

## Department of Biotechnology

आजादी का अमृत महोत्सव ||75th Anniversary of Indian Independence

**Title of the event:**Nanotechnology: Bridging Sciences

**Name of the organizer:**DBT-ILS

**Date and Time:**3<sup>rd</sup> August, 2021 – 3:00 PM

**URL/Registration link (in case of virtual event):**

<https://global.gotomeeting.com/join/526830981>

**Venue (in case of physical event):**DBT-ILS, Bhubaneswar

**Brief background/purpose of the event:**

The sixth event in the series of “Science Setu” is based on the theme of Nanotechnology and related advances. The event had three speakers who talked to the students on the contribution of nanotechnology in different disciplines of science. The three speakers for this session are Dr B.K Jena, CSIR-IMMT, Dr SanjeebSahoo, DBT-ILS and Dr. Mamoni Dash, DBT-ILS.

**Expected Participants/List of Participants:**

*SAC, Cuttack, JBASC, Chennai, WCC, Chennai, VCW, Erode, SGVGCW, Udumalpet, KSRCT, Tircchengode,MCAS, Namakkal, NGPASC, Coimbatore, HCAS,Coimbatore,GNC, Chennai,CTBCACS, Pune,GNCASC,Mumbai,PSGCAS, Coimbatore.*

**How is the event linked to AzadikaAmritMahotsav:**

The event is indicative of creating awareness in the field of Nanotechnology through highlighting the interventions and innovations by nanoscience, thus contributing to “विज्ञान से विकास-प्रौद्योगिकी से प्रगति”

**Potential/Expected Impact:**

The audience who are mostly graduate students were updated on the most advanced developments in the field. They can benefit from a free interactive session with eminent scientists who are experts in their respective researchdomains of nanotechnology.

## Department of Biotechnology

### आजादी का अमृत महोत्सव || 75th Anniversary of Indian Independence

**Title of the event:** ID 75 Webinar Series

**Name of the organizer:** Regional Centre for Biotechnology

**Brief background/purpose of the event:**

As a part of Science Setu and to commemorate 75th Year of Indian Independence, RCB organized a webinar event where the life and works of eminent Indian scientists who have made a difference to science and lives of people, and who have furthered science to its current glory in India and around the world is being showcased.

Besides, keeping in mind the exciting scientific talks and an enthusiastic participation from students, faculty and others in the first round of 'RCB Contemporary Webinar Series' a second round/ season 2 of this webinar series has been announced, which will be held also to commemorate India's 75 years of Independence. Similar to the previous round, we will have the webinars every week on Fridays.

As a part of this webinar series, presentations are regularly delivered through RCB's YouTube channel.

S.No.	Start Date	End Date	Theme/ Subject	Activity Details*	Venue
1	05.08.2021	05.08.2021	Webinar on 'Biological and Therapeutic Insights from Oral and Lung Cancer Genome Analysis'	To be delivered by: Dr. Amit Dutt, Scientist-G, Tata Memorial Centre, ACTREC, Navi Mumbai	Presentations delivered through RCB's YouTube channel

\*'विज्ञान से विकास-प्रौद्योगिकी से प्रगति' Celebrating the Glory of Indian Science: Showcasing the Life and Works of Eminent Indian Scientists.

Such events will also be planned further till August 2022 and will be communicated in due course.

**Expected Participants/List of Participants:** ~ 200

विज्ञान से विकास-प्रौद्योगिकी से प्रगति



COMMEMORATING 75 YEARS OF INDEPENDENCE

**Azadi Ka Amrit Mahotsav**



FARMERS' TRAINING PROGRAMME ON **PROTECTED CULTIVATION OF HIGH VALUE OFF SEASON VEGETABLES WITH FOCUS ON GAP BASED PRODUCTION TECHNOLOGY**

5-16 August, 2021 :: 10:30-11:30 AM



Organized by:



**Biotech-KISAN Hub**  
**Assam Agricultural University**



DEPARTMENT OF BIOTECHNOLOGY  
Government of India



[dbtindia.gov.in](http://dbtindia.gov.in)



[/dbtIndia](https://www.facebook.com/dbtIndia)



[@dbtIndia](https://twitter.com/dbtIndia)



[@dbtIndia](https://www.youtube.com/dbtIndia)

## Department of Biotechnology

### आजादी का अमृत महोत्सव ||75th Anniversary of Indian Independence

**Title of the event:** Farmers' training programme on "Protected Cultivation of High Value Off Season Vegetables with Focus on GAP Based Production Technology"

**Name of the organizer:** Assam Agricultural University

**Date and Time:** 5-16 August, 2021 (10.30 AM – 11.30 AM) (Excluding August 8 & 15, being holidays)

**URL/Registration link (in case of virtual event):**

**[meet.google.com/mxa-okmj-hyp](https://meet.google.com/mxa-okmj-hyp)**

**Venue (in case of physical event):** NA

#### **Brief background/purpose of the event:**

The state of Assam is a high vegetable consuming state, with the per capita consumption higher than the national average. Vegetables, both conventional and indigenous, have high market demand and acceptability. Despite this, vegetable cultivators of the state have not yet been able to reap profits from commercial vegetable cultivation to the extent desired. This is on account of several factors such as lack of technical knowhow, inability to understand market dynamics, market glut during peak season, lower technology penetration etc. To address some of these issues, the present capacity building programme has been designed to facilitate higher profitability for vegetable farmers through protected cultivation technology, high value vegetable commodity& cropping sequence selection and off season production for higher returns, keeping in mind the parameters of productivity, quality and sustainability.

#### **Expected Participants/List of Participants:**

Altogether 55 (fifty five)vegetable farmers from eight districts of Assam will be joining the virtual training programme, with the active involvement of partner institutes of DBT Biotech KISAN Hub (including Aspirational District programme) under Assam Agricultural University. The participant composition would be as under:

Nalbari district: 5 farmers  
KarbiAnglong district: 10 farmers  
Goalpara district: 10 farmers  
Udalguri district: 10 farmers  
Dhubri district: 5 farmers  
Kamrup district: 5 farmers  
Darrang district: 5 farmers  
Morigaon district: 5 farmers

**How is the event linked to Azadi ka Amrit Mahotsav:**

Having traversed 75 years of independent existence, the year 2021 symbolises the undying and fighting spirit of our nation, making significant inroads in all spheres of development despite adversities. From a country steeped in poverty at the time of independence, when foodgrains had to be imported to feed our hungry millions, we have not only come a long way to achieve food self-sufficiency, but have also ensured that our citizens are empowered. The changes brought in during the past 75 years have been evident – from quantity to quality, from subsistence to commercial and from development to empowerment.

The present capacity building programme on “Protected Cultivation of High Value Off Season Vegetables with Focus on GAP Based Production Technology” echoes the same spirit of an independent and vibrant India that strives towards growth with tools of science and technology, ensuring stable and sustained incomes for its farming fraternity and inculcate relevant knowledge and usable skills that would lead to empowerment. The event would also contribute to the larger vision of self-reliant or *Atmanirbhar* India.

**Potential/Expected Impact:**

The expected impacts of the event/intervention can be envisaged as under:

- Grafting relevant knowledge and skills to practising vegetable growers of the state in order to facilitate the remunerative and sustainable scientific production and management of vegetables.
- Round the year production owing to protected cultivation technology, leading to round the year income.
- Higher returns and profits to farmers on account of better market quality and off season marketing.
- Stimulating interest among farmers for adoption of protected cultivation technology for vegetable production.

Department of Biotechnology

आजादी का अमृतमहोत्सव || 75th Anniversary of Indian Independence

**Title of the event:** Lab2 Market Campaign

**Name of the organizer:** BIRAC

**Date and Time:** Weekly basis

**URL/Registration link (in case of virtual event):**

**Venue (in case of physical event):** Social Media-BIRAC Twitter and Facebook Handle

**Brief background/purpose of the event:**

Several customized and uniquely positioned initiatives of BIRAC have helped recognize a growing number of the Biotech Entrepreneurship Start-ups & over 165 commercially deployed products. The idea is to initiate a campaign to promote and inspire conversation around the BIRAC supported innovations on the social media platform.



@BIRAC\_2012 supported innovation GOassure is an IOT enabled fully automated hand hygiene device that digitalizes the hand hygiene process. It ensures that the users perform hand hygiene as per the WHO recommended six step of hand hygiene and notify the variation to the authorities. #AzadiKaAmritMahotsav #IndiaAt75

@DBTIndia @Drrenuswarup @bhallan\_anju

**How is the event linked to Azadi ka Amrit Mahotsav?**

The event has an overarching tagline **विज्ञान से विकास-प्रौद्योगिकी से प्रगति** under the theme *सशक्त भारत*. All these supported innovations are Make in India innovations that aim to strengthen the Atma Nirbhar Bharat initiative.

**Potential/Expected Impact:**

Outreach of BIRAC supported innovations to the social media audience to make people aware about the innovations that can be helpful to their day to day lives. BIRAC's efforts have resulted in significant changes in the landscape of the Indian biotechnology sector.

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Department of Biotechnology

आजादी का अमृत महोत्सव || 75th Anniversary of Indian Independence

Science Setu

**Title of the event:** *How does the skin heal wounds*

**Speaker:** Colin Jamora, DBT inStem

**Name of the organizer:** inStem, Bengaluru

**Date and Time:** Saturday August 07, 2021, 10-11AM

**URL/Registration link (in case of virtual event):** By registration only for UG and PG colleges

**Venue (in case of physical event):** N/A

**Brief background/purpose of the event:**

The Science Setu Programme at inStem entitled “Discovering Possibilities” is an effort to create awareness about the importance of science in our lives and encourage the participation of young college students and their teachers in the area of Biology. Through setting up engagements with practitioners of science, this programme aims to provide a view to the excitement and numerous opportunities arising from a career in science.

Each webinar covers a topic in a manner accessible to college students and apart from contemporary cutting-edge research, involves colleagues who have faced challenges and success in allied areas such as science journalism, publishing, communications, history of science, as well engagements with students and interns from our laboratories. The programme will include interactions with established leaders in Industry as well as innovators and heads of technical hubs in the city and beyond.

Contact email: [sciencesetu@instem.res.in](mailto:sciencesetu@instem.res.in)

**Expected Participants/List of Participants:**

UG and PG students from Bangalore: St Joseph's; Maharani's Science College for Women, Mount Carmel College Autonomous, Indian Academy Degree College, Kristu Jayanti College, Sri DharmasthalaManjunatheshwara College,  
Mangalore: St. Aloysius College;  
Gadag: Bipin Chikkatti Degree College, Gadag  
Kollam, St. John's College, Kollam, Anchal Kerala;  
Chennai: Sri Ramachandra Institute of Higher Education & Research: Undergraduate college and Medical School students.

**How is the event linked to Azadi ka Amrit Mahotsav:**

The talk showcases research conducted in the laboratories in inStem and other research spaces in India. It covers a topical and relevant area of wound healing. It will highlight the



progress and advances laboratories in India have made in the area collectively, over preceding decades and the current contemporary approaches we are taking to address questions.

### Potential/Expected Impact:

We hope to build sustained interactions with participating colleges and partner with them in nurturing the growth of students curious about possibilities in science as well foster career advancement of exceptional students who would like to venture into science as a career. We also propose to participate in teaching in interested colleges, provide opportunities for students to visit our laboratories, be selected for internships (when safe) and also take part in debates and competitions in biological science and related areas.

SCIENCE SETU  
Discovering Possibilities!  
Atmanirbhar Bharat

DEPARTMENT OF BIOTECHNOLOGY  
GOVERNMENT OF INDIA  
DBT Science Setu  
India@75  
सशक्त भारत

inStem

## How does the skin heal wounds?

with

**Colin Jamora**  
DBT-inStem

**Registered Participants**

Bangalore: St Joseph's; Maharani's Science College for Women, Mount Carmel College Autonomous, Indian Academy Degree College, Kristu Jayanti College, Sri Dharmasthala Manjunatheshwara College,  
Mangalore: St. Aloysius College;  
Kollam: St. John's College, Kollam, Anchal Kerala;  
Chennai: Sri Ramachandra Institute of Higher Education & Research.

SATURDAY, 7TH AUG, 10 AM IST

REGISTER AND JOIN  
[tinyurl.com/scsetu](https://tinyurl.com/scsetu)  
Registration Required

Department of Biotechnology

आजादी का अमृत महोत्सव || 75th Anniversary of Indian Independence

Science Setu

**Title of the event:** Applications of phytopharmaceuticals in human life

**Name of the organizer:** DBT-Rajiv Gandhi Centre for Biotechnology (DBT-RGCB), Thiruvananthapuram

**Date and Time:** Friday 6<sup>th</sup> August 2021 ; 4.00 PM

**URL link:** <https://global.gotomeeting.com/join/904162925>

**Brief background/purpose of the event:**

Historical sources indicated that the use of medicinal plants goes way back to the Bronze age of human civilization. Phytopharmaceuticals are the molecules or medicines derived exclusively from a whole plant or parts of plants. The estimated global market for herbal medicines by 2023 will be worth USD 110 Billion. In this talk the various aspects of phytopharmaceuticals will be discussed with respect to inflammation and cancer.

**Expected Participants/List of Participants:**

People from all sectors of society including students from DBT Star Colleges.

**How is the event linked to Azadi ka Amrit Mahotsav:**

Azadi ka Amrit Mahotsav is an embodiment of all that is progressive about India, covering the development of phytopharmaceuticals.

**Potential/Expected Impact:**

This platform will help to strengthen the awareness of the common people and students towards the development of phyto-pharmaceuticals.





# Inauguration of "Science Museum"



**Chandel, Aspirational District, Manipur, India**

**Maha Union Govt. Higher Secondary School**

**August 11, 2021**

**11:00 am onwards**

**To celebrate and commemorate 75 years of Independence of India  
as a part of the occasion on the basis of Jan-Bhagidari**



**INSTITUTE OF BIORESOURCES AND  
SUSTAINABLE DEVELOPMENT (IBSD)**

**Department of Biotechnology (DBT), Govt. of India  
Takyelpat, Imphal 795001, Manipur, India**



[www.ibsd.gov.in](http://www.ibsd.gov.in)

# **Inauguration of Science Museum**

*Developed by*

**Institute of Bioresources and Sustainable Development (IBSD), Imphal**

*At*

**Chandel, Aspirational District of Manipur, India**

**Maha Union Govt. Higher Secondary School**

**August 11, 2021 11:00 AM onwards**

## **PROGRAM SCHEDULE**

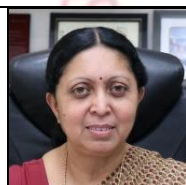
**Welcome address by:** (11:00 - 11:10 AM)

**Prof. Pulok K Mukherjee**

Director

Institute of Bioresources and Sustainable Development, Imphal, Manipur, India

**Address by:**



**Dr. Renu Swarup**

Secretary

Dept. of Biotechnology, Govt. of India  
New Delhi

(11:10 - 11:25 AM)



**Dr. R K Ranjan Singh**

Hon'ble Minister of State for  
External Affairs and Education,  
Govt. of India

(11:25 - 11:35 AM)



**Dr. Thirumalachari Ramasami**

Former Secretary

Department of Science and  
Technology, Govt. of India

(11:35 - 11:45 AM)



**Sh. Rajkumar  
Mayanglambam,  
IAS**

Deputy Commissioner  
Chandel District, Manipur

(11:45 - 11:55 AM)



**Sh. Ksh. Siddharth, McS**

Additional Deputy Commissioner  
Chandel District, Manipur

(11:55 AM - 12:05 PM)



**Sh. N. Pritam, McS**

Sub Divisional Officer  
Chandel District, Manipur

(12:05 - 12:15 PM)



**Sh. Warson Anal**

Principal

Maha Union Govt.  
Higher Secondary School,  
Chandel, Manipur, India

(12:15 - 12:25 PM)



**Sh. Nitin Gupta**

Commandant,  
182 Battalion,  
Border Security Forces  
Govt. of India

(12:25 - 12:35 PM)





**Dr. Anamika Gambhir**  
Scientist F  
Dept. of Biotechnology,  
Govt. of India, New Delhi &  
Coordinator  
IBSD, Imphal, India  
(12:35 – 12:45 PM)



**Dr. Manoj K Modi**  
Scientist-E  
Dept. of Biotechnology, Govt. of  
India, New Delhi &  
Nodal Officer  
IBSD, Imphal, India  
(12:45 – 12:55 PM)

*Vote of thanks by:*



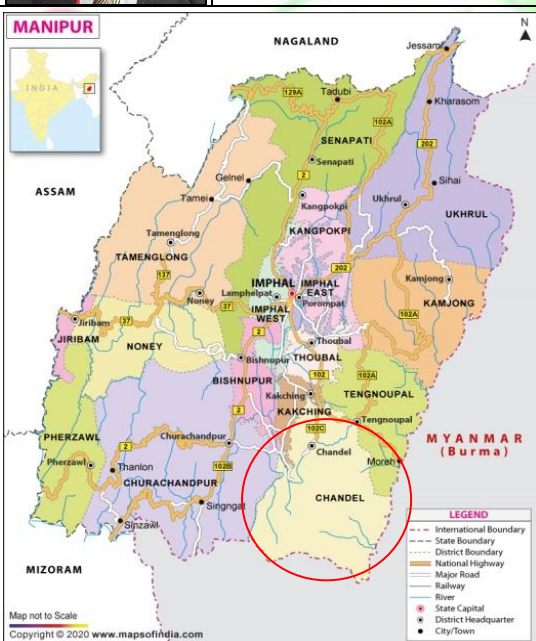
**Dr. Pardeep Bhardwaj**  
Coordinator & Scientist  
Institute of Bioresources and  
Sustainable Development (IBSD),  
Imphal, India  
(12:55 -01:00 PM)



**Dr. Nanaocha Sharma**  
Coordinator & Scientist  
Institute of Bioresources and  
Sustainable Development (IBSD)  
Imphal, India



**Prof. Pulok Kumar Mukherjee**  
Director  
Institute of Bioresources and Sustainable Development  
(IBSD)  
Imphal, Manipur, India



*We cordially invite all of you to join the event*

**Event link:**

<https://ibsd.webex.com/ibsd/j.php?MTID=m016eb10bae767eee46df781d58656430>

# Proposed 'Science Museum' in Chandel, Aspirational District of Manipur



**Institute of Bioresources and Sustainable Development (IBSD), Imphal**  
**जैव संसाधन एवं स्थायी विकास संस्थान, इंफाल**  
(Department of Biotechnology, Ministry of Science & Technology, Govt. of India)  
Takyelpat, Imphal 795001, India

## Science Museums in Aspirational Districts: Chandel District, Manipur

### Chandel Aspirational District:

To commemorate the 75 years of Independence as a part of the occasion on the basis of Jan-Bhagidari, Institute of Bioresources and Sustainable Development (IBSD) is setting up a 'Science Museum' in Chandel District of Manipur which will be adopted by IBSD as Aspirational District of Manipur.



Manipur have 16 districts. Among them, Chandel District came into existence on May 13, 1974. The District lies in the south-eastern part of Manipur at 24°40' N Latitude and 93°50' E Longitude. It is the border district of the state with an area of 2,100 sq. km neighboring with Myanmar (Burma) on the south and east, Ukhrul district on the north, Churachandpur district on the south and west, and Thoubal district on the north. It is about 64 km. away from Imphal. The National Highway No. 39 passes through this district. The district is inhabited by several communities with about

20 different tribes. The Moreh town, the international trade centers of the state, lies on the southernmost part of the district. When the Trans-Asian Super Highway comes into existence, Chandel district will be one of the gateways to the Asian countries.

### Venue of the Museum and initiatives with State Govt., Manipur:

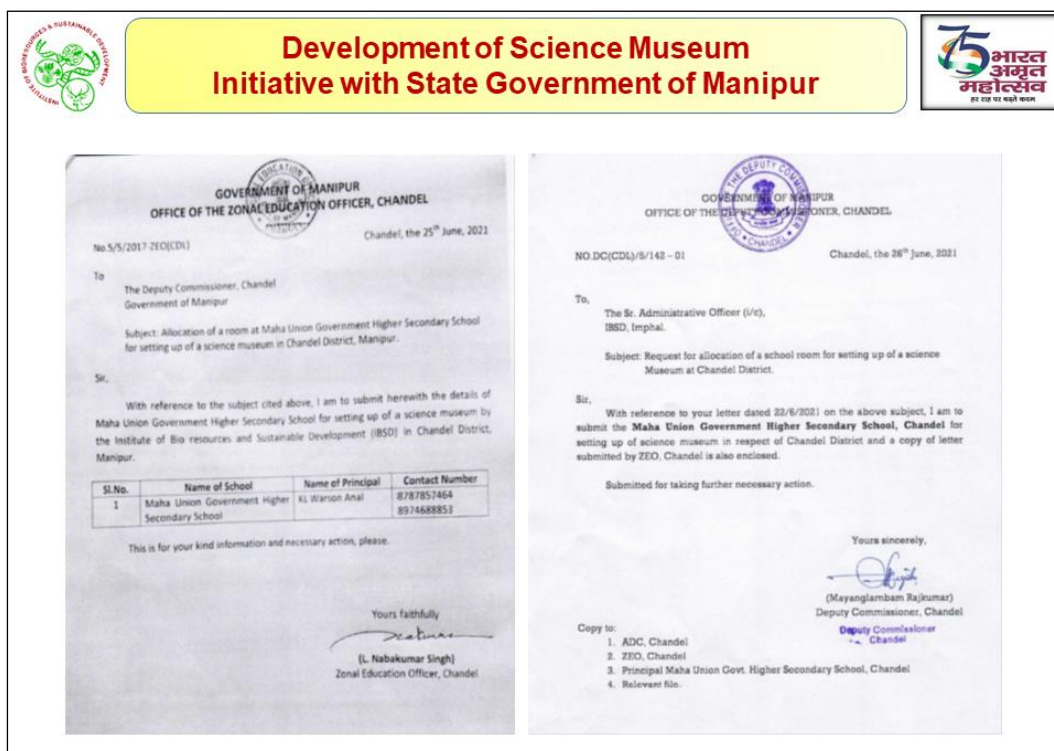
The Museum will be established in a senior secondary school namely Maha Union Govt. Hr. Sec. School, Japhou, Chandel, Manipur, India. The museum will be built in a room of the recently built two-story building. Two rooms @ 320 square feet (20 x 16 feet) has been specified for the implementation of the science museum.





**Proposed venue for the Science Museum**

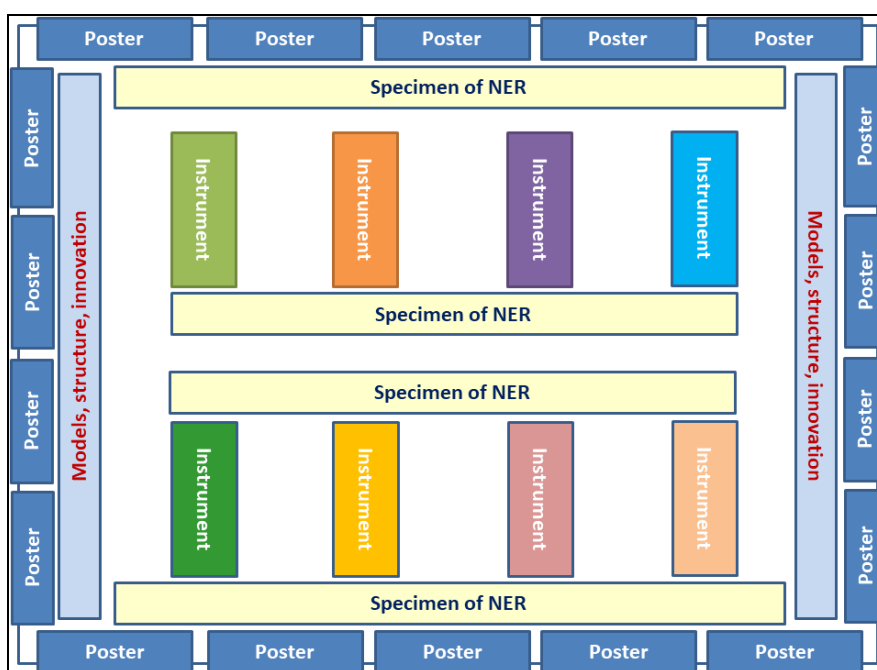
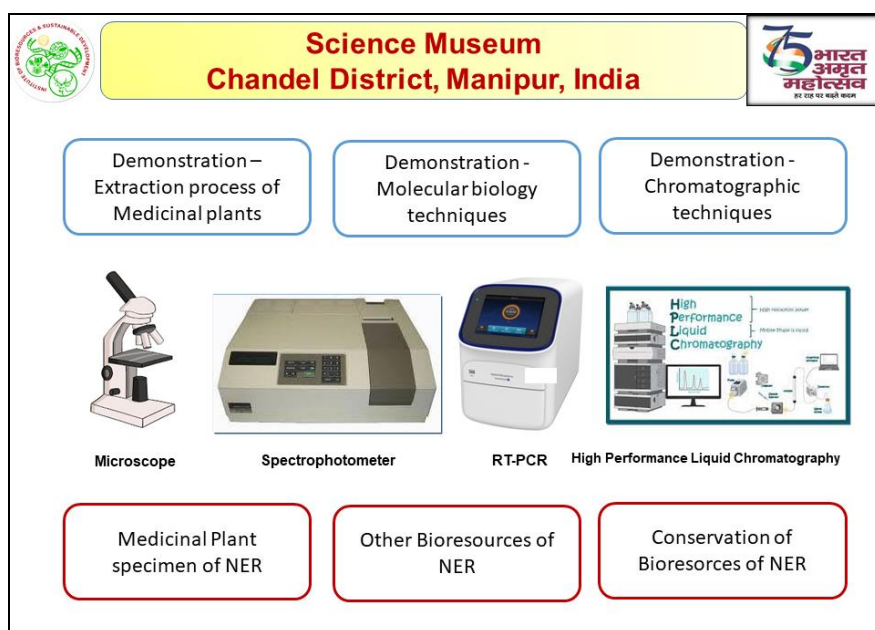
Deputy Commissioner, Chandel District of Manipur has agreed to provide a suitable place for setting up 'Science Museum'.



**Initiatives with State Govt. of Manipur**

## Hypothesis and objective

Main objective of museum is to develop scientific attitude and to inculcate general awareness among the students and common people. Also to promote scientific intervention of bioresources for the benefits of students and common man of the region by demonstrating about instruments, organising lectures, seminars, scientific camps and outreach program. This museum will aim at school children (and the general public) are expected to inspire them for a career in science and technology while celebrating the history and future of research and innovation in the country.



**Graphical representation of proposed Museum**

This museum will inspire many school children and general public for a career in science and technology while celebrating the history and future of research and innovation in the country. The poster and graphical representation of different research findings, global research scenario, bioresource management including sustainable use of medicinal plants will also be highlighted.

This museum will also promote scientific intervention of bioresources for the benefits of students and common man of the region with the following:

- Display and Demonstration of instruments
- Display of posters
- Demonstration on Bio-resource management
- Sustainable use of Bio-resources
- Organising lectures, seminars
- Scientific camps
- Outreach programme



## Posters highlighting 'Biodiversity of Manipur' Science Museum



Representation of posters highlighting “Biodiversity of Manipur”





## Posters highlighting scientific instruments Science Museum



### AUTOClave

- Autoclaves are also known as steam sterilizers, and are typically used for healthcare or industrial applications.
- An autoclave is a machine that uses steam under pressure to kill harmful bacteria, viruses, fungi, and spores on items that are placed inside a pressure vessel.
- The items are heated to an appropriate sterilization temperature for a given amount of time.
- The moisture in the steam efficiently transfers heat to the items to destroy the protein structure of the bacteria and spores.

**Process :**

- Three critical factors for ensuring successful steam sterilization:
- 1. Temperature range** - 250°F (121°C), 275°F (132°C) or 275°F (130°C)
- 2. Quality steam** - 97% steam (vapor) and 3% moisture (liquid water)
- 3. Time** - Exposure periods for steam sterilization vary with size, shape, weight, density and material composition of the device being sterilized.

To meet these requirements there are three phases to the autoclave process:

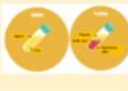
- 1. Conditioning Phase (C):** Air inhibits sterilization and must be removed from the chamber during the first phase of the sterilization cycle known as conditioning.
- 2. Exposure Phase (E):** After the air is removed, the sterilizer drain closes and steam is continuously admitted into the chamber, rapidly increasing the pressure and temperature inside to a predetermined level. The cycle enters the exposure phase and items are held at the sterilization temperature for a fixed amount of time required to sterilize them.
- 3. Exhaust Phase (D):** During the final phase of the cycle, exhaust, the sterilizer drain is opened and steam is removed, depressurizing the vessel and allowing the items in the load to dry.

**Never autoclave :**

- Flammable, reactive, corrosive, toxic or radioactive materials
- Household bleach
- Any liquid in a sealed container.
- Paraffin-embedded tissue.

### CENTRIFUGE

- A **centrifuge** is a device that uses centrifugal force to separate various components of a fluid. This is achieved by spinning the fluid at high speed within a container, thereby separating fluids of different densities (e.g. cream from milk) or liquids from solids.
- In a laboratory, the radial acceleration causes denser particles to settle to the bottom of the tube, while low-density substances rise to the top.
- For example:** Unlike serum, plasma is obtained from whole blood that is not left to clot, and contains serum along with clotting factors. To obtain plasma, a whole blood sample is collected in tubes treated with anticoagulants. Following centrifugation, cells are removed and plasma supernatant remains.



**Principles of centrifugation :**

- A centrifuge is used to separate particles suspended in a liquid according to particle size and density, viscosity of the medium, and rotor speed.
- Within a solution, gravitational force will cause particles of higher density than the solvent to sink, and those less dense than the solvent to float to the top. Centrifugation takes advantage of even minute differences in density to separate particles within a solution.
- As the rotor spins around a central axis, it generates a centrifugal force acting to move particles away from the axis of rotation. If the centrifugal force exceeds the buoyant forces of liquid media and the frictional force created by the particle, the particles will sediment.

**Safety precautions :**


- Ensure a sturdy, level work surface.
- Balance the centrifuge
- Do not open the lid while the rotor is moving
- If the centrifuge is wobbling or shaking, pull the plug

### Compound Microscope

- A compound microscope is an instrument that is used to view magnified images of small specimens on a glass slide.
- It can achieve higher levels of magnification than stereo or other low power microscopes and reduce chromatic aberration.
- It achieves this through the use of two or more lenses in the objective and the eyepiece.
- The objective lens or objectives located on the nosepiece have a short focal length and are close to the target specimen where it collects light and focuses the image of the object into the microscope.
- The second lens, in the eyepiece, has a longer focal length and further enlarges the image.

**Characteristics of a Compound Microscope:**

- Two or more convex lenses
- Typical magnification range between 40x and 1000x
- One objective is used at a time
- Two-dimensional images
- Available in monocular, binocular, trinocular and multi-head configurations



**Types:**

1. Biological microscope
2. Phase contrast microscope
3. Polarizing microscope
4. Metallurgical microscope

**Mode of Function**

- Light starts its journey at the base of the microscope from the source of illumination. This light travels upwards through the condenser and aperture where it then passes through the contents of the stage.
- The image of the slide or specimen on the stage is focused by the powerful magnification of the objective lens above it (4x, 10x, or 100x).
- The light then moves up the head of the microscope where it reaches the eyepiece and is again magnified by the ocular lenses (5x-20x, 10x eyepiece is by far the most common).

### Gas Chromatography Flame Ionization Detector (GC FID)

- Gas chromatography (GC), which is widely used in foods, petroleum products, pesticide and pesticide residues, pharmaceutical products, environmental monitoring, and clinical chemistry.
- If the sample to be analyzed is not volatile, the techniques of derivatization has to be done.

**AGC system is composed of four major components:**

1. Detector
2. Carrier gas source
3. Sample introduction system
4. Column

The flame ionization detector (FID) is the most popular detector for GC. It utilizes a flame produced by the combustion of hydrogen and air.

- For optimal FID operation, the carrier, hydrogen, and air flow must be properly set and adjusted.
- Flame ionization detector (FID) is more frequently encountered in food applications, since many compounds under investigation are organic (containing carbon).
- FID is around a thousand times more sensitive than thermal conductivity detection for organics.
- FID is sensitive to molecules such as hydrocarbons,  $\text{CHCl}_3$ ,  $\text{CH}_2\text{Cl}_2$ ,  $\text{CO}_2$ ,  $\text{C}_2\text{H}_6$ , and  $\text{H}_2\text{O}$ .

### GEL DOC

- A gel doc, also known as a gel documentation system, gel image system or gel imager, refers to equipment widely used in molecular biology laboratories for the imaging and documentation of nucleic acid and protein suspended within polyacrylamide or agarose gels.
- These gels are typically stained with ethidium bromide or other nucleic acid stains such as GelGreen.
- Generally, a gel doc, is composed of ultraviolet (UV) light transilluminator, a hood to shield external light sources and CCTV camera for image capturing.

**Principles:**

1. Principle of fluorescence with fluorescent staining of nucleic acids - a fluorescent substance that has bound to nucleic acid is excited by ultraviolet irradiation and emits fluorescent light.
2. Ethidium bromide binds specifically to nucleic acid and the amount of bonding depends on the molecular weight and concentration of the nucleic acid. A band for a large amount will shine brighter; conversely, fluorescence will be weaker for a band for a small amount.

**Components of Gel doc system:**

1. Camera : Ultraviolet camera ranging from 1.4m upto 8.3m pixel.
2. Lenses : All lenses are computer controlled and motor driven. Here lenses automatically tracks upwards or downwards movements of sample using auto focus.
3. Filters : There is an extensive range of emission filters use for an array of applications.
4. Over head illuminator : White light , Ultra violet light, and LED lighting option
5. Visible light : For extending the transmitted light application. Visible light convert screen for visible light application.

**Uses:**

It is used for the analysis of proteins, antibodies and nucleic acid immobilized in polyacrylamide or agarose gels, membranes or microarrays.

### Lyophilizer (Freeze dryer)

- Lyophilizer or freeze dryer executes a water removal process typically used to preserve perishable materials, to extend shelf life or make the material more convenient for transport.
- Lyophilizers work by freezing the material, then reducing the pressure and adding heat to allow the frozen water in the material to sublimate.

**A Lyophilizer's 3 Primary Stages:**

1. **Freezing Phase**  
A lyophilizer uses various methods to freeze the product. Freezing can be done in a freezer, a chilled bath (shell freezer), or on a shelf in the lyophilizer. The lyophilizer cools the material below its triple point to ensure that sublimation, rather than melting, will occur. This preserves the material's physical form.
2. **Primary Drying (Sublimation) Phase**  
A lyophilizer's second phase is primary drying (sublimation), in which the pressure is lowered and heat is added to the material in order for the water to sublimate.
3. **Secondary Drying (Adsorption) Phase**  
A lyophilizer's final phase is secondary drying (adsorption), during which the specially bound water molecules are removed. By raising the temperature higher than in the primary drying phase, the bonds are broken between the material and the water molecules.

**Problems To Avoid While Using a Lyophilizer**

- Heating the product too high in temperature can cause melt-back or product collapse.
- Condenser overload caused by too much vapor hitting the condenser.
- Vapor choking - the vapor is produced at a rate faster than it can get through the vapor port, the port between the product chamber and the condenser, creating an increase in chamber pressure.

### Polymerase chain reaction (PCR)

- Polymerase chain reaction (PCR) is a common laboratory technique used to make many copies (millions or billions) of a particular region of DNA.
- The goal of PCR is to make enough of the target DNA region that it can be analyzed or used in some other way.
- For instance, DNA amplified by PCR may be sent for sequencing, visualized by gel electrophoresis, or cloned into a plasmid for further experiments.

**The basic steps are:**

**Denaturation (96°C):** Heat the reaction strongly to separate, or denature, the DNA strands. This provides single-stranded template for the next step.

**Annealing (55 - 65°C):** Cool the reaction so the primers can bind to their complementary sequences on the single-stranded template DNA.

**Extension (72°C):** Raise the reaction temperatures so Taq polymerase extends the primers, synthesizing new strands of DNA.

**Applications:**

- PCR is used in many research labs, and it also has practical applications in forensics, genetic testing, and diagnostics.
- For instance, PCR is used to amplify genes associated with genetic disorders from the DNA of patients (or from fetal DNA, in the case of prenatal testing).
- PCR can also be used to test for a bacterium or DNA virus in a patient's body. If the pathogen is present, it may be possible to amplify regions of its DNA from a blood or tissue sample.

### Rotary evaporator (Rotovapor)

- A rotary evaporator (rotovap) is a device used in chemical laboratories for the efficient and gentle removal of solvents from samples by evaporation under reduced pressure.
- A simple rotary evaporator system was invented by Lyman C. Craig. It was first commercialized by the Swiss company Bichi in 1967.

**Main components :**

1. A motor unit that rotates the evaporation flask or vial containing the user's sample.
2. A vapor duct that is the axis for sample rotation, and is a vacuum-tight conduit for the vapor being drawn off the sample.
3. A vacuum system, to substantially reduce the pressure within the evaporator system.
4. A heated fluid bath (generally water) to heat the sample.
5. A condenser with either a coil passing coolant, or a "cold finger" into which coolant mixtures such as dry ice and acetone are placed.
6. A condensate-collecting flask at the bottom of the condenser, to catch the distilling solvent after it re-condenses.
7. A mechanical or motorized mechanism to quickly lift the evaporation flask from the heating bath.

**Safety:**

- Pressure hazards include implosions resulting from use of glassware that contains flasks, such as star-cracks.
- Explosions may occur from concentrating unstable impurities during evaporation, for samples containing peroxides, organic acids and acrylates and nitro-containing compounds.

### Ultraviolet-visible (UV-Vis) Spectrometer

- Ultraviolet-visible (UV/Vis) spectrophotometry is a technique used to measure light absorbance across the ultraviolet and visible ranges of the electromagnetic spectrum.
- When incident light strikes matter it can either be absorbed, reflected, or transmitted. The absorbance of radiation in the UV/Vis range causes atomic excitation, which refers to the transition of molecules from a low-energy ground state to an excited state.

**Principles:**

- According to Beer-Lambert Law, the amount of light absorbed is directly proportional to the concentration of the sample and the distance the light travels through the sample, the pathlength.
- Molecules containing bonding and non-bonding electrons (n-electrons) can absorb energy in the form of ultraviolet or visible light to excite these electrons to higher anti-bonding molecular orbitals. The more easily excited the electrons, the longer the wavelength of light it can absorb.
- A UV/Vis spectrophotometer can use this principle to quantify the analytes in a sample based on their absorption characteristics.

**Applications:**

- UV/Vis spectroscopy is routinely used in analytical chemistry for the quantitative determination of different analytes, such as transition metal ions, highly conjugated organic compounds, and biological macromolecules.
- Spectroscopic analysis is commonly carried out in solutions but solids and gases may also be studied.

Poster highlighting different scientific instruments

For infrastructure development and related activities, the cost incurred will be reimbursed from IBSD core fund.

- Expenditure on infrastructure development including installation of laboratory tables, electrification for instruments, lights, fans, painting, tables, chairs, carpet, almirahs, printing posters, fire extinguisher, water purifier etc.
- Expenditure on transportation and installation of equipments, projection equipments, audio-visuals, projector screen, computer systems, internet connection for virtual workshops and interactive exhibits for experimentations etc.

### **Targeted audiences:**

IBSD is developing a science museum in Chandel aspirational district of Manipur. This museum will aim at school children (and the general public) are expected to inspire them for a career in science and technology while celebrating the history and future of research and innovation in the country. In this regards, Deputy Commissioner, Chandel District of Manipur has agreed to provide a suitable place for setting up 'Science Museum'. In this context, suitable place has been provided at Maha Union Govt. Higher Secondary School Chandel District, Manipur, India. IBSD will install old scientific instruments used in biotechnological related R&D work and install some research materials and posters highlighting unique bioresources of the North Eastern Region and different Research verticals of the institute. A recording on the demonstration of the instruments and research activities will be highlighted in audio visual format. The system has been installed in this regard. To celebrate 75 years of Independence, IBSD will organise many lectures, seminars, workshops and science camps in 'Science Museum' in Chandel District. Thus this museum at Chandel is aimed at school children (and the general public) to inspire them for a career in science and technology while celebrating the history and future of research and innovation in the country.

The proposed museum at Maha Union Govt. Higher Secondary School Chandel District, Manipur has been made ready for inauguration. I would like to request Respected Secretary, Joint secretary, other officials of DBT to please fix a date between 10<sup>th</sup> -12<sup>th</sup> August, 2021, before 15<sup>th</sup> August 2021. Accordingly, we will inform the local administration to join the programme at Chandel, aspirational district of Manipur.





ORGANIZED AND SUPPORTED BY

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प्रौद्योगिकी से प्रगति



## OPPORTUNITIES IN AGRICULTURE ENTREPRENEURSHIP

Wed 11<sup>th</sup> August 2021 | TIME 10.00 AM to 1.00 PM

"विज्ञान से विकास-प्रौद्योगिकी से प्रगति" under the theme सशक्त भारत



**Dr. Ajay Parida**  
Director,  
Institute of Life Sciences



**Dr. Manish Diwan**  
Head – Strategic Partnerships &  
Entrepreneurship Development



**Dr. Kiran K Sharma**  
Director, ICRIAT-IN



**Dr. Ranjit Kumar**  
Principal Scientist  
Head, Agribusiness  
Management Division,  
ICAR-NAARM



**Dr. Sivaramane**  
CEO, NAARM TBI-aIDEA,  
NAARM



**Dr. Sanjay Saxena**  
Head- Investment, BIRAC

For details email at [incubation@ils.res.in](mailto:incubation@ils.res.in) and Register @ <https://forms.gle/YFZ3YDpBnDcS6Dmp9>

**Department of Biotechnology**  
**75th Anniversary of Indian Independence**

**Title of the event:** Opportunities in Agriculture Entrepreneurship

**Name of the organizer:** DBT-ILSBioincubator

**Date and Time:** 11<sup>th</sup> August, 10.00 AM- 1.00 PM

**URL/Registration link (in case of virtual event):** <https://forms.gle/YFZ3YDpBnDcS6Dmp9>.

**Venue (in case of physical event):** DBT-ILSBioincubator, ILS Campus 2, Bhubaneswar

**Brief background/purpose of the event:**

Agricultural development and diversification have opened up new opportunities for developing entrepreneurship in the agri-business sector especially agriculture, horticulture, floriculture, sericulture, animal husbandry and veterinary, fishery, etc. The mission of DBT-ILS Bioincubator through this workshop is to promote sustainable development by creating awareness on the different opportunities in agricultural entrepreneurship. The aim of the event is to show new concrete ways for the aspiring and existing entrepreneurs. Our goal is to build awareness around the broad array of opportunities and current innovation trends in agriculture biotechnology available to start-ups, researchers and academicians here at DBT- ILS as well as other organizations in this region.

**Expected Participants/List of Participants:**

Academicians from different Institutes / Colleges / Universities, Industry Professionals, Entrepreneurs, Research Scholars, MSME are expected to participate in the workshop.

**How is the event linked to Azadi ka Amrit Mahotsav:**

The event is indicative of creating awareness in the field of Agriculture Entrepreneurship by highlighting the interventions and innovations existing in the field and thereby opportunities available to aspiring entrepreneurs, thus contributing to “विज्ञान से विकास-प्रौद्योगिकी से प्रगति”

**Potential/Expected Impact:**

The audience expected are academicians from different Institutes / Colleges / Universities, Industry Professionals, Entrepreneurs, Research Scholars, MSME. They can benefit from a free interactive session with eminent experts in the area of agro technology.

**Department of Biotechnology**  
**75th Anniversary of Indian Independence**

**Title of the event:** Better with Biotechnology

**Name of the organizer:** IIT Kanpur Bioincubator

**Date and Time:** 11-13<sup>th</sup> August (5-7:00 PM)

**URL/Registration link (in case of virtual event):** [https://us06web.zoom.us/webinar/register/WN\\_c\\_CSOKVYRRiOakNs6i7fHA](https://us06web.zoom.us/webinar/register/WN_c_CSOKVYRRiOakNs6i7fHA)

**Venue (in case of physical event):**

**Brief background/purpose of the event:**

The three-days event is being organised to celebrate and highlight the important role played by Biotechnology Industry in boosting India's economy post independence.

**Expected Participants/List of Participants:**

Startups, students, faculty members and individual innovators.

**How is the event linked to Azadi ka Amrit Mahotsav:**

The event has three keynote sessions on :

- Journey and Impact of Biotechnology on Indian society
- India2.0 | Unleashing the potential of Biotechnology for covidized India
- Emerging trends in Biotechnology that will rule the industry for next 25 years

Additionally, the event will focus on highlighting the ecosystem established by BIRAC to support Bio-entrepreneurs in North region and showcasing Biotech based startups in the regions.

**Potential/Expected Impact:**

- Awareness about the startup ecosystem created
- Awareness about the important role being played by the Biotech startups in improving the human lives and over all society.

## क्षेत्रीय जैवप्रौद्योगिकी केन्द्र

### REGIONAL CENTRE FOR BIOTECHNOLOGY

12-16<sup>th</sup> July, 2021

**Title of the event:** ID 75 Webinar Series

**Name of the organizer:** Regional Centre for Biotechnology

**Brief background/purpose of the event:**

As a part of Science Setu and to commemorate 75th Year of Indian Independence, RCB organized a webinar event where the life and works of eminent Indian scientists who have made a difference to science and lives of people, and who have furthered science to its current glory in India and around the world is being showcased.

Besides, keeping in mind the exciting scientific talks and an enthusiastic participation from students, faculty and others in the first round of 'RCB Contemporary Webinar Series' a second round/ season 2 of this webinar series has been announced, which will be held also to commemorate India's 75 years of Independence. Similar to the previous round, we will have the webinars every week on Fridays.

As a part of this webinar series, presentations are regularly delivered through RCB's YouTube channel.

S.No.	Start Date	End Date	Theme/ Subject	Activity Details*	Venue
1	16.07.2021	16.07.2021	Celebrating the Glory of	Prof. Saikrishnan Kayarats, IISER Pune	Presentations delivered through RCB's YouTube channel
2	23.07.2021	23.07.2021	Indian	Dr. G.N. Ramachandran	
3	13.08.2021	13.08.2021	Science: Showcasing the Life and Works of Eminent Indian Scientists	Dr. Obaid Siddiqi	

\*'विज्ञान से विकास-प्रौद्योगिकी से प्रगति' Celebrating the Glory of Indian Science: Showcasing the Life and Works of Eminent Indian Scientists.

Such events will also be planned further till August 2022 and will be communicated in due course.=

**Expected Participants/List of Participants:** ~ 200

विज्ञान से विकास-प्रौद्योगिकी से प्रगति

## Department of Biotechnology

## आजादी का अमृत महोत्सव || 75th Anniversary of Indian Independence

**Title of the event:** Skill and Capacity building program for tribal artisans in bamboo craft sector

**Name of the organizer:** DBT-Rajiv Gandhi Centre for Biotechnology (RGCB), Thiruvananthapuram

**Date and Time:** 15 days from 4<sup>th</sup> August

**URL on Media news:** <https://youtu.be/evbS8cQ9Cxo>

**Brief background/purpose of the event:**

Now-a-days, traditional bamboo craft items such as mats and baskets have less demand among the consumers mainly due to the availability of plastic items at lower cost. Because of the low income, the traditional bamboo artisans are facing severe economic crisis and they are searching for other options like agriculture labours, daily wages in construction works etc. The traditional bamboo craft artisans and associated livelihood opportunities are fastly disappearing from the tribal culture itself. To revamp the rich skill of tribal artisans, and to compete with the modern plastic items available in modern markets, skill and capacity building programs are necessary. They should be encouraged to make diverse utility items like kitchen items, Office stationary items etc. As part of DST-Tribal Heritage project, DBT-RGCB has organized 15 days skill and capacity building program for tribal bamboo artisans in Idukki District, Kerala.

**List of Participants:**

Tribal Artisans from tribal community at Idukki District, Kerala

Sl. No.	Name	Address
1.	Ammini Vijayan	Parlayil, Venmony P.O. Kanjikuzhi
2.	Ammini Raju	Arackal, Venmony P.O. Kanjikuzhi
3.	C V Georgekutty	Therayil, Venmony P.O. Kanjikuzhi
4.	Aniyamma Philip	Thonikkallel, Venmony P.O. Kanjikuzhi
5.	Ammini Ponnappan	Parlayil, Venmony P.O. Kanjikuzhi
6.	Anandhu Jayachandren	Parlayil, Venmony P.O. Kanjikuzhi
7.	Biji Santhosh	Parlayil, Venmony P.O. Kanjikuzhi
8.	Chandran T G Therayil	Therayil, Venmony P.O. Kanjikuzhi
9.	Chandini Chandran Therayil	Therayil, Venmony P.O. Kanjikuzhi
10.	P R Kannappan	Parlayil, Venmony P.O. Kanjikuzhi
11.	Neely Thankachan	Therayil, Venmony P.O. Kanjikuzhi
12.	Krishnakumar T G	Therayil, Venmony P.O. Kanjikuzhi
13.	Devaki George	Therayil, Venmony P.O. Kanjikuzhi
14.	Pushpa Unni	Parlayil, Venmony P.O. Kanjikuzhi
15.	Ramachandran T K	Therayil, Venmony P.O. Kanjikuzhi

16	Rajamma Gopalan	Therayil, Venmony P.O. Kanjikuzhi
17	Raju	Therayil, Venmony P.O. Kanjikuzhi
18	Susamma T S	Thazhathukozhikunnel, Venmony P.O. Kanjikuzhi
19	Thankamma Vellan	Therayil, Venmony P.O. Kanjikuzhi
20	Vincy Chandran	Therayil, Venmony P.O. Kanjikuzhi
21	Vijayan Karimpan	Parlayil, Venmony P.O. Kanjikuzhi
22	Suseela Gopalan	Therayil, Venmony P.O. Kanjikuzhi
23	Chinnamma T S	Parlayil, Venmony P.O. Kanjikuzhi
24	Vimala Aneesh	Cheriyannickal, Venmony P.O. Kanjikuzhi
25	Sreevidhya Unni	Parlayil, Venmony P.O. Kanjikuzhi
26	Radha Jayachandhran	Parlayil, Venmony P.O. Kanjikuzhi
27	Rani Nevan	Koraliyil, Venmony P.O. Kanjikuzhi

**How is the event linked to Azadi ka Amrit Mahotsav:**

"For a self-reliant India, we have to be vocal for local" On the occasion of celebrating India @ 75, we need to empower the traditional bamboo craft artisan in terms of their skill, efficiency in production, diversity in products etc.

**Potential/Expected Impact:**

This program helped to strengthen the capacity of the tribal people to make diversity of products.



## Department of Biotechnology

## आजादी का अमृत महोत्सव || 75th Anniversary of Indian Independence

**Title of the event:** " Biomolecular Targets and Drug Design: Approaches and Opportunities" by Dr. Manoj Munde, JNU, New Delhi

**Name of the organizer:** National Agri-Food Biotechnology Institute (NABI), and Center of Innovative and Applied Bioprocessing (CIAB)

**Date and Time:** 19<sup>th</sup> August 2021 4:00 am to 5:00 pm

**URL/Registration link (in case of virtual event):** Please join webinar from your computer, tablet or smartphone.

<https://www.gotomeet.me/nabimohali81/sciencesetu>

New to GoToMeeting? Get the app now and be ready when your first meeting starts: <https://global.gotomeeting.com/install/594320197>

**Venue (in case of physical event):** Virtual platform

**Brief background/purpose of the event:**

The National Agri-Food Biotechnology Institute, and Center of Innovative and Applied Bioprocessing two autonomous DBT institutes, are organizing Open day program to connect the Indian research Institute with the colleges and general audience on Friday, 19<sup>th</sup> August, 2021 from 4:00 am to 5:00 pm.

Students from the various colleges and teachers of all over India, research institute, and other science admirers will have a chance to learn about the scientific achievements of India in past 75 years, and perspectives of future scientific development. The open day will feature scientific lecture and poster presentation by young researcher of NABI and CIAB. The overall purpose of the event is to showcase the potential of science to the young students, so they can contribute to the field in the future.

**Expected Participants/List of Participants:**

S. No.	Colleges	S. No.	Colleges
1.	S. Govt. College of Science Education & Research, Jagraon	14.	Sri Guru Tegh Bahadur Khalsa College, Ropar
2.	Doaba College, Jalandhar	15.	S.G.G.S. Khalsa College, Hoshiarpur
3.	B.B.K DAV College of Women, Amritsar	16.	Guru Nanak College, Mansa
4.	Kanya Maha Vidyalaya, Jalandhar	17.	Dev Samaj College for Women, Ferojpur
5.	Maulana Azad College, Kolkata	18.	DAV College, Jalandhar

6.	Lady Brabourne College, Kolkata	19.	Kamla Nehru College for Women, Phagwara
7.	Jhargram Raj College, Jhargram	20.	Mata Gujri College, Fatehgarh Sahib
8.	Ramkrishna Mission Vidyamandira, Howrah	21.	DAV College, Amritsar
9.	Ramakrishna Mission Vivekananda Centenary College, Kolkata	22.	DAV College, Abohar
10.	Surendranath College, Kolkata	23.	DAV College, Bhathinda
11.	Bethune College, Kolkata	24.	R. D. National College, Mumbai
12.	Mugberia Gangadhar Mahavidyalaya, Medinipur	25.	Nagpur Veterinary College, Nagpur
13.	Krishna Chandra College, Birbhum	26.	Other DBT autonomous Institutes

#### **How is the event linked to Azadi ka Amrit Mahotsav:**

Azadi ka Amrit Mahotsav is an initiative of the Government of India to celebrate and commemorate 75 years of progressive India and the glorious history of its People, culture and achievements. A science open day can be a path breaking idea to indulge young minds towards science. No country has achieved self-reliance without mass quality and public education. The open day will connect the young minds with ongoing science in India and show them how they can do wonders in Science. New discoveries by these young minds will make the country self-reliant which is the overall motto of Azadi ka Amrit Mahotsav.

#### **Potential/Expected Impact:**

Open days are social encounters among the students and faculty of eminent institutions. Most of the students are attracted towards the institutions where faculty is highly qualified, possess great knowledge, and are enthusiastic and passionate about their work. Many students are not able to take proper decisions due to a lack of exposure to advanced scientific discoveries and instrumentation. Being able to interact with the faculties of higher institutions enables the students in the decision making process about their future. Here at NABI and CIAB we have highly qualified and experienced staff that might impact students' perspective towards opting for their career in science. Moreover, they could also learn the importance of small observations in making great discoveries.

The event highlights the latest developments in scientific fields and how few observations are important. Such open days can help the students and teachers to develop scientifically temperament and this way they would be encouraged for scientific thinking and a better understanding of scientific concepts.

## Department of Biotechnology

### आजादी का अमृत महोत्सव || 75th Anniversary of Indian Independence

**Title of the event: Webinar entitled:** Skeletal Muscle – Life’s Movers & Shakers; Speaker: Arvind Ramanathan, DBT-inStem

**Name of the organizer:** DBT- Institute for Stem Cell Science & Regenerative Medicine

**Date and Time:** 21 August, 2021, 10-11AM

**URL/Registration link (in case of virtual event):** registration link

**Venue (in case of physical event):** Online



#### Brief background/purpose of the event:

The Science Setu Programme at inStem entitled “Discovering Possibilities” is an effort to create awareness about the importance of science in our lives and encourage the participation of young college students and their teachers in the area of Biology. Through setting up engagements with practitioners of science, this programme aims to provide a view to the excitement and numerous opportunities arising from a career in science.

Each webinar covers a topic in a manner accessible to college students and apart from contemporary cutting-edge research, involves colleagues who have faced challenges and success in allied areas such as science journalism, publishing, communications, history of science, as well engagements with students and interns from our laboratories. The programme will include interactions with established leaders in Industry as well as innovators and heads of technical hubs in the city and beyond.

Contact email: [sciencesetu@instem.res.in](mailto:sciencesetu@instem.res.in)

#### Expected Participants/List of Participants:

UG and PG students from Bangalore:

- St Joseph’s;
- Maharani’s Science College for Women,

- Mount Carmel College
- Autonomous, Indian Academy Degree College,
- Kristu Jayanti College,
- Sri Dharmasthala Manjunatheshwara College,

Mangalore:

- St. Aloysius College;

Gadag:

- Bipin Chikkatti Degree College, Gadag

Kollam,

- St. John's College, Kollam, Anchal Kerala;

Chennai:

- Sri Ramachandra Institute of Higher Education & Research: Undergraduate college and Medical School students.

**How is the event linked to Azadi ka Amrit Mahotsav:**

The talk showcases research conducted in the laboratories in inStem and other research spaces in India. It covers a topical and relevant area of muscle health and its changes by disuse, ageing disease etc. This is particularly relevant and relatable given our athletes remarkable performances in the recent Olympic Games.

Overall, this talk like the others in the series will highlight the progress and advances laboratories in India have made in the area collectively, over preceding decades and the current contemporary approaches we are taking to address questions.

**Potential/Expected Impact:**

We hope to build sustained interactions with participating colleges and partner with them in nurturing the growth of students curious about possibilities in science as well foster career advancement of exceptional students who would like to venture into science as a career. We also propose to participate in teaching in interested colleges, provide opportunities for students to visit our laboratories, be selected for internships (when safe) and also take part in debates and competitions in biological science and related areas.

Department of Biotechnology

आजादी का अमृत महोत्सव || 75th Anniversary of Indian Independence

**Title of the event:** Science Setu Startup Series

**Topic-** Entrepreneurship Challenges & Opportunities

Speaker- Mr. Arpit Dhupar

Founder- Dharaksha Ecosolutions Pvt. Ltd.

**Name of the organizer:** BSC BioNEST Bio-Incubator (BBB)

**Date and Time:** 20<sup>th</sup> August, 2021 (Friday) 12.00 PM-1.00 PM

**URL/Registration link (in case of virtual event):**

<https://forms.gle/NWz73CcjYA7EJUDw9>

**Venue (in case of physical event):**

**Brief background/purpose of the event:**

It is an online virtual event to showcase the 'Success Stories of Indian Biotech Start-ups' also focussing on the journey of an entrepreneur and the challenges faced on the way.

**Expected Participants/List of Participants:**

120

**How is the event linked to Azadi ka Amrit Mahotsav:**

This event will generate awareness about entrepreneurship and current startup ecosystem of the country. It will also provide new direction to the future entrepreneurs of the country.

**Potential/Expected Impact:**

Awareness about entrepreneurship and challenges faced on the way

## Department of Biotechnology

आजादी का अमृत महोत्सव || 75th Anniversary of Indian Independence

**Title of the event:** Building sustainable innovation ecosystem

**Name of the organizer:** ASPIRE-BioNEST, University of Hyderabad

**Date and Time:** 16<sup>th</sup> August 10 AM to 1.30 PM

**URL/Registration link (in case of virtual event):** Zoom (ID: 83150418723, Code: 12345)

**Venue (in case of physical event):** NA

**Brief background/purpose of the event:** The event consists two components, 2-3 expert lectures by successful industrialists and a panel discussion on “Building sustainable innovation ecosystem: Experiences of the successful Incubators”. The panel discussion is moderated by Head of SPED division of BIRAC Dr. Manish Diwan and expert panel members are the heads of 5 leading incubator who are supported by BIRAC i.e., Venture Center – Pune, KIIT-TBI Bhubaneswar, IKP-Hyderabad, HTIC-Chennai, C-CAMP – Bangalore. Invited Experts are the recently grown start-ups and who are successfully running the business. This event covers the overview of creating the innovation based ecosystem for encouraging budding entrepreneurs and also the experience of developing a start-up to a successful business.

**Expected Participants/List of Participants:** Start-ups, academicians, students

**How is the event linked to Azadi ka Amrit Mahotsav:** This event discusses about the support ecosystem provided by the Govt. funding bodies to nurture and encourage the budding entrepreneurs in creating wealth from indigenous innovations. This event also discusses the experiences of successful start-ups who took the help from the generated ecosystem.

**Potential/Expected Impact:** Nuances of establishing and troubleshooting in creation of successful incubator. Inspirational stories from the successful entrepreneurs, including the journey of an innovative idea to become a successful business. The expected outcome also includes, igniting the entrepreneurial spirit among the students and faculty.

विज्ञान से विकास-प्रौद्योगिकी से प्रगति

## From a Researcher to an Entrepreneur

Are you aspiring to become an innovator or entrepreneur, and willing to contribute towards '*Atma Nirbhar Bharat*'? In our aim to help, promote, support and mentor the potential innovators and entrepreneurs, BioNEST-BHU invites you to join a webinar on,

### Research, Innovation & Entrepreneurship: Redefining Imaginative Landscape



**Speaker:**

Prof. Anil K Gupta, Founder, The Honey Bee Network, National Innovation Foundation, SRISTI and GIAN. Ahmedabad



**Welcome Address:**

Prof. Anil K Tripathi  
Coordinator BioNEST-BHU  
Director, Institute of Science  
Banaras Hindu University, Varanasi.

**Contact:** Saikat Sen, Chief Executive Officer, BioNEST-BHU, [bionestbhu@bhu.ac.in](mailto:bionestbhu@bhu.ac.in), [www.bionestbhu.org](http://www.bionestbhu.org)

**Registration link:** <https://forms.gle/87zfFeU8Sd1oJ2UK6>

**Time & Date:** 21<sup>st</sup> August 2021 (Saturday) 15:30 hrs



## Department of Biotechnology

आजादी का अमृत महोत्सव || 75th Anniversary of Indian Independence

**Title of the event:** Webinar on “From a Researcher to an Entrepreneur”

**Name of the organizer:** BioNEST-BHU, Banaras Hindu University, Varanasi

**Date and Time:** 21<sup>st</sup> August, 3:30 pm

**URL/Registration link (in case of virtual event):** <https://forms.gle/87zfFeU8Sd1oJ2UK6>

**Venue (in case of physical event):** NA

**Brief background/purpose of the event:** BioNEST-BHU is organising an expert talk on 21st August 2021 at 15:30 hrs with an aim to help, promote, support, and mentor the potential innovators and entrepreneurs. Our guest speaker of the webinar is Prof. Anil. K. Gupta, former Professor, IIM Ahmedabad and IIT Bombay. Ph.D. (Management), MSc. Biochemical Genetics; Fellow, NAAS, WAAS, & INSA; Founder, The Honey Bee Network, National Innovation Foundation, SRISTI and GIAN; CSIR Bhatnagar Fellow, 2018-21.

**Expected Participants/List of Participants:** students, faculty members, researchers, innovators, aspiring entrepreneurs

**How is the event linked to Azadi ka Amrit Mahotsav:** It will promote start ups in the area of Biotechnology and help in the building of Atma Nirbhar Bharat

**Potential/Expected Impact:** Webinar will contribute towards Atma Nirbhar Bharat by creating awareness on Entrepreneurship.



## Department of Biotechnology

आजादी का अमृत महोत्सव || 75th Anniversary of Indian Independence

**Title of the event:** Lab2 Market Campaign

**Name of the organizer:** BIRAC

**Date and Time:** Weekly basis

**URL/Registration link (in case of virtual event):**

**Venue (in case of physical event):** Social Media-BIRAC Twitter and Facebook Handle

**Brief background/purpose of the event:**

Several customized and uniquely positioned initiatives of BIRAC have helped recognize a growing number of the Biotech Entrepreneurship Start-ups & over 165 commercially deployed products. The idea is to initiate a campaign to promote and inspire conversation around the BIRAC supported innovations on the social media platform.



Nemocare is a continuous monitoring wearable device that will aid in remote monitoring of vitals along with geolocation and prognosis of affected and quarantined patients. It will also aid in tracking their symptoms and the doctors will be alerted on detection of deterioration. #AzadiKaAmritMahotsav #IndiaAt75

@DBTIndia @Drrenuswarup @bhalla\_anju

**How is the event linked to Azadi ka Amrit Mahotsav?**

The event has an overarching tagline **विज्ञान से विकास-प्रौद्योगिकी से प्रगति** under the theme *सशक्त भारत*. All these supported innovations are Make in India innovations that aim to strengthen the Atma Nirbhar Bharat initiative.

**Potential/Expected Impact:**

Outreach of BIRAC supported innovations to the social media audience to make people aware about the innovations that can be helpful to their day to day lives. BIRAC's efforts have resulted in significant changes in the landscape of the Indian biotechnology sector.

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Department of Biotechnology

आजादी का अमृतमहोत्सव || 75th Anniversary of Indian Independence

**Title of the Project:** “Expansion activities of Biotech KISAN Hub in three Aspirational Districts of Rajasthan, one Aspirational District of Haryana and three Aspirational Districts of UP”

**Title of the event:** Integrated pest management (including alternative pathways)

**Name of the organizer:** Division of Agricultural Extension, ICAR-IARI, New Delhi in association with KVKs of aspirational districts (Dholpur, Karauli, Baran, Bahraich, Shravasti, Balrampur, Mewat and Chitrakoot) under DBT-Biotech-KISAN Hub Project.

- **Date and Time:** 23<sup>rd</sup> – 28<sup>th</sup> August, 2021 from 10.AM to 4.30 PM
- **URL/Registration link (in case of virtual event):** NA. Physical Event
- **Venue (in case of physical event):** Premises of KVKs (Dholpur, Baran, Bahraich, Balrampur, Mewat and Chitrakoot) and at village Dhandhuret, Karuali in Rajasthan and village Maanuwas, Mewat in Haryana

**Brief background/purpose of the event:** Increased reliance on chemicals for management of insect pests and diseases in crops has led to a serious threat to health as well as ecosystem. Integrated Pest Management (IPM) is an eco-friendly approach to pest management. IPM helps to minimize use of toxic chemicals and reduces the risks to the environment and human health. In IPM, different practices like physical, biological, cultural and chemical practices besides the use of resistant varieties are combined for the pest management in crop fields. However, there are several challenges regarding the implementation of IPM. There is lack of knowledge and skills among the farmers in use of IPM principles and practices. Emphasis has to be laid upon farmers’ training and education for implementation of IPM. The farmers need to be educated about the alternative approaches for pest management besides identification and maintenance of bio-agents and helpful insects. The farmers need to be educated about the concept of Economic Threshold Level (ETL) and scheduling of pest management based on ETL. The training programmes intend to upgrade the knowledge and skills of farmers in application of IPM in kharif crops mainly paddy; pulses and vegetables. Extension literature on Principles and Practices of IPM will be distributed / provided to the participants.

- **Expected Participants/List of Participants:** 25-50 farmers and farm women from selected project villages of each aspirational districts
- **How is the event linked to Azadi ka Amrit Mahotsav:**

IPM will strengthen nation’s strides towards sustainable development. Doubling farmers’ income is one of the important priorities of the nation. The training on IPM will help farmers increase their quality production and income.

**Potential/Expected Impact:** The farmers' trainings will result in favourable attitude towards judicious use of pesticides as well as enhance their confidence in IPM. Adoption and implementation of IPM practices will lead to reduction in pesticide use, reduction in losses of yield, reduction in injudicious use of pesticides, besides minimization of risks to human health as well as the environment.

**Table: Details of the training progarmes**

S.N.	Aspirational District	Title of training	Date and Time	URL/Physical	Venue	Expected participants(Mae/Female/)
1	Karauli	IPM in pulses and vegetables	23 <sup>rd</sup> August At 10.30 AM - 4.30 PM	Physical	Village Dhandureti; KVK, Karauli (Rajasthan).	50 (40/10)
2	Baran	IPM in Kharif crops	24 <sup>th</sup> August, 2021 At 10.30 AM - 4.30 PM	Physical	KVK, Anta-Baran, (Rajasthan)	30(25/05)
3	Balrampur	IPM in paddy and vegetables	24 <sup>th</sup> August, 2021 At 10 AM - 4.30 PM	Physical	KVK Balrampur, (Uttar Pradesh)	50 (35/15))
4	Shravasti	IPM in paddy and vegetables	24 <sup>th</sup> August, 2021 At 10 AM - 4.30 PM	Physical	KVK,Shravasti, (Uttar Pradesh)	30 (25/05)
5	Mewat	IPM in paddy and vegetables and alternative pathways	25 <sup>th</sup> August, 2021 At 10 AM - 4.30 PM	Physical	Village- Mannuwas; KVK, Mandkola, Mewat (Haryana)	50 (40/10)
6	Bahraich	IPM in paddy and vegetables	26 <sup>th</sup> August,	Physical	KVK, Bahraich-I, (Uttar Pradesh)	30(25/05)

		and alternative pathways	2021 At 10 AM- 4.30 PM			
7	Dholpur	IPM in pulses and vegetables	26 <sup>th</sup> August, 2021, At 10 AM- 4.30 PM	Physical	KVK, Dholpur (Rajasthan).	50 (40/10)





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विज्ञान से विकास-प्रौद्योगिकी से प्रगति

## कृषक प्रशिक्षण : शाक-सब्जी एवं दलहनी फसलों में समेकित कीट प्रबंधन

यह कार्यक्रम आजादी का अमृत महोत्सव के तहत आयोजित किया जा रहा है। समेकित कीट प्रबंधन सतत विकास की दिशा में देश की प्रगति को मजबूत करेगा। किसानों की आय दोगुनी करना देश की महत्वपूर्ण प्राथमिकताओं में से एक है। इस प्रशिक्षण से किसानों को उनके गुणवत्तापूर्ण उत्पादन और आय में वृद्धि करने में मदद मिलेगी।

दिन और समय: अगस्त २४, २०२१ (प्रातः १०.३० बजे से सायं ४.३० बजे)

शामिल होने के लिए : कृषक

स्थल: कृषि विज्ञान केंद्र, करौली

आयोजक: भारतीय कृषि अनुसंधान संस्थान एवं कृषि विज्ञान केंद्र, करौली; राजस्थान



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## कृषक प्रशिक्षण : शाक-सब्जी एवं दलहनी फसलों में समेकित कीट प्रबंधन

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दिन और समय: अगस्त २६, २०२१ (प्रातः १० बजे से सायं ४.३० बजे)

शामिल होने के लिए : कृषक

स्थल: कृषि विज्ञान केंद्र, धोलपुर

आयोजक: भारतीय कृषि अनुसंधान संस्थान एवं कृषि विज्ञान केंद्र,  
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## कृषक प्रशिक्षण : खरीफ फसलों में समेकित कीट प्रबंधन

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शामिल होने के लिए : कृषक  
स्थल: कृषि विज्ञान केंद्र, बारां

आयोजक: भारतीय कृषि अनुसंधान संस्थान एवं कृषि विज्ञान केंद्र, बारां  
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## कृषक प्रशिक्षण : धान एवं शाक-सब्जी फसलों में समेकित कीट प्रबंधन

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शामिल होने के लिए : कृषक

स्थल: कृषि विज्ञान केंद्र, बलरामपुर

आयोजक: भारतीय कृषि अनुसंधान संस्थान एवं कृषि विज्ञान केंद्र,  
बलरामपुर; उत्तर प्रदेश



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शामिल होने के लिए : कृषक

स्थल: कृषि विज्ञान केंद्र, श्रावस्ती

आयोजक: भारतीय कृषि अनुसंधान संस्थान एवं कृषि विज्ञान केंद्र, श्रावस्ती; उत्तर प्रदेश



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शामिल होने के लिए : कृषक  
स्थल: कृषि विज्ञान केंद्र, बहरैच

आयोजक: भारतीय कृषि अनुसंधान संस्थान एवं कृषि विज्ञान केंद्र,  
बहरैच ; उत्तर प्रदेश





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## कृषक प्रशिक्षण : धान एवं शाक-सब्जी फसलों में समेकित कीट प्रबंधन

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शामिल होने के लिए : कृषक

स्थल: कृषि विज्ञान केंद्र, मंडकोला, मेवात

आयोजक: भारतीय कृषि अनुसंधान संस्थान एवं कृषि विज्ञान केंद्र, मंडकोला, मेवात ; हरियाणा



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## आजादी का अमृतमहोत्सव || 75th Anniversary of Indian Independence

**Title of the event:** IPM and INM practices in Pulses and Groundnut

**Name of the organizer:** Programme Co-ordinator and Head, Krishi Vigyan Kendra, Rastakuntubai, Vizianagaram District, A.P.

S.No	Date and Time	Venue	Brief background /purpose of the event	Expected Participants/List of Participants
1.	24.08.2021 11.30am-1.30pm	Raithu Bharosa Kendra	To create awareness in production technologies of pulses and groundnut	20-25
2.	25.08.2021 11.30am-1.30pm	Agriculture Polytechnic college	Varietal selection, importance of seed treatment and weed management in pulses and groundnut	20-25
3.	26.08.2021 11.30am-1.30pm	RaithuBharosa Kendra	To impart knowledge on integrated nutrient management	20-25
4.	27.08.2021 11.30am-1.30pm	Horticulture Polytechnic college	To impart knowledge on integrated pest management	20-25
5.	29.08.2021 11.30am-1.30pm	Seed technology Polytechnic college	Awareness on value addition in pulses	20-25
6.	30.08.2021 11.30am-1.30pm	RaithuBharosa Kendra	Farmer – Scientist interaction	20-25

**Date and Time:** 28.08.2021

**Brief background/ purpose of the event:** Considering the importance of Integrated Nutrient and pest management practices in Pulses and pulse based farming and cropping systems , this virtual training programme is organized to provide technical knowledge to the farmers to select appropriate management options for enhancing the pulse production in various systems in North Coastal and High Altitude and tribal Areas of Andhra Pradesh .

S.No	Topic	Resource Persons	Mobile
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			Number
	Inaugural Guests	Joint Directors of Agriculture of Viziangaram and Visakhapatnam districts Associate Director of Research of North Coastal/HAT Zones and Project team	
1	Role and scope of pulses in Andhra Pradesh and agrotechniques	<ol style="list-style-type: none"> <li>1. Dr.T. Srinivas PI,Biotech KISAN Hub project of ANGRAU &amp; ProgrammeCoordinator, KVK, Kurnool</li> <li>2. Dr.K.TejaswaraRao, ProgrammeCoordinator, KVK,Vizianagaram</li> </ol>	8512296111  9493084826
2	Pulse based farming systems and Navadhanya concept of Natural farming in North coastal Andhra Pradesh	<ol style="list-style-type: none"> <li>1. Dr.M.M. V.SrinivasaRao SeniorScientist, AICRP-IFS, Gajularega.</li> <li>2. Sri.K.Prakash DPM,APCNF.</li> </ol>	9440123223  9121147885
3	FPOs- Strengthening and Sustainability	<ol style="list-style-type: none"> <li>1. Sri.P.Harish, AGM, NABARD.</li> <li>2. Dr.K.Lakshmana, Coordinator, DAATTC.</li> </ol>	9452202000  9989623801
4	ICTs -Usage in Agriculture	<ol style="list-style-type: none"> <li>1.Dr.G. Prasad Babu SMS (Extension), KVK,Kurnool</li> <li>2. Dr.P B Pradeep Kumar, Coordinator, DAATTC, Visakhapatnam</li> </ol>	7416384968  989623802
5	Allied enterprises- pulses inclusion in orchard crops and pulse fodders in crop-livestock systems	<ol style="list-style-type: none"> <li>1. Y. V.Ramana Joint Director of AnimlHusbandry , Vizianagaram</li> <li>2. Sri.N.SrinivasaRao, Deputy Director of Horticulture,Vizianagar am</li> </ol>	9989932802  7995086760

**Expected participants / List of participants:** 800-1000 No. includes farmers, Extension functionaries, youth , progressive women farmers and line departments staff of RBK system of AP

**How is the event linked to Azadi ka Amrit Mahotsav:**

This event impart knowledge to farmers and helps to reduce cost of cultivation and increased net returns of the farmers and thus helps in well being of nation.

**Potential/Expected Impact:**

This event will impact the knowledge and income of farmer in a positive way.



## Department of Biotechnology

### आजादी का अमृत महोत्सव || 75th Anniversary of Indian Independence

**Title of the event:** Molecular innovations rekindled the chromosome segregation machine after the recurrent loss of its key components.

**Name of the organizer:** National Institute of Immunology

**Date and Time:** 26<sup>th</sup> August 2021

**URL/Registration link (in case of virtual event):**

<https://nii1.webex.com/nii1/j.php?MTID=m1d5fdc1e85214e05ecae710a0740bab1>

**Venue (in case of physical event):** Online

**Brief background/purpose of the event:** To create interest and awareness about science among PhD scholars and Post Docs. These kind of online lectures help them to understand science with a different perspective as scientists themselves will be talking on many aspects which they usually don't get in their textbooks.

#### **Expected Participants/List of Participants:**

**How is the event linked to Azadi ka Amrit Mahotsav:** National Institute of Immunology has planned to celebrate 'Azadi ka Amrit Mahotsav' to commemorate 75th Independence Day as well to celebrate the spirit of science by organising online lectures for school/colleges/PhD and Post Docs. There is nothing more overwhelming to see students participating enthusiastically in a science lectures.

**Potential/Expected Impact:** Experts from across the globe have been invited to give colloquium lectures at NII. Students will hear scientists and they will also ask questions too. This will be altogether a different experience for them and a more practical way of learning science. This would a life time experience for them.