



..biotechnology into service

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Intramural location, while others could have both Intramural and Extramural locations. Some Institute Members might have dual affiliations on contractual basis (University and NIB or Commercial Company and NIB).

Research wing

The Research Wing of the Institute may consist of several divisions such as

(a) Agricultural Biotechnology (b) Health Biotechnology (c) Conservation and Environmental Biotechnology; and (d) Bioenergy and Process Biotechnology. These Divisions will be made up of a small number of multidisciplinary research programs consisting of few inter-related research projects within the programme theme. NIB-administered National Research Programmes will be determined by a proper priority exercise with the help of the ISAC of the NCBT and NIB.

The location of research personnel within the Research Division should not necessarily be on the basis of program or project. Wherever possible, personnel from different programs and projects should be co-located on the basis of their common disciplinary interests, so that they form the required critical mass enabling them to address target-oriented research programmes with maximum interaction and optimum use of common disciplinary facilities. Staff from a particular program or project coming from different disciplines can get together on a regular basis for discussion, seminars and workshops.

Technology wing

This core facility should house all major and expensive research equipment for common use. It is suggested that such equipment remain under the control of full time trained operators, one each for every major equipment. The Technology Wing must also house all central services such as nucleotide and peptide synthesis, DNA and protein sequencing, analytical services, polyclonal and monoclonal antibody production etc. This Division must also house a Small to Medium-Scale Fermentation and Downstream Processing Unit, and a Research Animal Facility.

The Technology Wing should also house the cutting edge technologies such as Bioinformatics, Genomics, Proteomics, Computational Chemistry and Synthetic Chemistry (for design and synthesis of new drugs) led by scientific experts (with adequate technical support). These technology experts will collaborate with researchers and provide them technical advice and support

Technology transfer and commercial applications wing

This Wing will be responsible for carrying the Institute's research to the market place and clinic through collaboration with local commercial partners, thereby facilitating the development of a research-based biotechnology industrial product. This Wing should provide opportunities to commercial partners to not only collaborate with Institute scientists but also to scale-up potential products to pilot

plant levels. This Wing should incubate start-up companies based on completion of successful products.

The commercial applications wing should also house business development

Unit, an Intellectual Property Rights Unit (IPR), and a Regulatory and Clinical/Field Trial Unit.

Remuneration and facilities

Reasonable and competitive salaries of international standard are essential for attracting and retaining competent scientists in the Institute. Since a pay structure different from the National Pay Scale is not feasible, it is suggested that they may be given additional benefits in the form of enhanced house-, transport- and additional increments. The hired scientists of the rank of Principal Investigator/Project Leader be requested to negotiate with the donor if they could transfer their current project to Bangladesh so that they continue to get the benefit of all the project facility including salary. In addition, there should be a written understanding between NIB and high ranking scientists recruited that they would apply for competitive research grants to different International Agencies for covering a part of their salary and running lab expenses. The NIB should be able to get grants from International donor agencies allowing NIB to offer inducements to scien-

tists of outstanding merits. Provisions may be made for international level positions (~10% of all professional positions) with comparable salary structures, provided sufficient funds are available from international sources. These positions should be filled by deserving full time Bangladeshi scientists living in the country or abroad through an appropriate selection procedure, based on their scientific competence. This could be achieved through provision of contractual service on a specified time period.

Funding Strategies

Government Funding

Since the GoB has made a substantial outlay in the construction of the NIB building, development of laboratory facilities, all out effort should be directed to recruit scientific personnel of various categories forthwith. With this object in mind all impediments that stand in the way of manpower recruitment be removed so that NIB becomes fully functional without further loss of time. By working cooperatively with the Institute, the academic and research organizations can make very valuable scientific inputs. MOU can be signed to form such a partnership.

A number of developing countries, such as India, China and Brazil, have made spectacular progress in harnessing Biotechnology for national development in the last decade. A model that can be followed is perhaps that of India that now has at least a dozen world class Biotechnology Institutes with internationally competitive working

and living conditions. Most of these institutes are "Deemed Universities" (postgraduate research universities) which in the initial five to ten years are totally funded by the Indian Government's Department of Biotechnology. NIB should get similar support from the government

Public-private or public-public partnership

In order to attain self-reliance and sustainability the research institutions need to explore additional funding from different sources instead of depending solely on the government funding for running their research programmes. This is more true for any biotechnology Institute as research and development activities in modern biotechnology are expensive, and the field is fast developing. One strategy to meet the fund constraints is to develop partnership with private sectors and work on specific projects of interest in developing products and processes on the basis of mutual agreement. This type of partnership is common in many of the biotechnology efforts globally.

NIB should encourage collaborative partnership in the field of biotechnology with interested private universities, academic institutions, research organizations, and commercial enterprises if such collaboration is expected to serve the interest of the country. Likewise, the NIB will facilitate collaborative partnership in biotechnology with the universities, academic institutions, research organizations and corporations in the public sector. NIB can also

develop collaboration with private sectors industries interested in biotechnology products and processes or on specific project/problems of the concerned industry. Opening windows for commercial agreements with private, non-profit or market-driven organizations/companies may result not only in upfront support and share of profits, but their support for infrastructure and expertise development would benefit the Institute with a good setup for future R&D, capital investment and promotional activities.

International funding

Since Bangladesh is a member of the International Centre for Genetic Engineering and Biotechnology (ICGEB), it is entitled to receive the benefits of ICGEB's research grant through technology transfer for very nominal license fees. The ICGEB is willing to help the industrial production of recombinant biologicals whose patent protection is expired. The NCBT and NIB could help the local industry to exploit these opportunities and thereby derive income for its own R&D activities. Both the local industry and the Institute would derive immense economic benefits from this partnership.

Millennium Science Institute

A number of organizations (TWAS, ICGEB) are very keen to support the setting up of a Millennium Institute in Bangladesh with funding from the World Bank. The Millennium Foundation is helping the establishment of Millennium Institutes in the developing

countries in the areas of Biotechnology, Instrumentation, Information Technology and Mathematics.

The NIB could qualify for at least three of the four areas, as Bioinformatics is a specialized branch of Information Technology, and the proposed Technology Wing of NIB requires expensive instrumentation. Funding from the Millennium Foundation would be expected to match the total local outlay (i.e., contribution by GoB, private sector and academic institutions in building, salary, institutional costs, equipment etc.), and has been in the range of \$10-20 million for each of the Millennium Institutes that have been set up in Latin America and Africa.

There is a lot of international goodwill towards Bangladesh with regards to the setting up of a Millennium Institute as revealed by the members of the Foundation who visited Bangladesh in February 2004 at the invitation of the BRAC University. The chance of making a bid for the NIB should not be missed.

To conclude, selection of right people and right projects will ensure optimal support at the international levels and scientists working in the NIB should be able to obtain funds from competitive international grants as currently done in the ICDDR,B.

The author is coordinator, Biotechnology at BRAC University and Secretary, Bangladesh Academy of Sciences. He was involved in formulation of National Biotechnology Policy and founder Project Director, National Institute of Biotechnology, Savar.

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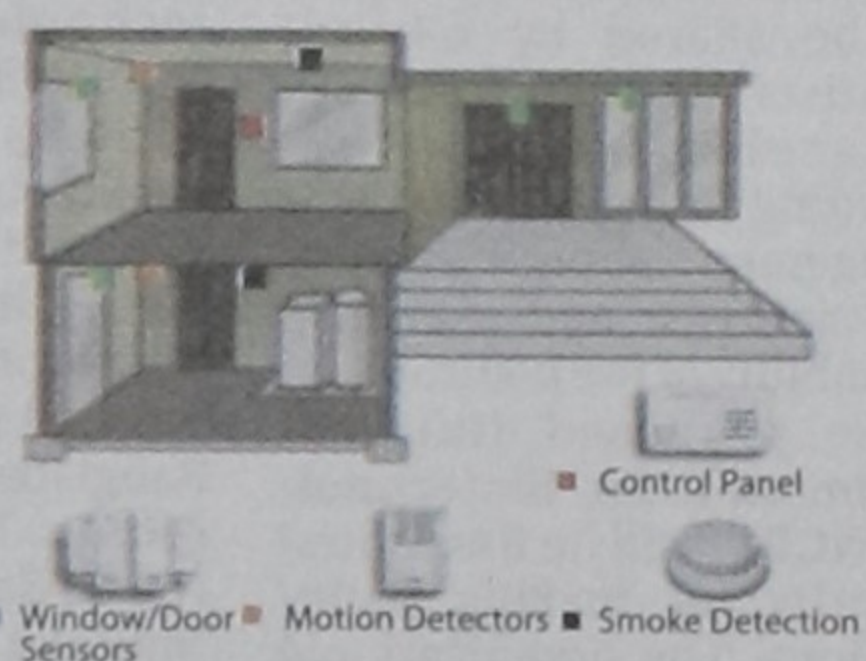
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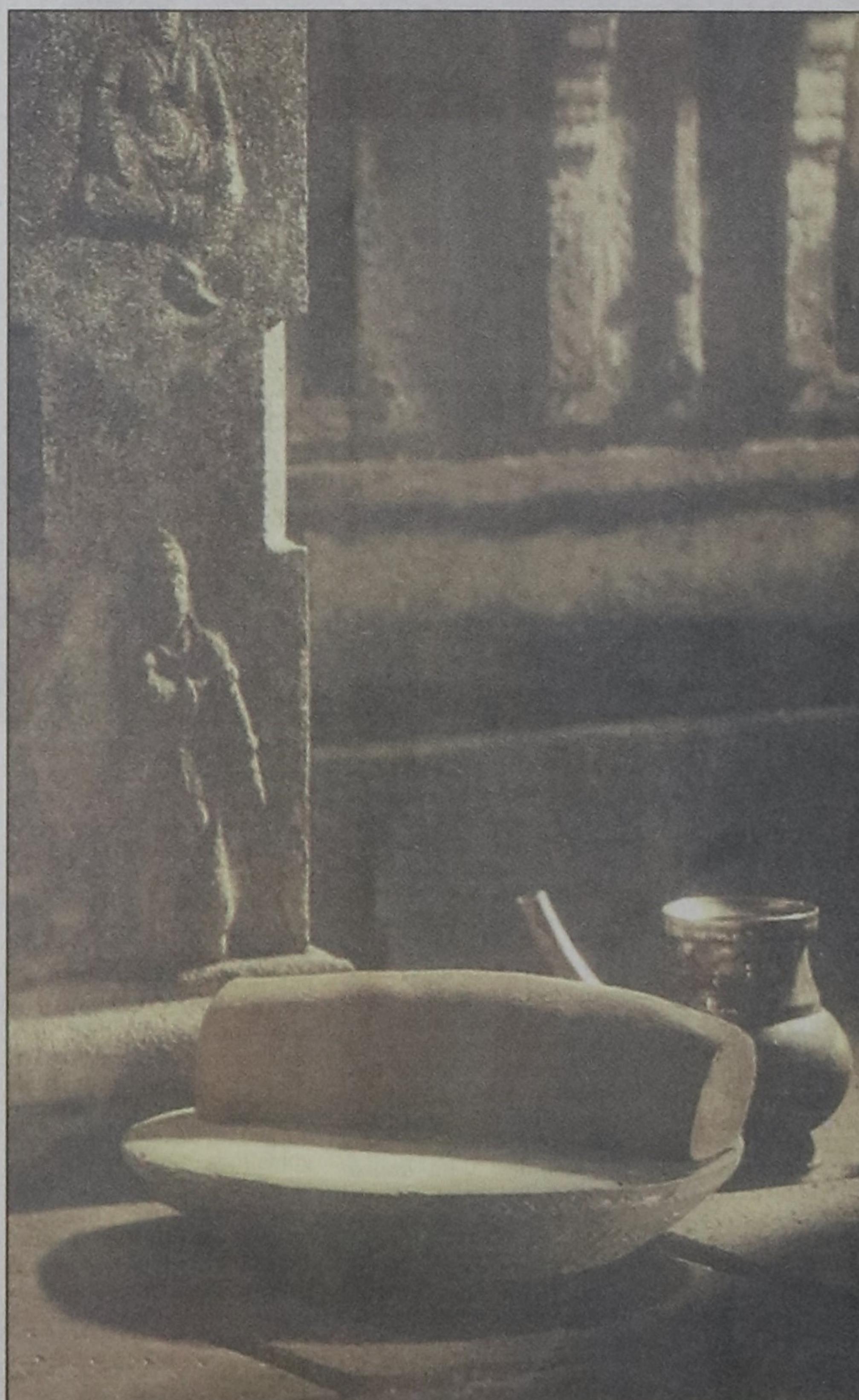


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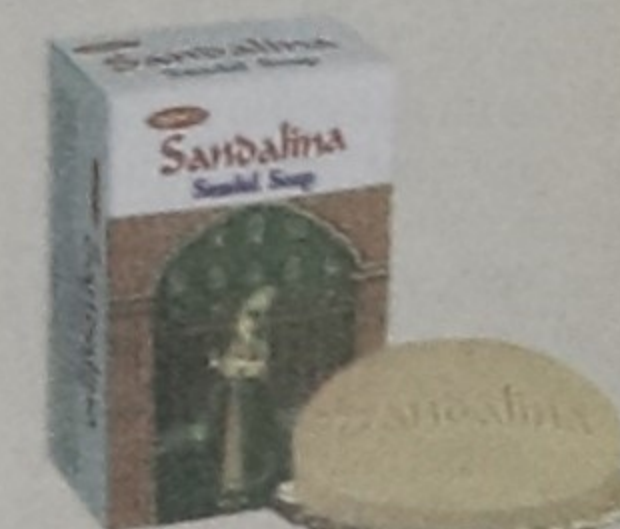
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