

## **Latin American Genome Initiative, the Creation of a Network and Web Based Resource to Aid and Nurture Genome Biology in Developing Countries**

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As never before, biological and medical sciences in Latin America have been caught unprepared with the explosive development of genome biology with its concomitant use of high-throughput technologies, large scale database management, sophisticated instrumentation and collaborative research. In the past, new biological technologies, such as those developed during the genetic engineering revolution, were readily assimilated and successfully used by laboratories in the Region. A typical, small sized university laboratory with a set of shared instruments, managed to produce results that were acceptable in good or regular impact journals. Nowadays, a

large scale, collaborative, inter- and multi-disciplinary research effort with networking is the paradigm. What can Latin America and other developing nations do in order to become involved in genomics?

At a recent workshop\*, the Latin American region was given a good example of how it can develop genomics in the stunningly successful Brazilian genome initiative. This effort, which was started in 1997, received from the beginning, substantial national and state funding. A virtual genome institute, ONSA was created that included many research laboratories scattered around the country. A

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collaborative effort between members of ONSA resulted in the sequencing and annotation of the first Latin American genome, the fruit disease-causing bacterium *Xylella fastidiosa* (Simpson et al. 2000). Since then, the Brazilians have gone on to even greater heights. In 2000 the federal government launched the Brazilian Genome Project to sequence the human pathogen *Chromobacterium violaceum*. In addition, associated with the Ludwig Institute for Cancer, various regional genome projects were initiated including those related to health, such as the transcriptomics of both cancer and *Leishmania chagasi* (the causative agent of New World visceral leishmaniasis) and those of agricultural and industrial significance (i.e. *Herbaspirillum seropedicae*). Also, projects related to EST sequencing of sugarcane, eucalyptus and coffee have been started. In addition to promulgating the development of a sophisticated DNA sequencing infrastructure and bioinformatic muscle power, these projects are linking university and institute researchers with the agricultural, industrial and health communities (Simpson 2001) and serving as a showcase for political and financial decision makers.

For the present, however, no other country in the Region has the widespread technological base and political and economic support to be able to follow this example. During expositions from different representatives, we were informed of small-scale genomic research being done in at least 6 countries (Argentina, Brazil, Chile, Cuba, Mexico and Venezuela.). Clearly, there are qualified human resources in the region, but they are scattered and isolated. One central question that arose concerns the need to convince our respective governments to become involved in genomics. A common political perception in Latin America is "why bother when advanced nations are doing the research and making many of the results freely available?" However, it became clear that genome projects of special relevance to Latin American countries, such as those related to SNP representation of indigenous peoples and related investigations into human genetic diseases and those that highlight industrial and agricultural problems of special importance for the Region are low on the list of priorities for developed countries and, therefore, must be undertaken in Latin American countries if they wish to reap the benefits that can result from genome research. This is a pertinent argument for the local development of genome projects in any developing country.

What can be done? One simple but potentially powerful expedient is to create a web-based communication network for those interested in Latin American genome biology. It would cost little but might catalyse and nurture much. Such an initiative is a way to share our limited resources and to help interface our efforts with other segments of society including those involved in funding decisions and with other developing nations and the world scientific community at large.

With this mind, we are establishing a Latin American Genome Biology Network to be sponsored by the United Nations University Program, Biotechnology for Latin America and the Caribbean (UNU/BIOLAC). Our objective is to link Latin American groups working in genomics to discuss common problems, help each other with technical expertise, assist laboratories in the region in need of high throughput genomic technologies, and to promote the exchange of resources (libraries, oligos, instruments, software, best buys, technical services and special offers, etc). The network will also disseminate information about genome related activities such as conferences, training and funding opportunities, web based lectures and courses, taking place inside or outside the Region and will link and work in tight cooperation with the sister UNU/Bioinformatics Network (A Bioinformatics network for Latin-America and the Caribbean). We invite all those interested in participating and collaborating to visit us and to add relevant information, ideas and links. In addition to our colleagues in Latin America, we wish to extend this invitation to the world community at large because we are looking for ideas and collaboration from all investigators and because we wish to serve as a global window for Latin American genome activities and to serve as a source of information and ideas for other developing nations.

## References

Simpson, A.J., et al. The genome sequence of the plant pathogen *Xylella fastidiosa*. The *Xylella fastidiosa* Consortium of the Organization for Nucleotide Sequencing and Analysis. *Nature*, July 2000, vol. 406, no. 6792, p. 151-157.

Simpson, Andrew J.G. Genomics in Brazil. *Research Coordination, Pan American Health Organization* [online]. 2001. Portable Document Format. Available from Internet: <http://www.paho.org/english/hdp/HDR/ACHR-02-Simpson.PDF>.

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\* International Course on the Use of DNA Microarrays in Basic and Applied Research, held in the Institute of Cellular Physiology at the National Autonomous University of Mexico (UNAM), September 23-27, 2002 and sponsored by the Howard Hughes Medical Institute, The Wellcome Trust and the Latin American Biology Network.