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Ignite • Innovate • Incubate



Nurturing and Mentoring Innovations



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

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chief editor's take



The BIRAC*i3* News Letter brings before its readers the next issue, which focusses on “Nurturing and Mentoring Innovations”. BIRAC’s key mandate is to foster innovation and entrepreneurship in all places of research with specific focus on Startups and SMEs. The key focus is on providing an enabling ecosystem for promoting innovation for affordable product development. BIRAC continues to work in this direction. The BIRAC Ignition Grant (BIG) has been a game changer and today we see young first generation entrepreneurs coming forward to take the plunge into discovery led innovation research. It is important to nurture and mentor these young innovators to help them not only to connect with the technical resource persons but also to get clear understanding of the nuances of the path of product development

BIRAC has instituted special mentorship and capacity building programmes such as the partnership with Center for Entrepreneurial Learning (CfEL), Judge Business School, University of Cambridge for Ignite, which is a flagship intensive entrepreneur boot camp. In partnership with ABLE, the Stimulating Entrepreneurs talk and Nascent Entrepreneurs Development Programme is also providing entrepreneurial motivation to university students.

BIRAC also conducts Road Shows, IP sensitization and Grant Writing Workshops in different parts of the country to stimulate the entrepreneur flair in the young research students, academia faculty and budding entrepreneurs.

The challenge today is to have strong mentor networks and this need is presently being addressed by the Incubators and Accelerators. A major emphasis in this direction would provide the required impetus.

This edition of BIRAC*i3* highlights some of the key Mentorship Initiatives and early successes of our young innovators. We wish to thank our Readers and we will be very happy to get a constant feedback from you and your suggestions for the forthcoming issues of the Newsletter. ■

Renu Swarup

Managing Director, BIRAC &
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The journey called entrepreneurship



The journey of entrepreneurship is not linear and several hurdles exist and in the context of bio-entrepreneurship, the number of hurdles are even more as the gestation period, because of regulatory burden, for a product to reach the market is longer (sometimes up to a decade). In addition, the influx of capital at the nascent as well as mid stage is significant and critical. As a popular African saying goes, it takes a village to grow a child. Similar analogy could be drawn for fostering and empowering bioentrepreneurship wherein support and mentorship from several people and organisations is a requirement for a start up to grow roots.

It has been observed that globally many start ups, especially technology start ups, spin out from academia. Access to inputs for technical refinement of the product for academic start ups could be sourced from within academia, however as the technology matures, strategies for market interface and business model for commercialisation become increasingly important. It is in these aspects, where besides technical mentoring, mentoring on business elements becomes crucial. Another aspect of a successful start up venture is access to networks of partners from product development, legal to channel distribution and sales. It is in this context that early first time entrepreneurs need support and connect points to several platforms and networks.

BIRAC has played a vital role in initiating and nurturing biotech start ups in India especially through many of its flagship programmes such as Biotechnology Ignition Grant, SPARSH especially through its fellowship component and University Innovation Cluster. Further, through Biotechnology Incubation Support Scheme (BISS), BIRAC provides nesting grounds for start ups.

In future, BIRAC would establish a 'biotech business accelerator' through partnership such that besides the funding support that BIRAC provides to nascent firms, they could be provided further support through smart mentoring and acceleration.

This issue of BIRAC*i3* highlights several of the aspects involved in nurturing and mentoring of start ups. Insights from a wide range of experts would help BIRAC incorporate the insights while fashioning a joined up mentorship programme. I would like to call upon the experts in the Indian biotechnology to join hands with BIRAC to mentor the next generation of biotech start ups and make India a 'biotech start up nation'.

Prof. K. VijayRaghavan

Chairman, BIRAC

&

Secretary, Dept. of Biotechnology, Govt. of India

through the prism

Kiran Mazumdar Shaw

Innovation needs collaboration



Dr. Kiran Mazumdar Shaw has inspired an entire generation of entrepreneurs in the Indian Biotech Sector. Not only is she a leading business person in the international biotech space, but also a respected thought leader contributing to the dialogue on the choices India can make on a variety of issues. She spoke to **birac23** to share her views on what we need to do as a nation to spur a culture of innovation.

Innovation is an outcome of a complex web of factors including training, motivation, perspective and enabling institutions? Where do you think India stands today in this context?

Kiran Mazumdar Shaw (KMS) : India's Innovation Quotient is lower than its Asian peers especially Korea, China and Taiwan. This is especially true in the case of Life Sciences where the whole ethos of discovery research is missing. In comparison, in the IT space, innovation is thriving. The main reasons that may be attributed to this poor showing in Life Sciences is the absence of Medical Research and the lack of incentives in basic science. I have been privy to good scientific endeavours in key research institutions but I don't see any takers for amplifying this science to greater levels of innovation. Moreover, the absence of an entrepreneurial culture within research institutions is also a contributor to inertia. We need to enable research institutions through incentivising incubation efforts as well as incentivising

inventors by monetizing patents through licensing. Rather than training, what we need are collaborative interactions with Business Schools and industry.

Innovations that succeed in a lab have to cross the proverbial "valley of death". The fatalities often have more to do with things other than the technology itself. What can we as a nation do, to jack up the rate of survival of a validated idea through to the market?

KMS : Innovation follows an arduous path of risk and reward. It requires endurance and resilience as there is inherent failure that takes determination and belief to stay on the course. There is also a need to understand what to tweak and when to quit. Getting from concept to 'proof of concept' is the first vital step but it is the validation process that is the most difficult. A good example of this is our Oral Insulin programme that has had its moments of great optimism and

its perceived failure. However, the scientific evidence that we ferreted out has allowed us to redesign and muster on.

Across the world SMEs lead so far as innovation is concerned. SMEs, by their very nature, are resource stressed. Public funding to promising SMEs is the default strategy. How can big business and governments collaborate to foster innovation in SMEs?

KMS : Whilst SMEs have demonstrated great innovative potential in IT enabled apps and devices, life science involves much larger capital infusion and longer gestational time lines which in itself is a deterrent. However, it is true that SMEs are able to be far more experimental than larger companies but this is exactly what VCs do not want to fund. They want to hear a well worked out strategy which is what SMEs need to learn.

BIRAC has been set up to handhold innovators and enable them to go through the entire idea to product chain in a more structured manner. What should be that "next level" that BIRAC should strive for as it gets out of its formative stage?

KMS : BIRAC has been playing a critical role in furthering the innovation process in the Life Sciences. Thus far BIRAC has assisted companies to pursue innovation in a structured way and has indeed funded companies across the innovation value chain. What it now needs to focus on is scaling up and commercialization.

You are a successful example of an entrepreneur gaining global scale even though starting small in biotech business. Can you recount for our readers the key attributes that you feel led to your success as an innovator?

KMS : I have had the luxury of building Biocon over three long decades where I have experimented, succeeded by trial and error and have operated at a time when the international regulatory system was far less complex. I have made sure that we invested in important areas such as quality systems, programme management and business development that have enabled us to evolve systematically from a fledgling Biotech company into a global scale, innovation led Biotech enterprise. I also believe that my approach of differentiating through IP and innovation has helped us in a big way to manage risk and understand the value of IP that we continuously monetize through licensing. My advice to start ups is to strive for excellence through adopting best practices very early in the development process. I would urge start up entrepreneurs to access consultants, collaborate with each other and build synergies that can help to create an eco-system that can cross leverage skills and accelerate development in a cost effective way. I say this because at Biocon we have had to create all our capabilities in house which is expensive and time consuming. Today we leverage a number of capabilities of several smaller companies that offer various critical services. ■

Call for Proposals

SBIRI

Small Business Innovation Research Initiative (SBIRI) is a flagship Public-Private Partnership Programme of BIRAC, a Not-for-Profit, Public Sector Company set up by Department of Biotechnology, Ministry of Science & Technology, Government of India to promote and nurture innovative research in Biotech Enterprises.

Key Features of the Call

- Supports 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.
- The support is extended as a grants-in-aid.

Last Date of Submission : 31 October 2014

SPARSH

Sparsh is the Social Innovation programme for Products: Affordable & Relevant to Societal Health. The programme is initiated by BIRAC under the aegis of Department of Biotechnology, Ministry of Science & Technology, Government of India.

The current call under Sparsh aims at improving reproductive, maternal, newborn and child health (RMNCH) in a coordinated and integrated manner so as to bring significant impact at the bottom of the pyramid through affordable, accessible and adaptive technologies.

The challenges are open for development of 'Continuum of Care' technologies/ products / processes / Services / Delivery innovations with low gestational periods and scalable potential.

Last Date of Submission : 30 September 2014

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

Biotech Entrepreneurship

Mentorship and education hold the key

Biotechnology as an industry sector is on the cusp of making a difference in society. We are in need of better foods, enhanced agriculture, veterinary improvements, and drug discovery, diagnostics and delivery mechanisms that are affordable.

However, the challenge to significantly grow the biotechnology sector requires a new generation of entrepreneurs and managers in a country where experience to take disruptive innovation is not yet developed. BIRAC works with Centre for Entrepreneurial Learning, University of Cambridge, Judge Business School to develop the future generation of Bio-Entrepreneurs



Shailendra Vyakarnam

Director
Centre for Entrepreneurial Learning
University of Cambridge Judge Business School

Nascent, or first time entrepreneurs with relevant scientific backgrounds need to have sources of education and mentoring that can help them understand the processes of incubating and then growing their ventures. They need deep commercialization insights, contacts and legal and technical support. In so many ways this understanding has to come before the usual chorus for funding. The question entrepreneurs need to think about is why would anyone fund a project or a team that does not know how to make use of the funding? In this chicken or egg question – it has to be knowledge and capability that comes first.

Standard sources of management education based on faculty using case studies and textbook models are a good place to start as they provide a certain level of vocabulary for scientists who have never been exposed to entrepreneurship and management. But they have their limitations because often the content is not in context of biotechnology or if it is, it tends to be US centric, with little bearing on conditions in India.

The solution to strengthening the capability for this sector has to rely on practitioners from industry being willing to share their knowledge and know-how with the future generation. They need to nurture and provide inspiration; practical insights, confidence and a strong push towards action orientation. This core requirement must fit into a broad set of frameworks otherwise they can become anecdotal and have little sustainability.

Ignite

To overcome the shortage of people in industry that can impart knowledge and knowhow, at Cambridge we have designed

practitioner workshops and one to one meeting formats where the next generation of entrepreneurs can learn from senior entrepreneurs, IP lawyers, financial experts, industrial operational managers and senior people from within the supply and value chains.

The one to one meetings, which top and tail these workshops, provide opportunities for more individual questions and confidential conversations. One of the key benefits of highly interactive workshops is the exchange of peer-to-peer learning and the development of contacts.

The next generation of entrepreneurs in biotechnology need to be nurtured in three broad areas:

Business know how

This is a very complex area in any case, but for biotechnology which is also highly regulated in some sectors and sits with a very broad range of market opportunities with few mature routes to market the challenges are even steeper. There is need to understand market structures, customer needs, competing solutions and technologies, business models and both funding models and finance to manage the venture. Within some sectors of biotechnology there is also need to learn about the operational aspects such as managing trials, scaling from lab to small business, meeting regulatory requirements to name a few items.

Entrepreneurial social skills

This is about how to build teams that are made up of a mix of scientists, managers, operational staff; how to



manage investors; create presentations to clients; negotiate commercial agreements and basic skills of self presentation, time keeping and general business etiquette. Entrepreneurs also need to build extensive networks across government, policy, industry, investors, research institutions and especially senior entrepreneurs and managers who can guide them to a point where they can raise funding and achieve commercial success.

Self awareness

Probably the crucial foundation for all careers in entrepreneurship is to know why one is taking on the challenge. Is it to do with making a difference? Or is it to see a product in the market? Is it to make money? What are the personal circumstances? In other words, do business and personal goals align with technical expertise and/or does the entrepreneur understand when and how to bring in appropriate expertise and experience into the senior team? Understanding motivations and intention along with having self belief in the venture is a crucial step in the process.

Underneath these broad areas comes a huge stack of core skills and know how which are very specific to each venture and this can best be developed with individual mentoring on a case-by-case basis. Indian biotechnology may struggle with this last stage for a few years yet due to the relative lack of a critical mass of managers experienced in disruptive innovation based entrepreneurship.

It may be necessary to rely on interactions with international sources of expertise for a while yet, for example in places like Cambridge (UK) where a biotech industry has been growing rapidly for the past 30 years and where the early stage founders of this sector are now able to impart their understanding of how to create and grow new ventures in biotechnology. They are especially equipped to understand how to commercialise IP from University and research centres.

BIRAC has understood this need and together with the University of Cambridge Judge Business School's Centre for Entrepreneurial Learning has developed a two-week exposure, in Cambridge, for nascent biotech entrepreneurs. In the first week entrepreneurs are part of the Ignite Programme at Cambridge. This is a one week intense "pressure cooker" where new ideas are tested and entrepreneurs receive business know how in technology and biotechnology entrepreneurship. Ignite has now been running for 16 years and can point to many successful alumni. In the second week the delegates supported by BIRAC then visit Cambridge based biotech firms to learn and to initiate business conversations.

BIRAC has taken the innovative and bold step to bring international exposure to the biotech sector to nurture the next generation of entrepreneurs and the next step is to find ways of scaling up this provision so that we can accelerate the bioeconomy. This is an area of success for Cambridge and so the partnership can support the BIRAC vision. ■

Incubation and Mentoring through BISS and UIC Creating Successful BioVentures

One of the thrust areas of BIRAC is to nurture Bio-Entrepreneurship in India. In order to nurture bio entrepreneurship, BIRAC follows the strategy of promoting Entrepreneurial motivation through its various funding and entrepreneurial development programmes. These programmes cover whole gamut of funding and other services ranging from capacity building, mentoring and networking, thereby, creating a conducive ecosystem for start-ups and entrepreneurship development.

Bio-incubator Support Scheme

BIRAC keenly focusses on providing a holistic ecosystem for the ideas to develop and mould into affordable products and technology, through its support to bio-incubators. Through its Bio-incubator Support Scheme (BISS), BIRAC provides support for Strengthening and Up-gradation of the existing Bio-incubators and also to establish New World Class Bio-incubators.

Strengthening existing Bio-incubators : The Bio-incubators for SMEs and start-ups have been set up as a stand-alone facility and as a part of an existing University/ Institute or Science Park. The BIRAC Bio-incubator strengthening support is provided to those existing Incubators which have proven experience and competence to run successful incubators, have an existing network for mentoring and handholding of incubatees, and also can provide the enabling services to promote innovation research. There is a well-structured governance model which allows for such activities to be conducted within the host institute, providing the required autonomy and flexibility for operation.

Establishing World Class Bio-incubators : BIRAC is also setting up a limited number of new World Class, State of Art, National Bio-incubators at strategic locations, especially in an around the DBT Bio-clusters. These would be closely located to existing Academic hubs and have a well-developed management model. It would provide the required infrastructure, incubation space, access to central equipment and pilot plant and enabling services. Most importantly the proximity to the Academic Centres of Excellence would provide access to the Translational Research strength and capacities. These BIRAC Bio-incubators would benefit from the close interaction with the Academic Institute in the cluster and on the other hand

provide opportunities to the scientists / entrepreneurs who could create their own spin offs, or are incubated in close proximity to the Academic Centre of Excellence. The two way flow of knowledge between Academia and Start-up would be beneficial to both and provide a boost and help nurture innovative technologies for affordable product development.

A BIRAC Bio-incubator provides support - Lab space (200-500 sq.ft.), bench space, office space; creating specialized facility (plant growth, quality testing and microbial fermentation); access to a pool of hi-end equipments in the Central Equipment Facility and networking and mentorship. Moreover, the programme has provisions for enabling services and required mentorship for - Intellectual Property Rights (IPR), legal consultations and resource mobilization. Till date, BIRAC support has strengthened 13 existing bio-incubators:

- IKP, Hyderabad
- SBTIC, Hyderabad
- GSBTM, Savli
- KSIDC, Trivandrum
- RCB Biocluster, Faridabad
- FITT, IIT Delhi
- SIDBI, IIT Kanpur
- IIT Madras
- C-CAMP, Bangalore
- ZTM-BPD, IARI, Delhi
- KIIT-TBI, Bhubaneswar
- NCL, Pune
- PERD, Ahmedabad

University Innovation Cluster

In order to nurture a culture of applied research and need-oriented (societal or industry) innovation among researchers and to catch them young, provide professional mentoring and support needed, it is imperative that there be a focus on fostering local ecosystems. In the Biotechnology sector for successful innovation, this ecosystem will need to include stakeholders from the entire value chain from idea discovery proof-of-concept validation prototype development and commercialization, to ensure the innovation is accessible and affordable to the intended customer.

BIRAC has developed a focused strategic action plan to foster the culture of innovation and techno-entrepreneurship in Indian Universities, leveraging the University Innovation Cluster (UIC) and Cluster Innovation Centre (CIC) model recommended by the National Innovation Council (NInC). Post consultations with prominent institutions in the Biotech sector, the University Innovation Cluster initiative has been launched by BIRAC as a support programme for Universities

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Biotechnology Ignition Grant

The Trigger for Innovations



Taslimarif Saiyed, C-CAMP

Taking ideas from the lab to the market is an enormous challenge. In the biotech sector in particular, there is the added onus of validating the science behind an idea before exploring possible commercial avenues if indeed they exist. The skills and infrastructure required to bring together the science and business components of an idea are most often not found in one place and frequently it is through collaboration between groups of people that successful nurturing of innovation is achieved. It is at this time that we realize the need for a focused effort to build this ecosystem for exciting ideas, compelling concepts and early discoveries.

The Biotechnology Industry Research Assistance Council (BIRAC) in India through its Biotechnology Ignition Grant (BIG) Scheme does precisely this. BIRAC has partnered with selected partner organizations across the country to manage and nurture these entrepreneurs and start-ups with incubation and mentorship activities.

Risk-free Funding

Currently, in its 4th funding round (biennial award), the BIG scheme has supported over 100 entrepreneurs/start-up companies with up to Rs. 50 lakh each to take their scientific ideas from concept to proof-of-concept or working prototype stage. A crucial cog in this programme is the support provided by partner organizations across the country such as C-CAMP, IKP, FIIT, Venture Centre and KIIT-TBI who help manage the initial screening and evaluation of proposals and once awarded, are closely involved with the awardees through incubation and mentoring throughout their tenure.

High-end Incubation

When we talk about nurturing and mentoring innovation, we can look at the business/technology incubator landscape and the various models of incubation in practice today. Many of these incubation models rely on providing “incubatees” with required infrastructure for product development as well as access to mentors with expertise across a wide range of fields encompassing science, business management, regulatory affairs, IP/Legal etc. Incubators are prime examples of environments in

which mentorship and collaboration is encouraged to accelerate ideas from conceptualization to reality.

Continuous Mentoring

Scientific and equally important, business hand-holding is essential to see these exciting ideas/discoveries through to the market. Having these BIG grantees incubate in a nurturing environment, thriving with cutting-edge technology and entrepreneurship expertise becomes very valuable to a budding entrepreneur or a start-up.

Through its presence in the academic environment of NCBS/InStem and strategic collaborations with other organizations like NSRCEL (IIM-B), C-CAMP offers this very eco-system to BIG funded start-ups partnered with it. The C-CAMP mentoring programme not only helps awardees connect with mentors but also holds multiple workshops covering various aspects a start-up needs to consider and further provides the awardees with crucial networking opportunities.

The BIG awardees have taken very well to the first few mentoring programmes that have been held as they benefit remarkably from the insights and guidance the mentors have to offer and believe that it is an important value add to the an early-stage funding scheme like BIG.



Mentorship session at C-CAMP



An illustration of key aspects for nurturing Start-ups and Entrepreneurs

C-CAMP’s Mentorship Programme runs for the entire 18 months of the funding tenure. Once the awardee receives the first installment of funds and begins with their project work, there are at least three mentoring events which are held on-site at C-CAMP with an eminent panel of mentors from industry and academia, many of whom have had the experience of supporting innovation in various forms like in academia, industry and even starting companies of their own. The 1st mentoring programme presents the awardee with the opportunity to select mentors that they interact with off-site throughout their project tenure. Similar programs are repeated a couple of times as a follow-up of previous meetings at crucial milestone stages in their projects.

Workshop

Understandably, entrepreneurs come with their strengths in science and varied expertise in other areas. Hence, before we take them on project based mentorship, we expose them to

some of the non-scientific experts through one-day workshops at C-CAMP on various areas like IP, licensing and technology transfer, company formation, Legal matters, HR strategies and next level funding. These workshops have been extremely well received and we are encouraged to grow on this further.

Through BIRAC’s understanding with Centre For Entrepreneurial Learning, University of Cambridge, chosen grantees from each batch get the opportunity to participate in the IGNITE program. The programme is tailor-made for Indian entrepreneurs and is an intensive, one-week training camp including industry visits for the aspiring entrepreneurs and innovators to prepare business ideas for the commercial environment. Entrepreneurs get one more week in Cambridge to connect with local ecosystem for possible collaboration and tie-ups.

Valedictory Programme

The periodic on-site mentorship programmes are concluded with a valedictory programme just before the completion of 18-months BIG projects. C-CAMP held its first Valedictory programme for the 1st call awardees on the 17th and 18th of June 2014. Through the first round of BIG (started late 2012), C-CAMP’s 6 start-ups/entrepreneurs have successfully progressed their innovative ideas towards proof-of-concept studies. The objective of this event was to celebrate the successful completion of their 18 month engagement with C-CAMP and also to guide them through the next steps to be taken after BIG to make their ventures successful.

Previously unimaginable in the Indian bioscience funding landscape, BIRAC has been courageous and delivered a programme that focuses on igniting innovation from early-stage ideas rather than simply fund existing mature companies with a track record of success. It would be a mistake to see this BIG scheme and its components as another funding scheme, as it provides a comprehensive nurturing environment to entrepreneurs and start-ups unheard of anywhere. With more than 100 start-ups humming around in last two years across India, this indicates the efforts of BIRAC and the partners to create and help cultivate a more entrepreneurial culture across the nation, hopefully to contribute significantly in taking India from a service-based life science industry to innovation-based industry, and possibly to the 100Bn USD industry! Yes, I would rather be optimistic. ■



A snapshot from Valedictory event, followed by Dinner-with-Czars at C-CAMP

Road Show & Workshop on Grant Writing & IP Rights in Bioscience sector

Going for the Bull's Eye

A biotechnology entrepreneur in India is faced with several challenges (in spite of the enormous opportunities) while he sets out to create a technology start-up. Apart from identifying the right idea and the right markets and being able to recruit the right team, the most crucial challenge an entrepreneur faces is raising money for the new venture and securing and exploiting the IP rights. There are widely known sources of funding for technology startups that one can think of, such as venture capitalists, angel investors, banks, and friends and family. But, an often-overlooked source of funding, particularly in the early stages of a start-up, when private investors hesitate to invest due to the high risk of failure associated at that stage, is government funding. BIRAC is the nodal agency that funds and mentors the bioentrepreneurs. To create awareness amongst the entrepreneurs' community about its funding programmes and to educate them about the importance of intellectual property, BIRAC regularly conducts roadshows and workshops at various places.

It is deemed appropriate that the stakeholders be made more aware and equipped to take benefits of the support systems for technology commercialization by the Government and similar likeminded organizations. Hence, BIRAC partnered with GSBTM (Gujarat State Biotechnology Mission), a body under the aegis of Department of Science & Technology, Govt. of Gujarat, to organize a Road Show and IP Workshop on Effective Grant Writing & Securing and Exploiting IP Rights in Bioscience sector on 07th – 08th August 2014 at Gandhinagar. GSBTM has formed an Entrepreneurship



Support Cell (ESC) to foster Entrepreneurship & augment Innovation Ecosystem & encourage individuals to undertake Biotech innovations, acquire business acumen & help channelize their own resources to transform innovations into economic goods.

The **'Effective Grant Writing'** workshop included sessions for securing funding under various schemes of BIRAC, case studies and personal experiences of Techno-entrepreneurs, especially of those who have been supported by BIRAC under various schemes. The grant writing session was taken by Dr. Shirshendu Mukherjee from Wellcome Trust.

The session on **'Securing and Exploiting IP Rights in Bioscience Sector'** gave insights into intellectual property rights for protecting ideas and business strategies, effective utilization of IPR tools for technology up-gradation and enhancing competitiveness as well as experience sharing by bioscience industry. Various components of the sessions were taken by experts from IP and legal industry such as Dr. Malathi Lakshmikumaran, Director, Lakshmikumaran & Sridharan attorneys and Mr. Arun Kumar, K&S Partners.

The twin workshops were attended by more than 70 participants, ranging from Faculties, Researchers, Entrepreneurs, Industry Professionals and IP management professionals. ■



BIRAC at BIO-San Diego

Embracing the world

The 2014 BIO International Convention was held from June 23-26 at San Diego Convention Center, San Diego, California. The Indian delegation comprising of government and industry professionals was led by Prof. K. VijayRaghavan, Secretary, Department of Biotechnology.

The mission included visits to PaxVax Inc, University of California – San Diego (UCSD) as well as the Salk Institute.

The visit at PaxVax included a scientific briefing of the activities of the institutes intending for a potential collaboration. Information with respect to the types of vaccines against infectious diseases under development and commercialization were the main focus of the discussion. A tour of the laboratory facilities at PaxVax was also carried out which provided an overview of the manufacturing capabilities and market strategy for PaxVax's expansion to other countries.

The discussions during the visit to Dr. Todd P. Coleman's lab were centered around the use of tools from information theory, neuroscience, machine learning and bioelectronics to understand and control the interacting systems with biological and computer parts. This was followed by an interaction with Indian graduate and post-doc students at UCSD. The discussion was attended by Prof. Suresh Subramani, Executive Vice Chancellor, UCSD and few other faculty members. The main point of discussion was to interact with students and create an understanding about the different avenues available in India for research and entrepreneurship.

Highlight of the visit to the Salk Institute was the interaction with the Indian students focussing upon the research opportunities in India. The general feedback from the interaction with students from UCSD and Salk institute was that the students were looking for options on how to return to India and what all opportunities were available within the country with regards to funding mechanisms, research infrastructure and research themes.

The India pavilion at BIO was formally inaugurated on 24th June 2014 by Prof. K. VijayRaghavan, Secretary, DBT. During the opening ceremony, the exhibitor brochure was also released. The India session involved a Keynote Address by Dr. K. VijayRaghavan, Secretary, DBT on "Biotech for Social and Economic Transformation: Making the Impossible Happen Requires Partnership".

The second day also saw the Indian participation in a number of plenary talks and Indo-US bilateral session. Several panel discussions on Meeting India's Biotechnology Potential, Leveraging the Improving Regulatory Landscape for Clinical Trials in India and India's Bio-Manufacturing Capacity also saw the participation of Indian delegates.

The India-U.S. Bilateral Discussion on Biotechnology featured Prof. K. Vijay Raghavan, Dr. Renu Swarup, Advisor DBT – Managing Director BIRAC and US Deputy Assistant Secretary of Commerce, Holly Vineyard. The purpose of the session was to provide a platform for governments and



representatives from both U.S. and Indian industry to identify areas of collaboration to facilitate the growth of biotech globally.

BIRAC stall and promotional documents were appreciated by the visitors. There were very specific queries raised by the visitors as to how BIRAC could provide networking or funding assistance for commercialization of their technologies in India. A recurring request was to have a list of Indian Biotech Companies. The visitors wanted to initiate contact with Indian Biotech companies to set up manufacturing and R&D units in India either independently or in collaboration with them. Strength of the Indian biotech companies was also showcased through the video that was displayed.

The visitors to the booth were also interested in knowing how BIRAC operates its various schemes, what is the process flow for the selection of different innovative ideas and what are the operational modalities of the different initiatives.

The visitors were highly impressed with the kind of initiatives the Indian government is taking for promoting young entrepreneurs in the country.

A foremost feature of the BIO convention was BIO One-on-One Partnering. The partnering feature provided an online login to all company representatives. This login provided a

platform for searching the profile of other companies to pre-schedule and fix 30-minute private, one-on-one meetings to be conducted onsite. It was an efficient way to interact with other life science ecosystems, fix meetings with them in advance and have discussions to calibrate and learn from each other.

A detailed discussion was carried out with the company representatives with respect to the operational mechanisms, modalities of funding and support and functioning of innovation clusters.

The representatives from other countries gave a very informative presentation on the health issues, population trends and recent developments influencing the ongoing development in their life science sector. A detailed overview of BIRAC activities was also provided to them with the help of the brochures, technology bulletin and newsletter. The BIG scheme was appreciated a lot by the visitors. The meetings also helped in defining as to how collaboration could be encouraged between BIRAC and life science eco-systems in other countries.

These meetings provided an opportunity to develop an understanding of different country's approach to the ongoing development of their biotechnology sector. ■

Incubation and Mentoring through BISS and UIC Creating Successful BioVentures

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to proactively create vibrant ecosystems that can seed, foster and nurture innovations. Five University clusters have been identified to establish Cluster Innovation Centres:

1. Anna University, Chennai
2. Panjab University, Chandigarh
3. Tamil Nadu Agricultural University, Coimbatore
4. University of Rajasthan, Jaipur
5. University of Agricultural Sciences, Dharwad

Cluster Innovation Centre in Biotechnology (CIC-B), hosted in these Universities are acting as the nerve centre to manage the University Innovation Cluster activities. Along with facilitating the creation of networks and partnerships between stakeholders to strengthen the innovation ecosystem, the CIC-B is providing pre-incubation support to innovative ideas and innovators

for effective translation into products thereof. Such support includes:

- A Cluster for 5-6 students/young Entrepreneurs to test their ideas/ discoveries and take them to Proof of Concept
- An incubation space-2500-3000 sq.ft
- BIRAC Innovation Fellowships for two Post Docs. and four post M.Sc. fellows per university
- BIRAC Innovation Grant:
 - Post Doc. Fellow: BIRAC Innovation Fellowship @ Rs. 50,000/- p.m. & Innovation Grant of Rs. 5,00,000 p.a. for three years
 - Post M.Sc. Fellows: BIRAC Innovation Fellowship @ Rs. 30,000/ p.m. & Innovation Grant of Rs. 2,00,000 p.a. for three years
- Industry Participation for training, mentoring, sponsored research and networking opportunities and IP & Technology Management; access to risk finance among others. ■

BIRAC moves to its new office

The Innovation Anchor now has a new address - BIRAC has shifted its base to 1st Floor, MTNL Building, 9, CGO Complex, Lodhi Road, New Delhi - 110 003

Prof. K VijayRaghavan, Secretary, DBT and Chairman, BIRAC inaugurated the new office on 08th September, 2014. Dr Renu Swarup, MD, BIRAC and Senior Adviser, DBT was present at the inauguration along with senior officers from DBT and the entire BIRAC Team. ■



Entrepreneurial Workshops with ABLE

BIRAC collaborated with ABLE to provide entrepreneurial motivation to university students – through Stimulating Bio-Entrepreneurs Talk, and entrepreneurial training to start-ups – through Nascent Entrepreneurs Development Programme.

Stimulating Bio-Entrepreneurs Talk (SBET) were conducted at Punjab University, University of Rajasthan, University of Dharwad and Tamil Nadu Agricultural University. Each workshop was attended by around 60 students from the participating and nearby universities. The students participated enthusiastically to get their concerns regarding entrepreneurship addressed

Nascent Entrepreneurs Development Programme (NEDP) was conducted at Delhi, Chennai and Ahmedabad. These workshops primarily target biotech/healthcare entrepreneurs from India. The workshops focussed on the finance resources for entrepreneurial ventures and the importance of IP for a biotech venture. Each workshop was attended by around 40 Bio-entrepreneurs. ■



CfEL's Ignite Programme

Under the aegis of BIRAC and Centre of Entrepreneurial Learning (CfEL), Judge Business School, University of Cambridge partnership, five BIRAC supported innovators were sent to attend the CfEL's flagship intensive entrepreneurial boot-camp programme called "Ignite", which is aimed at providing academics (PhDs, post-docs and scientists) entrepreneurial opportunities to explore their innovative ideas and transform them into a business project. The first batch of 5 fellows comprising of BIG grantees and Stanford India Bio-design fellows went to Cambridge in July 2013. The second batch of five innovators attended the programme from 06 July – 19 July 2014 at Cambridge. The overall experience has been described as a tremendous learning opportunity by the participants. The programme helped the participants to strengthen their business plan around the commercial pitch apart from the technological backbone. ■

Workshop on Recombinant Protein Production for Bacterial Systems Taking a close look

A three day workshop on “*Optimization and Scale up of Recombinant Protein Production for Bacterial Systems*” was organized by BIRAC in collaboration with School of Biotechnology, Jawaharlal Nehru University from 22nd –24th August 2014. The workshop co-ordinator was Prof. K.J. Mukherjee and other expert speakers who were invited for this workshop included Prof. Guhan Jayaraman, IIT Madras, Dr. Amulya K. Panda, NII, New Delhi and Dr. Shams Yazdani, ICGEB, New Delhi. The total number of participants in the three day workshop was 20 from 16 different BIRAC funded enterprises.

The primary objective of this workshop was to provide hands on training to participants from industries who are working in the area of bioprocess optimization, with a primary focus on recombinant systems. Lectures and simultaneous experiments were conducted to understand the concepts of media optimization for recombinant protein expression, recombinant protein production in high cell density fed batch fermentation and continuous stirred tank



reactors. Additionally, metabolic engineering principles were explained through experiments on ethanol production using metabolically engineered *E.coli* and Hyaluronic acid production using metabolically engineered *Lactobacillus*. ■

Forthcoming Call for Proposals

BIPP

Biotechnology Industry Partnership Programme (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 • Indigenous discovery, innovation and technology to products • Products of national relevance or public benefit Ø Support is also available for infrastructure/facility set up • In cases where such a facility leads to R&D capacity building or is required for scale up of an innovative product/process of national importance developed through company's in-house R&D • Facility proposed could be in the area of agriculture, healthcare, biosimilars, industrial processes, energy, bioinformatics, genomics and other relevant areas in biotechnology.

Date of Launch : 15 October 2014

Third Grand Challenge India : All Children Thriving

Third Grand Challenge India Funding Opportunity with support from Department of Biotechnology (DBT), Ministry of Science & Technology, Govt. of India and Bill & Melinda Gates Foundation (BMGF).

All Children Thriving program aims to fund a portfolio of Indian-led research projects that will ensure children not only survive, but are on a trajectory to live a healthy productive life.

Through these projects, we ultimately aim to improve maternal nutrition status, reduce low birth weight, reduce micro nutrient deficiencies, improve cognitive development, and/or improve child stunting or wasting for children under two.

Date of Launch : October 2014

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



BIOTECHNOLOGY INDUSTRY RESEARCH ASSISTANCE COUNCIL

Empowering and Enabling the Biotech Innovation Ecosystem for Affordable Product Development

BIRAC is a 'Not-for-Profit Company' set up by Dept. of Biotechnology, Govt. of India as its interface agency to serve emerging biotech industries. BIRAC is guided by an independent Board of Directors comprising of senior professionals, academicians, policy makers and industrialists. BIRAC operates a variety of schemes to serve various dimensions of its mandate.

BIG

Biotechnology Ignition Grant (BIG) is available to scientist entrepreneurs from research institutes, academia and start ups. It is designed to stimulate commercialization of research discoveries by providing very early stage grants to help bridge the gap between discovery and invention. The BIG Innovators receive mentoring and networking help from five BIG Partners (C-CAMP Bangalore, IKP Hyderabad, FITT IIT Delhi, NCL Venture Center Pune and KIIT-TBI Bhubaneswar).

SBIRI

Small Business Innovation Research Initiative (SBIRI) is the first of its kind, early stage, innovation focussed PPP initiative to support incremental R&D in the area of Biotechnology to facilitate innovation and risk taking by SMEs. SBIRI support is in the form of a mix of soft loans and grants.

BIPP

Biotechnology Industry Partnership Programme (BIPP) seeks to provide support for early to late stage high risk biotech R&D by industry and/or accelerate commercialization of new indigenous technologies.

CRS

Contract Research and Services (CRS) scheme supports academic institutes across the country to take forward research leads through a validation and translation cycle by the industry. Funding is in the form of grant given to both the academic as well as the industrial partner. While the industry performs its role as a validation partner and engages on a contractual basis, the IP rights reside solely with the academic partner.

SPARSH

SPARSH combines social innovation and biotechnology for the well-being of the society by helping identify and support cutting edge innovations towards affordable product development with potentially significant social impact. SPARSH provides support in the form of impact funding and fellowships.

BISS

In order to foster techno entrepreneurship in biotechnology, BIRAC has initiated a scheme for Strengthening and Up-gradation of the existing Bio-incubators and also to establish New World Class Bio-incubators. These Bio-incubators will provide the incubation space and other required services to start-up companies for their initial growth.

UIC

The University Innovation Cluster Initiative (UIC) focuses on Universities, where conducive environment for biotechnology collaboration and innovation thereof exists and where all stakeholders including industry can be brought together in synergy with each other. UIC initiative seeks to create an entrepreneurial culture in the Universities and help students to take their novel ideas to proof of concept.

DBT-BMGF

BIRAC manages the DBT-Bill and Melinda Gates Foundation project to support collaborative scientific and technological research to alleviate some of the world's most critical global health and development issues.

Wellcome Trust

The BIRAC-Wellcome Trust Joint Call in Translational Medicine aims to fund translational research projects to deliver safe and effective healthcare products for India at affordable costs, under the current theme of "Diagnostics for infectious diseases".

CEFIPRA

BIRAC, French Embassy in India, Ministry of Foreign Affairs, Government of France and Indo-French Centre for the Promotion of Advanced Research (CEFIPRA) are supporting research on Molecular diagnostics for prediction of disorders like cardiac stroke, Alzheimers and /or dementia, cerebral palsy and generation of new assistive technologies for mobility of physically challenged.

For further information please contact:

Biotechnology Industry Research Assistance Council (BIRAC)

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