

## LATIN AMERICA

# Improving research links with industry in Latin America

Latin America's larger countries have been successful in science for many years, but can scientific research fuel their natural resource-dependent economies?

*"The biggest challenge in Brazil today is to get industry to do its own research."*

*Carlos Henrique de Brito Cruz, FAPESP*

**FIFTEEN YEARS** ago, Chile learned a valuable lesson from Costa Rica when US computer chip manufacturer Intel decided to build a US\$300-million semiconductor plant there. Although the plan was initially compared to putting a whale in a swimming pool, owing to Intel's annual revenue approaching twice Costa Rica's gross domestic product (GDP), the tiny Central American country seized the opportunity.

Costa Rica's then president, José Figueres Ferrer, attended Intel's progress meetings and secured investment from other foreign funders off the back of the plant. More recently, the country's weathering of the economic storms that have hit Latin America has been attributed to 'the Intel effect', and Intel products represent 20% of Costa Rica's exports.

From Costa Rica, Chile learned what changes were needed for it to secure such a major industry investment — Intel had initially considered locating the semiconductor plant in Chile, but had trouble meeting government officials and negotiating the country's red tape. It is a lesson that Manuel Gidekel, executive director of Chilean business accelerator VentureL@b, and Juan Pablo Toledo, a UK-trained technology transfer expert, are determined to see put to good use. With VentureL@b, they aim to foster spin-off companies that will help shift Chile's economy away from its reliance on finite natural resources such as copper, and towards exporting ideas — patented, of course, and developed into high-tech goods and services. "We want to move the GDP [of Chile]," says Gidekel. "We can produce a richer country."

Chile is facing challenges that are common to other Latin American countries. As highlighted in the 2010 UNESCO Science Report, research in the region is

heavily concentrated in academia, with historically weak links to industry. While the basic infrastructure for an entrepreneurial ecosystem exists in Chile — there are high-quality research universities, some venture capitalists and several prestigious collaborations with universities abroad — there are also impediments to new and risky research-based enterprises. The venture capital community, for example, has little experience in investing in high-tech start-ups. "Roughly 80% of the wealth in Chile resides within 15 families," explains Toledo. "That contributes towards whether you can establish a culture where people look to change their wealth through [innovation] rather than by inheriting money."

With the lesson of Intel lodged firmly in influential minds, there is an appetite for change. The UNESCO report points out that reforms in the region have focused on promoting innovation and strengthening the bonds between research centres and business. This year the Chilean government passed a law that grants tax breaks to companies that invest in research and development (R&D). And when VentureL@b was launched in 2008, the country's president at the time, Michelle Bachelet, attended the inauguration.

The VentureL@b laboratory is based in Santiago at Chile's oldest business school — part of Universidad Adolfo Ibáñez — so it can benefit from the school's »





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VentureL@b is UAI's innovative platform to launch scientific research into business, offering students access to state-of-the-art market orientated technologies. To be a part of this elite working group, meet the entrepreneurs and learn more about our projects, please contact us.

\* America Economia magazine 2011.

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Universidad Adolfo Ibáñez is home to one of Chile's oldest business schools.

long-established relationships with local companies. PhD students associated with VentureL@b and other partners of Universidad Adolfo Ibáñez are able to develop industry-relevant skills at the business school, which was recently ranked first

in Latin America by *América Economía*. Explaining all this in a café in central London on a visit to the United Kingdom, Gidekel appears visibly excited by the research he oversees. "This Antarctic plant might yield new sunscreens," he says, pointing

to photographs displayed on his laptop. "And these bacteria have the capacity to make phosphorus soluble in soil, even at very low temperatures." Forging links with international innovation hubs is a key priority for Gidekel and his colleagues. "We look at Cambridge and Oxford as places where innovation flows very well," says Ramón Molina, executive director of Universidad Adolfo Ibáñez's business school.

### Brazil's blossoming

Brazil, Latin America's richest country, has made the most progress in improving links between public and non-profit research and industry in the region, aided to a large extent by its impressive economic growth over the past decade. Juliana Salles, the regional director for Microsoft Research in Latin America, says Brazil is on its way to achieving a critical mass of researchers, policy-makers and business owners — essential for

getting innovative projects up and running in the region. There are a number of technology transfer tips that the country can offer its neighbours in Latin America, such as allowing academics to work as private consultants for one day a week within their particular field of interest. The University of São Paulo has had this arrangement for over 10 years. Brazil has also built 25 science and technology parks, with a further 17 planned or under construction, and the country's main high-tech hub, centred on the University of Campinas (Unicamp) in São Paulo state, encourages frequent meetings between alumni who have founded spin-offs and recent graduates who are in the process of doing so.

In São Paulo, state research funding agency FAPESP has its own tried and tested method for creating relationships between industry and academia. In 1995 it began a programme whereby

# Science news from Brazil

Science in Brazil is on the rise, along with its economy and global prestige

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### Climate from a Brazilian viewpoint

Scientists from FAPESP's Research Program on Global Climate Change and other institutions are developing the Brazilian Model of the Global Climate System.



### Time for epithelial stem cells

Scientists reproduce oral mucous membrane tissue from epithelial stem cells in a selected research project at FAPESP-King's College London.



### Double agent

An article published in *Nature* with the participation of a Brazilian researcher reveals the double function of BID molecules in treating gastrointestinal illnesses.



### Bacterial protection

A study published in *Science* magazine with Brazilian participation shows how plants exploit a specific combination of soil bacteria to protect themselves from pathogens.



### Chemistry school will have four Nobel prize winners

The São Paulo Advanced School on Chemistry – Natural Products, Medicinal Chemistry and Organic Synthesis Integrated Solutions for Tomorrow's World will be held at the Universidade Estadual de Campinas.



### FAPESP signs agreements with British universities

The United Kingdom's Government Chief Scientific Advisor, Sir John Beddington, visited the headquarters of the São Paulo Research Foundation.

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it issues annual calls for research proposals in partnership with the private sector. FAPESP and each company taking part work together throughout the entire process: they form a joint committee to select proposals to fund; they contribute half of the costs of the research each; and they oversee the collaboration together. "FAPESP has found a way of multiplying its money this way," says agency head Carlos Henrique de Brito Cruz. The popularity of the programme has grown enormously over time, aided by the booming economy that has furnished Brazilian firms with extra cash. Companies taking part include aerospace specialist Embraer, cosmetics firm Natura, Petrobras (oil), Vale (mining), Whirlpool (home appliances) and Telefónica (telecommunications).

There are also signs that Brazil is beginning to crack the hardest chestnut in technology

transfer. "The biggest challenge in Brazil today is not so much getting industry and academia to come together, which we have shown we can do, but to get industry to do its own research," explains Brito. "If you manage that, collaborations between industry and academia will happen naturally." For example, in the past year Vale, based in Rio de Janeiro, has committed to building three campuses to house a US\$400-million technology institute.

### Engineering change

Latin America's other economic powers — Argentina and Mexico — are working hard to catch-up with Brazil. Surveys carried out a decade ago found that just 5% of companies in Argentina and 6% of companies in Mexico were collaborating formally with universities and other public research institutions. Santiago Villa, director of the technology transfer office at

Argentina's national science council, CONICET, says that the culture has since shifted. He explains that both CONICET and Argentina's recently created ministry of science, technology and productive innovation, MINCYT, have intensified engagement with the private sector at both regional and national levels. In 2010 CONICET signed over 130 agreements with companies and more than 20 public-private partnership deals for applied high-tech projects.

A further significant development in Argentina is the commercial expansion of the Fundación Instituto Leloir (FIL), a non-profit biomedical research centre based in Buenos Aires. FIL has created a technology transfer office, INIS Biotech, and a bioincubator, the Center for Biotechnological Development (CeDeBio), which allows start-up companies to use its research facilities and

equipment. INIS Biotech also works with CONICET on technology transfer and helps coordinate public funding from MINCYT and national research funding agency ANPCYT. INIS Biotech president Fernando Pitossi reckons stem cell research is one to watch in the country. "There is a greater critical mass of groups working on stem cells today in Argentina," he says. "Not long ago there were 14 [groups], but now there are 45." Stem cell research in the region is also supported by a joint funding programme, PROBITEC, that was set up by Argentina and Brazil in 2009.

Mexico has also made significant strides in developing public-private research collaborations. An injection of cash into healthcare research by the country's wealthiest man, Carlos Slim, led to the creation of the Mexico City-based Carlos Slim Health Institute in 2007. Roberto



## CONICET



The Consejo Nacional de Investigaciones Científicas y Técnicas CONICET ([www.conicet.gov.ar](http://www.conicet.gov.ar)) was founded in 1958 by the Argentine Nobel Laureate Dr. Bernardo Houssay. It is the main public institution devoted to the promotion of scientific and technological research in Argentina.

CONICET is integrated by more than 6,500 researchers and 8,000 doctoral students, most of them working together in cooperation with universities and other research institutes. All areas of science are represented. In addition, CONICET promotes the training of research scientists through doctoral and postdoctoral fellowships, being the institution that gives the biggest number of research grants at the national level.

For information on fellowships and research opportunities please visit [www.conicet.gov.ar](http://www.conicet.gov.ar)

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## Connecting science, industry and society - Argentina's Biotechnological development



**INIS Biotech** is the Technology Transfer Arm of Fundación Instituto Leloir, one of the leading Research Institutions in Life Sciences in Argentina and Latin America

**INIS Biotech** is part of the knowledge society, fostering the use of research results to improve people's lives.

**INIS Biotech** promotes the creation of innovative biotechnology companies, intellectual property protection and licensing from inventions and knowledge generated at Fundación Instituto Leloir and other Research Institutions in Argentina

**INIS Biotech** is the catalyst that ensures that Biotech developments and inventions from Argentina's Science and Technology sector, reach the market in alliance with private and public partners.



**CeDeBio** (Center for Biotechnology Development) is Fundación Leloir's 740 M2 Bioincubator, located in the geographical center of Buenos Aires

**CeDeBio** boosts the set up and incubation of local Biotech start-up companies by offering access to state-of-the-art equipment and infrastructure, networking, and specialized high technology platforms.

For more information and research opportunities contact us or visit our website.



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Langebio, a national laboratory that studies the genomics of biodiversity in Mexico, is creating its first spin-off company.

Tapia-Conyer, its director, says its public-private partnerships with organizations such as the Inter-American Development Bank, the government of Spain and the Bill and Melinda

Gates Foundation will help the region meet UN Millennium Development Goals. Ricardo Mujica, who is in charge of the institute's social investments, adds that the institute has a



keen interest in projects that adapt available technologies for health purposes: "For example, our partners have developed applications for sending mobile phone messages to help care for people with diseases such as diabetes and hypertension."

Another catalyst of home-grown R&D in Mexico is Langebio, a two-year-old laboratory that is currently sequencing the genomes of avocado, common beans and a small carnivorous plant that has one of the smallest known genomes of flowering plants. Langebio has its own intellectual property office and is busy spinning off its first company, which will focus on weed control systems and novel fertilizers. Langebio's head, Luis Herrera-Estrella, is optimistic about the lab's potential to create new jobs for scientists in Mexico, but recognizes that change is needed to make technology transfer easier.

"Mexican legislation imposes some restriction on researchers," he explains. "There is some potential conflict of interest in creating a spin-off [company] if your original research was funded with public money. The situation is normal in Europe and the United States, but it still needs to be legally resolved in Mexico."

Boosting private investment and innovation in R&D is an issue of major concern to most countries in Latin America, and there is now significant political will to make it happen. Almost all countries in the region have developed legal instruments and provide direct public funding to support business R&D and innovation, and many have implemented tax mechanisms to further stimulate the sector. Costa Rica can certainly attest to the benefits of removing hurdles to high-tech investment.

*Nature editorial staff have no responsibility for content*

## Faculty Positions

The National Laboratory of Genomics for Biodiversity of Mexico (Langebio) is a Unit of the "Centro de Investigación y de Estudios Avanzados" (CINVESTAV), a Federal Government Institution devoted to basic and applied research. Langebio's mandate is to conduct top-ranked research and graduate education, while promoting genomic knowledge for the protection and sustainable use of Mexican biodiversity ([www.langebio.cinvestav.mx](http://www.langebio.cinvestav.mx)).

Research at Langebio is conducted by an international team of scientists, with an emphasis on collaboration and multidisciplinary studies. We are recruiting group leaders at all career stages, working in experimental and theoretical biology. Scientists at Langebio have access to state of the art computational and wet lab facilities, and are expected to build or bring a world-class research group. Applications from women are encouraged.

**Applicants should send a CV, PDFs of their 3 most important publications, and a three page description of their scientific accomplishments and proposed research program. Junior applicants should arrange for three reference letters to be sent separately.**

**Review of applications will begin November 15th, 2011. Send applications to the attention of Dr. Luis Herrera-Estrella, Langebio-CINVESTAV, Irapuato, Guanajuato, MEXICO, E-mail: [mbernal@langebio.cinvestav.mx](mailto:mbernal@langebio.cinvestav.mx)**

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## Public contest for positions of Researchers and Professors at UFABC - Brazil

The *Universidade Federal do ABC (UFABC)* is one of the youngest public universities in Brazil, having started its activities in 2006 with a strong commitment to the development of Science and Technology, and a particular focus on excellence in innovative and interdisciplinary research. Located in the ABC region, in the industrial belt of São Paulo state, the UFABC has been hiring high level Professors and Researchers through public contests in a wide range of areas. Currently 41 positions at the Assistant Professors level are available in the following areas: *aerospace engineering, biology, biomedical engineering, chemistry, computer science, control and automation, economics, education, energy, environmental engineering, geology, information technology, materials science, mathematics, metallurgy, neuroscience, philosophy, physics, statistics, social sciences and thermal engineering*, among others.


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More information is available at <http://www.ufabc.edu.br/concursos> (in portuguese) and <http://ri.ufabc.edu.br/en/>


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UFABC is an equal opportunity employer and provides equal employment opportunities to all qualified persons without regard to race, age, color, sex, religion, marital status, or any other legally protected status.

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The Oswaldo Cruz Foundation (Fiocruz), located in Rio de Janeiro (Brazil) invites applications for post-doctoral fellows to work on mathematical and statistical modeling applied to dengue fever epidemiology.



For further information please refer to the website [www.procc.fiocruz.br/oportunidades](http://www.procc.fiocruz.br/oportunidades)

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# Research Scientist



## JOB DESCRIPTION

Braskem S.A. is seeking a creative and motivated scientist with experience in Molecular Biology or Bacterial Genetics as related to Metabolic Engineering who is interested in working in a small and extensively multi-disciplinary team at our Biotechnology Laboratory in Campinas, Brazil. Braskem is an important player in global thermoplastics production with 31 industrial plants, and is the largest producer of thermoplastic resins in the Americas. With Braskem's commitment to innovation and becoming a world leader in sustainable chemistry Biotechnology plays a key role. Today we are the largest producer of biopolymers in the world and are involved in strategic partnerships with important global biotechnology companies to develop drop-in products from renewable feedstocks such as Brazilian sugarcane.

The successful candidate will play an important role in Braskem's metabolic engineering programs with opportunities to grow with the company.

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1. High-level development of genetic strategies for carbon-flux improvement in microorganisms
2. Coordination and execution of experimental trials
3. Development of genetic tools for microbiological systems of interest

## JOB REQUIREMENTS

A Ph.D. in life sciences with 1+ years of relevant experience or a M.S./ B.S. in biological sciences with a minimum of 3 years experience in an industrial setting and the ability to work independently are required for this job. Prior research experience in metabolic or enzyme engineering is required as is a working knowledge of molecular biology and microbiology. The successful candidate is expected to have strong written and oral communications skills and the ability to adapt to the Brazilian scientific environment. Portuguese is recommended but not required.

Braskem offers competitive benefits and compensation package designed to attract and retain the very best.

For further information about this position and to apply please send your CV and a cover letter to [avram.slovic@braskem.com.br](mailto:avram.slovic@braskem.com.br)

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The Institute of Physical Chemistry of Materials, Environment and Energy (INQUIMAE) is a leading research institute at the University of Buenos Aires (UBA) –the largest University in Argentina- and the Argentine Science Research Council (CONICET) with specific strength in the chemistry of materials, environment, energy, nanotechnology and biophysical chemistry. The objectives are to promote research and development, to train research students and technicians and to offer consultancy for research institutions, government and the local and international industry.

The activities encompass fundamental scientific research and applied contract research, specialized courses and training with funding from local and international agencies, foundations and corporations. International exchange in chemistry: CONICET Postdoctoral Fellowships, PIRE (NSF-US), Marie Curie (EU), von Humboldt, Volkswagen Stiftung, DAAD, Max-Planck Gesellschaft, European Union 7th. Framework Program (Eulasur, Biomoletronics), Associated Center of Excellence of TWAS (Trieste), etc. Active exchange of research students, postdoctoral fellows and investigators with research centers in Latin America, Europe, Canada and US.

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**Nanotechnology:** Molecular and biomolecular electronics, nanostructured surfaces, catalysts, electrocatalysts, molecular magnets. INQUIMAE participates of the Nanotechnology Argentine-Brazil Center (CABNN).

For further details see [www.inquimae.fcen.uba.ar](http://www.inquimae.fcen.uba.ar) or contact [inquimae@qi.fcen.uba.ar](mailto:inquimae@qi.fcen.uba.ar)

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