the strong growth in innovative startups that are creating novel technologies to solve Indian, and global, challenges.

India is poised to be the world's third largest economy by 2030, according to Economic Affairs Secretary Subhash Chandra Garg. While India has witnessed strong economic growth in recent years, it has not made commensurate progress in other areas, such as healthcare. Improvements in healthcare expenditure, outcomes, and infrastructure especially on the public side, have not kept pace with economic growth.

In fact, poor quality of healthcare is the biggest cause of preventable deaths. 2.4 million Indians die

<https://economictimes.indiatimes.com/small-biz/startups/newsbuzz/purposeful-innovation-how-startups-are-solving-challenges-plaguing-indian-healthcare/articleshow/68734703.cms>

Are these Home healthcare innovations the solution to India's healthcare burden?

By Agencies | New Delhi | Published: March 7, 2019 9:29:22 PM

Increasing number of healthcare professional as well as healthcare infrastructure is a long term and high investment proposition.



<https://www.financialexpress.com/lifestyle/health/are-these-home-healthcare-innovations-the-solution-to-indias-healthcare-burden/1508605/>

Health Care Innovation: Harnessing New Technologies To Benefit Patients



Sanjay Poonen Forbes Councils
Forbes Technology Council CommunityVoice @

POST WRITTEN BY
Sanjay Poonen

I work in Silicon Valley, spanning tech, business and innovation. Love family, piano, sports and leadership. On Twitter @spoonen.

The health care industry is experiencing perhaps its most rapid pace of innovation ever. Understandably, this shift has been driven in part by technology, with new innovations presenting tantalizing value for health care. Yet the time has also come to shift the emphasis from providers and doctors to patients and their data.

<https://www.forbes.com/sites/forbestechcouncil/2018/04/02/health-care-innovation-harnessing-new-technologies-to-benefit-patients/#6c07b7f35a88>

UPCOMING SEMINAR & CONFERENCES

Medical
hospital needs expo

23rd EDITION
Chennai

26	27	28
FRI	SAT	SUN

JULY 2019

24th EDITION
Mumbai

13	14	15
FRI	SAT	SUN

DEC 2019

Interaction of Healthcare Intelligentsia



BRAIN STORM MEDICAL Seminars
Conference
Workshops

Interaction of Healthcare Intelligentsia

<https://www.medical.in/conferenceandseminar.php>



Innovation Manifesto
for India

15th India Innovation
Summit 2019

21st – 22nd August 2019
Hotel Taj West End,
Bengaluru

exhibition & conference on
HOSPITAL NEEDS



MEDICAL EXPO
INDIA, DELHI, 7th edition
HOSPITAL NEEDS EXHIBITION & CONFERENCE

DELHI AUG 2019
23 **24** **25**
FRI SAT SUN
PRAGATI MAIDAN
HALL NO. 7-A,B,C

AWARDS / ACHIEVEMENTS

Sr. No.	Name	Title of Award	
1	Mr. Ashish Shah, Assistant Professor, Department of Pharmacy	1st Prize, Poster Presentation at National conference on Translational research in cancer biology, Charusat, Changa, Gujarat.	
2	Dr. Joseph Vinod, Assistant Professor, Department of Pharmacy	Best E-paper at Internal Quality Assurance Cell, Sumandeep Vidyapeeth, Vadodara, Gujarat	
3	Dr. Medha Wadhwa Assistant Professor, Department of Management	Best Research Paper at Institution Innovation Council, SV	
4	Dr. Pinkal Shah, Professor, Department of Management	Best Research Paper at Uka Tarsadia University	
5	Dr. Aman Singhal Assistant Professor, General Surgery, SBKSMIRC	Fellowship in Indian association of Gastro Intestinal Endo Surgery (FIAGES)	
6	Dr. Chandramani B. More, Prof. & Head, Oral Medicine, KMSDCH	The Sumandeep Vidyapeeth Innovation Award	Sumandeep Vidyapeeth
		Best Scientific Presentation	2nd congress of South Asian Association of Pediatric Dentistry
		Senior Researcher Award	Inst. of Dental Science, Shiksha 'O' Anusandhan, Bhuvneshwar, Odisa

AWARDS / ACHIEVEMENTS



**Distinguished Researcher Award to
Dr. Sanjay Prakash, Professor, Dept. of Neurology, SVDU
By Headache Society of India**



**Dr. Ashish Shah, Asst. Prof., Dept. of Pharmacy
First Prize in poster presentation for research in virtual screening of novel anti-cancer agents in
National seminar on Translational Research in Cancer Biology**

RESEARCH ORIENTATION PROGRAMS

On
“Extramural Research Funding and Opportunities”
By Research Cell, SVDU

12th April, 2019 For faculty of KMSDCH



9th May, 2019 for Physiotherapy, Nursing and MBA



25th May, 2019 for Pharmacy & Physiotherapy



IPR Symposium

Research cell conducted **Research Award Distribution Ceremony** and **One Day Symposium** on '*Indian Patent Rights in Healthcare Industries & Patent Prosecution in India*' in order to sensitize our researchers and faculty towards importance of very crucial IP generation of their invention. **Mr. Amit Patel**, Patent Agent, And Assistant Professor, GTU, Gandhinagar, was invited as guest speaker.



NEWS UPDATES

In a first, Mumbai hospital uses stem cells to save baby

Times News Network

Mumbai: In what it claims is the first such documented case in the world, a city hospital said on Thursday that it has used stem cells to save the life of a premature born 10-month-old baby suffering from chronic lung disease.

Though the Indian Council of Medical Research (ICMR) regulations doesn't approve of stem cell use in neonatal conditions, Santacruz's Surya Hospital claims it was performed to save a life and open newer research avenues.

The hospital said the son of Chandivall couple Pramod (44) and Meenakshi Dubey (42) got a new lease of life from stem cells that "accelerated the development" of his lungs and helped him fight a severe form of bronchopulmonary dysplasia (BPD)—a condition that destroys lungs and majorly affects babies born before 28 weeks of gestation.

"As far as we know, it's the first time where mesenchymal stem cells have been successfully used to treat BPD in a micro preemie newborn," said Dr Nandkishore Kabra, director, neonatal ICU at Surya Hospital.



The Dubey with Rudransh, a premature baby who developed a chronic lung disease. Doctors had advised the parents to expect the worst, but then resorted to stem cell treatment

seeing improvement in the baby's lung function within two weeks of injecting the boy with 40 million stem cells directly in the organ. The baby went home in March after spending nearly nine months in the hospital. He now weighs nearly 5kg.

A Central government official, though, said the hospital should have at least obtained the permission of the National Apex Committee for Stem Cell Research and Therapy since a hospital ethics committee approval does not suffice.

Times of India 29th April 2019

A Mystery Fungal Infection Immune To Drugs Is Secretly Sweeping The Globe

In Hospitals From India To America, Candida Auris Is Wreaking Havoc

Mathew K. Andrew Jacobs

In May an elderly man was admitted to the Brooklyn branch of Mount Sinai Hospital for abdominal surgery. A blood test revealed that he is infected with a newly discovered germ as deadly as it is mysterious. Doctors quickly isolated him in the intensive care unit.

The germ, a fungus called *Candida auris*, preys on people with weakened immune systems, and it is spreading across the globe. In the past five years, it has hit a small unit in Kerala, swept through a hospital in Spain, forced a greasy

died after 50 days in the hospital, but *C. auris* did not. Tests showed it was everywhere in the hospital, so invasive that the hospital needed special cleaning equipment and had to rip out some of the ceiling and floor tiles to eradicate it.

"Everything was positive—the walls, the bed, the doors, the curtains, the phones, the sink, the whiteboard, the poles, the pump," said Dr Scott Lorin, the hospital's president. "The mattress, the bed rails, the canister holes, the window shades, the ceiling, everything in the room was positive."

C. auris is so tenacious, in part, because it is impervious to



A fungal disease expert holds a microscope slide with inactive *Candida auris*

What is *Candida auris*?

Why is it dangerous?

It's often resistant to major antifungal drugs. More than 99% of infections are resistant to at least one such drug, while 30% to two or more major drugs. Once the germ is present, it is hard to eradicate from a facility. Some hospitals have had to bring in special cleaning equipment and even rip out floor and ceiling tiles to get rid of it.

It's a fungus that, when it gets into the bloodstream, can cause dangerous infections that can be life-threatening. Scientists first identified it in 2009 in a patient in Japan. In recent years, it has emerged around the world, largely in hospitals and nursing homes. There have been 587 cases reported in the US, while it has spread to the corners of the world, from Venezuela to Spain to Pakistan and India.

Who's at risk?

People with weak immune systems are the most vulnerable. This includes elderly people who're already sick. In one case, newborns were also infected at a neonatal unit.

Why haven't people heard about this?

In part because it is new, but also because outbreaks have at times been played down or kept confidential by hospitals, doctors, and even governments—in many cases with the aim of avoiding scaring the public.



black lagoon," said Dr Tom Chiller, who heads the fungal branch at the CDC, which is spearheading a global detective effort to find treatments and stop the spread.

This rushed panic is playing out in hospitals around the world. Individual institutions and national, state and local governments have been reluctant to publicize outbreaks of resistant infections, arguing there is no point in scaring patients—or prospective ones.

In the US, 587 cases of people have contracted *C. auris* have been reported, concentrated with 308 in New York, 104 in New Jersey and 144 in Illinois, according to the CDC.

The symptoms—fever, aches and fatigue—are seemingly ordinary but when a person gets infected, particularly someone already unwell, such commonplace symptoms can be fatal.

Workers who care for patients infected with *C. auris* worry for their own safety. Dr Matt

Regions Affected			
ASIA	AMERICAS	EUROPE	
India	US	Britain	Spain
Pakistan	Canada	France	Germany
Russia	Australia	Venezuela	S Africa
China	Japan		Kenya

Times of India 8th April 2019

Viruses 'hack' molecular biological system

Paper Explores How HIV, Hepatitis C Viruses Target cells

Parth Shastri@timesgroup.com

Ahmedabad: Viruses such as HIV—responsible for AIDS—are difficult to deal with. How they enter human cells and how they multiply and manipulate the human immune system have been studied over the years to find a cure. A new research published in scientific journal "Nature" points at a mathematical

stems", was recently published in "Nature". A senior research fellow at Dhirubhai Ambani Institute of Information and Communication Technology (DAIICT), Dr Vandana Ravindran, was one of the lead authors. Other team members included Prof V Sumithra from DAICT and researchers from Toho University in Japan, University of Glasgow and University of



Viruses choose the driver nodes in our molecular systems to gain access to the

Info processing

Like electric circuits, biological molecules also transfer and process information. Such biochemical 'circuits' perform computational tasks like signal amplification, integration and information storage. Virus attack affects this capability of the network and reduces immunity in the case of viruses like HIV.

this computational biology can be found in drug delivery system and identifying anti-viral targets."

Ravindran is currently a research fellow at The Royal Society as part of two-year Newton International Fellowship under which she got a grant of GBP91,192 (approximately Rs 82.2 lakh) for her post-doctoral research. "Modelling viral host molecular interaction using control theory".

The paper argues that virus efficiently brings the virus dynamically organize host system into its control

Times of India 29th April 2019

FOLLOW UP NEWS OF PREVIOUS THEME

GLOBAL NANOPARTICLES IN BIOTECHNOLOGY AND PHARMACEUTICALS MARKET DEVELOPMENT HISTORY, CURRENT ANALYSIS AND ESTIMATED FORECAST TO 2028



The Worldwide Nanoparticles in Biotechnology and Pharmaceuticals Market analysis is provided for the international markets including development trends, competitive landscape analysis, and key areas development status. Nanoparticles in Biotechnology and Pharmaceuticals market research report offers high-quality insights and in-depth information of nanoparticles in biotechnology and pharmaceuticals industry. The report also analyzes the growth rate, future trends, sales channels, distributors with market actual development and Analysis for huge growth by 2028.

<https://abusintelligence.com/2019/06/19/global-nanoparticles-in-biotechnology-and-pharmaceuticals-market-development-history-current-analysis-and-estimated-forecast-to-2028/>

Free Machine Learning Repository Increases Accessibility in Genome Research

Kipoi enables an easy exchange of machine learning models in the field of genome research. The repository was created by Julien Gagneur, Assistant Professor of Computational Biology at the TUM, in collaboration with researchers from the University of Cambridge, Stanford University, the European Bioinformatics Institute (EMBL-EBI) and the European Molecular Biology Laboratory (EMBL).



<https://www.sciencedaily.com/releases/2019/05/190529131154.htm>



For your suggestions, mail us on :
Dr. Maneesh Jaiswal
Chief.researchofficer@sumandeeepvidyapeethdu.edu.in