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Ignite • Innovate • Incubate



Accelerate to Amplify



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Ignite Innovate Incubate

Biotechnology Industry Research Assistance Council
(A Government of India Enterprise)



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Since its inception, BIRAC has focused on enabling and empowering the biotech innovation ecosystem in the country. Through our targeted programmes especially through Biotechnology Ignition Grant (BIG) we have laid a foundation for creation of biotech start-ups across the nation. More than hundred entrepreneurial ideas have been supported such that they move to proof-of-concept. BIG is implemented through our five partners IKP Knowledge Park Hyderabad, FITT at IIT Delhi, C-CAMP at Bangalore, NCL Venture Centre Pune and KIIT-TBI at Bhubaneswar who provide mentorships to BIG grantees.

We have also focused in providing the start-ups & SMEs incubation space through our Biotech Incubator Support Scheme (BISS), which has created over 100,000 sqft of incubation space spread over 13 incubators located pan India. These incubation centres also provide access to platform technologies and a common pool of high end scientific instruments. Besides, the incubators too provide access to networks and platforms relevant to start ups.

The power behind the hundred BIG ideas is immense if they become successful. BIRAC's focus is now to strategise such that we increase the chances of success of the BIG grantees. This BIRAC intends to put in practice through greater engagement with business mentors, incubators and accelerators in the country. It is through focused acceleration we would be able to amplify the innovations to move towards commercialisation and beyond, addressing the needs of the domestic and global market and creating a societal impact. ■

Renu Swarup

Managing Director, BIRAC &
Senior Adviser/Scientist 'H', DBT, Govt. of India



Taking Biotech Enterprise to the next level

Building a biotech ecosystem is a process that entails a focused approach. Over the last three decades, DBT has listened to the needs of the country in bioscience and through stages built an ecosystem for biotechnology in the country, both in public research institutions and the emerging industrial ecosystem. The first two decades were focused on building the human resources and infrastructural needs for foundational bioscience. In the last decade, DBT has responded to the emerging biotech enterprise that is taking shape in India through creation of BIRAC. It has also focused on building an innovation driven biotech enterprise with the stretched goal of being a USD 100 billion bio-economy by 2025. BIRAC through its pioneering programmes is mounting a serious attempt to reach the stated goal.

We are cognisant of the emerging issues in building a biotech ecosystem and BIRAC's programmes cater to support innovative bioscience ideas across the product development pipeline. Whilst programmes such as Biotechnology Ignition Grant populate one end of the nation's biotech funnel up to the proof-of-concept stage through a biotech start up culture, others such as BIPP help transition of the proof of concept to validation & scale.

It is within this innovation funnel that we wish to accelerate the process and amplify our impact. Within the pool of BIG grantees, which is growing every year, resides future success stories of the Indian biotech enterprise. These

nimble start-ups will grow and build products that will usher in scalable impact in addressing the challenges in health, food, nutrition and environment.

To accelerate the start-ups in their journey forward, two issues need focus, imparting serious business mentoring to young start-ups and providing access for them to a whole range of networks (both people & platforms) so that they are ready for follow on funding, able to understand and focus on customer and market needs, able to access relevant technology platforms for product development, visualise and strategize to the rapidly changing global and national biotech industry trends.

An important component of amplification of impact is through facilitation of diffusion of biotech innovation. For this, BIRAC would reach out to other public agencies in health, agriculture and environment. Acceleration and amplification would also require BIRAC to leverage existing partnerships and build new ones to create opportunities for start-ups to move to the next level. Keeping this in frame, BIRAC is committed to explore and forge new partnerships to play a catalytic role in the process of acceleration and amplification of bio-innovations. ■

Prof. K. VijayRaghavan
Chairman, BIRAC
&
Secretary, DBT, Govt. of India

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BIRAC Innovators Meet 2014

Prioritizing Innovation Research for Affordable Product Development

BIRAC's 3rd Innovators Meet was organized on 22nd-23rd September 2014 at New Delhi. The theme of the meet was – *Prioritizing Innovation Research for Affordable Product Development*. The event witnessed the participation of around 200 delegates from Industry, Academia, SMEs and Start-ups. Many BIG grantees also participated in the event.

The event started with the Welcome Address and theme introduction by Dr Renu Swarup, MD, BIRAC and Senior Adviser, DBT who emphasized the need for directed and focused innovation research for addressing the most challenging problems our country is facing. Key Note Address by Dr M K Bhan, Former Secretary, DBT focused on the importance for having a performance matrix and making programmes focused on the development of the innovation ecosystem. Prof. G Padmanaban, Sr. Science and Innovation Adviser, BIRAC, highlighted the importance of BIRAC support to the bio-entrepreneurs while also mentioning the need of directed efforts towards the bio-manufacturing for a sustainable future. Prof K. VijayRaghavan, Secretary, DBT and Chairman, BIRAC underscored the need for BIRAC to develop radical and innovative methods for funding while also expand its reach to SAARC nations.

The prestigious BIRAC Innovator Awards were announced in the inaugural session.

- **Best Innovation in the Healthcare Sector** was awarded to Healthline Private Limited, Bangalore, in recognition of their significant contribution to innovative research towards the development of face mask for cosmaceutical application using sericin and other natural bio-active agent on non-woven silk sheet.
- **Best Innovation in the Biomedical Devices, Implants and Diagnostics Sector** was awarded to Janacare Solutions Pvt. Ltd., Bangalore, All India Institute of Medical Sciences, New Delhi and Narayana Hrudayalaya Hospital, Bangalore. This was in recognition of their significant contribution to innovative research towards the development of a "Software Platform - DXPhone", a P-o-C diagnostic tool comprising of a novel hardware sensor. DXPhone plugs into any smartphone

and an array of proprietary dry-chemistry strips for testing six basic blood parameters – Blood Glucose, HbA1c, Lipids, Triglycerides, Hemoglobin and Serum Creatinine.

- **Best Innovation in the Agriculture Sector** was Awarded to Indo – American Hybrid Seeds Pvt. Ltd., Bangalore, in recognition of their significant contribution to innovative research for the development of salt tolerant hybrids in rice (*Oryza sativa*) using marker assisted selection.
- **Best Innovation in the Industrial Processes and Green Technology Sector** was awarded to Rossari Biotech Ltd., Mumbai In recognition of their significant contribution to innovative research towards the production of viable Enzymes using Agro waste produce as raw material of industrial Feed and health care use with large viable market demand.

The event also witnessed the official release of the BIRAC Innovators Compendium by Prof. K VijayRaghavan, Prof. G. Padmanaban and Dr Renu Swarup.

A poster presentation and a formal session on the BIG innovations were organized. The poster session had 32 participants. The three adjudged best by the jury were – Codon BioSciences, Goa; Total Potential Cell, Vadodara and Jayant Karve, SIB.

The BIG innovations session gave the opportunity to innovators to pitch their technology/product to the gathering and was judged by an expert jury panel. The winners were – Dr. Sai Siva Gorthy and Dr. Sujoy Guha, SG ArtHeart Pvt Ltd. Prof. K VijayRaghavan felicitated the best posters and best Innovators pitch.



Innovators Compendium Release

The inaugural day set the momentum for conclusive brain storming discussions on the following day. The scientific discussions focused on:

- Innovation Research and Product Development – Setting the Priorities for:
 - Biopharmaceuticals – Drugs and Vaccine
 - Medical Technologies – Diagnostics, Devices, Imaging
 - Agriculture
 - Industrial Products
- Accessing and Optimizing the resources for supporting successful BioVentures

The recommendations for the sessions can be accessed at http://birac.nic.in/webcontent/Innovators_Meet_Report_3.pdf ■



Incubators & Accelerators

Nesting Grounds and Take off Points



G. Sabarinathan
Chairperson, N S Raghavan
Centre for Entrepreneurial Learning
(NSRCEL), IIM Bangalore

Early stage enterprises have a high rate of failure. Economists, management specialists and academics have been able to unravel many of the factors that contribute to this high rate of failure and institutional interventions needed to deal with this higher rate of risk and enterprise failure.

Translational facilities, incubators, accelerators, are three such initiatives.

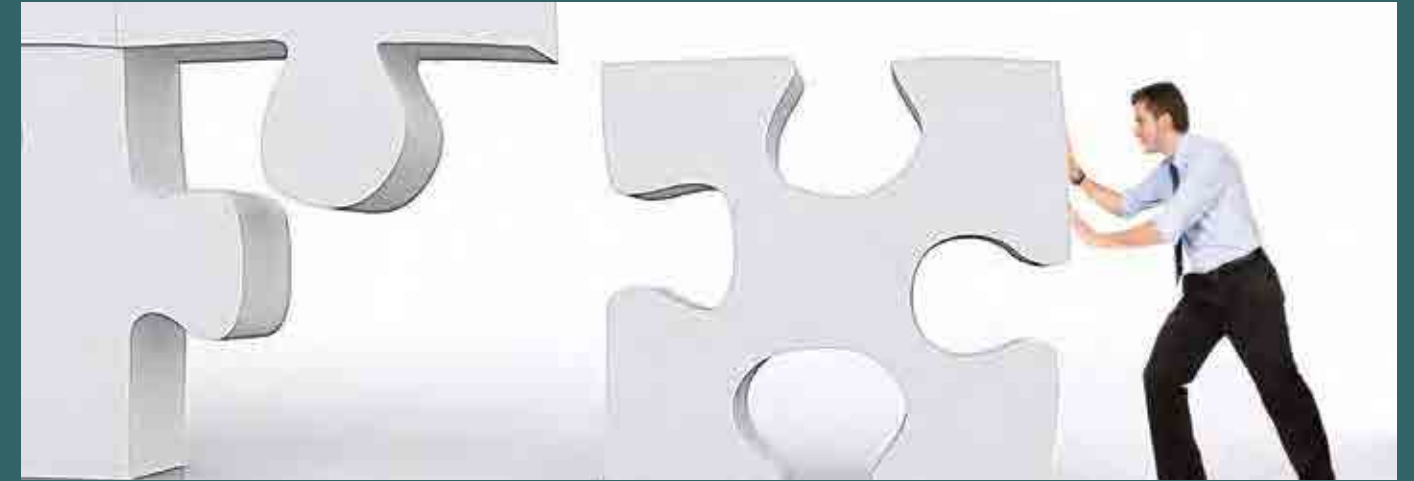
Although distinct in many ways translational facilities, incubators and accelerators are three initiatives with many similarities. Translational facilities help scientists and engineers take their work from the laboratory to a point where it can be developed further for commercialization. They usually do not develop the idea to the point of manufacturing and marketing the product on a commercial scale. They are especially relevant in fields involving deep science, such as drug development where once the molecule is developed in the lab, further work needs to be carried out on how to make it ready for industrial production. The Centre for Cellular and Molecular Platforms (C-CAMP) at the National Centre for Biological Sciences, Bangalore, is an example of such a translational facility.

Incubators are facilities where entrepreneurs can develop a business plan for an idea. Often they also support product development and testing. The Department of Science and Technology and the Department of Information Technology have supported the creation of a number of incubators. Nearly all of the older Indian Institutes of Technology and the National Institutes of Technology have an incubator of some kind.

A more contemporary extension of incubators, accelerators, as the name suggests, help accelerate the commercialisation of an idea by enabling quick and efficient customer acquisition. Several accelerators have come up in the past five years or so, many of them having been set up as for-profit commercial enterprises. By contrast, incubators and translational facilities in academic institutions or research organisations, are more developmental in their mandate, although they are expected to become financially self-reliant over a period of time.

In the rest of the discussion we will refer to all of them collectively as incubators for ease of reference.

Incubators assemble and provide many of the non-funded resources that are required to start and grow a commercial enterprise. Examples of such resources are mentors, aspirational models and access to a talent pool of human capital. Some of them provide a select amount of funding. They also help create a community of fellow entrepreneurs who are dealing with similar challenges in their business. So tenants in an incubator could benefit from each other's experiences. In the process incubators are expected to prepare enterprises to be investment ready.



The experiences of many of the successful centres of production of science and technology such as Cambridge in Massachusetts, Austin in Texas, and North Carolina in the USA, Oxford and Cambridge in the UK inform us that incubators can play a useful role in more effective commercialization of science and technology. In more nascent science and technology entrepreneurial systems like India incubators are even more essential.

Academics and practitioners have acquired a good deal of understanding of how to build effective incubators. Some essential requirements to build an effective incubator are a clear delineation of the incubator's mission, a mechanism to create a pipeline of incubation applicants, a well laid out set of processes that are consistent with the incubator's mission and a realistic financial model.

These requirements are self-evident to the point of appearing to be motherhood statements. The trouble lies in the implementation. I elaborate on three of the more important aspects here.

First, a clear mission statement allows the incubator to develop an operational strategy and communicate its *raison d'être* to all its relevant constituencies. What type of enterprises does the incubator wish to support: Stage of evolution? Sector? Other preferences such as innovativeness, impact and so on.

Second, the form and format of an incubator must follow its mission and function. Form and format here refer to the important facets of the incubator organization such as the design of the physical infrastructure, the staff, the networks and the activities of the programme. These elements should tie into the kind of the businesses that it proposes to incubate and the nature of its engagement with the incubatee. For example, incubators that intend to support enterprises based

on deep science need to either have laboratories or workshops of their own or to have arrangements with other institutions that can share their infrastructure with the tenant enterprises of the incubator. The network of resources that an incubator assembles will again depend on the stage of evolution of the incubator's tenants. For example, ventures engaged in the early stages of drug discovery and development would benefit from inputs on critical choices for commercialization such as licensing arrangements and development of the all crucial business model. More fundamentally, the incubator needs to promote entrepreneurship among its scientists and researchers and inspire and help them to start up.

And third, the financial model for an incubator. The most common source of revenue for incubators is rental income. Given their stressed financial situation, startups are often unable to pay market determined rents. That means that incubators will most likely not even cover their cost of operations from the rental they charge, let alone realize a return on investment.

Some incubators seek an additional financial compensation in the form of an equity stake in the incubated enterprise. Whatever their financial model may be, the overwhelming evidence from our understanding of incubators over the past few decades is that the business of incubation is not financially attractive in the long run.

Incubators are like a public infrastructure. They can lead to many positive network effects, which make them a useful building block for an entrepreneurial ecosystem. By themselves they cannot ensure the realization of the policy goal of creating a large number of enterprises. But they can be an important component in the overall ecosystem that can encourage the starting up of enterprises. ■

Perspectives on Life Science Acceleration

A domain like life-sciences can only survive through inter-disciplinary excellence. An accelerator needs to be the platform that brings together skills sets and competencies from across the disciplines of Bio, Engineering/IT/Big-Data and Mobility. An accelerator also needs to be the umbrella that brings together seasoned mentors, infrastructure including wet labs, computing and engineering, in an integrated modality.

Need of Acceleration in Life Science/Biotechnology in India can be summarised as under:

- To help shorten gestation periods in this vertical from typical 8 year window to 5, by accelerating product development, POC frameworks and access to early Pilot clients.
- Provide business acumen to the technical team and make them think about go to market strategies.
- Add structure to the operations, and align them with the industry requirements.
- Provide Access to great mentors who can work closely with entrepreneurs
- To bridge the funding requirements of the start-up
- Improve the probability of a financial exit such that the space becomes more attractive for start-ups and investors alike.

Acceleration in Life sciences is closely coupled with access to multi-disciplinary world class government assisted Bio-research Infrastructure which is highly limited in this vertical today.

Various components/elements of Acceleration are:

- Mentorship that involves direct, deep and highly hands-on involvement with the companies: Since Mentors are so scarce in the Life-sciences space, the only model that will work is one that allows for 'Clustered Mentoring' to happen in a campus like environment that houses multiple startups under one roof. Each company within the clustered environment can benefit from interacting with each other and from 'Mentors in Residence'.
- Seed/Early-Stage Capital – Immediate need for 'patient capital' that needs to work for atleast 5 years and have ticket sizes in the Rs 2-5 Crores per company, in order to take companies to higher orbits that are of interest to VC/PE firms.
- Market Access including a keen understanding of the global

problem being addressed and the global market being served.

- Support for company structuring to make them investable and exitable.
- PPP between Government & accelerators.
- IP & Regulatory frameworks.
- Accessible and affordable Integrated work environment, that allows for seamless coalescing of IT/Engineering, Data Analytics, Mobility and Bio-sciences competencies.
- Access to shared services (HR, Finance, Legal and IT support).

While there are several IT/Technology based accelerators in the country, Bio-acceleration is very nascent in India. This is due to several reasons including, shorter gestation period (for IT/Technology companies), low investment/risk-capital, ability to course-correct and fail early in the life of the company. And these accelerators take in approximately 50-80 companies in a year in 2 batches. Some accelerators provide basic seed funding to the companies, in exchange for equity.

There are very few accelerators in the bio/healthcare/medtech space, all of which have come up in the last 12-18 months. Investment ecosystems in this space though nascent, looks very optimistic with more special-purpose funds being announced to support growth of healthcare/medtech based startups. The need to have disruptive and affordable innovation has never been higher for India, with the massive health-care burden that our country carries, thanks to life-style based disease, underlying genetic predisposition(s) to metabolic and cardio-vascular diseases and communicable diseases.

For creating a successful accelerator in the life-sciences space, several factors need to align, especially "Private-Public-Partnership" model where government and industry collaborate to seed, nurture and develop successful entrepreneurs and creation of affordable/accessible/integrated infrastructure that allows for Bio-sciences, IT/Data/Engineering and mobility platforms to co-exist. ■



A. Anandkumar
Founding MD
Escape Velocity
Accelerator (EVA)



P. Venugopalan
Head, NCL Innovations &
Director, Venture Center



Acceleration is a process of advancing early stage start-ups to the next level where they are ready for growth and expansion --- that is going from the stage of validated technology to a stage of clear product/service offerings with well-defined value propositions. Life sciences/biotechnology startups, which are often knowledge intensive, are often so focused on demonstrating and validating their technology platforms, that they often ignore or under-emphasize the need to define products and service offerings of value to customers that leverage the technology platform. A consequence

is that many startups will fail to raise the next round of investment or not be able to command attractive valuations.

In the Indian context, on one side, proactive efforts of agencies like BIRAC, Wellcome Trust, IUSSTF, BMGF, GCI etc have significantly improved the availability and access to funding for technology validation and de-risking especially for first generation entrepreneurs. On the other hand, commercial venture capital funds and private equity are increasingly interested in investing in biomed/biotech/bioenergy etc projects at the expansion stage. The real gap is in grooming early stage startups supported by the agencies to a stage ready for commercial investors. Acceleration has never been more important for life sciences/ biotechnology startups!

Acceleration of life sciences/ biotechnology startups is significantly more complicated than acceleration in other domains. This is due to significantly higher knowledge intensity, IP richness, need for specialized & expensive facilities and skill sets, and relative shortfall of experienced entrepreneurial/managerial talent for such industries. A good acceleration program for life sciences/ biotechnology startups in India needs to be able to, first and foremost, focus

on providing entrepreneurs an access to experienced mentors who have relevant and appropriate experience. These mentors need to guide the entrepreneurs towards converting technology offerings into product/service offerings with a strong value proposition for clearly identifiable customers. This often requires a combination of experience of technology development, industry sectors, markets and end-users, intellectual property, regulations and venture capital. Good acceleration programs (for life sciences/ biotechnology startups) need to be embedded in rich innovation eco-systems to help the entrepreneur navigate through the complexities in taking products/services to the market. Another important aspect can be access to complementing industrial partners and end-use markets. Yet another important aspect is opportunities to network via events, external networks etc.

Acceleration programs in India are in their infancy, most well-known ones being in the domains of IT, software, web services, mobile, education etc. Examples include iAccelerator of CIIE, acceleration programs of corporate players like Microsoft Ventures, Startup Leadership Program (hosted by Venture Center in Pune) etc. In the recent past, accelerators have started emerging with a focus on biomed technologies thanks to emerging investor interest in these domains. Examples include InAccel, HealthStart etc. Other domains of life sciences/biotechnology including agrobiotech, industrial biotech, biopharma etc are still not receiving sufficient interest from the acceleration community. This is probably because the downstream commercial investors and corporates/strategic investors in India are yet to show sufficient interest in investing in these sectors.

I expect several accelerators getting into action, in the near future, in biomedical devices and diagnostics with several incubators leveraging their eco-system to build acceleration programs. Acceleration programs focused on industrial biotech is a distinct possibility in India within a few years. If Indian startups can produce world-class intellectual property in biopharma, then accelerators focused on biopharma aiming to reach international investors and corporate investors are also a distinct possibility. ■

Perspectives on Life Science Acceleration *(Continued)*

At Villgro, we foresee acceleration in life sciences and biotechnology as one of the key areas of need over the next few years. There is a particular need for accelerators that focus on identifying and growing enterprises that are developing products and services for people at the base of the pyramid. Acceleration is particularly relevant in the segment of low-cost medical devices, since this can be provided in a very targeted way and requires specific infrastructural and funding requirements as well as inputs to the business and financial models. Given the dearth of experienced entrepreneurs in this segment, it is imperative that the accelerator focuses on identifying founding teams that have a combination of technical expertise as well as business experience.

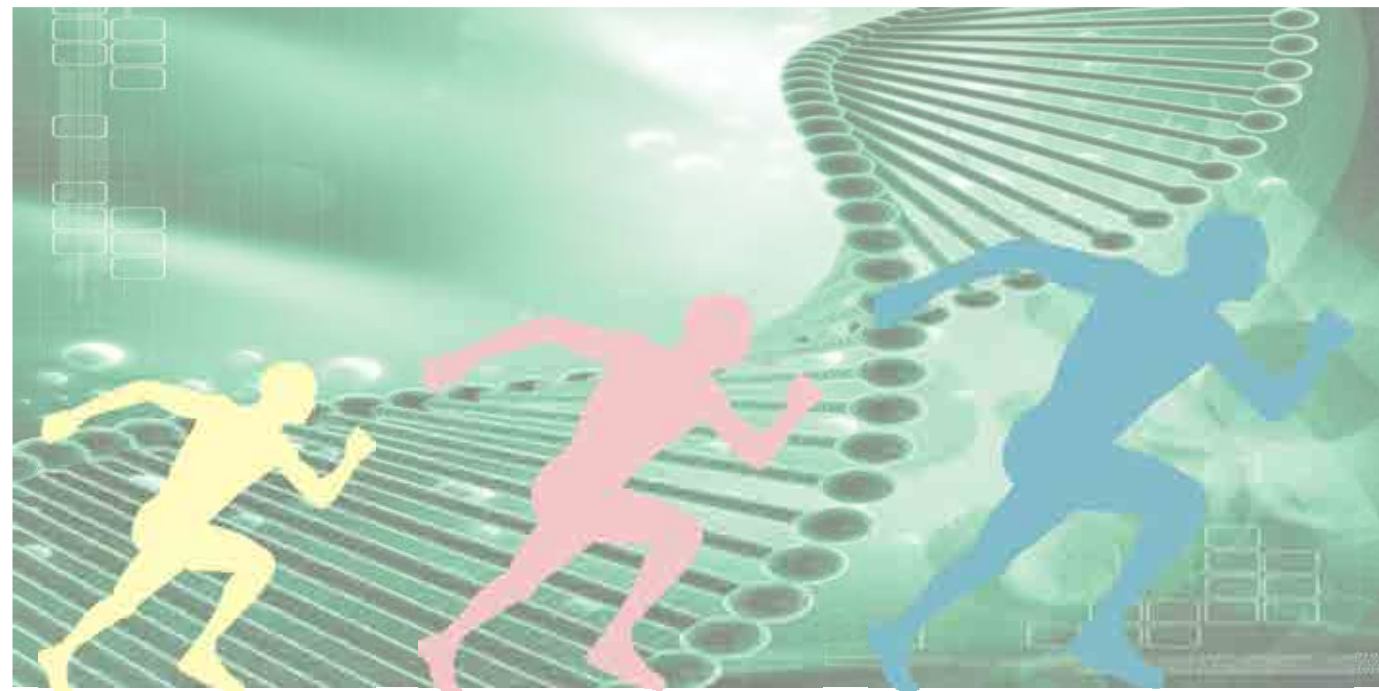
Any accelerator working in the area of life sciences/ biotech needs to build a structured program that includes: funding, technical expertise, business support, and mentorship. Enterprises in the early stages of developing a product or service in this field have high costs of R&D and development for which the accelerator program must provide funding or have partnerships with external funders. Depending on the particular product or service that the enterprise is

developing, the enterprise will also require technical expertise (clinical, engineering, product design and prototyping), which the accelerator must be able to provide. It is also important for the accelerator to work with the enterprise from the beginning to really understand the customer segment better in order to develop a strong value proposition and business plan that can then be used when the product or service is ready for commercialization.

There are a number of accelerators in India, including Villgro, providing support to enterprises in the life sciences and biotechnology sector. Given the large need, it is necessary for more accelerators to develop specific expertise in these areas. Additionally, there will also be a need for accelerators to be based in smaller cities in India, as well as in areas of high need (such as the low-income states). ■



Kavita Rajagopalan
Investment Manager
Villgro



BIRAC Innovators Pushing the Envelop

BIRAC Innovators Meet 2014 was also an occasion to felicitate the innovators who have made remarkable contributions in the biotech space. Here we profile a few of the notable efforts that have stood out from the rest.

Sericare The Silk Route to Cosmeceutics

Cosmeceuticals are the fastest-growing segment of the natural personal care industry. Consumers are always interested in maintaining a youthful appearance, and as the global population's median age increases, this market is increasingly expanding. The objective of the present innovation is to design a cosmeceutical product useful for facial application in the form of a device carrying natural bio-active peptides extracted from silk cocoon, purified and suitably modified to provide uniform, intense and sustained moisturization in stratum corneum, localized tyrosinase inhibition activity and to catalyze epithelial cell regeneration and facilitate other skin rejuvenation steps.

Silk protein, specifically, sericin when formulated in a lotion base, can enter stratum corneum layer of epidermis, penetrate corneocytes cells augmenting already

present natural moisturizing factors, increase moisture content and enhance epidermal layer effectiveness in decreasing trans-dermal water loss. In addition, the antioxidant property of sericin provides tyrosinase inhibition activity, helping effective capture of free radicals, resulting from stress factors like exposure to solar radiation, which can damage cell integrity. Specific silk protein used in the innovation has been proved to provide anchor points for new fibroblast cells to grow and differentiate, helping in skin rejuvenation.

Sericin being water soluble, has limited applications for formulations that require fat as a base, especially for hair care applications. We are probing possibility of derivatizing sericin into fat soluble product, not compromising too much of its hydration capabilities. The hydrolyzed low molecular weight protein affords possibility of using it as a ligand to carry some of the active minerals across epidermal layer for manipulation of the metabolic activities underneath the skin.

Apart from financial support, BIRAC's way of technical assessment of the project, periodic evaluation mechanism, mentoring sessions has provided us ways and means of completing the project successfully as per the objectives. In addition, BIRAC's effort to promote the novel concepts through media (Hunnarbaaz – weekly video magazine of Doordarshan), road shows, newsletter and award schemes definitely helped us to get some kind of recognition of innovation line that we have adapted. ■



Radhakrishna P M
Sericare



Indo American Hybrid Seeds (I) Pvt Ltd. Ramping Up Saline Tolerance

Saline tolerance is one of the complex abiotic stresses where both soil and plants have roles in imparting the tolerance. Although, a very few saline tolerant rice varieties were developed through conventional breeding, it would take more time to incorporate saline tolerance into maintainer line. Hence, we wanted to develop saline tolerant maintainers through molecular markers associated with trait of interest along with more recurrent genome in a short period without disturbing the maintaining ability of the original line. With this background, our prime objective was to convert saline sensitive rice maintainer lines into tolerant lines through marker assisted backcross breeding followed by conversion of CMS lines to develop saline tolerant rice hybrids.

The converted salt tolerant maintainer lines showed good fertility at EC 6.5-7 (dS m⁻¹) and pH 8.0, where at this EC, rice varieties usually do not survive. Furthermore, the converted saline tolerant maintainer lines in this stress condition showed good survival with better grain fertility and yield. The innovation was the

development of the saline tolerant maintainers possessing saltol Qtl through MAS and were subsequently confirmed their tolerance in salinity stress locations and saline micro-plots. Thus, saline tolerance is “value added” in saline sensitive maintainers.

These lines are being used to develop saline tolerant CMS lines in order to develop saline tolerant rice hybrids for salinity affected paddy growing areas and the farmers having such lands would be benefited by growing these hybrids.

These converted saline tolerant maintainer lines can be further used in gene pyramiding with other biotic stress through MAS.

The Project Monitoring Committee (PMC) set up by the BIRAC helped in getting technical guidance and supervision of eminent persons for this project. This made us carry out project work smoothly on specified timelines. In fact, the suggestions of the PMC members in each review meetings of the project were highly helpful. ■



Devaraja Achar
Biotechnologist, Project Coordinator



Vikram Yadav
Rice Breeder, Key Investigator



S. N Ratho
Principle Rice Breeder, Key Investigator



Nadiram Saha
Rice Breeder, Key Investigator

Jana Care New Grip on Diabetes

Diabetes Management is costly and complicated. 40% of patients don't adhere to drugs within first six months, harming patients, doctors and pharma companies.

Jana Care has built an integrated biochemistry sensor on the mobile phone, which reduces testing costs by 10x, improves drug adherence by nearly 30% and significantly enhances health outcomes.

DX-Phone device is a mobile blood monitoring system that allows the testing of six basic blood

parameters (HbA1c, Glucose, Creatinine, Lipids, HDL and Hemoglobin) with a single drop of blood and at a fraction of the current costs. Aina comes bundled with a software application with smart decision support tools and a comprehensive diabetes coaching program to enable patients to learn the skills to manage diabetes, changing behavior and modify lifestyles to improve outcomes.

In simple words, Aina transforms mobile phone into a personal diagnostic lab and a 24/7 diabetes educator to helps in effective diabetes management. ■



Sidhant Jena
CEO, Jana Care

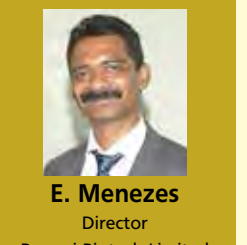
Rossari Biotech Limited Breaking New Ground

Enzymes have a huge market demand in India as well as in the world. Inadequate enzyme manufacturing facilities, threat from imported enzyme products are some of the problems faced by Indian Enzyme industry. We need to scale up innovation to commercial scale which will not only help to fulfill market demand but also encourage more entrepreneurs to enter into this segment.

Cellulase and Pectinase enzymes have great market potential. Both enzymes find various applications in various fields like bio-scouring, denim fading, bio-polishing, juice clarification, paper refining etc

The project started from proof of concept and was successfully scaled up to 1000 L fermenter. We have successfully produced two enzymes viz. Cellulase and Pectinase by using agricultural waste and agricultural produce like rice husk and orange peel.

Usage of these materials not only brings down fermentation cost, but also offers a solution for their waste disposal.



E. Menezes
Director
Rossari Biotech Limited



We are planning to take these products to commercialization level using 30/50 KL fermenter.

Financial support as well as Technical guidance from BIRAC helped us to complete this project within stipulated time. ■

Third Grand Challenges India Grant Opportunity All Children Thriving

‘All Children Thriving’, a third Grand Challenge India grant opportunity was launched in October 2014, under the partnership of DBT-BMGF-BIRAC along with USAID. To effectively disseminate & empower potential applicants with necessary tools for the Grant opportunity, a one day workshop was conducted in five cities - Pune, Mumbai, Bhubaneswar, Lucknow and Hyderabad - from 13th Nov. to 20th Nov. 2014, so as to enable them to articulate and submit Letter of Intent(s) LOI(s).

The purpose of this workshop was to bring together the key stakeholders to discuss the key issues related to mother and child and also, to share information and raise awareness about the call – ‘All Children Thriving’. A detailed overview of the ‘Request For Application’ (RFA) was provided, which highlighted the eligibility criteria, evaluation process and other relevant details for prospective applicants. Panel discussions were held on multi-sectorial interventions in the context of Maternal & Child Health, with reference to the identified



priorities of the RFA in India and other developing countries that focussed on multidisciplinary approach to develop a package of interventions in tackling this challenge. In addition, workshop included past successful grantees of Bill Melinda Gates Foundation who shared their experiences with Grand Challenges. ■

Urban Sanitation Challenges in the Developing World Clean Cities - Green Cities

BIRAC in collaboration with Department of Biotechnology, Government of India and the Bill and Melinda Gates Foundation had launched the “Reinvent the Toilet Challenge - India”, which aimed at addressing the problems of sanitation and was specifically targeted towards Indian innovation and creativity.

To take this initiative forward, BIRAC in collaboration with Department of Biotechnology, Govt. of India and Bill and Melinda Gates Foundation, India organized a One Day International Symposium on “Urban Sanitation Challenges in the Developing World: Initiatives and Innovations” on 6th November 2014 at The Lalit Ashok, Bangalore, India. The Symposium was an integral part of the 2nd International Congress on Green Urban Futures (*urbanfutures2014*) organised by Center for Urban Green Spaces, New Delhi in association with Government of Karnataka and Ministry of Urban Development, Government of India.

The symposium brought together urban planners, municipal administrators, professionals from disciplines of public health,



urban sanitation & waste disposal, and was attended by more than 70 participants. The objective of the symposium was to provide a platform to interact and gather insights on the enormity of the challenges and diversity of innovations that can be deployed for waste management in India. The discussion centered around waste management scenario in India as well as around new biotech solutions being developed for effective waste management. ■

BIRAC'S 3i Portal Awarded

BIRAC was conferred the *CSI Nihilent e-Governance Award 2013-14* for its 3i Portal. The 3i – “Investment for Industry Innovation Research” – Portal has been developed for sustainable, accountable, transparent governance and management of the Investment Schemes of national importance run and managed by BIRAC. ■



Workshop on Regulation in Medical Devices & IVD Kits

BIRAC, in collaboration with Clinical Development Services Agency, New Delhi organised a workshop on ‘Current Regulation on Medical Devices and In -Vitro Diagnostic (IVD) Kits’ on 16 Oct 2014 at India Habitat Center, New Delhi. The workshop brought together various eminent scientists and professionals from industry, academic institutes, regulatory bodies and finance.

The objective of the workshop was to provide direct, relevant and valuable information on key aspects of Bio-Medical devices and IVD Kits and associated regulatory framework in India.

The issues deliberated upon during the workshop included regulatory developments in India, technical parameters in the device development process, the new Drugs and Cosmetics Medical Device & Patient Safety Act, 2013, regulatory review and approval processes at the Central Drugs Standard Control Organisation for devices and IVD kits, research strategy and development path. ■

BIRAC at Indo-US Technology Summit & Knowledge Expo

The Indo-US Technology Summit and Knowledge Expo was held at NOIDA CONVENTION CENTER from 18-21 November 2014 and brought together industry and academia on a single platform.

Policy dialogues on issues and challenges associated with diverse sectors like manufacturing, IT, clean & renewable energy, life sciences, sustainable cities, natural resources and earth sciences were an integral part of the Summit. Dr Renu Swarup, Senior Adviser, DBT & MD, BIRAC delivered a special address on

“Women Entrepreneurship” and also participated in the roundtable discussion on “Collaborative R&D in Clean Energy”.

The Knowledge Expo provided a knowledge-business partnership platform to discuss developments in the areas of IPR, design, higher education, innovation, entrepreneurship, technology and R&D. In addition to participating in the exhibition that ran parallel to the events, BIRAC also supported two innovators turned entrepreneurs to present their case study on venture success. ■

BIRAC at Global R&D Summit 2014

BIRAC participated in the Global R&D summit, organized by FICCI on 12-13 Nov. 2014 at New Delhi. The event was a 2 day integrated conference, exhibition and award function, which witnessed the presence of experts from academia, industry, funding agencies, not-for-profit organizations and many more.

The event focused on creating an inter-disciplinary ecosystem for Research and Development, connecting local and global resources for enabling collaborations by value addition, sharing best practices and global standards in financing and management of R&D capacity building. ■



BIOTECHNOLOGY INDUSTRY RESEARCH ASSISTANCE COUNCIL

**Empowering and Enabling the Biotech Innovation Ecosystem
for Affordable Product Development**

BIRAC is a Public Sector Undertaking under the aegis of Dept. of Biotechnology, Ministry of Science and Technology, Govt. of India. BIRAC was established as an interface agency of DBT, to foster and nurture innovation research, specifically focusing on start-ups and SMEs.

Forthcoming Call for Proposals

Biotechnology Ignition Grant (BIG)

The BIG scheme enables technology innovators and entrepreneurs to pursue a promising technology idea, establish and validate proof of concept (POC) for the idea.

Scope & Support

- BIG is for high level innovation in the Biotechnology sector. BIG does not support basic research projects
- BIG scheme supports only up-to Proof-of-Concept stage
- Grant-in-Aid up-to Rs. 50 lakh
- Grant period is 18 months
- Mentoring support and Project Monitoring by BIG Partners

Proposal Submission Starts : 1 January 2015

Proposal Submission Closes (midnight of) : 15 Feb 2015

Small Business Innovation Research Initiative (SBIRI)

SBIRI is a flagship Public-Private Partnership Programme of BIRAC. SBIRI is an early stage, innovation focused PPP Initiative in the area of Biotechnology.

Key Features

- Support start-ups, small and medium enterprises and other 'for-profit' private companies
- Financial support for early stage & proof-of-concept for innovations based on valid hypothesis, R&D aimed at affordable product development, lab - scale technology refinement, validation of a technology at pilot scale, platform technologies / prototypes development etc.

Date of Call Launch : February 2015

Biotechnology Industry Partnership Programme (BIPP)

BIPP is a Government Partnership Programme with industry for support on a cost sharing basis, targeted at development of novel and high risk futuristic technologies mainly for viability gap funding and enhancing existing R&D capacities of Start-ups and SMEs in key areas of national importance and public good.

BIPP Supports

- Large, medium, small scale companies as well as start-ups on cost sharing basis
- High risk, discovery linked innovation
- Accelerated technology development
- Evaluation and validation of biotech products
- Products of national relevance or public benefit
- Infrastructure/ facility set up

Date of Call Launch : February 2015

Contract Research and Services Scheme (CRSS)

CRSS provides support to Academia in the form of grant-in-aid to develop lab scale technologies into product.

Key Features

- Support for taking proof of concept (PoC) of academia leads /technologies towards commercial scale with industry under a specific contract and fee structure.
- The requirements of the Academic groups for some specific services from the industry such as toxicology studies, gene sequencing towards translational work, studies using specific industrial equipment etc. as a part of commercial scale development could also be supported under this scheme.
- The academic partner will be provided Grant-in-aid for further translational work required at their site (if any) and for the contract research/service component(s) to be outsourced to the collaborating company (ies).
- Exploratory research or fundamental discovery with no PoC will not be supported.

Date of Call Launch : February 2015

To know more about scope, terms & conditions, and/or to submit a proposal, log on to the BIRAC website: www.birac.nic.in

For further information please contact:

Biotechnology Industry Research Assistance Council (BIRAC)

1st Floor, MTNL Building, 9, CGO Complex, Lodhi Road, New Delhi - 110 003

Ph. 011-24389600 | Web: www.BIRAC.nic.in