

## Vision :

- To be amongst the top ten Pharmacy Colleges in India by Imparting excellence in Pharmacy education.
- Instilling research temperament in Pharmacy student.
- Continuous upgradation of infrastructure to maintain high standards of education.

## Mission :

- Inculcating timeless values of caliber, confidence and conscience in budding pharmacists.
- Indoctrinate quality in all aspects of Pharmacy education thereby enabling provision of better healthcare services.

## Quality Policy :

- The AISSMS College of Pharmacy is committed to empower our students to meet global challenges in Pharmacy profession through excellence in education.
- Our highly qualified and committed faculty is constantly exploring newer frontiers of knowledge with the intention to build quality pharmacist.
- We believe in honing the overall persona of our students through excellence in academics, co-curricular and extracurricular activities.
- We strive to develop a sense of social obligation and discipline among our students not only to make them better technocrat but also a better human being.

## Objectives :

- To provide sufficient understanding of scientific principles and techniques of pharmaceutical sciences.
- To develop comprehensive knowledge and experience.
- To provide exposure to latest techniques and technologies.
- To teach pharmacy ethics to students.
- To cater to manpower for globally growing pharmaceutical industry and for implementation of drug laws for compliance to regulatory norms.

### For Contact :

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# Editorial:

April welcomed the bright sun that illuminated new dreams, enlivened fresh hopes, brought thrilling opportunities and striking challenges. Spectrum of possibilities only stretching, quest for aim still thriving; academics and creativity prospers, amid the pandemic or not.

As AISSMSinas believe, challenges are the beginning, struggles are destined and victory the reward. Appreciating the efforts of young creative minds, Pharmavoice will provide a concise overview of the stages of vaccine development and testing. From a quick glance over latest happenings, current advances in medical devices to a brief peek over pharmaceutical industries, this issue has it all!

Just like our previous issues, this time too, Pharmavoice has exciting and insightful readings that are worth your time. Without further ado, let's dive in!

Have a cheerful reading!  
Team PharmaVoice.

**"In order to succeed, your desire for success should be greater than your fear of failure."**

*Bill Cosby*



## News and Events

### Lecture on “Evolving Opportunities in Healthcare”

**Date : 30th June 2021**

**Time : 10:30 -11:30am**

**Audience: M Pharm Sem II and IV, B Pharm Sem VI and VIII**

**Organized by : Industry Institute partnership cell  
( Under AISSM I connect initiative)**

**Total number of Registered Students: 106**

The speaker, Mr. Ashish Baktiwale of Navigo Analytix was introduced by Dr. Mangesh Bhalekar. Mr. Ashish guided students about new avenues for pharmacy professionals and specifically about business analytics. He gave a good insight of what business analytics is about and what a student needs to do to have a successful career in it. Mr. Rahul Padalkar managed the question answer session and later also gave the vote of thanks.

The program was organized by IIPC as a part of All India Shri Shivaji Memorial Society's I connect initiative as a part of the birth anniversary of Chhatrapati Shri Shahu Maharaj. It was useful to introduce students to the uncharted path of business analytics and its potential.



### Parent Teacher Initiative

**Date : 29th June 2021**

**Time : 11:00am**

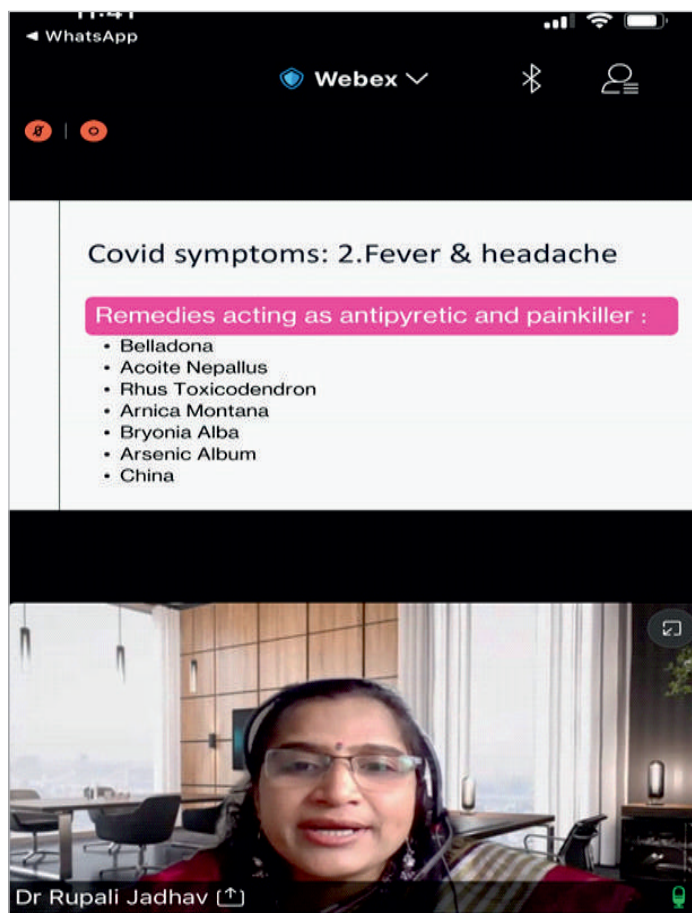
**Audience: All the students and staff at our college**

**Organized by : Parent Teacher Initiative (PTI)**

**Co-ordinated by : Dr. Mrinalini Damle**

**Anchors : : Ms. Shreya Mantri, M.Pharm. (QA)  
Sem-II**

Dr. Rupali Jadhav, a practicing homeopath and mother of Ojas Jadhav, a TY B. Pharm. student, provided detailed insight of Homeopathy in corona, individualised medicines in homeopathy.





## International Yoga Day

**Date : 21st June 2021**

**Time : 06:00 am-07:30 am**

**Organized by : Extension Cell (Dr.Trupti Chitre and Mr.Omkar Devade)**

The Seventh International Yoga day was celebrated by AISSMS college of Pharmacy on Sunday, 21st June 2021 from 6 a.m. to 7.30 a.m. Dr. Amita and Dr. Varsha conducted the programme as follows:

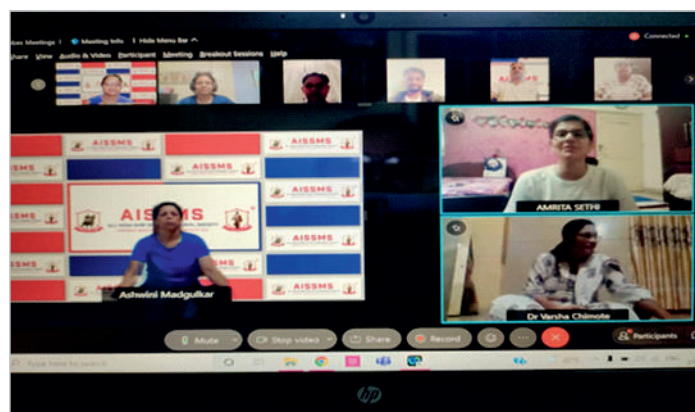
1. Description of the topic: Yoga Karmasu Kaushylam
2. Demonstration and actual conduct of Pranayama
3. Yoga pose for Spine correction
4. Meditation in Sri Sri Ravi Shankar video/audio clip

The entire teaching and non- teaching faculty as well as students performed as per the given instructions. The convener of the programme was Dr. Ashwini R. Madgulkar.

Some of the screenshots of the activity

The recordings are posted on the college YouTube channel: <https://youtu.be/F2NEHER38Qs>

Further, Savitribai Phule Pune University Board Sports and Physical Education in Association with Pune City, Pune District, Ahmednagar District & Nashik District had jointly organized "Yoga Week - 2021" on the occasion of 7th International Day of Yoga from 14th June 2021 to 21st June 2021. Pune City Zonal Sports Committee had hosted the proceedings on 20th and 21st June 2021. Our teaching faculty also attended these sessions and some of the screenshots are:



Screenshots of the "Yoga Week - 2021" of SPPU Board Sports and Physical Education in Association with Pune City, Pune District, Ahmednagar District & Nashik District jointly organized "Yoga Week - 2021" on the occasion of 7th International Day



## AISSMS

COLLEGE OF PHARMACY  
IMPARTING EXCELLENCE IN EDUCATION & RESEARCH  
Approved by AICTE & PCI New Delhi. Recognized by the Government of Maharashtra.  
(JL 158 recognition by UGC, Affiliated to Savitribai Phule Pune University  
College ID No. PU / PH / Phd / 157 / (1996)  
Accredited by NAAC with 'A' Grade

On the Occasion of  
**7th International Yoga Day**  
**YOGA : Karmasu Kaushalam**  
Date : 21st June 2021 | Time : 6:00 am.- 7:00 am.



**Dr. Amita Sethi**  
Homoeopathic Physician & Yoga Certified Instructor.  
AYUSH Ministry Govt of India.  
Associated with Art of Living since 16 years.



**Dr. Varsha Chimote**  
Physiotherapist- Practicing for the past 23 years  
Associated with Art of Living since 15 years.

WebEx Platform : [bit.ly/3zBG0cX](https://bit.ly/3zBG0cX)

**Coordinators**  
Dr.Trupti Chitre  
Mr.Omkar Devade

**Convener**  
Dr.Ashwini R.Madgulkar  
Principal  
AISSMS College of Pharmacy

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## Extension Activity with Soham Trust, Pune

**Date :** 31st May 2021

**Time :** 11:00 am-12:30 pm

**Organized by :** Extension Cell (Dr.Trupti Chitre) and NSS (Mr.Rahul Padalkar)

**Participants :** Staff/Alumni students

As our country continues to battle the second wave of COVID-19 pandemic, AISSMS College of Pharmacy, Pune, has joined hands with Soham Trust (Dr. Abhijit Sonawane) Shivaji Nagar, Pune and have initiated help in kind to people who are on the road after losing their jobs owing to the current conditions. Dr.Trupti Chitre and Mr. Rahul Padalkar handed over 100 Hygiene Kits (containing Soaps, Mask, Sanitizer and Toothpaste) to Soham Trust, for distribution to the needy. Principal Dr. Ashwini R. Madgulkar, expressed her gratitude to all the Teaching and Non-Teaching Staff as well as Alumni students who have come forward with generous help. (Thanks to Dr.S.V.Gandhi for arranging the kits).

### Outcome/Usefulness:

100 Kits were donated and they have reached the needy on the road. Hence social contribution in this pandemic is the outcome.



**Dr.Trupti Chitre and Mr.Rahul Padalkar handing over the Hygiene Kits**



**Person living on the roadside receiving the kit**

**"I cannot give you the formula for success,  
but I can give you the formula for failure  
--It is: Try to please everybody."**

*Herbert Bayard Swope*

## Guest Lecture: Process Validation with Life cycle Approach Continuous Process Verification

**Date : 30th May 2021**

**Time : 11:00 am-12:30 pm**

**Organized by : Students and Staff members**

**No of Participants: 157**

**An online lecture by : Dr. Dilip Dhore, Associate Vice President, Natco Pharma, Hyderabad , was organized on Cisco Webex platform of the institution.**

**Co-ordinator Names: Dr. M.C.Damle and Dr. Trupti S.Chitre**

The highlights of the lecture were discussion on:

1. ICH Guidelines (Q8/Q9/Q10) and Document Verification to meet quality attributes.
2. History and development of Validation technology and benefits of validation including critical quality attributes. Dr.Dilip Dhore described the approved validation process and gave details about preparing the report of validation.
3. Validation Life cycle was explained in a simplified manner. Different types of validation like Prospective, Concurrent and Retrospective validation were discussed in great detail.
4. Dr. Dilip Dhore explained about the notifications given by the Regulatory Bodies in a timeline.
5. Drug Master File (DMF) with all the 7 sections involved in it was also described.
6. He also discussed parts of ANDA.
7. Stages of Process Validation and variability were explained. Factors which impact output variability were especially discussed.
8. On-going sampling during different phases of commercial production was elaborated.
9. Process optimization techniques were discussed.

10. The Process Life Cycle was critically explained.

11. Dr. Dilip Dhore also discussed sampling plans and process stability and capability with CPK intervals.

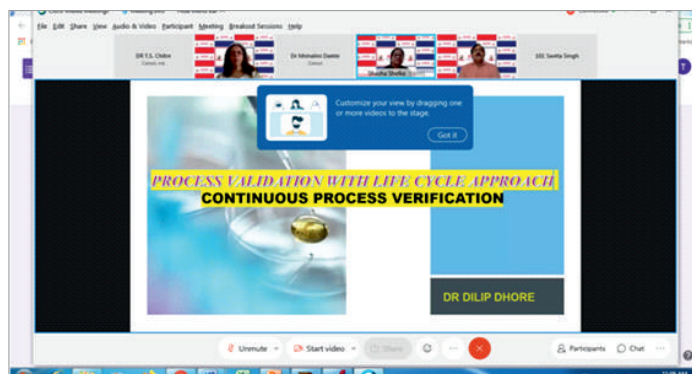
12. Parameters for CPP and CQA were discussed.

13. Process Design, and Process Qualification was summarized.

The explanation was in a very simplified language and it was thoroughly enjoyed by all the participants.

### Outcome/Usefulness:

The Graduate and Post Graduate students of current and last semester and all the faculty members got insights of industrial processes and would definitely use the knowledge shared by Dr. Dilip Dhore.



**Dr. Dilp Dhore (Associate VP, Pharma) presenting during the Lecture**

**"Success is not the key to happiness.  
Happiness is the key to success.  
If you love what you are doing,  
you will be successful."  
*Albert Schweitzer***



## Webinar on “Importance of Profession Ready Training in Clinical Research and Pharmacovigilance”

Date : 21st May 2021

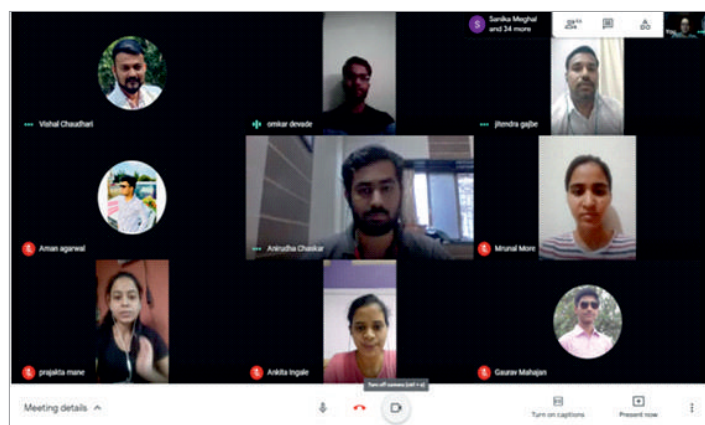
Time : 5:00 pm

Audience/Attended by: M-Pharm Second year & Final year students

Organized by : Training and Placement Cell

Anchor: Dr. MRP Rao, Dr. S. V. Gandhi, Mr. J. W Gajbe, Mr. Omkar Devade

An Online Webinar was organized for M-Pharm Second year & Final year Students on 21st May 2021. Mr. Vishal Chaudhari, from Clin. India, was invited as a speaker to talk on “Importance of Profession Ready Training in Clinical Research and Pharmacovigilance”. During his lecture, Mr. Chaudhari gave valuable information about Clinical Research and management, different Courses and training with scope and opportunity of learning Pharmacovigilance and medical coding. He further emphasized the need for Data management and highlighted the requirement of the pharmaceutical industry with plenty of opportunities for students to choose their career option. Mr. Chaudhari described his experience and gave special emphasis on acquiring Technical knowledge and learning software. Students actively participated in the session and found it to be a great value addition.



## National Level Faculty Development Programme

Date : 8th May 2021

Time : 11:00 am to 5:00 pm

Audience/Attended by: Pharmacy teachers from all over India

Organized by : AISSMS College of Pharmacy

Anchor: Mrs. Amruta Avalaskar, Mrs. Kalyani Asgaonkar

A National level faculty Development programme titled “Various facets of Quality in Pharmaceutical Industry” received overwhelming response. About 660 delegates had registered for the same. Dr. Uday Deshmukh, emphasized the Role of Quality functions in pharma industries. In the second session Mr. Vivek Sawarkar, guided everyone on Facility Qualification for a new project. Mr. Uday Kumar S. stressed about the importance of Quality Management Systems in Pharmaceutical Industry. He explained how Quality management helps in the overall Product Life cycle. He elaborated upon ICH Q8, Q9 and Q10 guidelines and discussed 7 pillars of the Quality Management system. Mrs. Madhuri Pawar, very aptly described the effective uses of QRM principles. The session by Dr. Subhasis Banerjee, APAC Bioprocessing Lead Application Expert, on the topic of “Vaccine Development during Pandemics” saw keen interaction by all the audience.



**AISSMS COLLEGE OF PHARMACY**  
IMPARTING EXCELLENCE IN EDUCATION & RESEARCH

**Is Organising National Faculty Development Program on  
“VARIOUS FACETS OF QUALITY IN PHARMACEUTICAL  
INDUSTRY”**

**Dr. Uday Deshmukh**  
Biosci. Quality, C and M.  
Role of Quality Functions in  
Pharma Industries  
11:00 am to 12:00 noon

**Mr. Vivek Sawarkar**  
Pharm. Corporation Q.A. Shree Pharma Science Ltd  
Facility Qualification for a New Project  
12:00 noon to 01:00 pm

**Mr. Uday Kumar S.**  
Catalyst & Enterprise  
Quality Management Systems in  
Pharmaceutical Industry  
02:00 pm to 03:00 pm

**Ms. Madhuri Pawar**  
Consultant  
Effective use of QRM Principles  
03:00 pm to 04:00 pm

**Dr. Subhasis Banerjee**  
APAC Bioprocessing Lead Application Expert  
Merck Lifesciences Pvt. Ltd.  
Vaccine Development during Pandemics  
04:00 pm to 05:00 pm

**Note:** Every registered delegate will get a certificate upon attending all the sessions & submission of feedback form.  
Registration is FREE but mandatory.

**Mode of Conduct - WebEx Platform**  
Day - Saturday, 8th May 2021  
Time - 11:00 am to 05:00 pm

**Registration Link - <https://bit.ly/3xpBcgg>**  
**Telegram Group Link - <https://bit.ly/3gF4mvm>**  
**Event Link - <https://bit.ly/3eAdGhe>**

**Under the guidance of**  
**Dr. Ashwini R. Madgulkar**  
Principal, AISSMS College of Pharmacy



## Communication & Employability Skills Training Program

**Date :** 22nd April to 01st May 2021

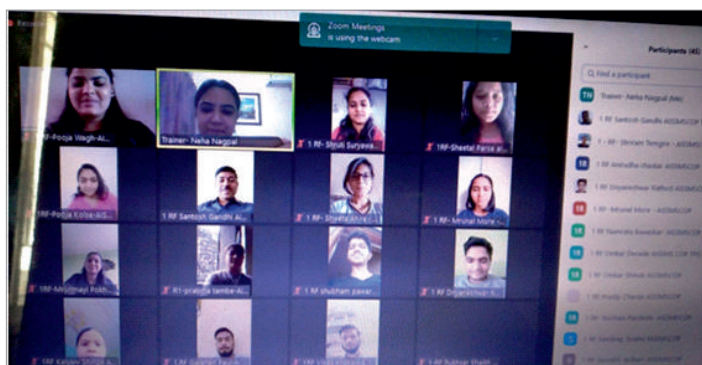
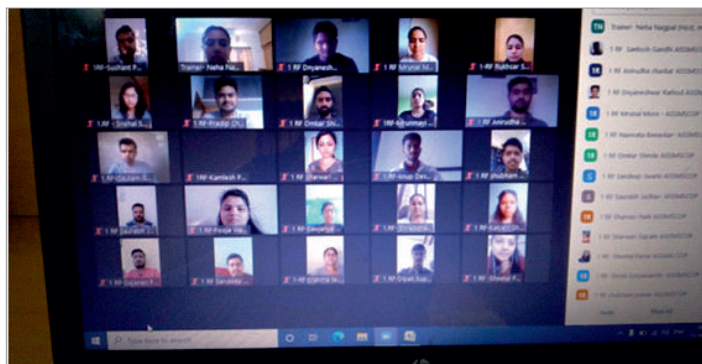
**Time :** 09 Days (09:00 am to 11:00 am)

**Audience/Attended by:** M. Pharm Sem IV students

**Organized by :** Training and Placement Cell

**Anchors:** Dr. . Monica RP Rao, Dr. S. V. Gandhi, Mr. J. W Gajbe, Mr. Omkar Devade

Training and Placement Cell of AISSMS College of Pharmacy organized 09 days online Communication & Employability Skills Training Program from 22nd April to 01st May 2021 for M. Pharm II Year students entitled “Connect with Work” in association with NGO Partner “Tomorrow's Foundation” and Training Partner “Rubicon Skill Development Pvt. Ltd.” The students were trained by Ms. Neha Nagpal on various aspects viz. Expectation setting, Ice breaking, Goal Settings, Organizational Structure, SWOT Analysis, Corporate Jargon, Public Speaking, Presentation Skills, E-mail Etiquette, Grooming, Body language and Telephone Etiquette. This was followed by Group Discussion and personal interviews.



## IPR Day

**Date :** 26th April 2021

**Time :** 02:00 pm-03:00 pm

**Audience/Attended by:** M Pharm First Year Students

**Organized by :** Extension Cell (Dr. Trupti Chitre and Mr. Omkar Devade)

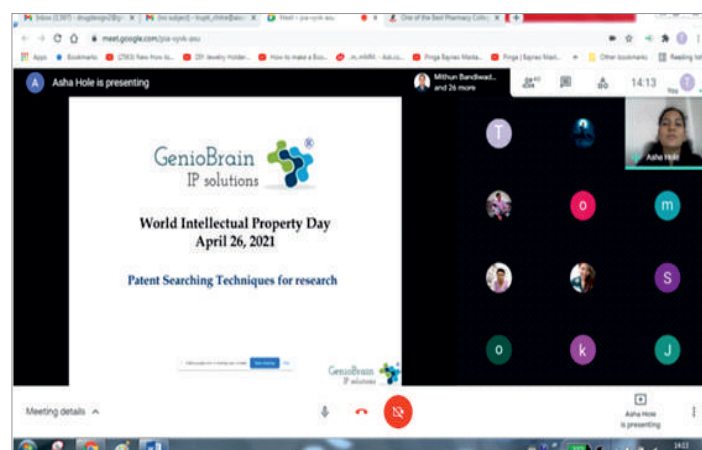
Ms Asha Hole is a highly driven IPR professional with extensive experiences in IP law. She guided Students on the Topic: How to do Patent search for Literature Search

The highlights of the lecture were:

1. Use of Keywords
2. Identifying IPC code
3. Searching Techniques
4. Use of Free databases like WIPO, FPO and Espacenet

The explanation was in a very simplified language and it was thoroughly enjoyed by all the participants.

Total number of Registered Students: 48 and Staff : 08



**"If you can dream it, you can do it."**  
*Walt Disney*

## Students achievements and participation Apr-June 2021

The **Training and Placement** Cell coordinated online interviews of Final Year B Pharm and M Pharm students for placements in Cognizant Technologies for positions in pharmacovigilance. Of the 36 students who appeared for the eligibility test, 18 students went forward to the interview round. Total 15 students (**09 B Pharm and 06 M Pharm**) cleared the final round and received the offer letters with a package of **Rs. 2.8 lacs pa. The following students were selected:**

### B. Pharm

1. Ms. Nikita Dhurde
2. Ms. Megha Kadam
3. Ms. Shraddha Khurpe
4. Mr. Shubham Naikwadi
5. Ms. Neha Ranka
6. Mr. Ayush Thole
7. Mr. Neerajkumar Sharma
8. Mr Shivraj Rakore
9. Ms Tejal Kawade

### M. Pharm

10. Ms. Shweta Ahire
11. Ms Namrata Bawaskar
12. Ms Sharwari Sapate
13. Ms Sharvari Naik
14. Mr Pradip Chavan
15. Ms Shruti Suryawanshi

The cell also coordinated the online interviews of 04 students of 2019-20 B Pharm batch for placement in Lupin Research, Mumbai for the position of Trainee Regulatory Officer. Ms Vaibhavi Kardile (B Pharm) was selected.

**The Training and Placement cell joins Principal, Dr. Ashwini Madgulkar and the faculty in extending heartiest congratulations to all the students**

## Upcoming News (July-Sept 2021):

1. AICTE ATAL Faculty Development Program from 13th- 17th Sept 2021

## Staff Achievement (Apr-June 2021):

## Student Achievement (Apr-June 2021):

Oral presentation at 8th World Conference on Pharmaceutical Science and Drug Manufacturing of research work entitled "Development and Validation of Stability Indicating HPTLC Method for Estimation of Dolutegravir" by Smruti C. Shinde\* Ayushi G. Gadekar, Anuruddha R. Chabukswar, Santosh V. Gandhi Organized by BioLeagues Worldwide and Association of Pharmaceutical Research (APR) on 17th & 18th April 2021 at Bangkok, Thailand. [ISBN: 978-93-90214-28-0]



Oral presentation of research work entitled "Development and Validation of Stability Indicating HPLC Method for Estimation of Valganciclovir" at 8th World Conference on Pharmaceutical Science and Drug Manufacturing, by Namrata G. Bawaskar\* Ayushi G. Gadekar, Anuruddha R. Chabukswar, Santosh V. Gandhi Organized by BioLeagues Worldwide and Association of Pharmaceutical Research (APR) on 17th & 18th April 2021 at Bangkok, Thailand. [ISBN: 978-93-90214-28-0]

**"In order to succeed,  
we must first believe that we can."  
*Nikos Kazantzakis***

**1. F.Y. B. Pharm: AISSMS College of Management organised AISSMS Blogosphere 2021 where students portrayed their blogging talents on a broader platform. Ms. Isha Kalbhor and Ms. Shrunalini Jadhav of first year B. pharm won the second runner up and third runner up respectively.**

**2. T.Y. B. Pharm: Mr. Pranish Gaikawad has been selected for slinging world cup competition. It will be held in Spain in October 2021.**

**. "A successful man is one who can lay a firm foundation with the bricks that others throw at him."**

*David Brinkley*





## Did You Know:

### STAGES OF VACCINE DEVELOPMENT AND TESTING

As the whole world is facing this deadly pandemic there are scientists, researchers and companies working 24x7 to develop a cure to this life-threatening disease called covid-19. The process of development of vaccines might seem simple to us but it is very much complicated, there are different stages involved towards the development of the vaccine.

#### 1) Exploratory stage (laboratory and animal studies)

This stage involves basic laboratory research and often lasts 2-4 years. Federally funded academic and governmental scientists identify natural or synthetic antigens that might help prevent or treat a disease. These antigens could include virus-like particles, weakened viruses or bacteria, weakened bacterial toxins, or other substances derived from pathogens.

#### 2) Pre-clinical stage

Pre-clinical studies use tissue-culture or cell-culture systems and animal testing to assess the safety of the candidate vaccine and its immunogenicity, or ability to provoke an immune response. Animal subjects may include mice and monkeys. These studies give researchers an idea of the cellular responses they might expect in humans. They may also suggest a safe starting dose for the next phase of research as well as a safe method of administering the vaccine.

#### 3) IND application (investigational new drug)

A sponsor, usually a private company, submits an application for an Investigational New Drug (IND) to the governing body. The sponsor describes the manufacturing and testing processes, summarizes the laboratory reports, and describes the proposed study. An institutional review board, representing an institution where the clinical trial will be conducted, must approve the clinical protocol. The governing body has 30 days to approve the application. Once the IND application has been approved, the vaccine is subject to three phases of testing.

#### PHASE I:

This first attempt to assess the candidate vaccine in humans involves a small group of adults, usually between 20-80 subjects. If the vaccine is intended for children, researchers will first test adults, and then gradually step down the age of the test subjects until they reach their target.

#### PHASE II:

A larger group of several hundred individuals participates in Phase II testing. Some of the individuals may belong to groups at risk of acquiring the disease. These trials are randomized and well controlled, and include a placebo group. The goals of Phase II testing are to study the candidate vaccine's safety, immunogenicity.

#### PHASE III:

Successful Phase II candidate vaccines move on to larger trials, involving thousands to tens of thousands of people. These Phase III tests are randomized and double blind and involve the experimental vaccine being tested against a placebo.

#### PHASE IV:

Phase IV trials are optional studies that drug companies may conduct after a vaccine is released. The manufacturer may continue to test the vaccine for safety, efficacy, and other potential uses.

## Did You Know:

### SCOPE OF THE M. TECH. IN MEDICAL DEVICES

The worldwide medical devices market size was estimated at US\$ 425.5 billion in 2018 and may be expected to achieve US\$ 612.7 billion by 2025 growing at a CAGR of 5.4%. Similarly, the existing market size of medical devices in India is estimated to be \$11 billion and is likely to grow to \$50 billion by 2025. The medical devices industry is knowledge intensive and can provide sustainable employment. The growth of the industry can accelerate higher exports into the rapidly expanding global market. To meet the well-trained & highly skilled human resource needs of this important sector there is an immediate requirement of large-scale investment in establishing quality education centres. M. Tech. in Medical Devices course is intended for highly motivated candidates who are passionate to find innovative solutions for the healthcare and pharmaceutical industry. The programme is multidisciplinary in nature and students from pharmacy, engineering and medical disciplines are eligible to opt for the course. The course is designed to contain topics related to biology, chemistry, mathematics, clinical science and engineering which are essential for developing Medical Devices. The course will also contain one-year project work aimed at developing prototypes of various Medical Devices. The batch size of the course will be 10 students per year in each offering NIPER. The interested candidates from industry, R&D organizations and other Govt Institutes are also eligible to apply for the course. After the successful completion of the program, the students are expected to have a broad range of career options, including :

**"Fall seven times and stand up eight."**

*Japanese Proverb*

### Research & Development in healthcare, pharmaceutical, biotech and medical device industry

- Academic & Research organizations
- Entrepreneurs
- Venture capital firms
- Hospitals, diagnostic labs and other health care facilities.

### Presently following 3 NIPERs are offering M. Tech in Medical Devices course

- NIPER-Guwahati
- NIPER-Hyderabad
- NIPER S.A.S. Nagar (Mohali)

### ELIGIBILITY

Medical Devices M.Tech. Offering NIPERs: Guwahati, Hyderabad and S.A.S. Nagar (Mohali)

Minimum Eligibility: B.Pharm/Pharm D/M.Sc/B.Tech/B.E/M.B.B.S/BDS/B.V.Sc.

#### Note:

- GPAT/GATE/NET score is a mandatory qualification for all the applicants except for Candidates holding B.V.Sc./M.B.B.S./BDS degree
- Foreign nationals
- Sponsored candidate from public/private sector undertaking, Govt. departments as well as R & D organizations

#### Reference:

[1] Niper. Guwahati, S. Nagar, NIPER Joint Entrance Examination 2020 M. Tech. in Medical Devices Offered by, (2020). <http://www.niperhyd.ac.in> (accessed August 16, 2021).

## Scientific Content:

### Natco Pharma



Natco Pharma is an Indian multinational pharmaceutical company based in Hyderabad, which makes finished dosage formulations and active pharmaceutical ingredients. It is the market leader in branded oncology medicines in India, and among the country's top three producers of hepatitis C drugs.

Founded	1981
Founders	VC Nannapaneni
Headquarters	Hyderabad, India
Key People	VC Nannapaneni (Chairman & MD) Rajeev Nannapaneni (CEO & Vice Chairman)

## Timeline:

- In 2003, Natco Pharma launched Veenat, a generic version of Novartis AG's anti-cancer drug Glivec. It won the subsequent patent protection legal battle against Novartis in 2013.
- In 2012, Natco Pharma obtained a compulsory license to produce a cheaper and generic version of Bayer's anti-cancer medication Nexavar.
- In 2015, Launched generic Sofosbuvir in India and Nepal for Hepatitis C.
- In 2016, In the United States, it launched influenza medication Tamiflu with marketing partner Alvogen.
- In 2017, Natco Pharma launched a generic version of blood cancer drug Pomalidomide at a 98% discount to the drug's selling price in the United States. Also, it launched multiple sclerosis treatment drug glatiramer acetate in partnership with Mylan.
- In 2018, Launched its first generic version of oral tablets Teriflunomide for Multiple Sclerosis in India as well as launched generic Posaconazole injection, for the first time in India
- In 2020, NATCO's Vishakhapatnam Formulation Facility receives USFDA approval. NATCO supplies Chloroquine Phosphate tablets to the US market in support of Covid-19 Treatment

#### Websites and Contact Details:

Registered Office and Corporate Headquarters

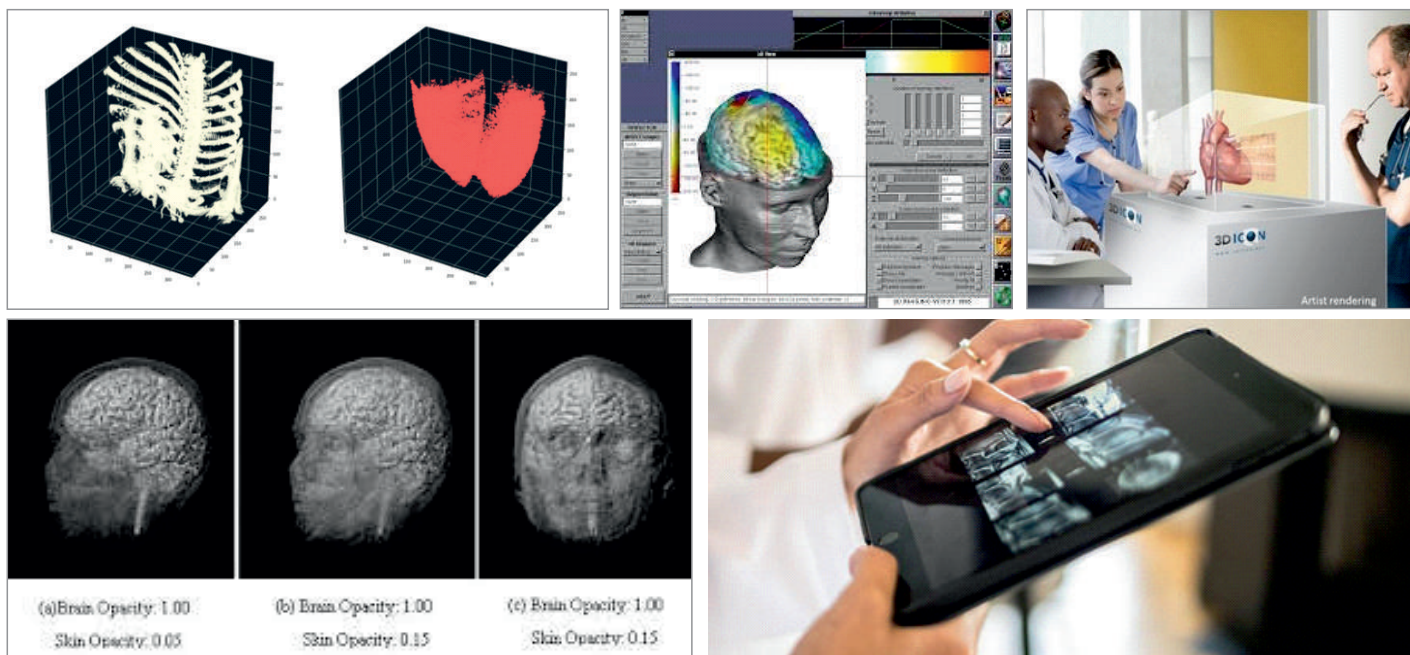
Natco House, Road No.2, Banjara Hills, Hyderabad-500 034, India

Contact : +91-40-2354 7532, +91-40-2354 5298/23548243

Website: [natcopharma.co.in](http://natcopharma.co.in)



## Theme: 3D Monitoring of Medical Devices



### Graphene-based Sensors in Health Monitoring

#### Invasive Applications

##### Nervous System

- ECoG
- Neural stimulation

##### Cardiovascular System

- ECG
- Blood glucose

##### Digestive System

- Gastrointestinal diagnosis

##### Locomotor System

- EMG
- Muscle stimulation



#### Non-invasive Applications

##### Biophysical

###### Electrophysiological

- EEG
- EOG
- ECG
- EMG

###### Kinematic

- Pulse/heart rates
- Respiration
- Phonation
- Facial expressions
- Blood pressure
- Joints movements
- Gesture
- Muscle movements

###### Thermometer

- Body temperature

##### Environmental

- Light
- Gases
- Heavy Metal

##### Bio-chemical

- Volatile gases
- Electrolyte
- Metabolite
- Bacteria
- Drug
- Dopamine
- Tumor markers
- Others



## Editorial Board:



**Dr. Ashwini Madgulkar**  
Principal



**Ms. Samruddhi Pandey**  
Final year B. Pharm



**Dr. Tina Saldanha**



**Ms. Kshitija Abhang**  
T.Y. B. Pharm



**Mrs. Shivani Rao**



**Ms. Purva Kalel**  
S.Y B.Pharm



**Mr. Vaibhav Raut**  
M. Pharm



**Mr. Prasad Kalekar**  
First year B. Pharm

"Success isn't just about what you accomplish in your life; it's about what you inspire others to do."

*Unknown*