

## News at a Glance

### IU awarded as Best Young University of Gujarat



Indrashil University (IU) was awarded 'Best Young University of Gujarat' at the "Pride of Gujarat 2021" program organized by News TV 18, Ahmedabad. Shri Nitin Patel, Deputy Chief Minister of Gujarat, presented the award to Dr Bharti Dave, Dean- School of Science and Dr Amish Vyas, Dean-School of Engineering.

### New Programme Launch: PGDHM (Post Graduate Diploma in Hospital Management)

Due to the rapid growth in the hospital sector, there is great need for professional managers to improve efficiency and effectiveness of private as well as public sector hospitals. So there is a need felt for a course that is designed in a manner to impart sound knowledge of concepts and management fundamentals for hospital functioning under different modes. This curriculum will develop professionals who would demonstrate strong problem solving acumen and analytical skills alongside great people dealing skills. The students of this course will imbibe in them a sense of ownership towards the service to patients and the society at large.

#### The objectives of this course are:

- ▶ To understand the managerial skills and its implementation in an organized way in the hospital sector.
- ▶ To acquaint full functioning of the hospital sector
- ▶ To familiarize with the National Health Programs and Insurance and its application in Hospitals
- ▶ Efficiently implement process of accreditation in the health sector
- ▶ To develop managerial abilities and analytical skills, and training to communicate with the community, interaction with government and statutory authorities



## From the Provost's Desk



In tandem with the 4IR (Industry 4.0), there are numerous expectations from the HEIs to transform the future of education using technology and automation. In fact, in the Education 4.0 era, an instructor has to wear many hats-that of a course coordinator and evaluator as well as a mentor, research guide and a professional role model. They are required to take up the role of a facilitator over a teacher, to navigate the university systems and sensitize students to self-reflect on their limitations empathetically. Equally, the challenge before students is to acquire skills like- critical thinking, problem-solving, agility and adaptability, initiative and entrepreneurialism, effective oral and written communication, curiosity and imagination. Out of these, curiosity and imagination is inherent in human beings and it only needs to be nurtured vigilantly and patiently by the parents and teachers from the early age of a toddler. In the later years, this distinct trait of students will arm them to pose open-ended questions thus enabling them to be thorough with the theory, concepts, knowledge and application of the subjects they opt for. Adopting such a perspective would entail the promotion of students' personal growth and development along with yielding of positive program outcomes slated in the university's objectives. This ever evolving urge to learn and excel is the ingrained trait of mankind and let it be sensitized, recognized and nurtured by everyone associated with the knowledge industry.

Best wishes,

**Dr. J. S. Yadav**

FNA, FTWAS

J.C. Bose Fellow

Former Director, CSIR-IICT and CSIR-Bhatnagar Fellow

Provost, Director (Research) & Trustee, Indrashil University

## Inside this issue

1. Dignitaries on Campus	01
2. Events	02
3. Expressions	04
4. Industry Alliances	06
5. Achievements	08
6. Activities on Campus	10
7. Flora & Fauna	16

## EDITORIAL BOARD

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## Editorial

Dear Esteemed Reader:

It was imperative to bid adieu to 2020 that coloured the world with dark shades and to welcome the New Year. The prayers bore fruit when the dawn of 2021 witnessed a fresh breath of hope and sunshine. The routine activities at campus saw vibrancy with students thronging to physical classes and enjoying college life. We saw momentum in academic lectures, live seminars and events like the Kite festival, Republic day, Blood Donation Drive, Science Day, International Women's Day though with strict adherence to Corona SOPs. The research indulgence of faculty was also exhibited in full swing. All these events are featured in the present edition showcasing a gleam on the faces of students very explicitly.

However, it was all back to the pavilion soon when the second wave of Covid-19 struck followed by lockdown phase 2. Nevertheless, online activities continued with the same fervor, defying curbs on the zeal of students and to continue participation in all academic activities through virtual platforms. International e-Conference, Earth day, Quiz time, Mathematic day, Technology day and a few webinars went on smoothly online. Nature also seemed to be in full bloom and beaming with bright colours at the campus in this period. And finally, all these rigours were duly recognized when IU was stamped with the 'Best Young University of Gujarat' award in the event -Pride of Gujarat hosted by NEWS TV 18. The enthusiasm and energy is refueled in the air of IU to uphold the best practices and scale newer heights with each passing year.

Will keep capturing all the special moments at IU and sharing with you in the next issue, till then,

Goodbye!

Namrata Bajaj



## Dignitaries on Campus

Luminaries from industry, academia and research continued to enlighten IU students & Faculty with their wisdom, knowledge and experience, both on virtual and physical platforms despite the entire world reeling through a very tough time due to the pandemic.



**Prof. Mannepalli Lakshmi Kantam**  
Distinguished Professor,  
Dept. of Chemical  
Engineering, ICT, Mumbai



**Prof. T K Chandrashekhara**  
Former Director-NIIST,  
Former Secretary- SERB  
Senior Professor- NISER



**Prof. P. K. Jain**  
Scientist G & Head –  
Centre for Carbon Materials,  
ARCI ( DST), Hyderabad



**Dr. Sanjay Vaid**  
Consultant, Coach & Regional  
Sales Director, Nordics Cyber  
Security & GRC HCL Technologies



**Dr. Palak Sheth**  
Director, Eduprogess and  
Research Pvt. Ltd.  
Ahmedabad



**Padma Shri Prof. Dipanker Chatterjee**  
Shanti Swarup Bhatnagar Fellow,  
Honorary Professor, Molecular  
Biophysics Unit, IISc. Bangalore



**Prof. Aniruddha Agnihotri**  
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EHS & Head Environmental  
Sustainability, Health and Safety, TCS



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CSIR-CFTRI, CIMAP-Lucknow



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Symbiosis International University



**Isha Velekar Rao**  
Director-Assk Precision  
Engineers



**Mamta Lodha Kothari**  
Director-M B Sugars  
& Pharma



**Hetika Shah**  
Founder & Director-  
4S Shield



**Archana Vijayan**  
Founder & CEO-  
ARVI Achievers



## Events

### National Webinar series (SoS)

School of Bioscience organized National webinar series on 'Opportunities in Chemical and Biological science for indigenization in India' virtually with eminent speakers across India from December 6, 2020 to January 12, 2021. It was sponsored by GUJCOST (Gujarat Council of Science & Technology).



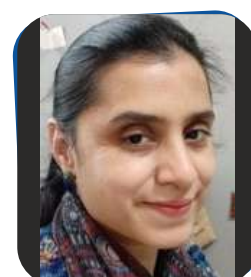
**Dr. S. Chandrashekhara**  
Director - CSIR IICT, Hyderabad,  
**Talk on:** Science without boundaries  
for Sustainability



**Prof. Anamik Shah**  
Vice Chancellor -  
Gujarat Vidyapith  
**Talk on:** Orchestration of  
collaborative research efforts between  
academia and industry : Lessons to  
learn from some case studies.



**Prof. Marius M. Balas**  
Professor, Aurel Vlaicu University,  
Arad, Romania  
**Talk on:** The Parallel Shift



**Prof. Millie Pant**  
Professor, IIT Roorkee  
**Talk on:** Marching towards  
Atmanirbhar Bharat:  
A contribution of Science  
and Technology



**Prof. Himanshu A Pandya**  
Vice Chancellor  
Gujarat University  
**Talk on:** Indigenisation of  
Indian minds for futuristic  
atmanirbhar Bharat



**Kanury Venkata Subba Rao**  
Co-founder,  
CTO PredOmix Technologies Pvt. Ltd  
Former Head, (THSTI) Faridabad  
**Talk on:** The Uneven Landscape for  
Tech Startups in India:  
Some Perspectives



**Prof. Avimanyou Vatsa**  
Professor, Gildart Haase School of  
Computer Sciences and Engineering  
Fairleigh Dickinson University, New Jersey  
**Talk on:** Role of Data Science  
for Food Security



**Prof. Rama Sushil**  
Professor, DIT University  
**Talk on:** Artificial Intelligence  
is a need for Health Care



**Prof. Javed Iqbal**  
Founder and Chairman  
Cosmic Discoveries, Hyderabad  
**Talk on:** How Covid-19 opens-up  
opportunities for young Indians to  
become entrepreneurs?



**Dr. Rakeshwar Bandichhor**  
Director and Senior Principal Scientist  
Dr. Reddy's Laboratories,  
Hyderabad  
**Talk on:** Synthetic Strategies for APIs



**Prof. Sandeep Singh Sanger**  
PhD research Fellow at University  
of Copenhagen, Denmark  
**Talk on:** Deep Learning  
Framework for Clinical  
Diagnosis: A Healthcare System

### International Webinar series (SoE)

Department of Computer Science and Engineering hosted International Webinar Series in association with GUJCOST on "Advanced & Recent Technologies in the field of Computer Science & Engineering towards Atmanirbhar Bharat", March 4–13, 2021



## International e-Conference, March 18 - 19, 2021

IU hosted International e-Conference jointly with Nirma University on "Covid-19: Challenges and Opportunity in Pharmaceutical Research". It was held with the prime objective of providing an opportunity for close interaction amongst scientists with varied interests in diverse fields of research related to Covid-19 through discussion, deliberation and presentations.



**Prof. Dong-Soo Shin**

Department of Chemistry,  
Changwon, National University,  
Changwon, Kyongnam, South Korea.



**Dr. Frederick Frankhauser**

Department Chair, Pharmaceutical  
Business & Administrative Sciences,  
Program Director, Regulatory Affairs  
and Health Policy, School of Pharmacy,  
MCPHS University, USA.



**Dr. Marco Lolli**

Associate Professor in Medicinal,  
Chemistry, Dept. Science and  
Drug Technology, University of  
Turin (UniTO), Italy.



**Dr. Heena Patel**

Associate Director,  
Clinical Operations,  
Gilead Sciences, Inc.,  
Foster City, CA, USA.



**Dr. Ram Vishwakarma**

Director-Indian Institute of  
Integrative Medicine, Jammu



**Dr. Asit K. Chakraborti**

Visiting Professor,  
Dept. of Chemistry, IIT-Ropar, Punjab



**Dr. Ian S. Haworth**

Associate Professor & Vice Chair,  
University of Southern California,  
Los USA



**Dr. Stephen Kerr**

Interim Dean and Professor,  
School of Pharmacy,  
MCPHS University, USA



**Dr. Bhushan Patwardhan**

Hon'ble Vice-Chairman,  
University Grants Commission,  
New Delhi



**Dr. Hitesh Malviya**

Director, New Vaccines,  
Serum Institute of India, Pune



**Dr. Suresh Patankar**

Clinical Physician,  
ACE Hospital, Pune.



**Dr. Souvik Maiti**

Sr. Principal Scientist, CSIR -  
Institute of Genomics and  
Integrative Biology, New Delhi.



**Dr. Bakulesh Khmar**

Executive Director,  
Cadila Pharmaceuticals Ltd.



**Dr. Prathama Mainker**

Sr. Principal Scientist & Chair,  
IICT, Hyderabad



**Dr. Suman S. Thakur**

Principal Scientist, Proteomics  
and Cell Signaling, (CCMB),  
Hyderabad.



**Dr. Anthony Addlagatta**

Senior Principal Scientist,  
Applied Biology, IICT, Hyderabad

### Chemistry for Controlling and Combating Covid-19 (CCC-Covid-19)

Dr Rajesh Bhosale



In the beginning of December 2019 a novel coronavirus was first detected in the patient in Wuhan, Hubei province, China. Within a short span of time, World Health Organization (WHO) has declared severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) as pandemic and the disease has been named as COVID-19. In the initial stage of COVID-19 the SARS-CoV-2 origin was a debatable issue. Comparative genomic data analysis enables scientist to hypothesize that the proximal origin of SARS-CoV-2 is from animal, not as a laboratory construct or a purposefully tailored virus.

The nucleotides of SARS-CoV-2 have 84%, 79.6% and almost 50% similarity with bat SARS-like coronavirus, SARS-CoV and MERS-CoV, respectively. Whereas 96% homology at the whole-genome level with bat coronavirus. The transmission of the SARS-CoV-2 was initiated from bat to individual human and further spread from human to human community. Currently worldwide, over 152 million SARS-CoV-2 positive cases and over 3.19 million deaths have

been reported. Whereas, in India over 19.6 million positive cases and over 0.216 million deaths have been reported. As of May 2021 WHO reported 3.4% fatality rate globally, whereas in India it is 1.3%. Early diagnosis, isolation or quarantine, social distancing and physical barriers such as masks, are the primary measures to slow down the SARS-CoV-2 infections and decrease fatality rate. Sanitization, diagnosis, medication and vaccination are the four main pillars in effectively controlling and combating Covid-19 outbreak. These four pillars are based on a solid foundation of chemistry (Figure-1). In the present expressions we discussed the role of chemistry in controlling and combating Covid-19 outbreak.



Figure 1: Chemistry based four pillars; sanitization, diagnosis, medication and vaccination are in controlling and combating Covid-19 outbreak.

### 1) Sanitization:

Historic pandemics including first severe acute respiratory syndrome (SARS) in 2002/2003 and Middle East respiratory syndrome (MERS) in 2007 revealed that the virus gets transmitted through respiratory droplets or contact. The contact transmission takes place when contaminated hands touch the mucosa of the mouth, nose, or eyes; the infection chains get interrupted through appropriate hand sanitization (hand washing). WHO recommended frequent hand washing by soap-water solution, this hygienic measure is not easy to implement for individuals with frequent customer or patient contact or travelers. Alcoholic hand rub solutions or gels are recommended as an alternative in these cases. The alcohol may be ethyl alcohol, isopropyl alcohol, or a combination of both is used in the percentage with water. WHO recommended two different alcohol-water formulations for hand rub solutions such as formulation-1 with 85% ethyl alcohol, and formulation-2 with 75% isopropyl alcohol, against SARS-CoV-2. The virucidal activities of soap-water solution or hand sanitizers rely on the chemistry of their active ingredients. Active ingredients of soaps i.e. lipid amphiphiles and hand sanitizers i.e. ethyl alcohol or isopropyl alcohol are feature both polar (hydrophilic) and nonpolar (hydrophobic) regions in their molecular structures. As a result, the hydrophobic parts of the active ingredient molecules interact with proteins and membranes of the virus and effectively break the virus structure, whereas the polar part is attracted to water.

After confirmation of Covid-19 outbreak worldwide, material chemists immediately began to work on the face mask technology for the controlling respiratory SARS-CoV-2 transmission. They tried to develop self-cleaning face masks with antiviral technology which deactivates and controls SARS-CoV-2 transmission. These antiviral masks could protect frontline workers including health-care workers, police men and social service workers from infection. During the last one year rapid scientific development happened in face mask technology. Israeli scientists invented a reusable face mask which can kill the SARS-CoV-2 with heat by drawing power from a mobile phone charger. Indian scientist Dr. Vemula has developed face masks based on fibers coated with quaternary ammonium salts to destroy virus particles. The company Color Threads is using vemula's technology to make G99+ masks. Scientists from University of Toronto established SARS-CoV-2 antiviral mask. Active mask as its external surface deactivates over 99% of the coronavirus suspension within minutes. Swiss-indo joint venture developed antiviral face mask technology. The principle is the empowering of fabric surfaces with strong positive charges. When viruses come in contact with fabric, the viral cell which is negatively charged is destroyed leading to permanent deactivation of the virus. Biocompatible positively charged silver nanoparticles, copper nanoparticles and zinc nano-particles were used for the coating of textile surfaces. These advanced fabric technologies showed hope of rays in the controlling respiratory SARS-CoV-2 transmission.



## 2) Diagnosis:

Diagnosis is the key pillar in the controlling and combating Covid-19 outbreak. In the current scenario two main quantitative detection strategies are implemented worldwide, either via the detection of the viral RNA or the antibody produced upon exposure to the infection. Till now the reverse transcription-polymerase chain reaction (RT-PCR) is mostly used and trusted method to detect RNA of the SARS-CoV-2. The virus antibody or antigens detected using immunological and serological assays. Both detection strategies are important and complement each other. RT-PCR test requires a 2-4 h turnaround time. Immunoassay tests detect antibody IgM and IgG in the patient blood after 3-6 days and 8 days infections, respectively. To tackle the limitations of the present diagnosis methods within a short span of time scientists are developing several faster and accurate assays based on previously developed principles and technologies.

## 3) Medication:

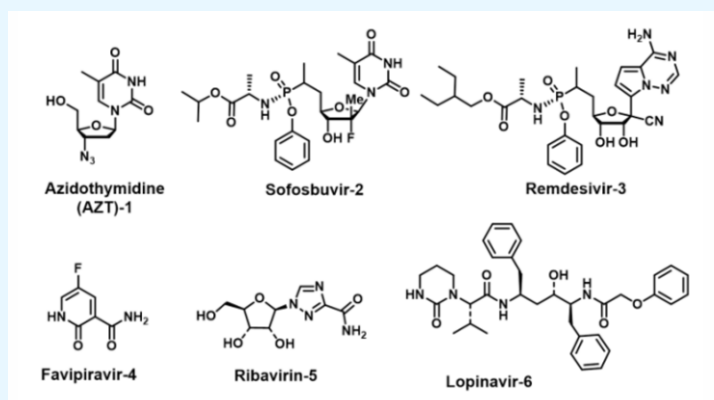


Figure 2: Structure of small molecules used as antiviral drugs.

Medication or therapeutics is the most important pillar in combating Covid-19 outbreak. Currently, there are no firm treatment options available for SARS-CoV-2 infections. Repurposing of approved or investigational drugs is considered as a very effective strategy for drug discovery as it involves less time and cost to find a therapeutic agent in comparison to the new drug discovery. Small molecule drugs have been game changers in the combating other viruses (Figure-2). Among them azidothymidine (AZT) 1, a nucleoside reverse transcriptase used to prevent and treat HIV/AIDS. Sofosbuvir 2 is another break-through antiviral drug, an inhibitor of the RNA-dependent RNA polymerase used to cure infection caused by hepatitis C virus (HCV). Remdesivir 3 is the only FDA approved drug for the treatment of COVID-19 so far. It is a similar pro drug like Sofosbuvir 2. Remdesivir 3 is a nucleoside analog originally developed against Ebola virus infections, but did not have sufficient activity against these targets. In 2017, it exhibits in-vitro and in-vivo inhibits MERS-CoV and SARS-CoV-1 replication. The in-vitro and in-vivo preclinical studies as well as case reports indicate its efficacy against SARS-CoV-2. Remdesivir 3 in Vero E6 cells, shown to block the viral infection at low concentration ( $EC_{50} = 0.77 \mu M$ ) with high selectivity index ( $SI > 129.87$ ). The  $EC_{90}$  value ( $1.76 \mu M$ ) was also low enough to be achieved in non-human primate models. It also

efficiently inhibited SARS-CoV-2 infection in human liver cancer Huh-7 cells. Small molecule antiviral drugs such as Favipiravir 4, Ribavirin 5, Lopinavir 6 and many other drugs exhibit promising in silico results and could be promising therapeutic candidates for the SARS-CoV-2 infections. Worldwide medicinal and organic chemists are heavily engaged in the design, development and repurposing of potential antiviral drugs for the treatment of SARS-CoV-2 infections.

## 4) Vaccination:

In the current Covid-19 outbreak world scientific community is heavily engaged in the vaccine development for SARS-CoV-2. In the development of vaccine chemistry has limited but very important roles such as design and development of newer stabilizers, amphiphiles based delivery systems and some extent efforts in the development of carbohydrate and peptide based synthetic vaccines. According to WHO four categories of Covid-19 vaccines are under development such as whole virus, protein subunit, viral vector and nucleic acid (RNA and DNA). Several vaccines are obtained emergency approval in the USA, Europe and Asian countries. Indian companies such as Serum Institute, Bharat Biotech and Zydus Cadila developed world class vaccine research and production facilities and become world leaders in the vaccine production. Bharat Biotech in association with the Indian Council of Medical Research (ICMR) and National Institute of Virology (NIV) developed the first indigenous vaccine BBV152 (marketed as Covaxin). Whereas Serum Institute producing AstraZeneca's COVID-19 vaccine AZD1222 (marketed as Covishield). Indian government gave emergency approval to Covaxin and Covishield. On 16th January 2021 India launched a priority based national vaccination programme (Figure 3) against the SARS-CoV-2. As of 2nd May 2021, India has administered over 156 million vaccine doses across the country.

Chemistry is the centre of science domain which touches every aspect of human beings and nature. In the current pandemic chemistry is playing a key role in the controlling and combating Covid-19 outbreak. World community is combating Covid-19 outbreak on four different fronts such as Sanitization, diagnosis, medication and vaccination, where chemistry is contributing significantly.



Figure 3: India launched a priority based national vaccination programme.



## Industry Alliances

### Turning Point-Webinar Series

An ongoing webinar series is designed to expose and enrich faculty and students to the latest trends, management experiences, problems faced (in areas ranging from manufacturing, product development, SCM, HR or sales) by industry today; and for industry leaders to present their perspective on engineering, science and management challenges with their experience, knowledge and wisdom.



**Girdhar Balwani**  
Mentor and Director, CPL



**B. V. Suresh**  
President, External Relations



**V K Singh**  
COO-CSBU



**P K Rajput**  
Sr VP - Sales and Marketing



**Amit Jain**  
Sr VP Branded - Cadila Pharma



**Sumesh Goswami**  
Head, Purchase, Cadila Pharma



**Abhinand Pandya**  
Strategic Project Head - IU



**Rajeev Shekhar**  
HOD, Marketing, Magfam



**Mehul Raja**  
GM, Marketing, MagnaStar



**Samrat Singh**  
GM, Marketing, Voltacare



**Ashit Shah**  
Financial Consultant



**Dr. Swati Mishra**  
Psychologist and Academician



## Companies where our students are working & also participated/ing in Placement Drive

		<b>Industry exposure</b> 22 Students of Msc Chemistry have gone for two months industry grade training at IICT-Hyderabad. Such industry and research exposure enhances skills in the lab and will definitely help in future	
			
			
			
			
			
			
			
			
			
			
			
			



## Achievements

### Faculty

#### ► Publications

- Kshtriya V, Koshti B, Pandey D K, Kharbanda S, Kanth C P, Singh D, Bhatia D D, Gour N. Sequential and cellular detection of copper and lactic acid by disaggregation and reaggregation of the fluorescent panchromatic fibres of an acylthiourea based sensor. *Soft Matter*. 2021.
- Jaiswal, S.; Kundu, S.; Bandyopadhyay, S.; Patra, A., Hybrid upconversion nanoprobe for ratiometric detection of aliphatic biogenic amines in aqueous medium. *Nanoscale Advances*, 2021
- Birajdar S. S., Brixi S., Rao P. S., Bhosale R. S., Kobaisi M. A., Gupta A., Lessard B. H, Bhosale Sid. V., Bhosale She. V. "Conjoint use of naphthalene diimide and fullerene derivatives to generate organic semiconductors for n-type organic thin film transistors", *Chemistry Open*, 2021, 10, 414-420. (IF: 2.37)
- Shaikh D. B, Wenbo L., Bhosale R. S., Said A. A., Kobaisi M. A., Bhosale Sid. V., Bhosale She. V., Zhang Q. "Novel core-modulated naphthalenediimides with CN-TFPA as electron transport layer for inverted perovskite solar cells", *Mater. Res. Bull.*, 2020, 132, 111009. (IF: 4.01)
- Liu W., Shaikh D. B, Rao P. S., Bhosale R. S., Said A. A., Mak A. M, Wang Z., Zhao M., Gao W., Chen B., Lam Y. M., Fan W., Bhosale Sid. V., Bhosale She. V., Zhang Q. "Molecular aggregation of Naphthalene diimide (NDI) derivatives in electron transport layers of inverted perovskite solar cells and their influence on the device performance", *Chem. Asian J.*, 2020, 15, 112–121. (IF: 3.69)
- D M Chudasama, Darsh Patel, Abhishek Shah and Nihal Shaikh (2020), "Research on Cybercrime and its Policing ", *American Journal of Computer Science and Engineering Survey*, Vol.8, Issue.10, pp.14
- Soham Shah, M A Lokhandwala, D M Chudasama (2021) "Decoding Farm Laws", *International Journal of Scientific Research and Engineering Development*, Vol.4, Issue.2, pp.590-595
- Dhaval Chudasama (2021), "Strategies of the Successful Long Term Business", *Journal Of Commerce Management – ISSN: 2279-025X*, Vol.1, Issue.40, pp.1-5.
- Dhaval Chudasama (2021), "Current Thinking & Temperament Scenario in the Society" *Omni Science: A Multi-disciplinary Journal*, 11(1): 12–15p.
- Dhaval Chudasama (2021), "Step 16 Sacraments with Pooja Lessons", *Journal of Multi-disciplinary – ISSN: 2279-0268*, Vol.1, Issue.40, pp.1-3.

### Books

- Singh V (2021). *Microbial Cell Factories Engineering for Production of Biomolecules*, ISBN : 9780128214770, Academic Press, Elsevier.
- Singh V (2021). *Reprogramming the Genome: Applications of CRISPR-Cas in Non-Mammalian Systems Part A*, ISBN: 9780323853217, Academic Press, Elsevier.



### Book chapters

- Gohil N., Bhattacharjee G., Singh V (2020). "An introduction to microbial cell factories for production of biomolecules" chapter in *Microbial cell factories engineering for production of biomolecules* Ed Singh V., Elsevier. pp. 1-19.
- Patel H., Bhatt D, Shakhreliya S., Lam NL, Maurya R, Singh V\* (2021). An Introduction and Applications of Bioinformatics. Eds Singh V and Kumar A. *Advances in Bioinformatics*. Springer Nature. pp 1-15.
- Singh V. (2021). An Introduction and Use of the CRISPR-Cas Systems. *Progress in Molecular Biology and Translational Science*, 179:1-10.
- Satish L., Lavanya G., Kasthuri T., Kalaivaani A., Shamili S., Pandian M., Gowrishankar S., Pandian SK., Singh V., Sitrit Y., Kushmaro A. (2021). CRISPR based development of RNA editing and the diagnostic platform. *Progress in Molecular Biology and Translational Science* 179: 117-159.
- Vala A.K., Trivedi H.B., Gosai H.B., Panseriya H.Z., Dave B.P., 2020. Biosynthesized silver nanoparticles and their therapeutic applications. Eds. Verma S.K., Das A.K. In: *Biosynthesized nanomaterials*. Volume 94, ISBN 978032389881, Elsevier
- Trivedi H.B., Das A.K., Verma S. K., Gosai H.B., Vala A.K., Dave B.P., 2020. Biosynthesized nanoparticles derived from marine habitat and their interactions with plants. Eds. Verma S.K., Das A.K. In: *Biosynthesized nanomaterials*. Volume 94, ISBN 978032389881, Elsevier

### Patents

- Singh V., Gohil N., Bhattacharjee G. (2021). Synergistic bactericidal effect of prodigiosin in combination with antibiotics against pathogenic bacteria. Filed. Indian Patent Application Number: 202121010698.



- ▶ Singh V., Gohil N., Bhattacharjee G. (2021). Production of violacein from *Chromobacterium violaceum* using soybean meal. Filed. Indian Patent Application Number: 202121008399.

### Invited as an expert

- ▶ Dr. Vijai Singh, 25th Refresher Course in Life Sciences & Biotechnology, (online mode), organized by HRDC-JNU, New Delhi, 1st Jan, 2021.
- ▶ Dr. Vjai Singh, "Engineering of synthetic gene circuits in *Escherichia coli* for biotechnological applications", Amity Institute of Biotechnology, Amity University, Chhattisgarh, 19th February, 2021.
- ▶ Dr. Sanjay Karn, "Fish processing and its food applications" at Jyothy Institute of Technology in association with Centre for Incubation, Innovation, Research and Consultancy & Atal Incubation Centre- Jyothy Institute of Technology Foundation- a virtual TEDP Program on Food Technology, sponsored by NSTEDB, Department of Science & Technology (DST), New Delhi to promote entrepreneurs /startups in Food processing sector, 8th February, 2021.
- ▶ Dr. Harengiri Gosai, TEDP Program on Food Technology, sponsored by NSTEDB, Department of Science & Technology (DST), New Delhi at Jyothy Institute of Technology – Bangalore on 'Biostatistics and Experimental design', 24th February, 2021.
- ▶ Dr. Poulomi Sengupta at Chemical Engineering Department, Aditya Silver Oak Institute of Technology, GUJCOST sponsored webinar on "Recent Trends in Nanoscience and Nanotechnology (RTNN-20)" on "Characterization of Nanomaterials", 1st December, 2020.
- ▶ Dr. Kiran Patruni, "Food Chemistry on Lipids" in TEDP Program on Food Technology, sponsored by NSTEDB, Department of Science & Technology (DST), New Delhi at Jyothy Institute of Technology – Bangalore on Biostatistics and Experimental design, 3rd February, 2021.
- ▶ Dr. Kiran Patruni, "Food Chemistry on proteins" in TEDP Program on Food Technology, sponsored by NSTEDB, Department of Science & Technology (DST), New Delhi at Jyothy Institute of Technology – Bangalore on Biostatistics and Experimental design, 4th February, 2021.
- ▶ Dr. Kiran Patruni, "Food Chemistry on carbohydrates" in TEDP Program on Food Technology, sponsored by NSTEDB, Department of Science & Technology (DST), New Delhi at Jyothy Institute of Technology – Bangalore on Biostatistics and Experimental design, 5th February, 2021.
- ▶ Dr. Kiran Patruni, "Food Chemistry on Lipids" in TEDP Program on Food Technology, sponsored by NSTEDB, Department of Science & Technology (DST), New Delhi at Jyothy Institute of Technology – Bangalore on Biostatistics and Experimental design, 8th February, 2021.

- ▶ Dr. Rupesh, "Food Diversity" in TEDP Program on Food Technology, sponsored by NSTEDB, Department of Science & Technology (DST), New Delhi at Jyothy Institute of Technology – Bangalore on Biostatistics and Experimental design, 24th February, 2021.

### Conference

- ▶ Dr. Sanjay Karn presented paper on "Low cost bioassay test of insecticides organophosphates using microfaunal culture from their natural habitat", International e- Conference on 'Emerging Trends and Challenges in Life Sciences (ETCLS-2020)' organized by Indraraj Arts Commerce and Science College- Aurangabad, 18th - 19th June, 2020.
- ▶ Dr. Sanjay Karn presented paper on "Physiological role of multigrain diet and Avertroha carambola on carbohydrate metabolism in fluoride intoxicated rats" at International e- Conference - "COVID 19 Challenges and Opportunities in Pharmaceutical Research", organized jointly by Indrashil and Nirma University, 18th-19th March, 2021.
- ▶ Dr. Ritu Chaudhary presented paper on "Surface layer protein of probiotic *Lactobacillus acidophilus* NCFM prevents the Enterotoxigenic *E. Coli* adhesion to Caco-2 cells" International e- Conference - 2021 "Covid-19: Challenges and Opportunities in Pharmaceutical Research" organized jointly by Indrashil and Nirma University, 18th-19th March, 2021.

### Award



Dr. Ritu Chaudhary

1. Dr. Ritu Chaudhary won 1st prize in flash talk on 'Recombinant surface layer protein of *Lactobacillus helveticus* inhibits the binding of enterotoxigenic *E. coli* to human intestinal cell line' in E-symposium on recent trend in Biology organized by Charusat University, Changa, Gujarat, 10th-12th December, 2020

2. Dr. Ritu Chaudhary won 3rd prize in e-poster presentation titled 'Surface layer protein of probiotic *Lactobacillus acidophilus* NCFM prevents the Enterotoxigenic *E. Coli* adhesion to Caco-2 cells' in US-Indo training on Flow Cytometry and its Applications in Biological Research and Clinical Diagnostics organized by Trust for Education and Training in Cytometry (TETC), 22nd - 28th February, 2021

### Grant received



Dr. Nidhi Gour awarded SERB Power Grant with an amount of INR 30 lakhs for a research project on "Amyloid-like structures formed by single amino acids and its implication in metabolite disorders".



## Student achievement

- ▶ PhD student from department of Chemistry, School of science, Mr. Vivek Singh Kshetriya awarded the ICMR SRF Fellowship.
- ▶ Mr. Ankit Singh, student of B.Sc. (Chemistry), Batch 2018-21 qualified for IIT post-graduate entrance exam and secured an all India ranking, JNU as well Tata Institute of Social Science with scholarship.



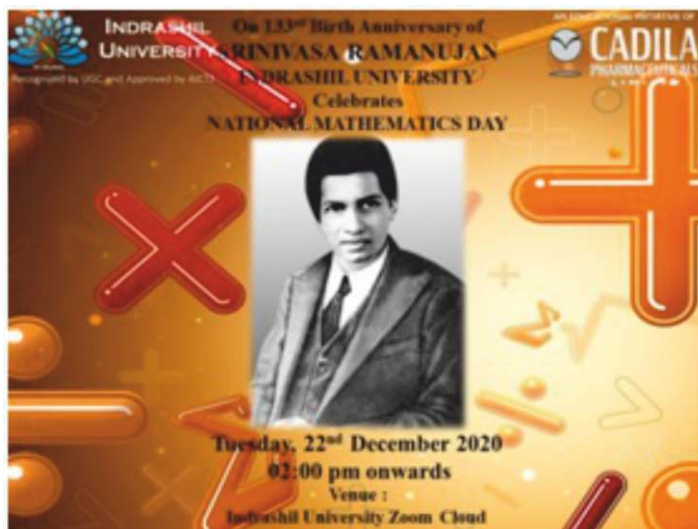
## Activities on Campus

### Extra curricular

- ▶ **Adieu 2020-** Faculty and staff of IU bid farewell to 2020 alongside welcoming the New year 2021 on December 31st with warm up exercise, outdoor games and Secret Santa.



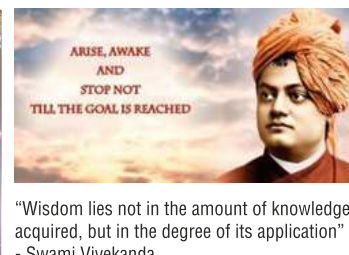
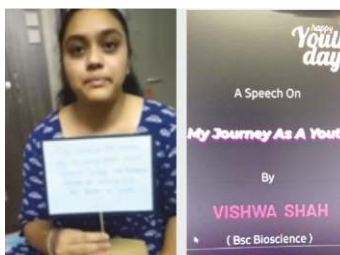
- ▶ **Mathematics Day-** National Mathematics Day was celebrated on December 22 with Quiz on mathematics to recognize the works of great Indian mathematician Srinivasa Ramanuja.



- ▶ **Kite Festival, 12<sup>th</sup> Feb** - IU family always celebrates Uttarayan with flying kites while enjoying traditional sweets of the occasion like TilLadoo (sweets made of sesame seeds) and Chikki (sweet made from groundnuts and jaggery).



- ▶ **Youth Day-** IU observed National Youth Day on January 12th to honor the birth anniversary of Swami Vivekananda, one of India's greatest leaders and believers of youth power.





► **Subhash Chandra Bose Day-** January 23rd was marked as the 125th birth anniversary of great freedom fighter Subhash Chandra Bose.



► **Ethnic Day, 23<sup>rd</sup> Jan** - Students at IU always look forward to dressing up traditionally and showcasing their affinity for the diverse culture of India.



► **Republic Day-** 72nd Republic Day at IU was celebrated on January 26th with flag hoisting and distribution of sweets on campus. Following the COVID -19 protocol, students expressed themselves with patriotic songs on a virtual platform.



► **Blood Donation Drive-** Every year on February 18, IU takes an initiative for blood donation camp to commemorate the birth anniversary of Shri Indravadan Modi. Students, faculty and staff enthusiastically donate blood for the cause on this day.





► **Tree Plantation** – The key officials of IU planted tree saplings and paid tributes to the founder chairman of Cadila Pharmaceuticals Ltd on February 18, 2021.



► **Master Chef Competition** – IU faculty and staff enjoyed preparing delicacies at the Master Chef competition, February 26, 2021.





► **Cricket tournament (IUPL)** - Indrashil University organized IUPL - Indrashil University Premier League on March 13, 2021 inaugurated by the provost – Dr. J.S. Yadav, Col. VK Sharma and Abhinand Pandya. The auction was held on March 5 for the team selection and 128 players were part of this auction. In IUPL, a total of 8 teams were identified to participate.



► **International Women's Day, 8<sup>th</sup> March**– The day was marked with the address by young women entrepreneurs and followed by performances from IU girl students.



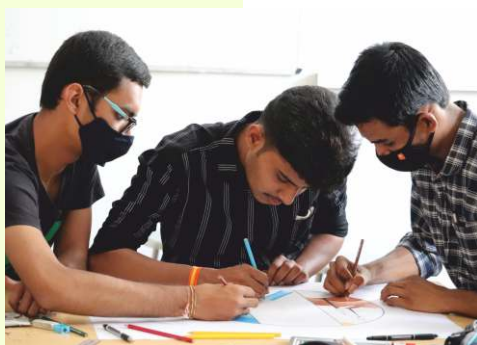
► **Earth Day** - On April 22nd, 2021 IU students participated in various activities viz. debate competition on various topics such as climate change, animal testing, alternative energy sources, air pollution etc. They also expressed their concern through poster presentation on plastic and agricultural pollution, climate change, energy's impact on the environment through their creativity and knowledge. Towards the end, the students and faculty of IU took pledge that "As a part of Earth day celebration at IU, I take the pledge to conserve my mother Earth by planting at least 5 trees in a year and will use cloth bags from now onwards".





## ► National Science Day-

IU celebrated National Science Day on February 27, 2021. The theme of National Science Day was “Future of STI (Science, Technology and Innovation): Impacts on Education, Skills and Work”. Various competitions were organized -Elocution, Science Model, Drawing and Painting, Poster making and Quiz. This celebration successfully culminated into prize distribution where the winners were given certificates and prizes.

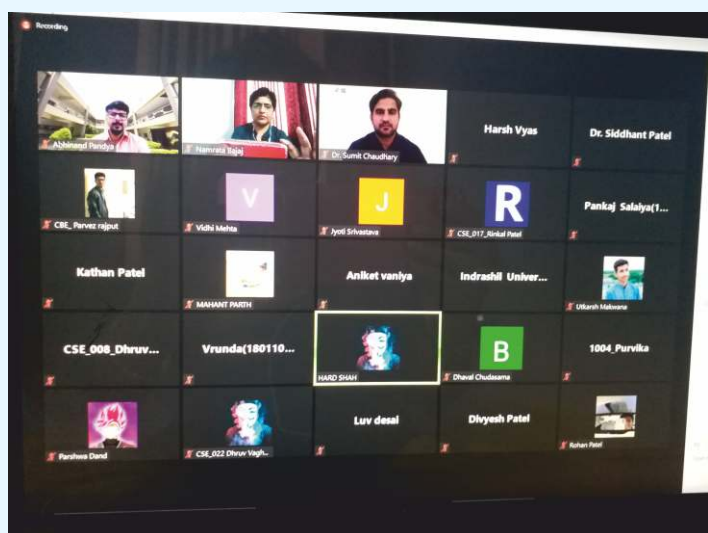




► **Quiz Time** - On April 19, 2021, as a part of Science club activity, a video recording on the works of Indian scientists was shared with students and a quiz which saw huge participation from IU students.

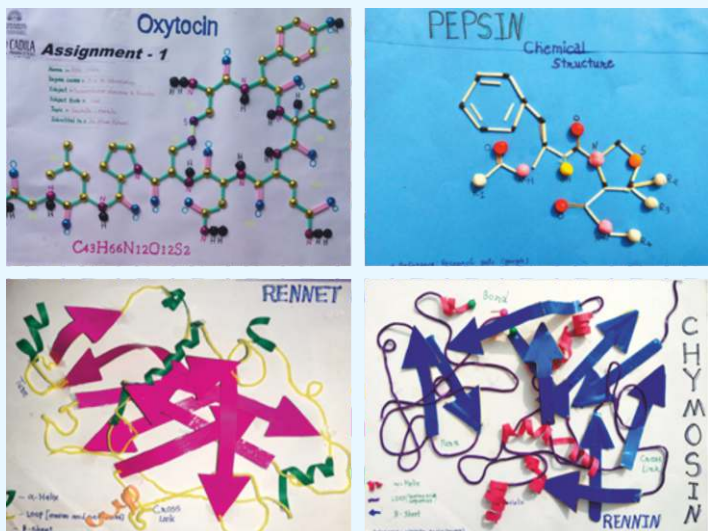


► **National Technology Day** - On May 11, 2021, as a part of Tech club activity, engineering students participated in project presentation.

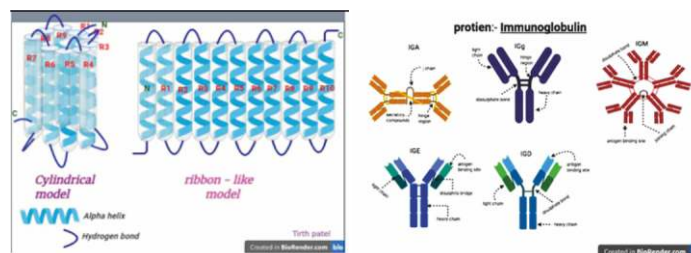


## Co-curricular activities

► 29 different varieties of protein were selected by B.Sc. students and submitted via different modes based on their creativity and available resources in the mode of submission as: Poster presentation>Scientific images using software's> 3D handmade models> Group assignments.



► **Models made using RM software**



► **Training workshop on Chromatography and Spectroscopy techniques**

B.Sc. students were trained in the operation of sophisticated instruments like HPLC, NMR, FTIR, and GC which are important in the study of science as well as to handle the dissertation projects with a multidisciplinary approach.



► **Nature trail: A step towards nature**



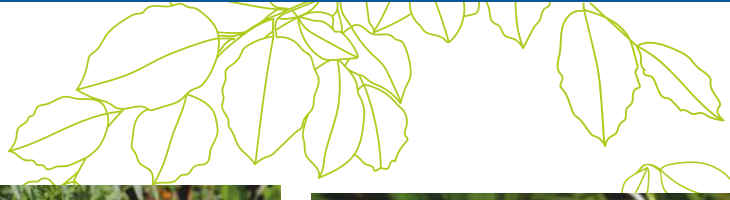
Eco club organized "Nature Trail" for B.Sc. Bioscience (Hons.) and B.Sc. Chemistry (Hons.) of Semester - II on February 20, 2021 to the nearby area of IU campus. Dr Rupesh explained the ecosystem diversity focusing on agro-ecosystem associated with medicinal plants and Phytochemicals. During the trail, Dr Sanjay emphasized on ecosystem interaction on avian diversity and their role in maintaining the agro-ecosystem.



# Flora & Fauna







Photography Courtesy: Mr. Jayesh Rajput, IU







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