

Interview: Patricia Ostrosky - General Director, Institute of Biomedical Research, Mexico



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Patricia Ostrosky, general director of the Institute of Biomedical Research in Mexico, details current research subjects and calls for greater collaboration between Mexican universities and the pharmaceutical industry to bring more life-changing innovation to patients.

Could you please provide our readers with a general overview of the Institute of Biomedical Research?

The Institute of Biomedical Research (IIB) is part of the National Autonomous University of Mexico (UNAM) and recently celebrated its 75th anniversary.

In general, we study every phenomenon in molecular-population levels, and work to develop treatments for human diseases. We truly take a holistic approach to our research, always trying to cultivate new ways to view and treat diseases. Actually, we were one of the first institutes in Mexico to engage in molecular research and have subsequently created three different institutes, through which many renowned scientists have been produced.

This Institute has 4 departments: Cell Biology and Physiology, Molecular Biology and Biotechnology, Immunology and Genomic Medicine, and Environmental Toxicology. Currently, we have 93 researchers, 80 technicians and 69 groups of research. We have a huge teaching responsibility as well, which is extremely important. We offer six graduate programs at UNAM and around 400

students conduct their research at this facility. Additionally, we have a very well established undergraduate program that is 40 years old. We really have been shaping the minds of researchers for decades.

How have you been developing the IBB's activities over the past years?

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For a long time one of our priorities has been the expansion of our research outside of the Institute, in line with our holistic approach to research. This is accomplished through our peripheral units, which are units operating outside of UNAM; however still belonging to IIB. Our expertise is widely spread. For example, we have units operating in the different National Institutes of Health in Pediatrics, cancer, medical science, and nutrition, and lastly the neurology and neuroscience. In addition, we have operating units at the Public University in Veracruz and Tlaxcala. Outside of these official units we collaborate with other national entities, including the Institute for Genomic Medicine, Cardiology Institute, Rehabilitation Institute and the Geriatric Institute. These partnerships are very important for the institute to grow and expand.

Speaking again of our collaboration with the Cardiology Institute, part of our work is to transform an old building into a new facility that will be used by UNAM to conduct cross-sector research and teaching. Another facility that we are all very proud of is our Biosafety Laboratory, which is the only laboratory at UNAM that is approved to work with level 3 microbial pathogens (BSL3). This facility has been used to work with mycobacterium tuberculosis as well as with the AH1N1 during the 2009 influenza pandemic.

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Which are some of the current research areas of the Institute that you would highlight?

In terms of areas of research, we are looking to expand further into chronic kidney diseases as well as toxicology, as toxicological troubles are one of the major problems we face in this country but unfortunately remain largely underestimated. There are many toxicological problems that we have yet to further investigate, and this is a field I have already worked in for many years. I have notably been conducting an extensive work on arsenic, which is found in small doses in many places in Mexico, including tap water. Currently, I am working to discover if there is a possible link between arsenic and diabetes, and possibly even with the development of cardiovascular diseases.

The Institute has also been very active in the field of metabolic disorders, especially neonatal metabolic disorders. In 1988, in Mexico, it became mandatory for every newborn to be tested for

metabolic disorders, hugely important as many of these diseases were previously going undiagnosed.

We are also looking at developing concrete innovations, and we recently work on a medical device, a tape, that through a urine sample is able to recognize, at a very early stage, if a patient has kidney issues.

Lastly, I want to point out the extensive and important work that we have done in the field of population genomics. Through this work we have made great progress in identifying genes in the Mexican population that are involved in type 2 diabetes, a critical issue for the country, as well as lipid disorders. Of course, this is a small snapshot of the impressive portfolio of work that the Institute has done, a portfolio that will only continue to increase in the future.

Why do you think that collaboration with the industry represents a big challenge?

There was a time when we weren't sure whether a substance called acrylamide is carcinogenic. It is present in many everyday foods, such as fish and chips. I was asked by PepsiCo to do a literature review on acrylamide toxicity. I found that much information was missing, therefore I offered to submit a research project, a proposition to which they agreed. However, after presenting the project, I was told the head office of the company prefers that their in-house experts complete the research. What this story highlights is that in Mexico, there is no industry involvement with the universities, which I believe is a mistake.

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In Mexican universities, we do a lot of basic research, which is important as it always evolves into more innovation-related research. However, I do think that we have to increase our collaboration with industry, and that this could be beneficial to both sides. To achieve this revolution, universities' structure may have to adapt as well. As of now, I only have one person who sends our products to patent offices, however we lack of somebody that could engage with companies and see if they could benefit from our products.

We are very good at publishing, in both national and international prestigious publications. Nevertheless, we do not have much experience in interacting with pharmaceutical companies: we need to build this bridge between us, a strong and two-way link built through further and more extensive collaboration.

You have three years left in your current post. Over that time, what will be your strategic priorities to further develop the Institute?

First, my goal is to encourage people to work together. We have over 330 projects currently operating, meaning each individual here at the Institute has around three projects for themselves. Rather than see this type of separation and individualistic approach, I would like to foster collaboration between people, researchers, and students.

Second, I hope to open people's eyes in terms of understanding that there are always new ways to approach diseases' treatment, and to accomplish this you must find new angles, new technologies, and new substances to treat the disease.

Lastly, I was raised during a time when there was a constant pressure to publish, and publish as much as possible, however I believe that now there is a new way of thinking. Goals now should be focused of finding new innovations that would be ultimately accessible to patients, new systems and kits, new drugs, in order to concretely improve health and our economy.

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