

BioResearch unlocks newer research avenues

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BioSpectrum spoke to Dr SK Brahmachari, Director Institute of Genomics and Integrative Biology (IGIB), New Delhi, Dr Lalji Singh, Director Center for Cellular and Molecular Biology (CCMB), Hyderabad and Dr CM Gupta, Director Central Drug research Institute (CDRI), Lucknow, to understand what challenges, opportunities and prospects will the future researchers have in this fast changing scenario.

Employer Expectations

Organizations like CSIR, ICMB, ISRO, BARC are premier institutions with considerable autonomy in their functioning and no visible red tapism. According to Dr Lali Singh, Director Center for Cellular and Molecular Biology (CCMB) CSIR laboratories have a lot of autonomy. And these organizations work in various research activities. Dr CM Gupta, Director Central Drug Research Institute (CDRI), Lucknow, informed, "CDRI is a unique combination of medicinal chemistry and biological sciences that are the key to solving major challenges of new drug discovery research and development. The major strength of the institute is its strong R&D and availability of wide spectrum of properly validated in vitro and in vivo screening models in disease areas of national relevance. State-of-the-art infrastructure and technologies have further augmented the drug R&D program. These include new disciplines and expertise in combinatorial chemistry, highthroughput screening, genomics, and molecular biology."

The candidates are expected to have a good grasp of the basic subject and ability to pick up related areas, in addition to a good practical hand and observation skill. Scientific performance, novel ideas, integrity, ability to provide leadership, ability to work in a team, desire to achieve goals in shortest time possible and desire to apply the scientific knowledge into human cause.

Dr Animesh Gupta, director, Institute of Information and Structural Biology (ISB), Hyderabad, informed, "ISB is a premier institute that would help the students in organizing themselves with respect to time and the training courses that are beneficial for the discovery and development of new drugs. However, only a few disease areas are covered by these pharma companies as the selection is directed solely with the market size and business opportunities. "The priorities of government institutions especially problems research laboratory. Their basic considerations are the societal benefit, research, and development. They should be able to provide centralized infrastructure to cater to the practical skill development of students and mid-career professionals," added Dr Gupta. Also the industry and R&D institutions are beginning to talk with each other. CDRI for example has collaborations with prominent pharma companies like Themis Medicare, Dabur Research Foundation, Lupin Labs, and Novo Nordisk.

These institutes have world-class infrastructure. Informed Dr Singh, "CCMB's real strength lies in its being an institute having one of the best infrastructure in the world to carry out basic research in the area of modern biology. We have a very strong instrumentation division and all our equipment are maintained, serviced and repaired in-house." Another reason why these research institutes are attractive is the good ambience and working culture. Dr Singh said, "Students prefer to join CCMB because it provides single occupancy hostel facility with kitchenette and attached bathroom, facility for gym and lounge, common washing facilities, solar water heating and canteen facility for breakfast, lunch and dinner. The institute and all the services operate round the clock. We provide transport to students and scientists at late hours to drop them at their residences. Most of the facilities at CCMB are centrally operated by trained technical staff. Everyone including students are free to go to any floor and use any equipment, if it is not already in use, simply by entering into a log book."

Added Dr SK Brahmachari, director, Institute of Genomics and Integrative Biology (IGIB), New Delhi, "IGIB offers excellent infrastructure and our mandate encompasses interesting areas of research. But our true strength is a unique environment where the researcher can strike an optimal balance between fundamental research and that oriented with application potential."

Selection Procedure



Government funded non-profit organization typically advertise in leading national dailies, scientific journals like Nature and Science and websites. Ad-hoc appointments are also made through "Quick Hire Scheme" of Council of Scientific & Industrial Research (CSIR) in cases of extremely suitable candidates. Research trainees constitute a major universities involved in biotech research. For admission to the PhD programs, the CSIR-NET qualified candidates can directly join the institute in their area of interest subject to consent of the institute's faculty as his/her supervisor and director's approval. Also added Dr Gupta, "Considering the emergence of new specialized disciplines and their need in drug R&D, CSIR has recently permitted fresh engineering and medical Graduates and M Pharma candidates with a valid GATE score to avail CSIR fellowships for pursuing a research career, in addition to CSIR lateral entry as senior research fellow. Besides, CDRI holds a written examination/interview for selection of research fellows to work in grant-in-aid projects and research schemes.

Dr Lalji Singh added , "A large number of Indian scientists from all over the world apply to CCMB every year. We also advertise in internationally reputed journals giving details of specific expertise that we are looking for. All the potential job applicants are requested to give a seminar and have one-to-one discussions with our scientists. An expert committee (which includes experts from outside CCMB and outside CSIR) would short-list candidates for interview. Selection of candidates is based on their publication record, their research proposal that they want to take up in CCMB, suitability of the research proposal in the context of the on-going projects in CCMB and CCMB's aspirations to initiate new fields. For students we select CSIR-NET or ICMR-JRF qualified students (about 250) for a written test. Those (about 50) who clear our written test would appear for interviews, which are done in two rounds. Success rate of the final selection is between 5 and 15."

Dr SK Brahmachari informed, "Students come to IGIB either during their post graduation for 2-6 months as trainees or as PhD students. The trainees may apply by directly writing to Head, PME, IGIB, Students who have cleared CSIR/NET examination are eligible for applying to join for PhD under the guidance of scientists at IGIB. Usually, they have to be selected through an interview conducted once in a year."

The opportunity for researchers in all national research laboratories in the country is being continuously refurbished with regard to modern infrastructure. The aim is to attract the best talent and build capability for new technology absorption. It will grow at much faster rate opine directors. Several new institutes are coming up and many old ones are also initiating new fields in order to be in the forefront of biotechnology.

Rolly Dureha

- In India there are over 200 research institutes and universities involved in biotech research.
- There are more than 150 private sector companies working in different segments of biotech research, manufacturing and marketing.
- Established in 1986, the Department of Biotechnology (DBT) within the Ministry of Science and Technology focuses on research and training in the different areas of biotechnology and generation of quality human resources.
- Government for 2-6 months as trainees or as PhD students who have cleared CSIR/NET examination are eligible for applying to join for PhD under the guidance of scientists at IGIB. Usually, they have to be selected through an interview conducted once in a year.
- Agriculture Research (ICAR), Council of Scientific and Industrial Research (CSIR) and Department of Science and Technology (DST).
- Biotechnology being an interdisciplinary field consists of studies of biochemistry, molecular biology, genetics, microbiology and other related subjects