From the Desk of President

ABLE Association of Biotechnology Led Enterprises

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The e-newsletter for the Indian Biotech industry

www.ableindia.in

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Home-made vaccine against Cervical Cancer a feather in India's biotech industry's cap

Millions of young women in our country can soon get protection against the cervical cancer, thanks to an affordable (Rs 200-400 per dose) vaccine (**CERVAVAC**) developed within the country by ABLE member, **Serum Institute of India**. Currently there are two imported vaccines that costs 8-10 times more and has prevented its widespread use. The cancer is caused by Human Pappilloma virus. The vaccine needs to be administered in two doses in 9–14-year-old girls and in three doses for women in the 15-16 age group. The vaccine was launched by the union minister for S&T **Dr Jitendra Singh** on September 1, 2022.

ABLE urges the government to include the cervical cancer vaccine in the National Immunization Programme so that millions of our future generation of citizens can lead a healthy life free of this deadly form of cancer.

We are also happy to know that the prestigious **HK Firodia Foundation Life Time Achievement Award** for 2022 has been **conferred** on ABLE Chairperson, **Dr Kiran Mazumdar-Shaw**. Our heartiest congratulations to her.

On the '**World Biofuel Day**' on August 10, 2022 **Hon. Prime Minister** inaugurated the nation's **first 2G ethanol plant** at Indian Oil Corporation's Panipat (Haryana) plant, built with Indigenous technology developed by ABLE member, **Praj Industries** and using **Novozymes** enzymes, also an ABLE Member, for the conversion of biomass.

Continuing the trend of good news coming from our member companies, August too has brought glad tidings on the funding front. Prominent fund raisers in August were: Sea6Energy that raised nearly $18 million (Rs 140 crore) from BASF Venture Capital and Aqua-Spark. Another startup member Eyestem has raised $6.4 million in Series A. What is important is that this round of funding has come mostly from Indian biotech and pharma companies such as Biological E, Natco Pharma, Kemwell Biopharma, Alkem and so on. Existing investors Kotak and Endiya too have contributed to enable Eyestem to further develop in promising treatment against macular degeneration eye disease.

There is more good news from ABLE member Bharat Biotech. The company's rotavirus oral vaccine has been introduced in Nigeria. Bharat Biotech has also announced the good results from the clinical trials of its intra nasal (BBV 154) against Covid-19 virus, developed in partnership with Washington University St Louis.

I am happy to announce that ABLE has launched the **10th Edition** of **'voice for BT'**, the country's premier public speaking contest for biotechnology students. The competition will be conducted with support from Novozymes in the four zones, **DY Patil University**, Mumbai (West), **Amity University**, Noida, UP (North), **KIIT University**, Bhubaneswar, Odisha (East) and **Sastra University**, Thanjavur, TN (South) in September and October. I request all our member biotech institutions and others to participate in a big way and let us identify the country's brightest biotech speakers and leaders of tomorrow.

G S Krishnan
President, ABLE

IN THIS ISSUE

ABLE NEWS

ABLE Chairperson Dr Kiran Mazumdar-Shaw gets H K Firodia Life Time Achievement Award

ABLE is proud to inform that Chairperson and Co-founder of ABLE & Biocon Group, Dr Kiran Mazumdar-Shaw has been honored with the prestigious H K Firodia Foundation Life Time Achievement Award 2022.

This is the 25th year of the awards set up by the H K Firodia Memorial Foundation in 1996 to honor outstanding achievements and excellence in science and technology.

The foundation hailed Dr Mazumdar-Shaw as an "unconventional thinker and visionary" and has made monumental contribution to biotechnology innovation and entrepreneurship. She will be the chief guest also at the function that will be held in Pune soon.

Among the past winners of this award, named in memory of the well-known industrialist are Dr APJ Abdul Kalam, Dr R A Mashelkar, Dr Anil Kakodkar and so on.

Applications open for 'voice for BT' - Inter Collegiate Public Speaking Contest

'voice for BT' Contest is organized by ABLE with support from our Patron Gold member company, Novozymes South Asia. Other prominent biotech companies in the country will be supporting the event. 'voice for BT', an Inter-Collegiate Public Speaking Competition, is currently India's only public-speaking contest on biotechnology for college students.

At ABLE, we see the importance of promoting Biotechnology in India. To achieve this objective, we recognize the need to encourage the promising students to pursue higher

studies in Biotechnology related areas. With this background, **'voice for BT'** was initiated as a Public Speaking contest, which gives an opportunity for the students to voice their views on various topics on Biotechnology. This, we believe, will further motivate them to pursue higher studies.

We are glad to announce the 10th edition of 'voice for BT' contest with all the four zones (North, South, East, West) in India.

The Online application process started on 26th August, 2022.
The last date for receiving the applications will be 18th September, 2022.

In anticipation that the college would encourage this initiative, we sincerely request you to nominate **ONLY ONE** of your under Graduate Final year or First year Post Graduate Biotechnology, Food technology or Chemical engineering students for this contest. Only the first 20-25 entries will be accepted and hence, kindly expedite your response to ensure the deserving participant does not miss the opportunity.

The contest is scheduled on the following dates:
West zone: Friday, 23rd September, 2022
South zone: Friday, 30th September, 2022
North zone: Friday, 14th October, 2022
East zone: Friday, 21st October, 2022

Here is the website link www.ableindia.in/voicebt **.** The participant selected by the college has to be nominated for the contest through the Nomination Form in the 'voice for BT' website only. All other information like 'General Information & Rules' and 'Screening process' are mentioned in the website. Please go through it thoroughly.

Click here for the Nomination form

All the participants would receive medallion and a participation certificate. The first three winners from each region gets awarded with cash prizes and internship programs at the Research and Technology (R&T) or Research and Development (R&D) facilities of Novozymes and other major Biotech companies, as detailed below:

Prize details:
1st Prize: INR 20,000 and 3-6 months internship
2nd Prize: INR 15,000 and 3-6 months internship
3rd Prize: INR 10,000 and 3-6 months internship

Eminent scientists/ academicians/ Industry leaders will be part of the jury to select the winners. The event is conducted at all the four regions in India. The first two winners from each region gets selected to compete in the final round for the All-India Winners position.

Union Minister Dr Jitendra Singh visits Venture Center in Pune to meet start-ups

The Union Minister of State (Independent Charge) Science & Technology; Minister of State (Independent Charge) Earth Sciences; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, **Dr Jitendra Singh** visited Venture Center (VC), the national award-winning business incubator hosted by CSIR-National Chemical Laboratory, Pune, on 20 Aug 2022 to meet leading science-based startups of Pune city and **to inaugurate a Startup Showcase** meant as a mixer for mentors and mentee startups. During his visit Dr Jitendra Singh interacted with **start-ups - across domains of healthcare, energy, environment, automation and digitization- incubated at Venture Center**. After attending the Start-up Showcase, Dr Jitendra Singh was pleased to note that:

1) Several start-ups incubated at Venture Center have developed technology platforms that can be put to use for many applications.
2) Venture Center incubatee startups:
   a. **Reported revenues in excess of Rs 377 Cr** during the financial year 2021-22.
   b. **Raised funding in excess of Rs 97 Cr** during the financial year 2021-22.
3) The incubatee companies created **more than 1000 jobs** during the year most of which were science and technology related jobs.
4) **33 unique patent families were filed by incubatee companies** during FY 2021-22 alone and many first-in-India/ world technologies were developed.
5) Venture Center **start-ups have delivered phenomenal impact** through their useful products and services, **wealth creation for India, job creation**, attracting resources to innovation and research while **contributing to an inclusive ecosystem**.
6) **Dr V Premnath, Director of Venture Center**, spoke about the coming of age of science-based deep tech startups in India and the immense potential they hold to contribute to the society and the economy through drugs, vaccines, diagnostics, medical devices, agriculture inputs and grains, nutrition products and ingredients, energy generation/

storage/ distribution solutions, sustainable chemicals/ materials/ fuels, industrial automation/ IOT etc.

7) Dr Premnath said that the startups are able to spot an opportunity early, work on seemingly small ideas and rapidly grow them into large enterprises.
8) On this occasion, the **Venture Center and its startups also showcased their efforts during COVID-19** in a wide array of technology led interventions.

Interview with Dr Premnath Venugopalan, Head, NCL Innovations and Director, Venture Center, Pune

Seeding Tomorrow's Enterprises Today

VENTURE CENTER

15 years of service to the Nation

"Venture Center plans to continue its focus on nurturing science-based/ knowledge-intensive/ inventive startups. It plans to scale up its physical operations in Pune several fold in the next 15 years," Dr Premnath Venugopalan, Head, NCL Innovations and Director, Venture Center, Pune.

1. **What is the genesis for setting up a Venture Center in Pune? How did the concept emerge?**
   The genesis of Venture Center dates back to 2005-6 when a couple of concurrent events collided to give birth to an organisation aiming to deliver impact from ideas originating from scientific research and development. One side, as a scientist interested in biomedical technologies, I was seeking ways and means to improve the likelihood of laboratory science reaching the market. During this time, I was studying models for the same in the UK as a Chevening Technology Enterprise Scholar while on a sabbatical. On the other side, the National Science and Technology Entrepreneurship Development Board of Department of Science and Technology had initiated conversations with the CSIR-National Chemical Laboratory (NCL) to consider building a technology business

incubator at NCL. This happy coincidence resulted (on my return to India) in me initiating efforts to build an incubator hosted by NCL which would focus on taking science-based ideas from lab to market.

The majority of research expenditure in India is done using public funds and happens in publicly funded institutions. Many research programs result in new technology ideas for which the scientists show proof-of-concept but do not advance to greater levels of technology maturity and thus closer to market. Mature industry partners often do not see value in engaging with technology developers at a very early stage. The net consequence of this is that many technology ideas languish in the so-called "valley of death" and the impact from laboratory science is stymied. I had experienced the same in my early years at NCL. Thus, creating mechanisms and resources that enable the crossing of the "valley of death" is a key focus area of successful innovation management groups across the world. One strategy of bridging this gap and advancing new ideas across various levels of readiness is to mobilize action, people and resources around a nascent startup company. This is the strategy that Venture Center aims to operationalize by providing nurturing homes for entrepreneurs, creating a rich and supportive ecosystem that is accessible and closing gaping holes in the ecosystem. This strategy has worked well in certain innovation clusters of the world and it was our thought that it might work in Pune.

2. **Which organizations have played a key role in helping the Center grow to its current pre-eminent state in the region and the country in a short time of 15 years?**

The Venture Center was initiated with support from the National Science and Technology Entrepreneurship Development Board of Department of Science and Technology, Government of India and the CSIR-National Chemical Laboratory (NCL). BIRAC (Govt of India)'s efforts to build out the national biotech ecosystem in the last 10 years helped accelerate the efforts of Venture Center. Besides this, association with programs of DSIR, TIFAC, TDB and MoMSME have all helped. More recently, Venture Center is engaging with Atal Innovation Mission, MeitY and Defence Innovation Organisation. We have also generously been supported by the Bill & Melinda Gates Foundation.

Several corporations have generously supported startups and initiatives of Venture Center through CSR funds and donations. These include – Bajaj Group, HDFC Bank, Indus Biotech, International Biotech Park Ltd, Cipla Foundation, Asian Paints, Technip India, Garware Fulflex, e-Infochips, Expanded Polymers Systems, Cognizant Foundation,Kirloskar Brothers, PubMatic India, Chemours India, Cummins Foundation, Persistent Foundation, Intox, Electronica Finance. The Venture Center also enjoys the support of many individuals and organisations who generously offer their time and expertise to the Venture Center. For example, in the life sciences space, more than 300 experts serve as reviewers, committee members, mentors etc.

3. **What were the efforts of incubatees and the Center itself during the Covid-19 pandemic? How did it emerge as a nucleus of some of the efforts to tackle Pandemic with Pune being the country's capital for taking Covid-19 head on by companies in the region?**

We are happy to report that Venture Center and its startups played an active and useful role in Pune's and national efforts during COVID19.

Our incubatee/ grantee/associate startups helped provide timely interventions in diagnostics (led by Mylab but also included other efforts), single-use bioreactors (OmniBrx), vaccine carriers (BlackFrog), defibrillators (Jeevtronics), oxygen enrichment

systems (Genrich), disinfection solutions (Weinnovate, Green Pyramid, Padcare), PPEs (Rut3/ Zeroplast, CAWACH grantees), ventilators (Aerobiosys, Gyrodrive), VLP based vaccine development (Seagull), analytical and technical support for vaccine development of large vaccine developers (Shantani supported by the Analytical Services of Venture Center) and many others.

At the same time, the Venture Center team and a group of volunteers self-organized and led various other initiatives such as Pune Action Groups (PAG) on Face shields, PAG on N95 Masks (MH12 Brand), PAG on temperature scanners and PAG on oxygen concentrators (Kokila). The Venture Center team quickly created online resources to support regulatory information needs and approvals of several startups in Venture Center and many other incubators. The Venture Center family contributed to National task forces/ committees relating to repurposing of drugs for COVID19 and the vaccine technology development programs. The Venture Center worked overtime to operate and accelerate funding opportunities for COVID19 initiatives via DST CAWACH, CSR grants, donations and seed funding/ prototyping grants.

We are often asked what allowed us to be productive and useful during the pandemic. Venture Center had already created and nurtured a ready pool and network of startups, innovators and technology developers who were all eager to contribute and be useful during the pandemic. The Venture Center team quickly worked to use online collaboration tools effectively and deploy available resources and facilities for COVID19. Our team engaged with national organisations like Office of Principal Scientific Advisor, BIRAC and Department of Science and Technology effectively to participate in several national initiatives. Many of Venture Center's in-house efforts aimed at COVID19 helped Venture Center keep open essential lab support for startups all through the pandemic. Venture Center's efforts to support local COVID front line workers earned it considerable good-will and support as well. Overall, all these efforts together positioned Venture Center as a nucleus for Pune's technology-led efforts against COVID19.

4. **How did the sophisticated infrastructure built over the years at Venture Center come in handy in the fight against the pandemic?**

Venture Center supports proof of concept and prototyping of products through its Hot Labs and Protoshop. The Protoshop comprises the Tinkering Lab supported by BIRAC and the Prayashala supported by DST. These facilities supported several of our startups and also Venture Center led initiatives. For example, the protoshop produced and donated more than 1 lakh face shields for local COVID warriors in April-May 2020. The facilities were used to design and test several other PPE products. Another example is the use of Hot Labs for accelerating diagnostics development projects especially in the context of non-availability of equipment for purchase due to supply chain constraints. The BIRAC supported Center for Applications of Mass Spectrometry (CAMS) and Center for Biopharma Analysis (CBA) supported key vaccine development projects. In particular, testing and analysis to support one important project of the Serum Institute of India.

5. **Can you name some of the emerging incubatees who could play a key role in handling future pandemic and describe their work?**

In the near future, we expect that there will be an increasing need to be prepared and alert for viral diseases, drug-resistant bacterial infections and related complications. Towards this end, some of our startups are positioned well to contribute in useful ways. Startups such as Mylab Discovery Solutions, Module Innovations and Fastsense Diagnostics are developing rapid and innovative diagnostic testing formats for infectious diseases. Mylab is focussing on innovations in nucleic acid-based tests and

rapid tests that can automate and speed up testing. Module Innovations is the only Indian diagnostics technology company that is a recipient of the prestigious CARB-X award. Fastsense Diagnostics is building adapters for smart phones for rapid electrochemical sensing of multiple biomarkers. Startups such as Seagull Biosolutions, Innovation Biologicals and Abel Biosolutions are working on vaccine platforms. Startups such as Weinnovate Biosolutions are working on infection resistant devices. Startups such as Enhance Biosolutions are looking at solutions for patients suffering from complications such as mucor-mycosis. There are several startups working on devices that can support patient care or contribute to treatment

6. **What is the goal the leadership team and the Center has set itself in the next 15 years?**
   Venture Center plans to continue its focus on nurturing science-based/ knowledge-intensive/ inventive startups. It plans to scale up its physical operations in Pune several folds in the next 15 years so as to create and benefit from cluster effects and leverage synergies between ecosystem members. Simultaneously, it plans to reach out nationally through its mentoring and outreach programs to support startups in other innovation clusters. (Today, Venture Center has mentees in more than 17 cities. It plans to grow that.) While health, rehabilitation, energy and environment, food and agriculture and automation will remain focus areas, Venture Center is planning to expand into new areas in digitalization while also exploring applications of selected emerging technology platforms. Venture Center builds ecosystems around a few key and relatively unique capabilities; beyond medtech and biopharma, the next phase will focus on key capabilities on sustainability and digitalization.

7. **The Center is a key repository of knowledge in the BioPharma, BioEnergy sectors. How did this happen and please explain how these things handled and help us understand how to replicate this in other parts of the world**
   Venture Center relies on its network of highly skilled startup founders, mentors, consultants and ecosystem partner organisations to bring in rich capabilities into the ecosystem and also build relatively unique shared capabilities.
   In the biomedical-devices domain, Venture Center noticed gaps in the ecosystem that were increasing uncertainties and risks for founders and investors, and then acted to close those gaps. Examples of these are the Regulatory Information and Facilitation Center at Venture Center (supported by BIRAC) and the ISO13485 certified Clean Room.
   In the biopharma space, we felt that one important gap to commercialization was the lack of high quality structural and functional characterization services that can provide dossier grade data to innovators. We also felt that a good facility will nucleate several startups in that domain. It is in this context that we set up the Center for Biopharma Analysis with support from the National Biopharma Mission.
   We are in the process of considering a few more such focussed facilities.
   We believe that such shared, open-access facilities can help build innovation ecosystems in other cities as well. However, every city or cluster has to first understand the local ecosystem, study emerging opportunities and interest areas, identify key gaps and then work towards filling those gaps. Replicating without attention to the local ecosystem will not be productive.

8. **Are there any interesting experiences related to people or institutions during the last 15 years that helped shape the institution to be what it is?**

One important reason for Venture Center's success and nimbleness has been the early decision to create it as an independent non-profit entity operating at an arm's length to CSIR-NCL or the funding agencies. The enabling policies for this were created by CSIR when Dr RA Mashelkar was the DG of CSIR. The then Director of CSIR-NCL and Founding Chairperson of Venture Center, Dr S Sivaram, was in agreement with me that Venture Center should maintain independence from academic and research institutions, and develop its own culture that is entrepreneur-friendly and nimble. DST's insistence that Venture Center be an independent organization and generate revenue for its operating expenses was also important in making the organization proactive. The credit for execution excellence, persistence and setting-up some key enabling facilities goes to biotechnologist Dr Manisha Premnath (COO, Venture Center) who has contributed selflessly towards the larger vision of the organisation over the last 13 years. The Board of Venture Center has provided key insights and helped make important decisions over the years. Interestingly, we have found that we have had generous support and interest from a wide range of experts and well-wishers.

Overall, the tagline of Venture Center "Seeding tomorrow's enterprises today!" has been an inspiration for many of us. It feels good to see startups maturing into larger companies and hopefully contributing to India's economy and society in positive ways.

About Dr Premnath Venugopalan:

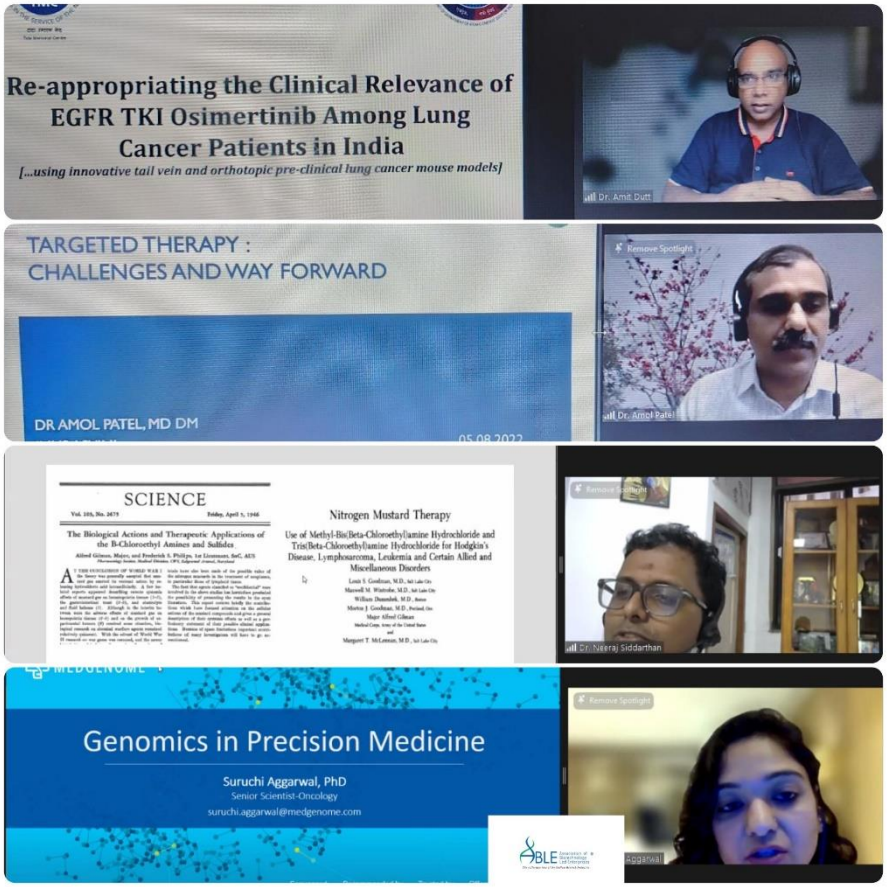
Dr Premnath is Head, NCL Innovations at CSIR-NCL and Founder Director, Venture Center (National award-winning inventive enterprises and deep tech incubator).

Dr Premnath is a technology developer, innovation and incubation manager, startup mentor and a co-founder of 2 medtech startups. One of his inventions -- a breakthrough material for hip and knee joint replacements — has been implanted in more than a million patients worldwide. Another technology for porous maxillo-facial implants has been implanted in thousands of patients in India and abroad.

He has provided leadership for teams that have won National awards for technology development, intellectual property management and business incubation. He is chemical engineer and an alumnus of MIT in the US, IIT-Bombay (Distinguished Alumnus, 2022) and has been a Chevening Technology Enterprise Scholar in Cambridge, UK.

This interview was conducted by ABLE COO, Narayanan Suresh.

ABLE webinar “Progress & Prospects in Companion Diagnostics and the Targeted Cancer Therapy”



The webinar “Progress & Prospects in Companion Diagnostics and the Targeted Cancer Therapy” was held on 5th August, 2022 on zoom platform. The webinar was sponsored by Aurigene Discoveries and Medgenome and Karnataka Innovation and Technology Society (KITS), under the Department of IT, BT and S&T, Govt. of Karnataka.

Welcome & Introduction was done by Dr Balasubramanya S, GM, ABLE. Dr. Amit Dutt, Principal Investigator/ Scientist G, Tata Memorial Centre, Advanced Centre for Treatment, Research & Education in Cancer, Navi Mumbai gave a talk on “Re-appropriating the Clinical Relevance of EGFR TKI Osimertinib Among Lung Cancer Patients in India with an emphasis on economical diagnostics and therapy”. Dr. Amol Patel, Prof., Department of Medical Oncology, Malignant Disease Treatment Centre, Army Hospital, Research and Referral, New Delhi shared insights on “Targeted Therapy: Challenges and Way Forward”. Dr. Neeraj Siddarthan, Hemato-Oncologist & Bone Marrow Transplant Physician, Amrita Institute of Medical Sciences, Kochi explained about targeted cancer therapy journey from Carpet Bombing to Magic Bullets. Dr. Suruchi Aggarwal, Senior Scientist - Oncology, MedGenome Labs Limited, Bengaluru gave an overview on Genomics in Precision Medicine. ABLE COO Narayanan Suresh, proposed the vote of thanks to all sponsors and participants.

The webinar recording can be viewed at https://www.youtube.com/watch?v=D7ojbPER9b8

Seeking solutions for challenges shared by Industries

TechEx.in is scouting solutions for the problem statements shared by our Industry clients as part of the TechNet service offered by us

TechEx.in
Tech Transfer Hub at Venture Center
Supported by NBM - BIRAC

Their clients belong to the FMCG, Chemicals and Molecular Diagnostics sector.

Problem statements (check website: www.techex.in/rfp.):

1) Biodegradable rheology modifier for personal care products

2) Biodegradable surfactant for cleaning or cleansing products (for hair, skin, fabrics etc) that can remove greases, fats etc at low temperature

3) Biodegradable polymer that leaves behind a sensory feel (slippery, smooth) on surfaces (hair, skin, fabric etc)

4) Manufacturing of C16-C22 range fatty acids, special interest in Isostearic acid through a chemical process by using novel catalysts or bioprocess/ fermentation.

5) Developing and manufacturing the branched chain alcohols, called Guerbet alcohols.

6) Biofermentation or Biocatalytic processes in the oleo spaces for manufacturing the fatty esters (monoglycerides and diglycerides), Glycerol esters in continuous manner.

7) Synthesis of oligos (primers) and fluorescent oligos.

8) Development of multiplex lyo ready real time RTPCR master mix indigenously. The composition would include reverse transcriptase enzyme, Hot start Taq polymerase, buffer components and excipient for lyophilization. Please check the problem statements here:

Interested solution providers may submit expression of interest to provide a solution by submitting a simple form. CLICK HERE

KEY BIOTECH EVENTS IN AUGUST 2022

IN THIS ISSUE

ABLE Member Serum Institute CEO Meets President and Prime Minister

ABLE Member, Serum Institute of India's CEO Adar Poonawalla called on Prime Minister Narendra Modi on August 24 and congratulated him for his leadership in the fight against the COVID-19 pandemic.

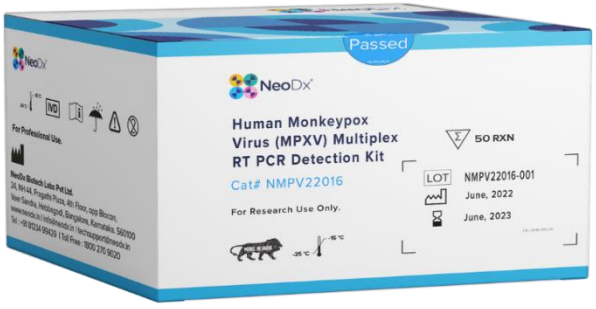
Mr Poonawalla tweeted. "Delighted to have met PM, Shri @narendramodi Ji. Congratulated him for his remarkable leadership and success in the fight against COVID-19. As an entrepreneur, I find his commitment to reforms, social welfare, and vision for Atmanirbhar Bharat very assuring."

Mr Poonawalla & Serum Institute's Director, Prakash Kumar Singh called on Hon'ble President of India Smt. Droupadi Murmu at Rashtrapati Bhavan, New Delhi on 2nd August 2022 and presented the book " THE SHIELD: COVISHIELD" to the Hon'ble President.

Mr. Poonawalla in his tweet said, "Delighted to meet Hon'ble Rashtrapati, Smt. Droupadi Murmu Ji @rashtrapatibhvn. During our meeting, we discussed the work done by SII & presented a book written by our director @PrakashKsingh7 on the chronological order of events leading to Covishield & the impact it has had".

Pune-based Serum Institute of India is the world's largest company in terms of COVID-19 vaccine production.

Karnataka IT-BT Minister launches products developed by BBC startups



Karnataka's Minister for IT,BT and S&T, Dr CN Ashwath Narayan launched a series of products developed by biotech start ups incubated at Bangalore Bioinnovation Center (BBC) on August 5, 2022.

Prominent among these products is a Monkey PoxVirus (MPXV) Multiple RT-PCR Detection Kit by NeoDx Biotech Labs. This product is currently only for research purposes. The startup has applied for approval from the drug regulator, CDSCO, said NeoDx founder Dr Prabhakar Kulkarni.

- ABLE Member PrARAS Biosciences inaugurates Microbial Fermentation Plant in Bengaluru
- ABLE as an Associate Partner in India Vaccine Leaders Conclave
- ABLE participated in two key selection committee meeting
- Conclave of Bio-Incubators & Bio-StartUps
- Webinar on "Accelerator/Incubation-Opportunities for Students and Faculties-Early Stage Entrepreneurs"

Among the other products launched by Dr Narayan are: a sugar free nutritious mix using 7 vegetable extract by Atrimed Biotech, gamma decalactgone & CIS-hexenon by TojoVikas Biotech, a CRISPR-CAS based early stage cancer diagnotstics kit, OncoDX, hallogenesas as drug discovery toolkit by KCat Enzymatic, NeuHeart , a point of care Troponis I& T test and Pure Neeru, a one-drop water salinity test kit (both from NeuOme Technologies).

Karnataka IT-BT Minister breaks ground for new block @ Center for Human Genetics

The Center for Human Genetics (CHG), one of the country's premier research centers on rare genetic diseases, will get a new 45,000 sq. ft building that will increase the genetic testing services significantly in a few years.

Karnataka's Minister of IT-BT, Dr CN Ashwath Narayan, performed the ground-breaking ceremony for the new building block on the premises of CHG in Electronic City on August 5,2022. The proposed new building will house the facilities of the Rare Diseases Research and Training Unit and will be in a position to help more than 2500 families with rare genetic disorders. Dr Ashwath Narayan was presented a memorandum by rare diseases treatment advocate, Dr Prasanna Shirol, that

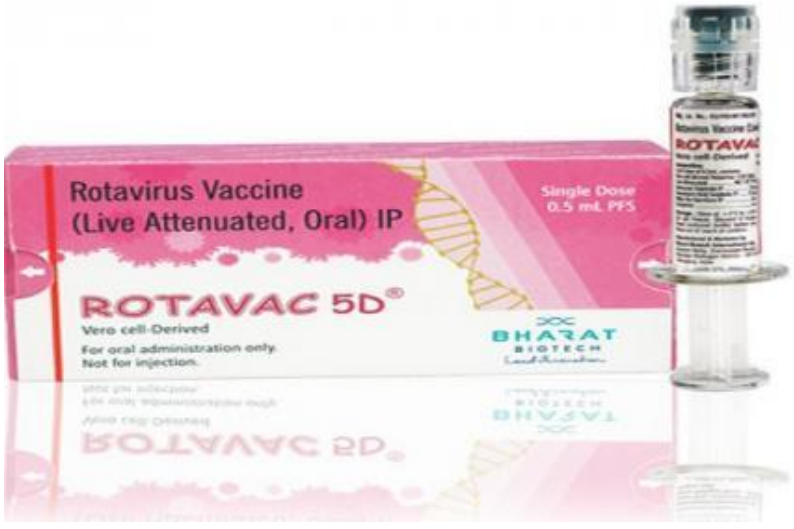
requested the state government to formulate an Orphan Drug Policy that could also become a model for the nation, to encourage development of high-quality drugs to treat these diseases. The minister promised to look into the matter urgently. Dr Shirol is a co-founder and director of the Organization for Rare Diseases in India (ORDI).

Giving an overview of the center after the groundbreaking ceremony, Dr Jayarama S Kandandale, director, CHG said the new facility, when ready, will be used to providing training to medical personnel to take up prenatal diagnostics, hands on training for lab genetics personnel, increase diagnostics tests on genetic samples (currently outsourced mostly), provide incubation facility to innovative startups to develop low cost therapies to treat rare genetic diseases and will be used as a location to engage with the public to create awareness programmes about rare genetic disorders and encourage them to seek early diagnosis.

Associate director of CHG, Dr Meenakshi Bhat, informed that there are over 7000 rare genetic diseases afflicting human populations in the world and approximately 8 percent of the global population are affected by one of these diseases. Nearly three-fourths of patients affected by rare genetic diseases are children. Karnataka is estimated to have about 45 lakh (4.5 million) people affected by some form of rare genetic diseases and a third of these are primarily due to large scale consanguineous marriages between close relatives. CHG is one of the 8 national centers of excellence to treat rare genetic disorders. It was pointed out that an enzyme replacement therapy to treat Gaucher Disease had been developed by a startup, Pristine Organics, in collaboration with CHG and clinical trials have been conducted at Indira Gandhi Institute for Child Health. The therapy shows promise in treating some of the metabolism induced errors that lead to the disease.

The construction work for the new CHG building block is expected to start soon when various clearances are received and fund allocation is made by the state government. CHG was founded two decades ago on the recommendations of Karnataka's Millennium Biotech Policy 2000.

ABLE Member Bharat Biotech's rotavirus oral vaccine introduced in Nigeria



Nigeria introduces Bharat Biotech's ROTAVAC vaccine for immunization in children.

ABLE Member, Bharat Biotech International Ltd (BBIL), a leading vaccine developer and manufacturer, announced that its rotavirus oral vaccine ROTAVAC has been introduced by Nigeria to immunize its children from the life-threatening diarrhoeal disease that affects millions of children worldwide. Nigeria currently accounts for

14% of all childhood rotavirus deaths globally, making it the country with the second-highest number of rotavirus deaths in the world. Rotavirus infection causes about 50,000 child fatalities under the age of five each year in Nigeria.

Dr. Krishna Ella, Chairman and Managing Director of Bharat Biotech said, “Decades of research and product development have resulted in ROTAVAC. This vaccine is now available in several countries across Asia, Africa, Latin America and the Middle East. We are proud to state that novel vaccines from India are saving lives worldwide.” We are committed to supporting, and reducing the infectious disease burden amongst children in the developing world, and to ensure nations like Nigeria in the African continent, have access to cost-effective world-class interventions for infants and vulnerable populations. ROTAVAC is safe and effective at preventing diarrheal disease caused by the Rotavirus.”

ROTAVAC received WHO-Prequalification in January 2018. Bharat Biotech developed the first generation, rotavirus vaccine, Rotavac under a Public-Private Partnership with the Department of Biotechnology, Government of India and 16 other international partners, making it the largest ever social innovation project for public health. Bharat Biotech is a global leader in rotavirus vaccines, with one of the largest manufacturing capacities. The project was funded by the Govt of India, the Bill and Melinda Gates Foundation, Research Council of Norway, UK DFID, and Bharat Biotech.

ABLE Member Sea6Energy gets investment from BASF Venture Capital and Aqua-Spark

BASF Venture Capital and Aqua-Spark invest Rs 140 crore in Sea6 Energy. A pioneer in tropical marine agriculture, the company has developed an integrated approach to cultivating and utilizing red seaweed, a promising sustainable raw material. BASF Venture Capital GmbH, the corporate venture company of BASF SE, Germany, and Aqua-Spark, a Dutch investment fund focusing on the global aquaculture industry, are investing in Sea6 Energy Pvt Ltd as part of a Series B round. Sea6 Energy was founded in 2010 and is located in Bangalore, India. The company is a leader in the production and processing of tropical red seaweed. Other existing investors include Tata Capital Innovations Fund. With this investment, Sea6 Energy will complete its Series B transaction of Rs 140.2 crore (about $18.5 million) in total.

Red seaweed grows mainly in tropical waters in Asia, which have constant, high temperatures conducive to year-round growth of seaweed. Biomass from the fast-growing red seaweed is suitable as a raw material for a variety of applications, for example in animal

feed and crop protection products, as a gelling ingredient in the food industry or as an ingredient in cosmetics. Only a small proportion of the commercially offered seaweed comes from wild collections. Most of it is grown in farms, particularly in Asia, and since 1950, the quantity produced worldwide has increased a thousandfold. In 2019, nearly 35 million tons of seaweed were produced, about half of which is red seaweed. The market volume for seaweed products was almost $17 billion in 2020. However, commercial offshore cultivation on a large scale is complex, and the technical systems must withstand adverse weather conditions, such as storms and waves.

Sea6 Energy has adapted its cultivation technology to the conditions in deeper water and adverse weather conditions and covers both parts of the value chain with its integrated business model. To identify the right locations with the right conditions for its farms, Sea6 Energy uses satellite imagery, for example. Under suitable conditions, at least six harvests per year are possible.

Sea6Energy is headquartered in Bangalore, India, while in Bali, Indonesia, it has set up a fully owned subsidiary that carries out commercial seaweed farming. Sea6 operates various plants in Tuticorin, India, for the further processing of red seaweed for different applications. For example, the company produces biostimulants for use in agriculture and shrimp farming that increase resistance to disease and stress. Sea6 Energy is also working on the development of bioplastics and biofuels based on red seaweed. In addition, Sea6 Energy has developed a proprietary process that increases the shelf life of red seaweed from one to two days to up to 60 days. This facilitates the transport of fresh red seaweed, which can otherwise only be transported over longer distances once it has been dried.

“Sea6 Energy convinced us with its integrated business model,” said Markus Solibieda, Managing Director of BASF Venture Capital GmbH. “With its extensive experience in the field of biotechnology, the team has created very good upstream conditions for cultivating red seaweed as biomass on a large scale while also demonstrating success downstream through its biorefinery. This opens up opportunities for transitioning traditionally crude-dependent industries such as the chemical industry to renewable feedstocks.”

“Our vision is to be able to offer red seaweed biomass and products on a large scale sustainably and reliably. Thanks to our patented mechanized cultivation technology, we can produce high quality biomass in large scale at competitive pricing which can enable products like Bioplastics and Biofuels as well,” says Shrikumar Suryanarayan, CEO and co-founder of Sea6 Energy. “We look forward to having experienced partners at our side in BASF and are happy about the renewed commitment of Aqua-Spark.”

“Sea6 has made great progress over the past year, and we are excited to continue to support the company. We believe Sea6’s seaweed cultivation technology is a real game-changer in the industry, making a variety of applications of red seaweed possible on a commercial scale,” said Aqua-Spark managing partners Mike Velings and Amy Novogratz. Aqua-Spark has been an investor in Sea6 Energy since June 2021.

The transaction also provides partial exit and liquidity to Tata Capital Innovations Fund.

ABLE Member Bharat Biotech completes clinical development for phase III trials and booster doses for BBV154 intranasal covid vaccine

In a separate development, BBIL, also announced that BBV154 (intra nasal vaccine) has proven to be safe, well-tolerated, and immunogenic in subjects in controlled clinical trials. BBV154 is a recombinant replication-deficient adenovirus vectored vaccine with a pre-fusion stabilized spike protein. This vaccine candidate was evaluated earlier in phase I and II clinical trials with successful results. BBV154 has been specifically formulated to allow intranasal delivery. In addition, the nasal delivery system has been designed and developed to be cost-effective in low and middle-income countries.

BBV154 was developed in partnership with Washington University St Louis, which had designed and developed the recombinant adenoviral vectored constructs and evaluated them in preclinical studies for efficacy. Product development related to preclinical safety evaluation, large-scale manufacturing scale-up, formulation, and delivery device development, including human clinical trials, were conducted by Bharat Biotech. The Government of India partly funded product development and clinical trials through the Department of Biotechnology's, COVID Suraksha program.

Highlights

• Two separate and simultaneous clinical trials were conducted to evaluate BBV154 as a primary dose (2- dose) schedule; and a heterologous booster dose for subjects who have previously received 2 doses of the two commonly administered covid vaccines in India.
• Data from both Phase III human clinical trials have been submitted for approval to National Regulatory Authorities.
• Primary dose schedule phase III trials were conducted for safety, and immunogenicity in ~3100 subjects, and compared with COVAXIN®. The trials were conducted in 14 trial sites across India.
• Heterologous booster dose studies were conducted for safety and immunogenicity in ~875 subjects, where a booster dose (3rd dose) of BBV154 intranasal vaccine was administered to study participants who were previously vaccinated with licensed COVID vaccines. The trials were conducted in 9 trial sites across India.
• Being an intranasal vaccine, BBV154 may produce local antibodies in the upper respiratory tract which may provide the potential to reduce infection and transmission. Further studies are being planned.
• At the start of the COVID pandemic, Bharat Biotech commenced work on 4 platform technologies, the vero cell inactivated platform, and the adenoviral vector platform have been developed.

ABLE Member Eyestem raises $6.4 Million

ABLE Member Eyestem raises $6.4 million in Series A round from Biological E, Alkem, NATCO, Kemwell promoters and existing investors- Kotak and Endiya. The investment will enable Eyestem to progress a treatment for Dry Age-related Macular Degeneration to the clinic.

Eyestem, a Bengaluru-based cell therapy company, has raised $6.4 million (Rs 51 Crore) in a Series A round led by pharma majors -- Biological E (BE), Alkem, NATCO and Anurag and Karan Bagaria, promoters of Kemwell Biopharma. Existing investors Endiya Partners and Kotak Private Equity also participated in this round, valuing Eyestem at $46.4 million (INR 371 Crore) post money.

Dr Jogin Desai, Founder and Chief Executive Officer of Eyestem, said “We started Eyestem with the sole purpose of being able to create cell therapy products at scale for diseases that devastate a large number of people in India and the world. The support of major Indian pharma companies who share our vision endorses our strategy of developing affordable innovation for patients worldwide. Post this funding, we will remain focussed on solidifying our cell therapy platform and moving our flagship product for Dry AMD through early clinical trials of an international standard”.

Eyecyte-RPE, the company’s patented flagship product, is an experimental treatment for Dry Age-Related Macular Degeneration (Dry AMD) and the company has other products in the pipeline for the treatment of incurable diseases affecting humanity. EyeCyte-RPE replaces damaged retinal pigment epithelium cells and is designed to restore sight for patients in early stages of Macular Degeneration or arrest loss of vision for those in later stages. The product is allogenic, administered by a surgical procedure and is patented in India and abroad. The company intends to file for a first in human trial for the product within a year in consultation with CDSCO and US FDA.

Rajeev Nannapaneni, CEO, NATCO Pharma Limited, quoted "We are very happy to be associated with Eyestem for their innovative work that services unmet needs of patients that have high impact for quality of life".

Commenting on the fundraise, Dr. Ramesh Byrapaneni, Managing Partner of Endiya Partners said “Endiya partners is delighted to back such strong, globally competitive innovative start-ups and participate in the current funding round. The addition of leading pharma and biotech investors on our cap table is a great validation of the world class science that Eyestem is pursuing which can change millions of lives globally”.

Founded in 2016, by an experienced team of clinical research, regenerative medicine and ophthalmology experts, Eyestem is advised by a world-class Board and has built collaborations with other leaders in related scientific disciplines in India, UK, Japan and the United States. The long-term vision is to develop a scalable cell therapy platform to treat incurable diseases and democratize access to these newer technologies globally.

ABLE Member PrARAS Biosciences inaugurates Microbial Fermentation Plant in Bengaluru

PrARAS Biosciences inaugurates it's Micorbial fermentation plant in Bengaluru on 12th August, 2022. Dr Sridevi A Singh, Director, CSIR-CFTRI inaugurated the plant.

Praras® Biosciences is engaged in the manufacture of specialty biochemicals for diverse industries like Beverages, Food, Plantation and Microbial (Bio-Enzyme). They specialize in providing solutions for product and or process improvement, cost savings, import substitution and greater sustainability for our customers.

ABLE as an Associate Partner in India Vaccine Leaders Conclave

India Vaccine Leaders Conclave & Exemplars Of Excellence: Biopharma Edition Awards on 25th-26th August 2022 at Courtyard By Marriott, Mumbai reinforces its leadership as the foremost event of the Vaccine Manufacturing Industry.

ABLE member companies like Dr. Reddy's, Cytiva, ThermoFisher, Serum Institute of India, Indian Immunologicals, MiBiome and many more participated in this mega event facilitated by ABLE.

India Vaccine Leaders Conclave 2022 closed successfully, after two intense days of 3 Keynote Addresses, 7 Panel Discussions, & 15 presentations with innovation, networking and knowledge sharing. "With more than 200+ delegates, 40+ speakers, and 3+ government representatives participated in the conclave. IVLC, the place where the world of Composites

meets – gathered the key players of the industry and their representatives, share their knowledge on the field's most groundbreaking advancements & discoveries including the front-runner COVID Vaccines.

On top of that, the show highlighted how vaccination helps to improve the health of everyone, everywhere throughout life, by connecting us to the people, ambitions, & moments that matter most to us.

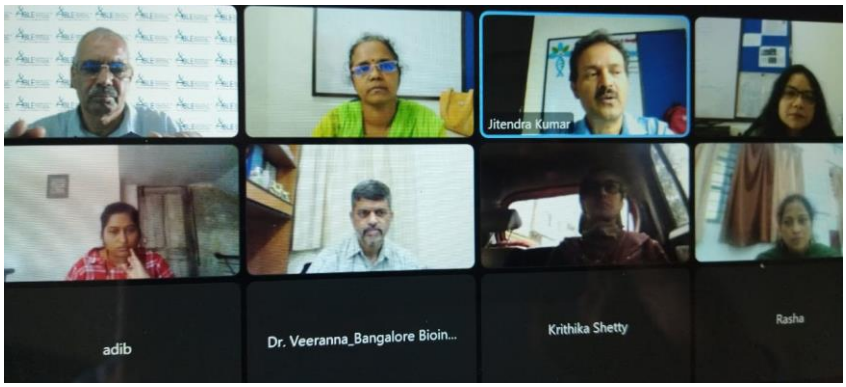
Exemplars Of Excellence: Biopharma Edition Awards in the evening on 25th August, at Courtyard By Marriott, Mumbai. This unique platform recognises the trailblazing achievements of brands that rewrote the rule book, and celebrates biopharma leaders, pioneers, and innovators, who have collectively elevated the bar of excellence while improving patient outcomes, creating value for customers, and addressing long-lasting health inequities.

It was an amazing and exclusive evening showcasing achievements and successes in the Indian healthcare, biotechnology, pharmaceutical, and life sciences industries.

Cheers to all the leaders who make a difference for a better tomorrow. Here's a list of our winners –

- **Biopharma Company of the Year** - Serum Institute of India Pvt. Ltd. (Ashish Sahai)
- **Biopharma Leader of the Year** - Sanjay Singh (Gennova Biopharmaceuticals)
- **Excellence in Life Sciences Outcomes** - Nanologica AB (Katarina Alenäs)
- **Excellence in R&D** - Bharat Serums and Vaccines Limited (Kripa Murzello, Ph.D.)
- **Excellence in Biopharma Leadership** - Rajendar Burki, PhD
- **Inspiring Health Entrepreneur Award** - Karishma R Khemani
- **Breakthrough Innovation of the Year** - Gennova Biopharmaceuticals
- **Excellence in Biopharma Leadership** - Dr. Pradeep Nagalkar (डॉ. प्रदीप नागलकर)
- **Exemplary COVID**-19 **Crisis Response** - Algor Supply Chain Solutions pvt ltd (Wasim Shah)
- **Excellence award for contribution to Health and Medical Technology** - Avantor
- **Trailblazer in Data** & **Insights Award**: **Life Sciences** - Ranjit Barshikar
- **Pioneering Pharma Executive Award** - Manoj Chitnis
- **Smart Sustainability Initiative Award** - EMBALL'ISO
- **Robust Supply Chain Award** - SD Cargo Pvt. Ltd
- **Inspiring Health Entrepreneur Award** - Rajni Jha
- **Exemplary COVID**-19 **Crisis Response** - Svan Analytical Instruments Pvt Ltd
- **Excellence in Neutraceuticals** & **Ayush R&D** - Aeon Formulations Pvt Ltd
- **Champion Of Equitable Health** - Dilip Pawar
- **Lifetime Achievement Award** - Bhattacharya Ashok

ABLE participated in Selection Committee Meeting



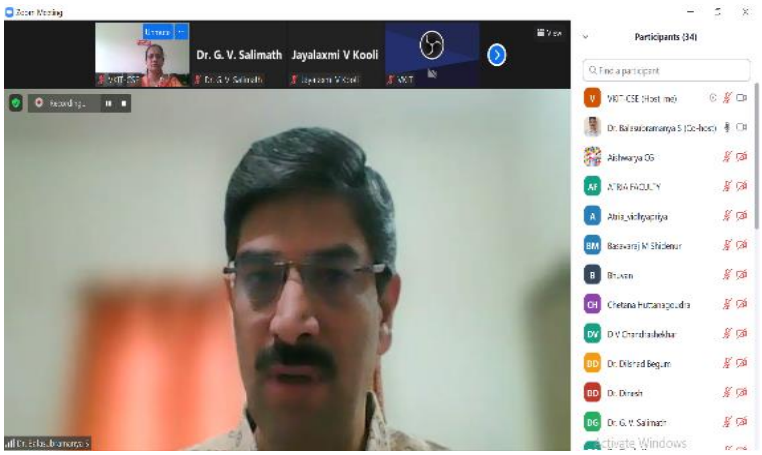
ABLE participated in two key selection committee meetings on August. ABLE Chief Operating Officer, Mr Narayanan Suresh, attended the BIRAC SEED Fund cum Selection Committee meeting of the Bangalore Bioinnovation Center (BBC). He also attended the BBC selection meeting for Elevate Women Acceleration Program for Women Biotech entrepreneurs.

Conclave of Bio-Incubators & Bio-StartUps

'Conclave of BioIncubators and Bio Start-Ups' was held on 29th August 2022 in Gandhinagar, Gujarat. The event was jointly organized by Savli Technology and Business Incubator (STBI) and Gujarat State Bio-technology Mission (GSBTM) – both autonomous organizations under the aegis of Dept. of Science & Technology of Govt. of Gujarat. The conclave aims to focus across the value chain from ideation till product in the market, the challenges faced by the Start-Ups and also by the Enablers in supporting them, etc.

Dr. Balasubramanya, General Manager, ABLE participated as a panelist in Panel discussion on 'Nurturing Deep Tech Start-ups in Gujarat'. He shared his views on the scopes of developing an Ecosystem supporting industry directed by deep tech Innovations & the possible role of Incubation Centers. Dr V Premnath, Director of Venture Center moderated the session. Venture Center is ABLEs regional chapter in the west zone. STBI as a regional cluster coordinator of ABLE aimed to support the Innovation Commercialization Ecosystem regionally.

Webinar on “Accelerator/Incubation-Opportunities for Students and Faculties Early-Stage Entrepreneurs”



A Webinar on “Accelerator/Incubation-Opportunities for Students and Faculties-Early-Stage Entrepreneurs” was conducted on 27th August, 2022 for faculties and students. The speaker for the session was Dr. Balasubramanya S, General Manager, ABLE. The webinar attracted many participants throughout the country. The webinar was started by welcoming the speaker, Principal, heads of various departments, and participants. The Vice-President of IIC-VKIT, Dr. Vidya A introduced the speaker to the participants. Dr Balasubramanya started with the definition of the Entrepreneur and entrepreneur commercial dimension. He mentioned the different dimensions of commercials including purely commercial, commercial with a social objective, and purely social. Later, he picked up the entrepreneur attitudes like self-respect, balancing between failure and success, the dignity of work, practicality, detachment, collaborating in a competitive world. He gave insights about Accelerators/Incubators, role of Incubators, Startup Ecosystem, funding agencies, State and Union Government funding schemes. He also mentioned about some of the Incubators in Karnataka.

ASSOCIATION OF BIOTECHNOLOGY LED ENTERPRISES (ABLE)

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