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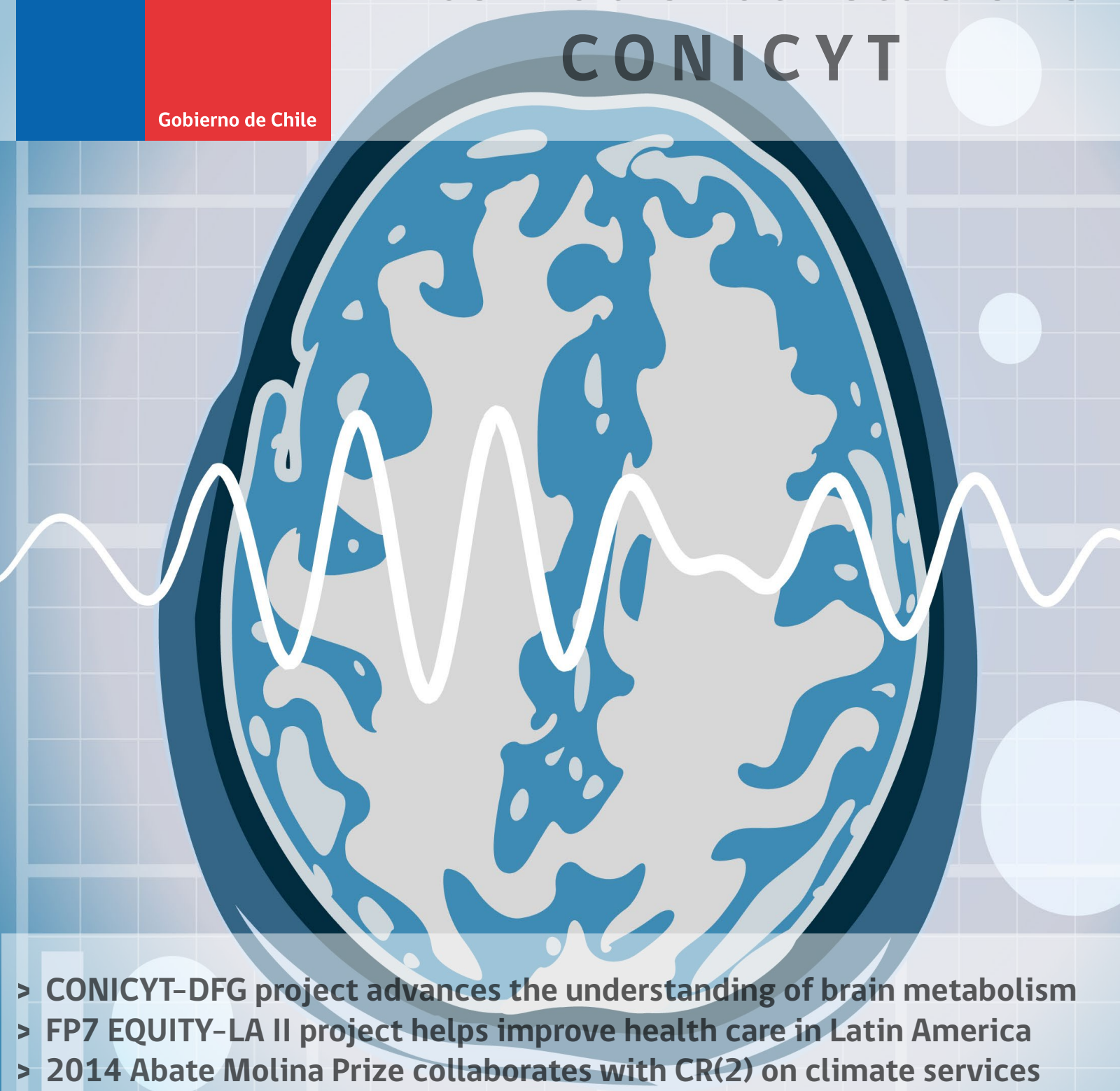

- CONICYT-DFG project advances the understanding of brain metabolism
- FP7 EQUITY-LA II project helps improve health care in Latin America
- 2014 Abate Molina Prize collaborates with CR(2) on climate services
- Chilean researcher at Queensland University studies human capital mobility

issue 27 /July 2015

Welcome to issue 27 of CONICYT's International Relations quarterly bulletin, with news and information for all stakeholders interested in international cooperation in science and technology with Chile.

In this issue we are pleased to inform about the latest activities carried out by CONICYT to reinforce its international partnerships in the US, South Korea and Finland.

In our *European Connection* section we feature the case of the EQUITY-LA II project supported by the European Union's Seventh Framework Programme, which includes the participation of The School of Public Health at Universidad de Chile. This project demonstrates the value of using participatory approaches across all stages of research.

In *Voices*, Dámaris Fernández, researcher and project manager of the Irish Raw Materials Initiative at Trinity College Dublin provides a special insight in the Workshop on Mining Research organized by CEST+I in Santiago.

In *Interview*, Guy Brasseur, 2014 Abate Molina Prize, tells us of his research in collaboration with the Centre for Climate and Resilience Research in Chile.

In *Projects*, we learn of the important results of the CONICYT-DFG joint research project between the Centre for Scientific Studies in Valdivia, Chile and the Kaiserlautern University of Technology in Germany in the field of neurosciences.

In *On the Move*, Chilean researcher Francisco Rowe, explains his current research on human capital mobility at the University of Queensland in Australia, and the value of developing regional science in Chile.

Finally, we include the financing opportunities currently open or about to open for applications in Chile to encourage international scientific and technological cooperation.

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.

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

US National Science Foundation's Director visits CONICYT

Dr France Córdova, the Director of the US National Science Foundation (NSF), made a public presentation on April 17 at CONICYT describing the collaboration ties between Chile and NSF before representatives from the scientific community, universities and research authorities in Chile.

Dr France Córdova, Director of NSF

Dr Córdova detailed the scientific cooperation between Chile and NSF in various areas, particularly through the astronomical observatories, polar cooperation and science, seismic networks, graduate research opportunities worldwide (GROW), and interagency collaboration.

During her presentation, Dr Córdova stressed that cross border collaboration accelerates the progress of science and said that "one of my favourite parts of my job is to re-invigorate and celebrate the partnerships that we have abroad and I do not think that there is any greater partnership that we have than with Chile". Dr Córdova also valued the collaboration of NSF with Chile over the years. "Our relation with Chilean institutions and agencies demonstrates that sharing scientific knowledge, including policies and practices, benefits both our countries and we really look forward to an even more expansive collaboration in the future", highlighted Dr Córdova.

During her visit to Chile Dr Córdova also participated in the stone laying ceremony in northern Chile to celebrate the construction launch of the Large Synoptic Survey Telescope (LSST). an 8-meter wide-field survey telescope that will provide an unprecedented amount of information about the universe.

Abate Molina Prize 2014 award ceremony

Dr Guy Brasseur, senior researcher at the Max Planck Institute for Meteorology in Germany, received the Abate Molina Prize 2014 during a ceremony held at CONICYT on May 13. The award will enable Dr Brasseur to collaborate with the Centre of Climate Science and Resilience (CR)2 of the Universidad de Chile during a four month research stay in Chile (read more on page 12).

The Abate Molina Prize is awarded by CONICYT every year to an outstanding foreign researcher or expert working abroad in any area of expertise, for the achievements over the course of his/her scientific career. The nominations are made by a research institution in Chile in order to develop a research project in collaboration with the awardee.

The 2015 call for nominations for the Abate Molina Prize will be opened between July and September.

New opportunities for collaboration in science and technology between Chile and South Korea

The Minister of Science, ICT, and Future Planning (MSIP) of South Korea, Prof. Yanghee Choi, headed a delegation of senior officers in his visit on April 22 to CONICYT to formalize important initiatives to strengthen collaboration in science and technology between Chile and South Korea.

(Left) Prof. Yanghee Choi, Minister of Science, ICT and Future Planning, and Han Inwoo, President of KASI

The Minister Yanghee Choi said that "our Presidents have agreed on the importance of collaborating in the area of basic science, particularly in astronomy, geology and polar science, as well as in the exchange of human resources to foster a better education environment".

During the meeting, CONICYT and the Korea Astronomy and Space Science Institute (KASI) signed a Memorandum of Understanding (MoU) to implement a joint call for research projects on astronomy, mobility opportunities for post-docs, as well as to promote the training of students and the participation of scholars in cooperation activities within the undergraduate programme of the Korea University of Science and Technology.

CONICYT also formalized an agreement with the National Institute for International Education (NIIED) of South Korea, which looks to provide civil engineering students in Chile the opportunity to carry out short-length stays at one of the ten universities of South Korea ranked among the top universities in the world in the area of engineering and technology. The activities took place in the framework of an official visit to Chile of the President of South Korea, Park Geun-Hye.

CONICYT and Academy of Finland discuss support for joint research in mining resources

The Academy of Finland in collaboration with CONICYT held on June 10-12 in Helsinki a workshop to identify and exchange ideas about the main topics of a future call for joint research projects to be implemented by the two partner agencies in the area of mining resources.

The workshop included the participation of Chilean researchers Dr Roberto Parra, Director of the Institute of Mineral Sustainability at Universidad de Concepción, and Dr Mario Durán, researcher at Pontificia Universidad Católica, and Director of the R&D centre INGMAT. Both experts presented an overview about the current state of research on mineral resources in Chile and took part in the discussions to identify the central topics of a potential call for proposals between CONICYT and the Academy of Finland on mining.

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Results of expressions of interest for working visits in Chile & Europe

CONICYT and the Institute for Research for Development of France (IRD) announced the names of the researchers selected to receive funding from the CEST+I project for working visits in Chile and Europe during the second half of 2015.

The six projects were selected through a process of expressions of interests from a total of 55 proposals received. The proposals were considered by an Ad Hoc committee of representatives from CONICYT and IRD, as well as external experts.

The purpose of the working visits funded by the CEST+I project is to elaborate joint projects to apply to the European research and innovation programme, Horizon 2020. The initiative responds to CEST+I's objective to promote the creation of networks and joint projects between researchers from Chile and Europe.

List of selected projects

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.

Chile-EU collaborate to increase link between knowledge and innovation

CONICYT jointly with partner institutions in Chile and Europe organized on May 7-8 in Santiago two workshops to increase the link between research and innovation in Chile and Europe focused on technology transfer, and solar technological platforms and roadmapping, respectively.

The events were organized by the CEST+I project, which includes a work package, led by IDOM Consulting of Spain, to increase cooperation between organizations in Chile and Europe linked to technology transfer and technology platforms.

CEST+I financed in 2014 a series of meetings in Spain and Belgium to promote the exchange of experiences between innovation and technology transfer networks in Chile and Europe, and to discuss alternatives to collaborate in areas of common interest.

Additionally, the CEST+I project is supporting the cooperation between the Centre for Innovation and Sustainable Energy (CIFES) and the European Technology Platform on Renewable Heating & Cooling.

The two workshops followed a series of initiatives to commemorate the 10th anniversary of the EU-Chile Liaison Office, which operates in the International Cooperation Programme of CONICYT with the objective to encourage, develop and facilitate research and development activities between the EU and Chile.

ALCUE-NET yearly LAC NCP Meeting in Barbados

The meeting of Latin America and the Caribbean National Contact Points (NCPs) took place on May 25-27 in Bridgetown, Barbados. The meeting aimed to inform and update all participants about the opportunities for third countries in Horizon 2020, the European Union's new innovation and research framework programme, and to reinforce the capacity of NCPs networks in the region.

The event, organized by the ALCUE-NET project, was attended by NCPs, researchers and industry representatives from Latin America and the Caribbean. It included a session about the most relevant aspects of Horizon 2020, as well as thematic parallel sessions focused on topics related to ICT, energy and bioeconomy.

CONICYT, as a member of the ALCUE-NET consortium, supported the participation of the ICT NCP in Chile, Héctor Torres, who presented the activities of the ICT working group, coordinated by Chile and Finland, to inform the Senior Officials Meeting (SOM) in science and technology, and shared the experience of the NCP network in Chile. Likewise, Francisco Mardones, President of the Group of Software Companies in Chile (GECHS), presented the activities of the technological platform in Chile and other technological platforms in Latin America.

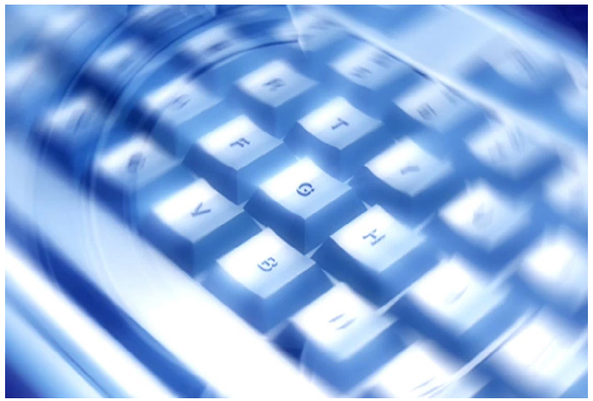
New reports on EU-LAC cooperation in ICT

The LEADERSHIP consortium recently published three input papers on Latin America and the Caribean Digital Agendas, ICT Regulations and Funding Mechanisms, as well as a report on ICT R&I priorities to enhance Europe-Latin America research and innovation cooperation and to provide an overview of the Latin American ICT landscape.

The publications were elaborated with the support of the LAC-ICT Expert Group, which is a permanent mechanism to support cooperation in ICT policies between Latin America and Europe, and other relevant ICT stakeholders and decision makers. One of the results of this work is the identification of 122 main programs and financing mechanisms totalling US$ 20,456 million, of which 33% are open to Europeans.

The LEADERSHIP project is also to organize a LAC Living Labs Spring School in Cartagena de Indias, Colombia on September 3 as a fringe event to ANDICOM 2015, which is one of the most prestigious ICT congresses in Latin America.

The LAC Living Labs Spring School will be focused on the challenges of open innovation, co-creation and living labs for cooperation in research and innovation between Europe and Latin America.



Action-research for improved health care in Latin America

EQUITY-LA II is a five-year international research project that involves the participation of European and Latin American partners, including the School of Public Health at Universidad de Chile, to improve the coordination and quality of health care in Latin America. Supported by the Seventh Framework Programme (FP7) of the EU, the project demonstrates the value of using participatory approaches across all stages of research.

In many Latin American countries health services very often fail to meet people's needs, either because people do not have access to them or simply because of the low quality of the care they provide. These problems are in great measure the visible expression of fragmented health systems that lack coordination among the different levels of health facilities and services.

EQUITY-LA II aims to evaluate the effectiveness of the different strategies implemented to integrate healthcare delivery in improving coordination and quality of care in Latin America. The project builds upon the results of EQUITY-LA, which "identified numerous barriers of access to healthcare service in the integrated health care networks (IHN) of Colombia and Brazil. A number of those are related to problems in the coordination and quality of care, suggesting failures in IHN policy implementation", explains Dr Maria Luisa Vázquez of the Consorci de Salut i Social de Catalunya (CSC), the project coordinator.

According to Dr Vázquez, in theory the integration of health care delivery should contribute to more efficient, equitable and higher quality health services. However, there is a lack of evidence available to support this. "Equity-LA II was conceived to contribute to filling this gap by expanding the research to four additional countries (Argentina, Chile, Mexico and Uruguay) - and, more importantly, by providing evidence on best practices of care integration that could be translated into effective policies for varied socioeconomic contexts and different health systems", says Dr Vázquez.

Partners in Chile

The participation of the School of Public Health (ESP) in the project is based on their long-standing and fruitful collaboration with the CSC, which includes the development of a number of training courses including a CONICYT-supported postgraduate diploma in qualitative research methods in Chile.

Another important reason to include Chile as a partner in this international collaborative project, was the interesting case that the Chilean health system provides for the analysis of integrated care. In fact, "the Ministry of Health in Chile developed a new policy in 2004 that promoted the development of regional-based networks, which are coordinated by Regional Health Services. Moreover, there is a specific national programme for the development of health care networks that aims to facilitate its functional integration", highlights Dr Vázquez.

The role of the ESP in the project is to coordinate the action-research that is carried out in Chile and exchange expertise and knowledge in gender analysis, one of their areas of research strength. Dr Pamela Eguiguren, leader of the research group in Chile explains that according to the quasi-experimental design of the project, the work carried out in Chile involves the participation of a control and an intervention group in two areas of Santiago, San Miguel and Recoleta, respectively. Likewise, the action-research approach involves the participation of a local committee in all research stages, including information-gathering, intervention design, application, and evaluation.

In the local committee, coordinated by the ESP in Recoleta, the different levels of the health care network are represented, namely, healthcare professionals, managers, users, local policy makers, and researchers. "The idea is that both the processes of gathering information and the analysis include the participation of those who will make the decisions with the support of the project", highlights Dr Eguiguren.

To make this happen, the project also promotes capacity building, which is "an important component of the project present across all work lines that looks to strengthen the capacities of the different actors according to the needs identified during the development of the project to achieve intervention designs based on evidence", says Dr Eguiguren.

For Dr Vázquez, "the involvement, from the very start, of policy makers, and other stakeholders, such as health providers, civil society organizations and academics in the research process of diagnosis and identification of solutions of problems in the networks will facilitate the process of moving from diagnosis to action and getting research results into policy".

Strong commitment

EQUITY-LA II provides the research teams involved the opportunity to work together on the various aspects of the project through the organization of workshops in the different participating countries.

These workshops represent an "interesting and valuable space for collective learning, where the progress made in one country can help to drive progress in others", says Dr Eguiguren. This interaction is also expected to contribute - says Dr Vázquez - to "developing further collaborative links between European and Latin American countries and among Latin American countries, opening up avenues for future scientific and technological collaboration".

Meanwhile, EQUITY-LA II partners are completing the initial phase of the project to assess the levels of coordination and quality of care in the different participating countries. According to the preliminary data, they identified "several problems of access to specialist care and coordination, as well as with the continuity of the care provided. However, now that we approach the qualitative phase of the project — says Dr Equiguren — we also believe there is room for improvement and what is more, a strong commitment of the actors at the different levels, which is vital for the success of an action-research project".

More info

http://www.equity-la.eu

How can sustainable mining be achieved in Chile and the EU?

The third of a series of workshops organized by the CEST+I project took place in Santiago on May 4-5 focused on sustainable mining solutions for Chile and the EU. The workshop brought together researchers and experts from Chile and Europe to discuss applied research and the implementation of sustainable mining technologies in the Chilean and European markets. Dr Dámaris Férnandez, researcher and project manager of the Irish Raw Materials Initiative at Trinity College Dublin, provides a special insight of her experience at the event and ideas about the role of science in developing sustainable solutions for the raw materials sector.

By Dámaris Fernández

Sustainability is a concept we all agree with in overall. It is important since countries, institutions and people are pondering where they are today and where they want to be in future. Quality of life is the driving force beneath this question, with the underlying principle of sustainability coming to the fore and giving us the opportunity to outline what role we will be playing from today until that point in future.

Why sustainable mining is important? Quite simple: we as individuals, every day, make direct and indirect use of products and services that are enabled by technology. From better health devices to online communications, transport systems, construction, machinery, tools, data and energy, all relates to some type of industrial process and technology. Technology that is built upon good performing materials. In consequence, the more the population grows, the larger the necessity and demand for raw materials and therefore, at the current growth rate of human society, the increasing demand for materials must be readily matched by a corresponding supply.

Mining is the way to bring materials into the value chain, which can then be re-processed and brought into the cycle again after the products end-of-life. Both primary and secondary raw materials, sourced from ores and urban environments, respectively, (see 1RM and 2RM in figure) are necessary. The full value chain faces great challenges, from technical to environmental to social. This is a natural evolution of societal requirements, reflecting the interconnectedness of different dimensions and production chains, as the figure shows.

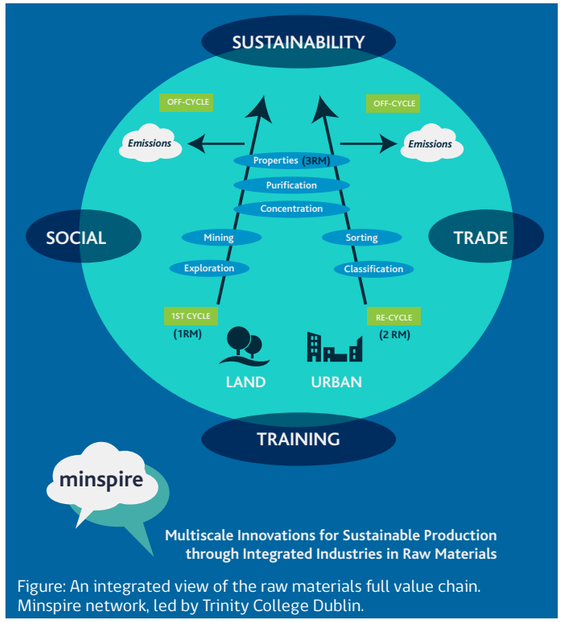


Figure: An integrated view of the raw materials full value chain. Minspire network, led by Trinity College Dublin.

In an ideally synchronized network of industrial processes, the "waste" from one is the "resource" for other production unit. The measure of excellence in such synchronized system is efficiency: besides energy, it furthermore incorporates efficient use of all resources, reducing residues in such a way that they are used as added-value materials. It also includes enabling human capital to excel, whichever their task. In resource efficiency, minimizing residues and dissipation is paramount.

The key challenge

Sustainability does indeed require using innovative approaches and technologies. Science is the basis to finding economically viable solutions. Sustainability is always part of an economic strategy that makes it feasible to adopt the new ways. Again, this decision relates to the strategic question of what role we wish to have in future, based on our role in today's context. And context, we must note, is at the same time local, national, continental and global.

Acknowledging these multi-dimensional aspects gives an interesting opportunity, where challenges can be embraced creating multi-disciplinary teams to develop real solutions. Current views about these challenges in the world indicate that future technologies will emerge from multi-sectorial approaches. The only real challenge seems to be how fast are countries, institutions and people to embark in the new way of doing things.

In the case of Europe, a multi-sectorial approach is paving the way for further innovations in the raw materials sector. The European Innovation Partnership in Raw Materials (EIP RM) brings together the four elements of the innovation pyramid: government bodies, industries, research and academia. Together they enable pathways to achieving the European vision of its role in the raw materials context, a role that in turn gives each sector tasks and responsibilities in the interconnected innovation system. In a series of remarkable initiatives for the raw materials sector, the EU promotes Education and Research that enables Industry in a connection facilitated by strategic framework support by Government bodies. See for example the European Institute of Innovation and Technology in Raw Materials, the European Technology Platform for Sustainable Mineral Resources or the European Research Area Network on non-energy mineral resources (EIT-RM, ETP-SMR and ERA-MIN, respectively). All have different roles, integrate the different sectors and enable shared projects aimed to develop sustainable solutions for the raw materials sector. The timeframe for these activities is in overall long term, but has started already some years back and is today active with immediate actions. Collaboration with the entire globe is active and growing. Sustainable mining is underway.

Chile is currently studying its strategic position in the future global raw materials arena. The initiatives are relevant, synchronizing with the societal requirements of the global community.

Clearly, the multiple raw materials constraints are interconnected. Fortunately, many countries are listening and embracing the complex challenge. The answers for each will emerge from how eager are we to be innovators and lead, and how ready we are to make the changes that will bring us towards our vision of the future.

Dr. Dámaris Fernández.

"THE ONLY REAL CHALLENGE SEEMS TO BE HOW FAST ARE COUNTRIES, INSTITUTIONS AND PEOPLE TO EMBARK IN THE NEW WAY OF DOING THINGS."

Guy Brasseur

Senior scientist at the Max Planck Institute of Meteorology in Germany and laureate of the 2014 Abate Molina Prize, explains his collaborative research with Chile.

What will the Abate Molina Prize enable you to do?

This prize is an opportunity to establish connections and collaboration projects. What I would like to achieve while I am visiting Chile for several months is to start working in collaboration with the Centre of Climate Science and Resilience (CR)2 of Universidad de Chile and others on two issues. One of them is air quality and the analysis and prediction of air pollution in the region. We have been talking a lot about climate in the last ten years, but most people probably do not know that air pollution is killing prematurely in the world more than three million people every year, so it is an issue that we are facing now, much more urgent perhaps than even the climate issue which is going to be affecting us more dramatically in the years and decades ahead. The second topic of interest is the issue of climate services. We have learned a lot about climate in the last decades, but we need to learn how we can communicate this knowledge to people in society. This is a very complicated problem, because we have a lot of knowledge, but this knowledge might not be exactly what people want or need, and we might not be able to provide what they need.

How can climate science serve to build a bridge between scientists and decision makers?

The relation between the scientific community and decision makers is very complicated, because scientists are accustomed to do science, to produce science and to publish in scientific journals, but they are not accustomed to talk to decision makers. On the other hand, decision makers are a bit afraid of talking to scientists because they do not understand what scientists accomplish and they believe the activities they are engaged in do not require science. There is a big need to establish a bridge between the two and different initiatives have been tried. The first one was the IPCC (Intergovernmental Panel for Climate Change), that produced all these comprehensive reports that are the scientific basis for international negotiations. However, a lot of people who need this information do not receive from these reports the knowledge that is relevant for them and so one needs to create a sustained bridge between scientists and users. This is exactly why climate services have been created. In Chile the (CR)2 for example is trying to think about how to create a market for climate services, how to make sure that the people in agriculture, health, water management, forest management, tourism, and so on become aware of the climate issue and understand how they will be affected. Today, this market does not really exist, so one needs to build this market making sure that science serves society.

> "We have learned a lot about climate in the last decades, but we need to learn how we communicate this knowledge to people in society"

What do you think is the value of carrying out climate research in Chile?

Chile has an exceptional geographical situation. It is a one-dimensional country going essentially from the tropics to the pole, so you can understand a lot of what goes on in the earth by conducting studies along Chile. But it is not only a one-dimensional country, it is a two-dimensional country because it is also very vertical, with mountains going all the way to almost seven thousand metres, which enables us to do observations not only on a line from the north to the south, but from the sea level to almost the stratosphere. In addition, Chile touches the ocean on a very long cost. One can therefore look at coastal problems and also at climate variability since this part of the world is very affected by El Niño and other natural climate modes of variability. The place is fantastic to do Geoscience and earth system science. This is why I am so proud to be able to collaborate with Chile and I hope that this collaboration will be a long term one. I think that it is important for an organization like CONICYT to support this kind of science. Chile could and should play a worldwide role in Geosciences.

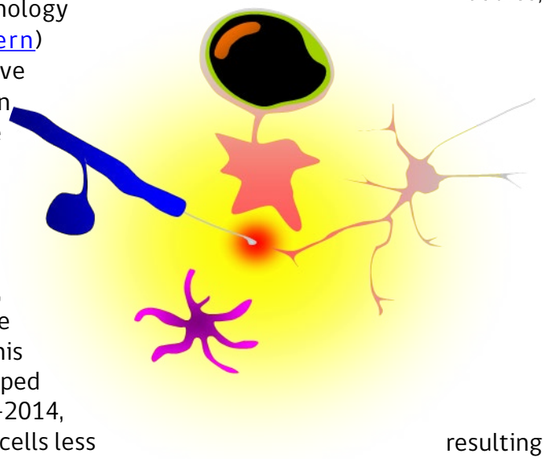
What role should fundamental science play into this?

Even though as an engineer, I am trained into the application of science, I believe in the importance of keeping a strong fundamental research activity. I see all over the place, including Belgium, Germany, everywhere I go, that policy makers are insisting very much on the application, on the need to be relevant. This is all well, as long as fundamental science will fuel the application, and will bring the knowledge to the application. It is important to keep fundamental science activities very strong because they are the germs of the application of the future, so it is good that you have here in Chile an organization like CONICYT that is focusing on fundamental science. You should keep a strong fundamental research programme and resist a bit the pressure that you will get from people with a short-term view who are thinking only at immediate applications.

Enhancing the understanding of brain metabolism with new imaging techniques

Joint research by the Centre for Scientific Studies in Chile and the Kaiserslautern University of Technology in Germany, has provided important new evidence on the role of glial cells in the protection of brain tissue that may lead to new treatments against epilepsy and other neurodegenerative diseases.

Scientists have long been aware that a high-fat and low-carbohydrate diet, known as a ketogenic diet, improves symptoms in patients with severe epilepsy and other brain diseases. However, what is still not clear is the cellular and molecular mechanisms underlying the protective effect of high levels of ketone bodies, which are characteristic of a ketogenic diet. Unlike most researchers who have tried to clarify this issue focusing on the role of neurons, a group of researchers from the Centre for Scientific Studies (CECs) in Valdivia, Chile and the Kaiserslautern University of Technology (TU Kaiserslautern) in Germany have concentrated on a different type of brain cells called glial cells.



According to Dr Felipe Barros, leader of the Chilean group in this project, developed between 2011-2014, glial cells are brain cells less known than neurons, but much more abundant in mammals and particularly in humans, whose role in brain physiology and brain diseases is just emerging. "Our hypothesis in this project was that the protective effect of a ketogenic diet could be related with the metabolism of glial cells and not just with the metabolism of neurons. We looked to understand how a ketogenic diet and ketone bodies affect the metabolism of glucose in astrocytes, which are the main type of glial cells in the brain cortex, and the results we obtained were impressive".

The researchers in this collaborative project found that glial cells consume an 80 per cent less glucose than they normally do when exposed to high concentrations of ketone bodies, resulting in an increased supply of glucose, which is required for normal neuronal functioning. "This finding connects with the historical idea that perhaps in various neurodegenerative diseases, such as epilepsy, the damage is caused by a local hypoglycemia characterized for a diminished amount of glucose. Although it is known that during epileptic seizures the brain receives normal amounts of glucose through the blood, it remains unknown what goes on locally in the epileptic focus that is the specific area affected by the neurodegeneration, yet now there is enough evidence to say that a diminished amount of glucose may be an important part of the problem. In this context, our current working hypothesis is that when astrocytes stop consuming glucose, there is an increased supply of glucose for neurons which allows to improve symptoms", explains Dr Barros.

International Joint Research Projects

The project featured in this section was supported by CONICYT's International Joint Research Programme.

Calls for proposals within the programme are the results of bilateral agreements with foreign counterparts involving each of them specific terms and conditions and areas of research.

These projects typically last three years and the grants cover operational costs, equipment, travel and researchers' incentives. CONICYT funds Chilean researchers and the foreign counterpart its own researchers.

In 2015, CONICYT is organizing calls with the German Ministry of Education and Research (BMBF) and the Academy of Finland.

This project has contributed with evidence that suggest that a diminished amount of glucose can be an important factor in neurodegenerative diseases like epilepsy.

Technology made in Chile

The ideas developed in this project are based on the previous collaborative work carried out by the Chilean and German research groups. Dr Barros and his German counterpart Dr Joachim Deitmer of TU Kaiserslautern, first met in 2006 in Vienna during an international scientific congress, where they realized they shared common interests and their work complemented each other.

The CECs team – explains Dr Barros – "have been developing a series of tools to measure the metabolism in brain cells with better resolution than anybody else. Doing that we have been able to see things that no one sees and Dr Deitmer was extremely interested in these technologies".

According to Dr Barros ten years ago, the techniques available only allowed researchers to understand the metabolism of the whole brain or a very large part of the brain within a space of time of 20 to 30 minutes, whereas the technology developed by the CECs' team uses fluorescent indicators to estimate the contribution of specific cell types to the

The Kaiserslautern University of Technology in Germany.

uptake and metabolism of sugars with a much greater temporal resolution, which is very important given the heterogeneous and changeable nature of the brain.

Dr Deitmer says that "the use of fluorescent indicators for glucose in astrocyte cultures struck me as a very powerful and straight-forward technique to study energy metabolism in cells. I realized that his work seemed to ideally complement our work on monocarboxylate transporters (MCT), studied in Xenopus oocytes and in astrocytes, and I anticipated great perspectives of combining joint efforts".

The team headed by Dr Deitmer has a vast experience in physiology of the brain, particularly in the properties and functions of glial cells and their contribution to the information processing in the brain using optical microscopy technology, which is needed to apply the techniques developed by their Chilean counterpart. The technology developed in Chile together with the expertise of Dr Deitmer's team in physiology of the brain and in the use of optical microscopy technology, allowed for the collaboration to grow. In 2007 Dr Barros received a DFG grant to carry out a two-month research visit to Dr Deitmer's laboratory and in 2008 the collaboration became formal with a joint travel grant from CONICYT and DFG. This travel grant allowed both teams to exchange personnel including graduate students, during a period of two years. "This collaboration was very fruitful and stimulating, produced several meeting presentations and two original publications. It had an important impact on the thesis work and personal development of the graduate students as two PhD projects on each side involved work between the groups", highlights Dr Barros.

In order to scale-up the collaboration the teams involved applied in 2010 for additional funding through the CONICYT-DFG Programme for international joint research projects. "We received the CONICYT-DFG funding and this made all the difference. During the three years of the project we made the most of the complementarity between both teams carrying our research activities like a one single laboratory, so the synergy was very significant", says Dr Barros.

"We received the CONICYT-DFG funding and this made all the difference. During the three years of the project we made the most of the complementarity between both teams carrying our research activities like a one single laboratory, so the synergy was very significant"

Passing the Torch

The work carried out by the two teams, which generated five scientific articles, highlighted astrocytic energy metabolism as a possible target for epilepsy and neurodegeration. Moreover, the project has had a strong impact on the collaboration between the laboratories of Dr Barros at CECs and Dr Deitmer at TU Kaiserslautern.

For Dr Deitmer, the success of an international joint research project depends on how collaboration is materialized, and how collaborative efforts are boosted by common interests and personal relationships. "Certainly, our joint research project with Dr. Barros has enormously benefited from both aspects. We have exchanged knowledge, expertise and continued to collaborate on various projects in which our groups complement each other. In our eight-year collaboration, we have always been in close contact and will probably continue to be in the future", says Dr Deitmer.

Although, Dr Deitmer is to retire from academia in a few years, another member of his team, Dr Holger Becker, has now taken the torch and is actively collaborating with Dr Barros' team. "We have published together and will be taking the collaboration forward. This obviously would not have happened without this project", explains Dr Barros.

The Centre for Scientific Studies in Valdivia, Chile.

Additionally, the project helped to establish other connections between researchers working in the area of cellular and molecular neurobiology in Chile and Germany. For instance, Dr Jimena Sierralta of Universidad de Chile, who has focused her research on the brain of the fruit fly Drosophila melanogaster, began collaborating with Dr Becker through the ties developed in this project.

Furthermore, the project has produced a great impact on the young researchers involved. In fact, six PhDs students benefited from the supervision of both lead researchers and carried out research stays in Chile and Germany. "One thing is to spend one month in a laboratory and another very different is to spend three months abroad doing experiments. That experience has the potential to change a young person's life", stressed Dr Barros.

More info:
http://www.cecs.cl

Researcher Francisco Rowe

on the move Making sense of human mobility

at The Queensland Centre for Population Research in Australia

Chilean researcher, Francisco Rowe, is conducting research on important issues concerned with human mobility at the Queensland Centre for Population Research (QCPR) of The University of Queensland, an international leader in the analysis of human migration and Australia's most important centre of expertise in demographic forecasting.

By Francisco Rowe

In countries currently confronted with declining levels of fertility and an ageing population, human mobility is the primary mechanism that alters the national pattern of population settlement, promoting growth in certain areas while reducing population numbers elsewhere. Likewise, human mobility has far-reaching consequences for regions and communities, as it represents a process through which skills, knowledge and labour are transferred into regions needing to enhance economic productivity and social well-being. Furthermore, for individuals and families, human mobility is a crucial mechanism by which individuals pursue aspirations, respond to opportunities and navigate their ways through unfavourable local conditions.

My current research at the Queensland Centre for Population Research in Australia focuses on two key areas: 1) human capital flows and spatial labour markets, and 2) spatial labour mobility and economic development. It seeks to develop new knowledge and theory of the ways spatial mobility enhances the economic performance of regions and the human capital development of individuals over their lives. Furthermore, this research seeks to make methodological advances by applying techniques from biological and computational sciences to social and economic issues. We have, for example, applied techniques for the identification of DNA sequences to examine the pathways followed by people in their transition from school into higher education and the labour market, and computational evolutionary algorithms to build functional labour market areas for Chile.

Our research also seeks to assist policy makers by providing new evidence on the factors that attract and retain human capital outside major metropolitan centres. In fact, we are currently working with the Australian Department of Immigration and Border Protection and the Government of Victoria, the most densely populated State of Australia, to develop policy options for enhancing the economic productivity of non-metropolitan communities and with the Commonwealth Scientific and Industrial Research Organization (CSIRO) to devise a project that aims to provide sub-national level projections of skills shortages.

Regional Focus

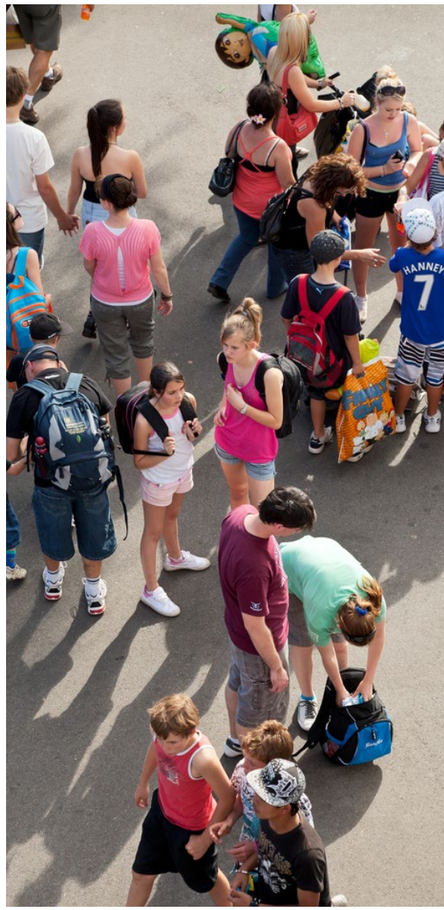
I joined the Queensland Centre for Population Research as a Post-doctoral Research Fellow in 2013 after completing my PhD for which I was recognized with a University of Queensland's Dean Award for Research Higher Degree Excellence.

One of the things that have struck me the most of conducting research in Australia is the strong collaborative environment and significant research support available to academics. There is also a strong link between governments, industries and universities to collaboratively devise, develop and apply research projects. Moreover, Australia has a significant critical mass of human expertise in a spectrum of fields which promotes and infuses research collaboration and innovation.

My research experience in Australia has provided me with the opportunity to establish strong international links with experts in the area of economic geography and regional science, particularly in New Zealand, China, the United States, the Netherlands and Spain. I have also made significant efforts to keep and expand my connections with researchers in Chile and to carry out research that contributes to the development of regional science and economic growth in Chile. To this end, I am currently working on two projects with researcher, Jorge Rodriguez, from the United Nations Latin American and Caribbean Demographic Centre (CELADE) based in Santiago. We hope by the end of this year to have submitted two journal publications of a comparative analysis of the impacts of internal migration on Latin American cities.

Encouraging the development of regional science in Chile is absolutely vital as it has the potential to contribute significantly to the country economic growth, public policy development and social wellbeing. Currently, policies affecting interest rate, employment and education are all focused on Santiago, although they also impact other regions and places with a different social and economic structure to Santiago. We have a wealth of mining resources in the north of the country and an affluence of agricultural, forestry and fishing commodities in the south. However, the financial, labour and housing markets in these regions are all affected by the same national policies. These regions have different needs and require different policy interventions to exploit their assets and populations.

More info
http://www.gpem.uq.edu.au



Call for proposals supporting the development of international research projects

who can apply?

Researchers sponsored by a public or private non-profit institution in Chile jointly with researchers in the United States, or Germany or the United Kingdom

disciplines

All areas of expertise. Polar science in the case of applications with researchers in the United Kingdom

funding

Internships, short working visits, consultancy and advice expenses, dissemination costs, equipments, administrative costs, operational costs, national and international travel

dates

May-July

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.

disciplines

Natural resources challenge, sustainability, and the food chain.

funding

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

April-September

CONICYT-Ministry of Energy International Energy Internship Programme

who can apply?

Chilean or foreign researchers or professionals with permanent residence in Chile working in the public or private sector

thematic areas

(1)Demand, smart grid and energy efficiency; (2) energy storage; (3) renewable energy (solar, wind, geothermal, ocean and hydropower)

funding

Air fares and a monthly allowance of $1.500.000 CLP to cover living expenses during the period of the internship (up to six months)

dates

June-September

Abate Molina Prize

who can apply?

Nominations may be made by a university, institute or a public or private research centre in Chile. Nominees must be outstanding foreign researchers or experts working outside Chile in any area of expertise.

disciplines

All areas of expertise

funding

Research visit of the awarded researcher to Chile

dates

July-September

call for proposals

International Networking between Research Centres 2015

who can apply?

National science and technology research centres formally established in Chile

disciplines

All areas of expertise

funding

Short-length training internships, research visits, bilateral workshops or seminars, and access to scientific and technological equipment

deadline

May-July

CONICYT-BMBF
International Scientific Research Projects

who can apply?

Researchers sponsored by a public or private non-profit institution in Chile jointly with researchers in Germany

disciplines

Sustainable mining and raw materials, biotechnology and environment

funding

Internships, short working visits, consultancy and advice expenses, dissemination costs, equipments, administrative costs, operational costs, national and international travel.

dates

July-September

Terms of reference and application at:
www.conicyt.cl/pci

agenda

July

7-9 T-AP Diversity, Inequality & Differences Academic Workshop (London, UK)

★ TBD Info Day on CONICYT-Ministry of Energy International Energy Internship Programme (Santiago, Chile)

September

2 First Annual Meeting of the LAC-ICT Expert Group (Cartagena, Colombia)

3 Living Labs Spring School (Cartagena, Colombia)

★ 14 IX Bilateral Joint Committee Meeting Chile-China in S&T (Santiago, Chile)

TBC India-Chile Joint Workshop on Astronomy

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