



CONICYT
Ministerio de Educación

Gobierno de Chile

international relations

CONICYT

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Welcome to issue 25 of CONICYT's International Relations quarterly bulletin, with news and information for all stakeholders interested in international cooperation in science and technology with Chile.

Another busy and productive year for CONICYT's International Cooperation Programme has just finished. In this issue, we review 2014's highlights, including the implementation of important new initiatives to expand collaboration between researchers in Chile and abroad in areas of mutual interest.

In this issue we also feature the case of the Nopoor project supported by the European Union's Seventh Framework Programme, which includes the participation of researchers in Chile. This project shows how large international scientific collaborations can allow researchers in Chile to play an active role in the complex process of developing effective poverty alleviation policies worldwide.

In our *European Connection* section, Manuela Caruz from the Eurochile Business Foundation, provides an insight of how small and medium-sized enterprises in Chile can participate in European research and innovation projects and the tools available to support them in that process.

In *Projects*, we profile two collaboration networks supported by CONICYT, one between researchers in Chile and Germany, and another between researchers in Chile and the US - both of which show interesting scientific and technological results.

In *On the Move*, we learn about how Marcos Sotomayor, a Chilean researcher settled in the US, is breaking new ground in our understanding of human hearing and balance at The Ohio State University.

Finally, in *Interviews*, the General Secretary of the Ibero-American Programme for the Development of Science and Technology (CYTED), Alberto Majó, analyses the main achievements and future challenges of the programme.

We hope you find these articles - and the rest of the pieces in this issue - enjoyable and informative.

Please do email us your feedback or ideas for content.

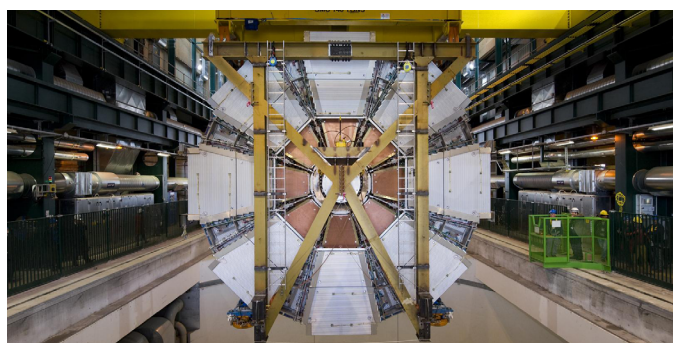
International Cooperation Programme
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The International Cooperation Programme welcomes all comments and suggestions from readers. Please email us at relacionesinternacionales@conicyt.cl

CONICYT's 2014 international relations accomplishments

Expanded Chilean participation in CERN's experiments

CONICYT and the European Organization for Nuclear Research (CERN) signed a MoU for the construction of the Muon New Small Wheel by the Pontificia Universidad Católica de Chile and the Scientific and Technological Centre of Valparaíso at Universidad Federico Santa María. The project is part of the upgrade programme for ATLAS, the world's largest particle detector.



Implementation of Newton Fund in Chile

Chile became the first of the 15 countries working under the Newton Fund to implement this new initiative of the British government through various CONICYT calls for international research, networking and innovation projects. Newton Fund resources matched by co-financing by CONICYT, will help over three years to finance an increased number of grants to link Chilean and UK researchers.



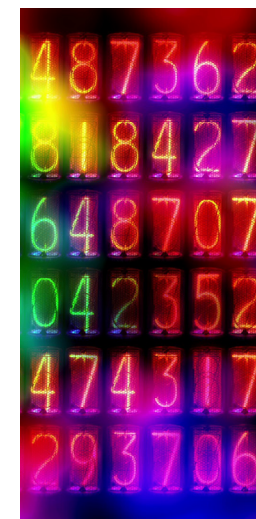
CONICYT-BMBF enhanced partnership

A new international joint research programme between CONICYT and the German Ministry of Education and Research (BMBF) began to support three year joint research projects between research groups in Chile and Germany in the areas of biotechnology, sustainable mining and raw materials, environmental research and environmental technologies.



First India-Chile Workshop on Big Data in Goa

The workshop, held in the Birla Institute of Technology & Science, Pilani, brought together experts from India and Chile to explore opportunities for collaboration in the area of Big Data, including bioinformatics, biomedicine and computational biology. Further activities will take place in 2015 in collaboration with the Department of Science & Technology (DST) of India in the areas of astronomy and food processing.



New alliance with Natural Science Foundation of China

CONICYT and the National Natural Science Foundation of China (NSFC) signed a MoU that will allow both institutions to coordinate financing mechanism to support joint projects between researchers from Chile and China. The initiative was the latest of a series of steps taken to reinforce ties with China following the signature of agreements with the country's key actors in science and technology. CONICYT and NSFC will organize a workshop in seismology in 2015.

Chile integrates transatlantic research platform in social sciences and humanities

CONICYT became a member of the Trans-Atlantic Platform (T-AP), which brings together major research funders in Europe and the Americas to increase transatlantic research collaboration in the social sciences and humanities.



Reinforced dialogue with key partners from Brazil, France, Germany and Japan

The productive dialogue established last year with key partners in Japan was maintained through an institutional mission that included meetings with the Ministry for Science and Technology and the Japan Society for the Promotion of Science (JSPS), as well as CONICYT's participation in the Chile-Japan Academic Forum at the University of Tokyo. Additionally, collaboration with partners in Brazil, France, and Germany received a new impulse through meetings with the Minister for Science, Technology and Innovation of Brazil, the President of the German Research Foundation (DFG) and the Ministry of Higher Education and Research of France.

Working visits create new networks for international collaboration with Chile

The first Massachusetts scientific mission on Biomedicine to Chile brought together top Chilean and U.S. scientists to create cooperation networks in an area of increasing focus in Chile. Activities were carried out in Santiago, Concepción and Valparaíso.

The [CEST+I project](#) Travel Fund for working visits was introduced as a new mechanism to create networks between Chilean and EU researchers. The meetings, held both in Chile and Europe, aimed at developing new proposals for joint research projects and establishing new twinning mechanisms between institutions in Chile and the European Union. The Travel Fund will continue to develop in 2015.



Launch of new Experts Group in ICT for Latin America

The initiative of the [LEADERSHIP](#) project, a consortium that includes CONICYT among its partners, is designed as a new permanent mechanism to support cooperation in ICT policies between Latin America and Europe. LEADERSHIP, jointly with the Experts Group, published a report on R&I priorities for ICT in Latin America and the Caribbean region. This input paper is intended to assess the alignment between these priorities and those of Horizon 2020, the European research and innovation programme.

Launch of first ERANet-LAC joint call for research projects

CONICYT participated in the first ERANet-LAC joint call for research projects to support cooperation between Europe, Latin America and the Caribbean. More than half of the applications received included the participation of research groups from Chile. The results will be communicated in May 2015.



Major international events for capacity building and networking

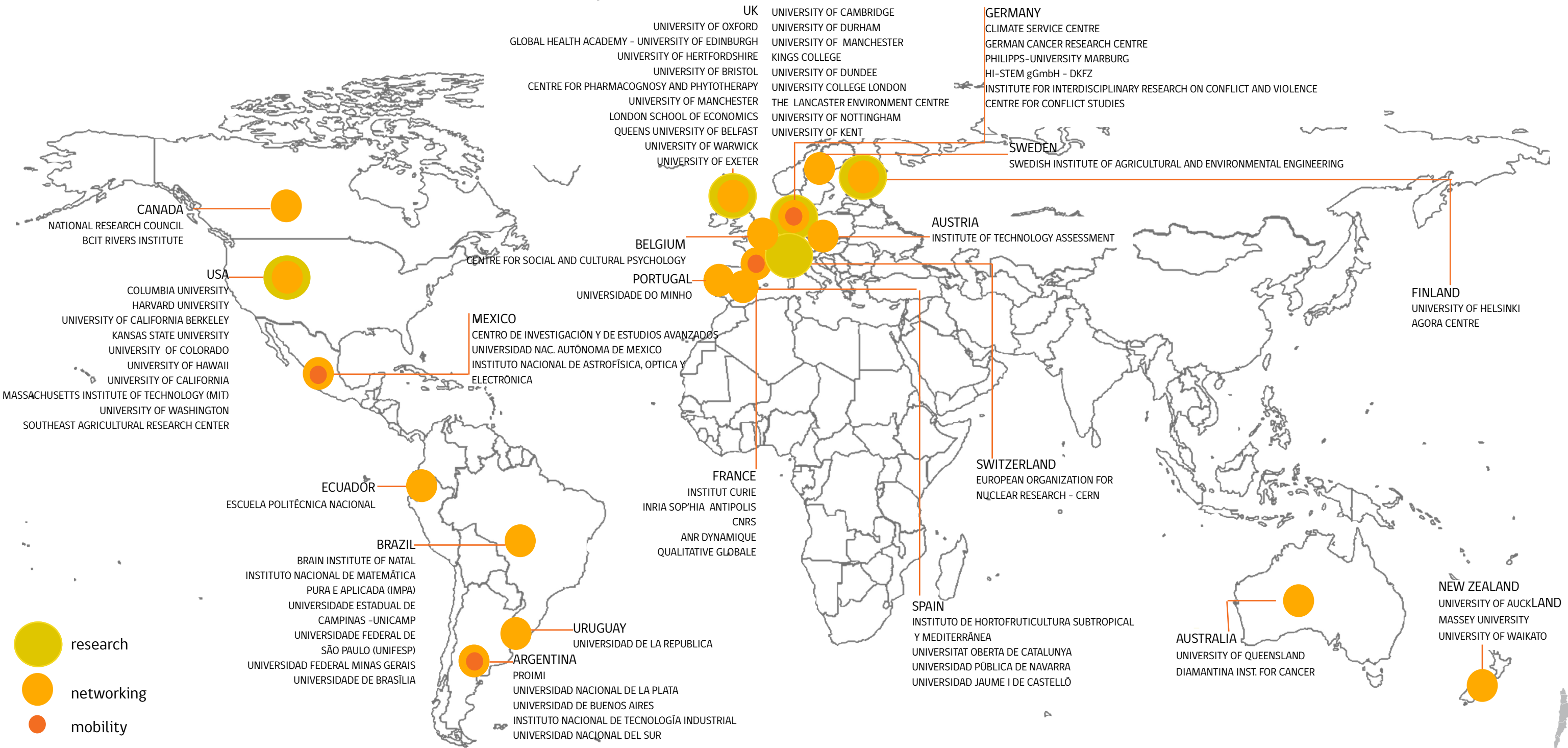
CONICYT worked together with key partners to organize events both in Chile and abroad that brought together experts to discuss cooperation strategies in the areas of ICT, environment, solar energy, and arid zones research. Additionally, regular info days and meetings were held in various regions of Chile to disseminate local and international funding opportunities for collaboration. These events were attended by over 400 people.

New dissemination documents

The CEST+I project coordinated by CONICYT produced two new analytical reports. One of these [reports](#) analyses the current state of bilateral S&T instruments between Chile and Europe, providing recommendations for the consolidation, expansion and improvement of bilateral cooperation on R&D in the future. Another [report](#) looks at the Chilean participation in European research and innovation projects since 2002 to date. Additionally, a new [guide](#) about Horizon 2020 was elaborated with key information for researchers in Chile about how to participate in the European programme for research and innovation.

2014 new international scientific collaboration projects*

*Information available as of December 2014



UPDATES



Solar energy experts from Chile and EU meet in Seville

The Chile-EU solar energy workshop held in Seville (Spain) on November 11-12 brought together more than forty researchers and experts from Chile, Germany, France and Spain to discuss the application of new technologies in the area of solar energy in Chile.

The discussions during the workshop were focused on how the relationship between university research centres and the industry is developing in Chile and its potential as solar power rolls out into the mainstream of the national energy mix. Currently, Chile is regarded as the leading solar market in Latin America for the excellent natural conditions for generating solar power available throughout the country and the rising energy demand.

The workshop helped to develop and consolidate collaboration ties between the participants and presented the various opportunities available that support joint projects between research institutions and industry in Chile and Europe, including: funding for working visits, opportunities within the framework of Horizon 2020; and the ERANET-LAC project joint call for research and innovation projects.

The event was organized by the [CEST+I project](#) (Chile-European Union STI Initiative) as part of a series of workshops on key areas of EU-Chile cooperation.

New guide for Chilean researchers on how to participate in Horizon 2020

The [CEST+I project](#) published a new guide for researchers and institutions in Chile on how to apply to Horizon 2020 (H2020), the biggest EU Research and Innovation programme ever with nearly €80 billion of funding available over 7 years (2014 to 2020).

The guide provides a brief overview of the different aspects to be considered in order to apply for EU funding. Additionally, it provides practical tips and information about the support and resources available for researchers and institutions in Chile interested in collaborating with European partners in research and innovation projects.

The document has been produced by CONICYT in collaboration with the CEST+I project partners, IRD, DLR and IDOM to help researchers and institutions in Chile to make the most of funding opportunities in Europe. It is framed within CEST+I's objective of disseminating opportunities for cooperation between Chile and the EU.

The guide is available for download [here](#).



CEST+I is a bilateral project financed by the Seventh Framework Programme of the EU to promote science, technology and innovation cooperation between Europe and Chile.

UPDATES



CYTED General Assembly in Mexico

Delegates of science, technology and innovation organizations of the signatory countries convened at the annual General Assembly of the Ibero-American Programme for Science, Technology and Development (CYTED) held in Mexico on 25-26 November.

The Assembly agreed to support 14 new projects selected from a total of 114 applications received to the 2014 CYTED call for thematic networks. The aim of thematic networks is to foster cooperation between research groups from the member countries of CYTED through the exchange of knowledge in areas of mutual interest.

The Assembly also agreed on the lines that will be included in the 2015 CYTED call for thematic networks in the areas of feeding and agriculture, health, promotion of industrial development, sustainable development, global change and ecosystems, information technologies and communications, science and society, energy and technology-based business incubators. The call will open on 20 February 2015.

The next General Assembly of CYTED will take place in Santiago de Chile in November 2015.

ERANet-LAC call closes for applications

The period for the submission of proposals to the first ERANet-LAC joint call closed on 27 November with 90 multilateral applications received. Over half of the proposals submitted (55) involve the participation of research groups from Chile.

Following eligibility checks, the proposals which meet the conditions defined by the funding agencies participating in the call, will be reviewed by international independent experts who will forward their evaluations to the Scientific Evaluation Committee. This Committee will be responsible for ranking the proposals according to the external evaluation results, select the best proposals and provide funding recommendations. The final funding decision will be taken by the national funding agencies, which in the case of Chile is CONICYT.

In Chile, the call will fund basic and applied research projects designed to produce new knowledge through scientific research. Projects can also request funding for mobility, networking and access to equipment.

The estimated date to communicate the results is May 2015.



CASE STUDY

Enhancing knowledge for renewed policy on poverty

Nopoor is a five-year research project that includes the participation of 20 institutions in 17 countries, including the Universidad de Chile, to provide new knowledge for more effective public policy against poverty. Supported by the European Union's Seventh Framework Programme (FP7), the project highlights the opportunities that large international collaborations offer for Chilean research groups to join the debate and contribute to the solution of key global issues.

Poverty remains a global challenge with many research areas still unexplored. The Nopoor project looks to generate new knowledge on the nature and extent of poverty in developing countries, which can ultimately "nurture policy makers with evidence and ideas for action", explains, Dr. Xavier Oudin, researcher at the Institut de Recherche pour le Développement (IRD) in France and the project scientific coordinator.

According to Dr. Oudin, Nopoor's approach includes exploring "new or neglected dimensions of poverty, including spatial segregation and intra-households inequalities, pointing out shortcomings in conceptual and measurement issues, and gathering new data".

The project was conceived in response to a call of the EU's Seventh Framework Programme for research projects that contributed to address socio-economic challenges facing Europe and the world. The call specified several dimensions

to be considered, most of which are covered by the project. The consortium, that unites more than 100 researchers in four continents (Europe, Africa, Asia and Latin America), was built upon the partners' existing links. Dr. Oudin recalls, a preliminary meeting was held in Paris where all the partners together defined the project structure based on their different competencies and areas of research. "For nearly all of us, this was our first experience applying to the EU's programme. We were keen to learn the European procedures and work in such a large project", says Dr. Oudin.

The Nopoor project covers not only a large geographical scope, but also a wide range of disciplines and approaches. It aims to generate new knowledge on seven main topics: poverty dimensions, impact of foreign aid, impact of globalization, inclusion/exclusion, education and protection, states and politics, and scenarios for the future; from a variety of disciplines, including



CASE STUDY



Left: floating market in Vietnam. Right: Chilean workers protesting for a living wage

political economics, public and social policy, governance, development studies, among others; and using a variety of methods, from original surveys, to database work and case studies.

Poverty's new challenges

The Universidad de Chile participates in Nopoor through the Centre for New Development Thinking, which was established in 2012 in order to question traditional approaches to development problems. Dr. Kirsten Sehnbruch, the Centre's Director and leader of the Nopoor project research group in Chile, explains the Centre covers issues that have been overlooked in the international development literature and practice, namely, multidimensional inequalities, labour markets, lack of productive diversification and sustainable development. This expertise is further enhanced by their partnership with the CONICYT-funded Centre for Social Conflict and Cohesion Studies (COES), which shares various lines of research and multidisciplinary perspective with the Centre for New Development Thinking.

The Universidad de Chile became part of Nopoor after being invited by the Université Paris Dauphine. The initial contact was made through a Chilean doctoral student in France who had links with researchers at Universidad de Chile. According to Dr. Oudin, "Chile offered interesting perspectives, in particular in regard with policies for poverty alleviation. Considered as a successful experience in poverty reduction policies, Chile faces new challenges that are addressed by our Chilean

"CONSIDERED AS A SUCCESSFUL EXPERIENCE IN POVERTY REDUCTION POLICIES, CHILE FACES NEW CHALLENGES THAT ARE ADDRESSED BY OUR CHILEAN PARTNERS (E.G. PRECARIOUS JOBS, RISING INEQUALITIES, ETC.) AND IT IS EXTREMELY BENEFICIAL FOR OTHER COUNTRIES TO DRAW LESSONS FROM THIS EXPERIENCE".

CASE STUDY



The NOPOOR project meeting with the European Commission Directorate-General for International Cooperation and Development in November 2014

partners (e.g. precarious jobs, rising inequalities, etc.) and it is extremely beneficial for other countries to draw lessons from this experience". The team of researchers led by Dr. Sehnbruch in Chile focuses primarily on employment and vulnerability. Dr. Sehnbruch explains that rather than poverty, the biggest problem in developing countries is that "the middle class can easily fall into poverty. They therefore require a different set of innovative public and social policies that are only just beginning to be considered".

For Dr. Sehnbruch the significant resources (8 million euros in total over five years) of the Nopoor project, have allowed the Chilean research group to "carry out research that goes beyond what we could do with our own resources. This is like receiving several consecutive Fondecyt grants over the course of five years", she explains. In fact, since the project began in April 2012, the Chilean research group has published ten academic papers in highly-ranked international journals. Among them, several articles about the quality of employment and related concepts, including the concept of "Decent Work" which was introduced by the International Labour Organization (ILO) in 1999. One paper, published by the Cambridge Journal of Economics, analyses how concepts related to the quality of work have developed in the academic literature, and another article, to be published by Development and Change in 2015, compares the impact of the ILO's Decent Work concept

"...TAKING PART IN NOPOOR ALLOWS US TO SOME EXTENT TO PROVIDE OUR PERSPECTIVE ON DEVELOPMENT ISSUES AND TO INFORM ABOUT OUR EXPERIENCE AS A MIDDLE INCOME COUNTRY".

CASE STUDY

with that of the Human Development approach.

Participating in Nopoor has also allowed the Chilean research group to broaden its international links, particularly with their partners at the Federal University of Rio de Janeiro in Brazil, at the think tank GRADE in Peru, and the University of Cape Town in South Africa. These countries says Dr. Sehnbruch, share similar problems with Chile in terms of their productive structure, inequality and vulnerability.

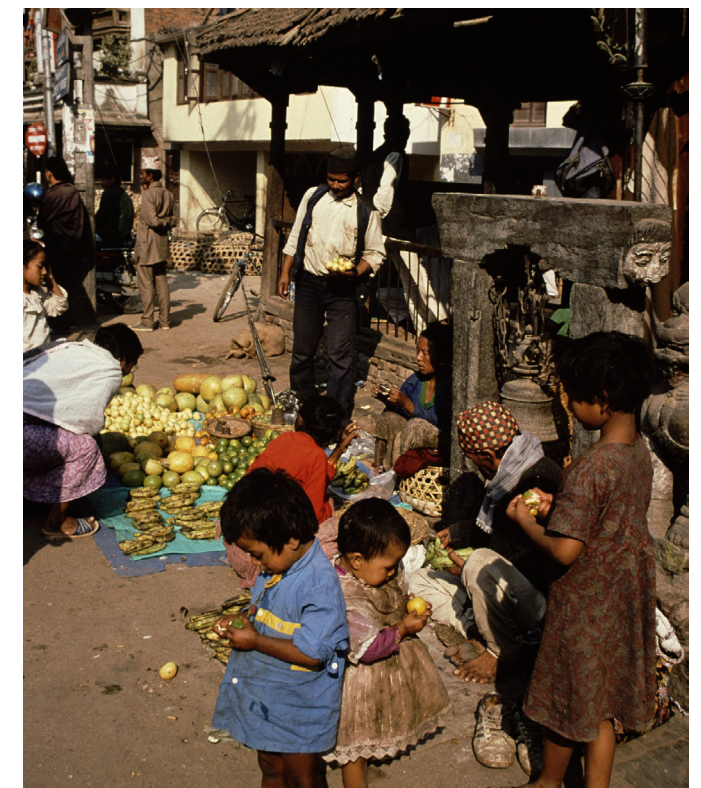
Policy-oriented approach

As well as improving scientific knowledge on poverty, Nopoor also aims to provide policy recommendations for the EU's development policy. With this purpose in mind, the consortium held a mid-term meeting with the Commission's Directorate-General for International Cooperation and Development (DG DEVCO) in November 2014.

According to Dr. Sehnbruch, the meeting with DG DEVCO was a unique opportunity for Chile to provide feedback about the EU's development policy. "We are experiencing a very important phase in the international development agenda. The UN Millennium Development Goals (MDGs) will be succeeded by the Sustainable Development Goals (SDGs) and discussions are taking place at international level on how these goals will be defined and achieved. In general, Chile does not have a prominent role in these discussions, but taking part in a project such as Nopoor allows us to present our perspective on development issues and to inform others about our experience as a middle income country".

Most research programmes developed under the project will continue for two more years, so dissemination of the results will take place during 2017, the last year of the project. In 2015 a scientific workshop on labour market issues is programmed to take place in Santiago de Chile. This will be an opportunity for a wide audience to learn about the project's results and for the partners to discuss longer term collaboration.

More information:
www.nopoor.eu
www.dev-out.cl



Street market in Nepal

VOICES

How can Chilean SMEs participation in H2020 create a win-win situation?

In the framework of the CEST+I project, CONICYT and the Eurochile Business Foundation organized last September in Santiago an Info Day for Chilean SMEs to discuss opportunities for collaboration in European research and innovation projects. We asked Manuela Caruz, Director of the Enterprise Europe Network Node at Eurochile and H2020 National Contact Point in Chile for SMEs, to explain how Chilean participation in H2020 can create a win-win situation.

By Manuela Caruz

Horizon 2020, the European Union's new research and innovation programme, is designed to help the EU to stimulate growth and jobs. It is, therefore, strongly focused on providing support to increase the innovation capacity of small and medium-sized enterprises (SMEs) through various financial schemes which are open, to a great extent, to the participation of SMEs from non-European countries, including Chile.

Funding for SMEs within Horizon 2020 includes dedicated financial schemes such as the [SME Instrument](#), [Fast Track to Innovation](#) and [Eurostars](#) as well as other non-exclusive funding opportunities such as the Marie Skłodowska-Curie Research and Innovation Staff Exchange ([RISE](#)) Scheme. This scheme, particularly interesting for SMEs in Chile, promotes one to twelve month academic and industry collaboration, particularly SMEs located in and outside Europe, through research and innovation staff exchanges, and sharing of knowledge and ideas from research to market (and vice versa).

Win-Win situation

In this context, Chilean SMEs participation in H2020 can create a win-win situation as it provides SMEs in Chile access to contact networks of world-class European innovators and research and innovation projects in equal terms to their European counterparts.



At the same time, it facilitates access to the Latin American market for European entrepreneurs, and provides an opportunity to transfer best-practices, knowledge and experience from one market to another.

Since its establishment in 1993 the Eurochile Business Foundation has served as a bridge between Chile and the member countries of the European Union by organizing activities to strengthen commercial links between Chilean and European SMEs; to encourage the transfer of technology and know-how; and to maintain and develop sustainable institutional partnerships.

VOICES

In order to connect Chile and the European Union, Eurochile has developed various platforms, facilitated dozens of cooperation agreements, and joined large Latin American and European networks — crucially the Enterprise Europe Network. This network offers SMEs in Chile a unique opportunity to access several free services, provided by Eurochile and tailored for their specific needs, to connect with Europe.

Connecting SMEs to European partners

The Enterprise Europe Network brings together nearly 600 business support organizations (i.e. national and regional commerce chambers, technology centres, scientific parks, public organizations specialized in SMEs, etc.) from more than 50 countries, to help small companies take advantage of business opportunities in the European Union single market.

As the local contact point of the Enterprise Europe Network, Eurochile can support SMEs by providing market information, helping to find potential project partners, providing access to other partners in the network and facilitating access to information about business events and European best practices. In fact, the support provided by Eurochile has already helped to assure

partnership agreements between Chilean SMEs and European companies.

For instance, following a brokerage event organized by Enterprise Europe Network in France in 2013, Quipasur, a Chilean company specialized in supplements and nutritional additives, signed a partnership agreement with Micro-Bio Systems Ltd, an international biotechnology company based in the UK, to distribute the company's products in Chile. Furthermore, following a matchmaking event organized by Eurochile in Santiago in 2012, Verfrut, a company with Chilean capitals that produces and exports fresh fruits, became a supplier to the international arm of Fleuron d'Anjour, a French company specialized in the production and commercialization of agricultural products.

Collaboration between SMEs from Chile and Europe is possible, encouraged and financed within Horizon 2020. The invitation is then to get informed about the opportunities and support available to engage in international research and innovation activities and networks.

More information:
www.eurochile.cl



Manuela Caruz.

“CHILEAN SMEs PARTICIPATION IN H2020 PROVIDES SMEs IN CHILE ACCESS TO CONTACT NETWORKS OF WORLD-CLASS EUROPEAN INNOVATORS AND RESEARCH AND INNOVATION PROJECTS IN EQUAL TERMS TO THEIR EUROPEAN COUNTERPARTS. AT THE SAME TIME, IT FACILITATES ACCESS TO THE LATIN AMERICAN MARKET FOR EUROPEAN ENTREPRENEURS, AND PROVIDES AN OPPORTUNITY TO TRANSFER BEST-PRACTICES, KNOWLEDGE AND EXPERIENCE FROM ONE MARKET TO ANOTHER”

High quality data for public policy on education in Latin America

Worldwide large-scale assessments in education have experienced a progressive growth since the mid 1980's. However, the difficulty in analyzing the data generated by these assessments has discouraged their development and implementation in Chile and Latin America.

CONICYT-funded researchers from the MIDE UC Measurement Centre at Pontificia Universidad Católica de Chile and the Data Processing and Research Centre of the International Association for the Evaluation of Educational Achievement (IEA-DPC) in Germany, have developed a research network to exchange knowledge about the analysis of data generated from large-scale educational assessments in Latin America.

The IEA-DPC has 50 years' experience implementing



methods for the analysis of complex surveys within the context of large-scale international assessments such as the Trends in International Mathematics and Science Study (TIMSS) and the Progress in International Reading Literacy Study (PIRLS).

The collaboration with IEA-DPC has allowed MIDE UC gain expertise in the analysis of data generated by large scale assessments such as the Third Regional Comparative and Explanatory Study (TERCE), which is a large-scale international assessment conducted by the Latin American Laboratory for Assessment of the Quality of Education (LLECE) of UNESCO's Regional Bureau for Education in Latin America and the Caribbean (OREALC/UNESCO), which measures how learning achievement in Language, Mathematics, and Sciences have developed for primary education students in Latin America over the past seven years. MIDE UC was chosen by UNESCO as one of TERCE's implementation partners to develop and analyse the achievement tests applied in 15 Latin American countries and the Mexican state of Nuevo León between 2011 and 2014.

Large-scale international assessments can provide

important feedback for public policy on education. According to Dr. María José García from MIDE UC, TERCE "is a useful tool to benchmark learning achievement in relation to other countries in the region, which is important to establish strategies for improving educational outcomes. TERCE can also serve to identify how the educational curriculum can be improved as well as potential alliances with neighboring countries which obtain better results in particular areas".

However, the complexity of education assessments creates a series of methodological challenges. According to Dr. Andrés Sandoval from IEA-DPC "the majority of people do not know how to analyse the results of these types of assessments, and when a small group concentrates the know-how, the data are published and the rest of people assume it is right. Knowledge monopoly does not help to make the most of these types of assessments, so we want to promote education assessments and provide training that can be replicated".

In fact, Dr. García says, "The collaboration with IEA-DPC has been fundamental to correctly address research questions using the TERCE data, and represents an important step forward for MIDE UC to become a leading centre in applied methodology in Latin America".

Combating illegal fishing with the use of satellite images

Illegal fishing is a global threat to marine ecosystems that also causes huge economic losses. Researchers in Chile and the US are working together to develop innovative technology for more effective protection of the world's seas.



Researchers from the Centre of Technological Innovation in High Performance Computing at Universidad Técnica Federico Santa María (USM) in Chile and the Stevens Institute of Technology in the US have established, with the support of CONICYT, a research network to exchange knowledge about processing satellite images that can be used to develop a comprehensive and integrated technological solution to help national maritime authorities detect and monitor illegal fishing in the Exclusive Economic Zone (EEZ).

The national EEZ is a concept universally accepted that includes an area (200 nautical miles off the coast) where a coastal State exercises special rights over the natural resources. In Chile, the combination of a vast EEZ (five times larger than its continental territory) and one of the richest fishing grounds in the world, make the effective detection and

monitoring of illegal fishing a major technical challenge.

At the moment, the Chilean Navy protects and monitors Chile's EEZ using Automatic Identification System (AIS), which provides information about ships to identify and locate vessels. This information, Dr. Werner Creixell from USM explains, can only be obtained from a distance of 35 to 50 kilometers from the coast, which means that "currently we have no way of knowing if foreign ships are illegally fishing in Chile's territorial waters in the high seas".

This research network is developing an ambitious solution that "will collect and compare information from different sources that would allow identify certain patterns of foreign fishing vessels and on that base take preventive measures", explains Dr. Creixell.

The network also includes the Office of Naval Research Global (ONRG) which has collaborated

with USM for several years by training students in Chile on satellite images processing, and through the [ICODE MDA](#) project. This project, funded by the US Department of Defense, looks to create Web-based tools for use in combating illegal activities at sea.

According to Dr. Creixell, the network has allowed to reinforce the collaboration with his US colleagues and elaborate further projects, including one with ONRG to send students to work on related research topics at the University of Miami, which has been actively collaborating with USM to develop a proof of concept using a combination of electro optical images of the FASAT-Charlie satellite and radar satellite images to identify illegal activity at sea.

The progress made by the research groups involved in the network also includes developments on dynamic detection based on the study of the route of a ship, and a static detection system, which uses information from Greenpeace's black list to classify ships potentially involved in illegal fishing. "We already have an 80% effectiveness detecting illegal activities using this tool and are exploring ways of achieving better levels of classification", explains Dr. Creixell.

Researcher Marcos Sotomayor

on the move Revealing the mysteries of hearing

at The Ohio State University



The Sotomayor Research Group at the Department of Chemistry and Biochemistry of The Ohio State University is a newly established laboratory, head by Chilean researcher Marcos Sotomayor, that uses experimental and computational tools to study key mechanisms involved in human hearing and balance.

By Marcos Sotomayor

As you read this text, your skin accurately reports on its contacts with surrounding objects, your eyes and balance system coordinate to keep the words steady while your head wanders, and your inner ear perceives minute mechanical motions produced by sound. All these processes, often taken for granted, involve complex biological macroscopic and microscopic structures essential for human sensory perception. Ultimately, however, the senses of touch, balance, and hearing, rely on “simple” mechanosensitive ion channels and force-bearing proteins that directly transform mechanical stimuli into the brain’s words: electrochemical signals. Our laboratory at The Ohio State University uses state-of-the-art

experimental and computational tools to study the structure and dynamics of the proteins that mediate mechanosensation in hearing and beyond.

Over the past decades we have learned about a plethora of cells and proteins involved in vertebrate mechanosensation, yet a molecular view of how these proteins work together to transform force into electrochemical signals has been missing for years.

To begin to gain structural insights into sound mechanotransduction, I joined the laboratories of David P. Corey and Rachelle Gaudet at Harvard University. Working with Wilhelm Weihofen, we determined the first x-ray crystallographic structure of the tip of cadherin-23

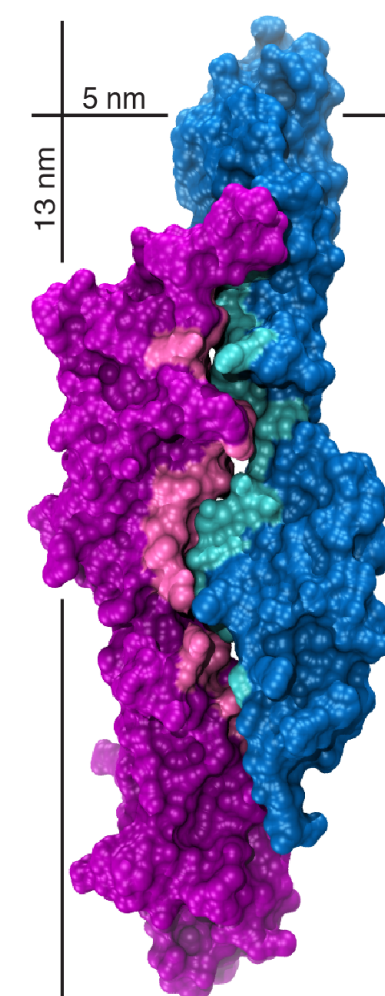
[1], part of a protein filament essential for hearing. We went on and solved the structure of the cadherin-23 tip bound to protocadherin-15, another key player in sound transduction. Surprisingly, the two proteins interact to form a novel and intimate molecular ‘handshake’ [2]. We validated the handshake interactions using mutagenesis, size-exclusion chromatography, and microcalorimetry. In addition, we showed its calcium dependency in vitro, and used advanced supercomputing resources and molecular dynamics simulations to show that entropic stress may underlie the handshake disassembly upon calcium removal. Steered molecular dynamics simulations also predicted that the handshake interaction would withstand

expected physiological forces. The simulations, reaching the fast microsecond time scale of sound mechanotransduction, showed how tip links would break in response to loud sound. Finally, using data from genetic studies, we confirmed the physiological relevance of the handshake in vivo [2,3].

Our cadherin-23 and protocadherin-15 structures, depicting for the first time a cadherin ‘handshake’ bond, shed light on the mechanisms underlying normal and impaired hearing. This work opened the door to determine how force is conveyed to inner-ear transduction channels, one of the main research aims of our newly established laboratory in the Department of Chemistry and Biochemistry at The Ohio State University [4]. Here we have a fully equipped, recently renovated laboratory where we can do protein biochemistry, X-ray crystallography, structure determination, single-molecule biophysics, and molecular dynamics simulations. Our research, funded by the National Institutes of Health (USA), goes beyond hearing mechanotransduction, as the family of proteins that includes cadherin-23 and

protocadherin-15 has over a hundred members encoded in the human genome. Some of them might use a handshake bond to assemble complex epithelial tissues, to mediate cancer metastasis, or to wire the vertebrate brain [4].

To advance our research, we look for collaborators and talented young scientists around the world. Throughout the years we have interacted with several groups in Chile, either by participating in training workshops and seminars, or by doing collaborations and organizing visits (to and from Chile, all supported by CONICYT). We look forward to recruiting more students and postdocs from Chile and Latin America, as well as to initiating a research dialogue with other groups doing research in mechanotransduction, structural biology, and molecular dynamics simulations.



Protein ‘handshake’.

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January 2015



Alberto Majó

General Secretary of the Ibero-American Programme for the Development of Science and Technology (CYTED) analyses the main achievements and future challenges of the programme.

What have been CYTED's main achievements over the past years?

CYTED has contributed significantly to the development of the Ibero-American region by becoming a network of networks. During the period 2005-2012 CYTED mobilized, through different instruments, nearly 17 thousand researchers, 800 businesses, and organized nearly 70 mini business forums with participation of nearly two thousand experts. In a nutshell, CYTED has potentiated horizontal relationships in our innovation systems connecting through different activities, researchers, technicians and business people in a community that although shares a cultural matrix, is at the same time very heterogeneous.

What is the value for researchers and institutions of participating in CYTED projects?

The CYTED programme connects world-class laboratories and research groups in the Ibero-

American region with emerging groups to exchange knowledge, infrastructure and technology. Moreover, the programme serves as a platform for research groups in the region to access other sources of funding. In fact, many CYTED networks have taken advantage of their connections to apply for European Union funding.

What is CYTED focused on today?

CYTED is a science and technology programme for development, so it focuses on generating knowledge that could be applied to other groups of experts or businesses in the region. In 2014 for instance, we launched for the first time an Ibero-American network of business incubators, and this year we will continue with this tool in order to connect a number of incubators to cooperate. We have also reformulated the logic of the mini forums and launched an annual call open to any public or private institution from the Ibero-American region.

What are CYTED's future challenges?

Over the past 30 years the innovation systems of the signatory countries of the CYTED programme have reached different degrees of development. Now, we want to take a step forward, identifying topics and instruments that allow us to generate a much bigger impact. We would like to make progress in the definition of a call in strategic topics where the countries in the region contribute with additional resources. We want the CYTED programme to take advantage of its organizational structure and links to potentiate even more connections in the region and with the rest of the world.

Further information:
<http://www.cytcd.org/>

CYTED Call for Thematic Networks

who can apply?

Public or non-profit private R&D centres, technological centres or public or private companies based in a country of the Ibero-American region.

support

Airfares, travel expenses, publications and training.

dates

February-April

contact

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OECD Cooperative Research Programme (CRP)

who can apply?

Research Fellowships: individual researchers willing to undertake their own research project in collaboration with host researchers and laboratories in a different CRP member country.

Conference sponsorship: organizers of international conferences, workshops, symposia, and congresses to be held in a CRP member country and focused on specific research priority areas of the CRP.

support

Research Fellowships: travel and accommodation costs.

Conference sponsorship: travel, accommodation and subsistence costs of keynote speakers, plus a contribution towards the publication of the proceedings of the conference.

dates

March-September

contact

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January



- | | agenda |
|--------|--|
| 15 | Horizon 2020 NCPs meeting (Santiago, Chile) |
| 15 | CEST+I project advisory board meeting (Santiago, Chile) |
| 27- 28 | Transatlantic Platform project consortium meeting and workshop (Washington, USA) |
| 29-30 | Leadership project consortium and review meeting (Madrid, Spain) |

March



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| TBC | Info Day for delegates of science and technology of foreign embassies in Chile (Santiago, Chile) |
| 18-19 | Bilateral Chile-Germany meeting on STI cooperation (Santiago, Chile) |
| 23-27 | Alcuenet NCPs meeting (Bridge Town, Barbados) |
| TBC | Bilateral Chile-Peru meeting on STI cooperation (Lima, Peru) |
| TBC | ENSOCIO-LA closing meeting and workshop (Berlin, Germany) |

the IR team

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| Director | Gonzalo Arenas | Head of Budgeting and Management for International Cooperation |
| Director's Secretary | Ingrid Tapia | Ricardo Contador |
| Deputy Director | María Mesonero Kromand | International Relations Unit Coordinator |
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| International Cooperation Programme Coordinator | Catalina Palma | Projects Executive |
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