

## **INTERNSHIP AT THE UNITED NATIONS UNIVERSITY PROGRAMME ON BIOTECHNOLOGY FOR LATIN AMERICA AND THE CARIBBEAN (UNU-BIOLAC)**

### **Nature of Internship**

**Duration:** Up to six months or more starting as soon as possible.

**Organisational Unit:** United Nations University Programme on Biotechnology for Latin America and the Caribbean (UNU-BIOLAC), a Research and Training Programme (RTP) of UNU.

**Duty Station:** Caracas, Venezuela

**Supervision:** Under the overall supervision of the Coordinator of UNU-BIOLAC the Intern will work directly with the Programme Assistant to the Coordinator.

### **Responsibilities and output expectations:**

Overall, provide support for the research, education, capacity building and dissemination activities of UNU-BIOLAC in the areas of Biotechnology and Development, Biotechnology and Society (including bioinformatics) and the virtual International School of Biotechnology.

Specific tasks include assisting with:

- i) the regional Bioinformatics programme: a) to identify, collect and disseminate information on subjects such as computational biology, modern biotechnology with particular relation to agriculture, health and human genomics; b) to provide support to the Bioinformatics Network of institutions, scientists, fellows and students; and c) to organise the annual meetings of the Network, prepare reports of the meeting and conduct follow up;
- ii) diagnostic of Intellectual Property and Technology Transfer, and building of an IP network (background in law desirable);
- iii) the operation of a Latin American Network on Molecular Epidemiology including analysis of network integration and outputs (statistical background desirable);
- iv) the planning, development and maintenance of UNU-BIOLAC databases on fellowships and participating scholars/institutions in collaboration with Project Coordinators;
- v) the development and operation of the International School of Biotechnology, a virtual learning programme of UNU-BIOLAC;

- vi) the updating of information on the progress of UNU-BIOLAC activities designed for the UNU-BIOLAC website and
- vii) submissions to foundations and funding sources (i.e. governmental, inter-governmental, non-governmental, and industrial) for project support.
- viii) other duties as may be assigned by the Coordinator.

As a special consideration UNU-BIOLAC is given access to the use of the Biotechnology Center of the Institute of Advanced Studies (IDEA), whose current work covers areas such as plant biotechnology, oil biotechnology, human genetic markers and biodiversity. Depending on the qualifications and background of the Intern s/he may undertake research in an area of her/his interest or participate in on-going research and/or use the labs of the Biotechnology Center of IDEA. S/he could also contribute to publications.

### **Qualifications:**

Degree or diploma in biology, bioinformatics or biotechnology related fields including law and statistics. Candidates with social science background but with interest in bioethics, bioinformatics and social aspects of biotechnology would also be eligible. Hands on knowledge and experience with computer technology including, but not limited to website design (HTML, Java scripts, PHP, Micromedia: Cold Fusion, Flash and Director) and business applications (Microsoft office). Ability to manage and construct online data bases desirable. Knowledge of programming concepts. Experience in using the Internet for collaboration/communication and research.

Fluency in English. Knowledge of Spanish would be an added asset.

### **Learning elements:**

After the assignment, the Intern is expected to acquire or strengthen skills in the following areas:

Knowledge and understanding of biotechnology management for sustainable development in the Latin American and the Caribbean Region

Experience working with scientists, fellows and students

Organisation of scientific meetings

Experience in the development and maintenance of databases and web sites

Drafting of reports, projects and activities.

Drafting project proposals for fund raising purposes

### **Background information on UNU-BIOLAC**

The mission of the UNU, within the United Nations system, is to contribute, to the advancement of knowledge, capacity development, and dissemination in a problem-oriented manner to solve global problems of human security and development.

UNU consists of the UNU Centre in Tokyo, nearly a dozen research and training centers and programmes (RTC/Ps) and a network of associated and cooperating institutions and scholars. The UNU Council sets the principles and policy for the University. The Rector is the University's chief academic and administrative officer.

Within the above framework, each RTC/P is headed by a Director or Coordinator and has its own Board or Advisory Committee (see attached Organisational Chart).

UNU-BIOLAC is an RTP of UNU with a Scientific Advisory Committee and a Programme Coordinator. UNU-BIOLAC deals with the interaction between science, technology and society and how modern biotechnology can contribute to development.

UNU-BIOLAC was established in 1988 by an agreement between the Government of Venezuela and the United Nations University with an endowment contribution. The Government continues its support by providing office space and facilities. While the core funding is covered by income derived from the endowment contribution, other sources are mobilized for project support. (<http://www.unu.edu>)

UNU-BIOLAC undertakes post-graduate education, research and capacity building in cooperation with regional academic institutions/organizations and through a worldwide network of senior researchers and academic experts in biotechnology.

For the medium term, UNU-BIOLAC will concentrate on Biotechnology for Development, Biotechnology and Society (especially bioethics, biosafety and bioinformatics) and the building of a virtual school of biotechnology. ([www.biolac.unu.edu](http://www.biolac.unu.edu)).

### *Bioinformatics Network*

Latin American countries have progressed in the implementation of modern biotechnology in the areas of health and agriculture and, with less emphasis, in industry and preservation of the environment. Major pharmaceutical concerns and local laboratories are producing genetically engineered plants and animals, and some of the resulting plants are being tested and cultivated in several countries.

The flow of information and new technologies generated worldwide is increasing exponentially. The volume of biological information as a result of sequencing the genome of many bacteria and small organisms, address the need for the development of highly sophisticated Bioinformatics tools. Only a few centres in Latin America have limited expertise and equipment to be able to take full advantage of information generated. It is of urgency to take action required to stimulate networking among these laboratories and with others, to increase their capacity and train specialists who could efficiently apply these tools.

There are groups working in related fields, such as database building, algorithm development, epidemiology and biostatistics, of which the last two disciplines are becoming essential for effective planning of control measures in the public health area. As noted, groups active in these fields are working in isolation. It would thus, be of benefit to the region, to collaborate through networking and the exchange of research, training and capacity building.

As the field of Bioinformatics in the region is at the incipient stage, one of the purposes of this project is to strengthen the network to encourage the sharing of knowledge, and capabilities. It is hoped that dissemination and sharing of such knowledge will further the development in new fields. Development of biometrics will have impact in the following fields:

- Biomedical and agricultural research
- Development of biotechnology
- Effective planning of control measures in public health (biostatistics, modelling of public health problems, geo processing)

The main approach of the project is the promotion of activities and meetings that help integrate the work of researchers active in Bio-informatics/Computational Biology, as well as to organize training workshops for students in the region under the Regional Bioinformatics/Computational Biology Network for Latin America and the Caribbean.

#### *Specific Aims of the Bioinformatics Network*

During 2002-04 UNU-BIOLAC Bioinformatics network will:

- Train students (both biomedical and informatics students) through short-term courses.
- Develop new tools in biostatistics, modeling and simulation as support for public health planning.
- Prepare for on-line dissemination: training materials in bioinformatics and the use of bioinformatics tools in planning and analysis.

#### *Intellectual Property and Technology Transfer*

UNU-BIOLAC recognising that technology transfer can have a substantial impact on sustainable development, inter alia, facilitated the transfer of biotechnology processes and products between ICGEB and the Venezuelan Government. In addition, UNU-BIOLAC has provided training for young professionals at the Butantán Institute in Rio de Janeiro, Brazil, for the transference of new technologies for the production of rabies vaccine and tetanus toxin. The trainees returned to the National Institute of Health of Venezuela to run Good Manufacture Practices facilities for the production of the above-

mentioned items. UNU-BIOLAC is encouraging other governments of the region to participate in similar types of activities

UNU-BIOLAC has organised an International Seminar: “Intellectual Property and Technological Transfer: Key Tools for Sustainable Development”, in December 12, 2003 at the University of Concepción. The seminar provided a venue to disseminate, through discussion and analysis, the importance of Intellectual Property and Technology Transfer to achieve sustainable development in Latin American countries. One of the outputs of this seminar was the organization of a Regional Committee for Intellectual Property and Technology Transfer which will organize the Latin American Network of Intellectual Property and Technology Transfer.

### *Molecular epidemiology*

In order to establish regional bridges among evolutionary biologists, epidemiologists, entomologists, and molecular biologists working on infectious diseases UNU-BIOLAC is establishing a Latin American Network on Molecular Epidemiology (LANMEp). The overall goal of the network is to promote the application of molecular evolutionary biology and molecular biology tools in population studies of infectious diseases and their vectors. The goals of the LANMEp will be achieved via the following specific actions: (i) A training program on the analysis of molecular data of infectious agents (ii) The use of molecular techniques in population level studies of infectious agents using concepts derived from molecular evolutionary genetics (iii) multilateral partnerships directed to study specific infectious and parasitic diseases, as well as, coordinated efforts with existing networks