# Research TC

a publication of the BIOCIRCLE2 project
with a focus on research in Third Countries

**Issue No. 1**



# Editorial

## *Want to boost research? Think global!*

Some, still view researchers as lucky individuals that can freely wander into the (scientific) realms of the unknown, do research driven solely by their curiosity and have the chance to discover something ground-breaking that could possibly change the world.

While every part of the previous sentence includes some elements of truth, researchers, in general, increasingly engage into managed, objective-driven research, where work is carried out towards understanding specific phenomena, tackling pre-identified challenges and reaching pre-defined targets. True, research and science are fascinating realms and the work of researchers has changed our world. But researchers, too, work under fixed schedules, deadlines, budget restrictions and challenging competition.

There is where cooperation can be a key to success. Identifying good partners, sharing knowledge with them in a coordinated way, employing complementary skills and pooling resources towards common objectives can strongly boost productivity and efficiency. From a more practical point of view, a number of challenges for researchers are of transnational magnitude or, even, global. Take zoonoses, for instance, or plant stress tolerance in areas that are being affected by climate change, or the optimization of the management of the food production-distribution chain. There are numerous examples where international cooperation, simply, makes sense.

What is important, too, is that the Framework for funding research in Europe – currently, the 7$^{th}$ Framework Programme – is strongly encouraging International Cooperation. All topics published allow for the participation of partners beyond the EU countries, while some specifically require the involvement of participants from areas outside the EU. That is a great opportunity for researchers in Europe and in the Third Countries to strengthen ties and engage into long-term cooperation towards common objectives!

Gorgias Garofalakis and Rozanna Ploumidou
*Issue Editors*

# Contents




# Country profiles

## *Argentina – Background report on S&T on Food, Agriculture, Fisheries and Biotechnology*

The food and agriculture sector is a key sector in Argentinean economy, representing about 30% of its GDP. The sector comprises more than 250,000 farms and the enterprises of the sector represent 32% of the manufacturing firms of the country, thus generating 59% of its total production. Most enterprises are SMEs of national capital. The country is also a key player in the International agrifood markets.

Today, Argentina is mainly specialized in export of commodities with little added value and a considerable part of the agro-industrial production consists of products having a relatively low level of industrial processing (oils, poorly diversified flours, etc.). In turn, we meet challenges that become inevitable for the sector. Rapid climate change and increasing restrictions of the necessary inputs for agriculture (water, land and energy in particular), pose extraordinary demands for agricultural and livestock production and demand the implementation of technologies and long-term methods of sustainable management, both from the standpoint of conservation of productive systems and the increased demands of the corresponding markets.

One of the possible alternatives to overcome these difficulties is to increase the added value of agricultural production. Such is its strategic importance that it has become one of the pillars of the agri-food policy. The Ministry of Science, Technology and Productive Innovation (MINCyT) has identified agro-industry as one of seven priority sectors or areas involved in its policies and guidelines, aiming at facilitating, in different ways, the expansion and/or improvement of productivity and competitiveness of Argentinean production networks based on agro-industry. To accomplish this, however, it is necessary to address shortcomings such as the lack of coordination between the efforts in science and technology and the needs of the productive sectors; certain, imbalances in the geographical distribution of technical skills for addressing regional issues; little private sector involvement in R&D, and some shortcomings in the training of human resources in certain areas of technological innovation, among others.

**Picture 1:** For Argentina, research on Food, Agriculture and Biotechnology is of high importance *(photo by Quimpg, www.flickr.com/photos/tempus7/, under a CC license).*

In the context of these challenges, the National Plan for Science, Technology and Innovation 2011-2014 has identified, in agreement with the relevant referents and actors involved in the sector, a number of Socio-productive Strategic Cores (NSPE), on which future investments should be focused. These cores are the priority areas of research in the subjects concerning the Knowledge-Based Bio-Economy (KBBE):

- Crop improvement and seed production;
- Food processing;
- Bioenergy, polymers and chemicals;
- Agricultural and food processing;
- Traditional Animal production;
- Production of nontraditional animals;
- Production and processing of forest resources;
- Production and processing of ocean resources.

The National Plan for Science, Technology and Innovation 2011-2014 apart from identifying the

already mentioned Socio-productive Strategic Cores (NSPE) has defined 5 general strategic objectives, from which specific areas of research for each of them have been established. These strategic objectives are:

1. Increase the productivity of major crops and the amount of biomass available for productive uses
2. Diversify the production of food and agriculture products
3. Increase the quality and value added agro-industrial production
4. Meet the production demands through sustainable management of environmental resources
5. Improve/create regulatory frameworks and adequate promotion for the expansion and diversification of the sector

## The FAFB Institutional S&T system in Argentina

The National Science and Technology is formed by various institutions, both public and private that play different roles in the system. For illustration purposes, Figure 1 shows the agencies that have a direct link to MINCyT and others who contribute to the system but with a less direct linkage (placed on the left and right of the figure)

All these institutions have, in relation to the development of FAFB, proven capabilities to address the different areas that involve the current challenges of the bioeconomy. This involves technical and human capacities ranging from traditional approaches to application of new technologies in the areas of genetics, animal health, recombinant diagnostic, genomics, etc. Within this system three institutions concentrate the bulk of capacities and R&D activities in the FAFB area. These are Instituto Nacional de Tecnología Agropecuaria (INTA), Instituto Nacional de Tecnología Industrial (INTI), and the Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET).

**INTA (www.inta.gov.ar)** is an autonomous organisation, operating under the Ministry of Agriculture, Livestock and Fisheries (MinAgri) of the nation. Its main objective is to contribute to the competitiveness of agriculture, forestry and agribusiness across the country, within a framework of ecological and social sustainability. Among its actions, it gives priority to the generation of information and technologies for processes and products of the agri-food sector, placing them to the service of farmers through an extension system, distributed throughout the national territory.
Its main R&D strengths are in plant breeding, agronomy and natural resources management and its capacities include from the traditional agro research approaches to modern biotechnology and the application of TICs to agricultural and natural resources management.

**Picture 2:** The pilot plant of the Meat Science department of INTI
*(photo by INTI-Carnes, http://www.inti.gob.ar/carnes)*

**INTI (www.inti.gob.ar)** is a decentralized national organisation that acts within the jurisdiction of the Ministry of Economy and Production.

Among its functions, it acts as a point of reference, both for the Argentinean State as well as to the private sphere, regarding the implementation of quality regulations, the product conformity assessment (in compliance to Act No. 19,511 of Metrology). Also, INTI provides general and technical support to the National Quality System, regarding certifications of national interest on mandatory, as well as on voluntary fields of application.

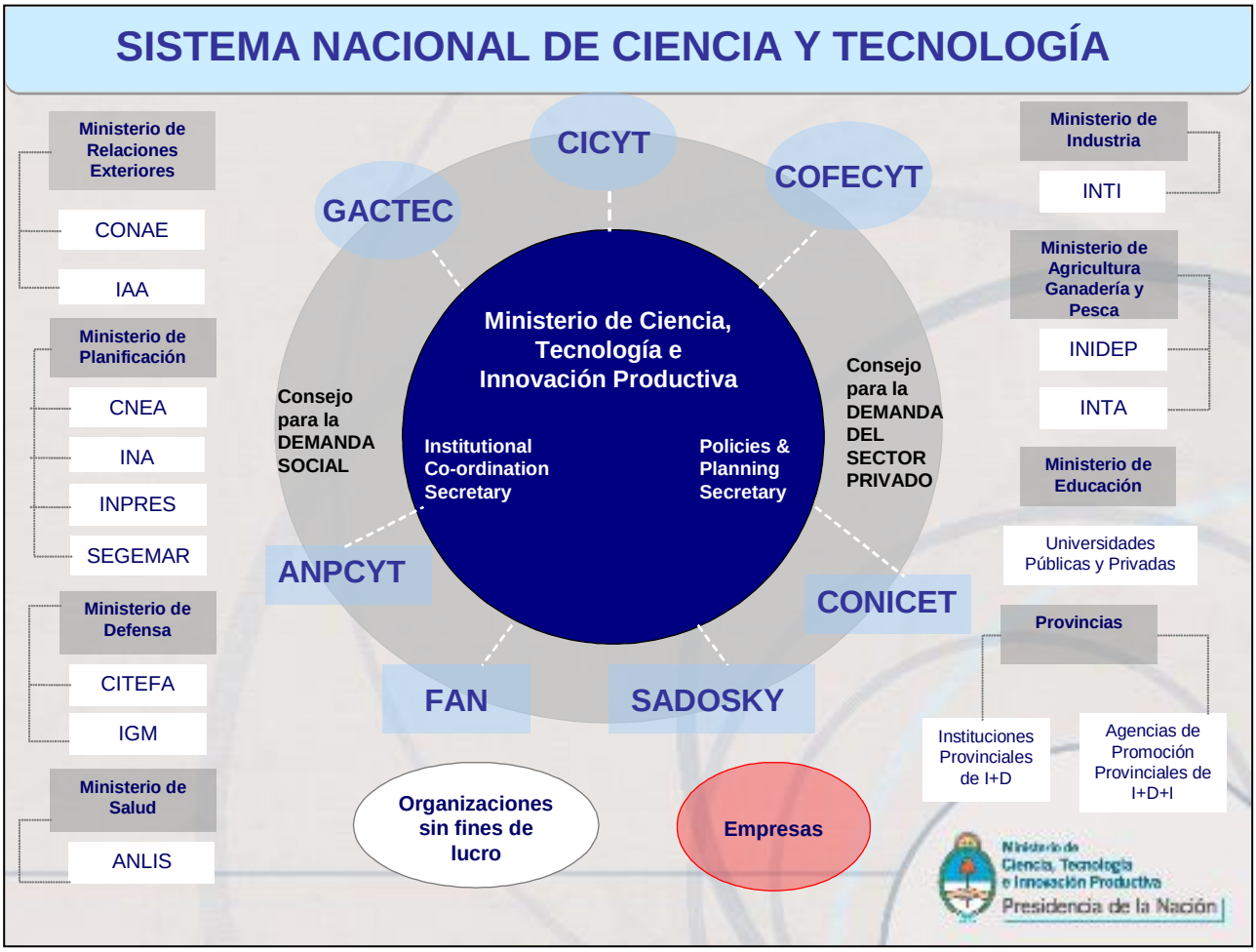



**Figure 1:** Diagram of the National System of Science and Technology of Argentina, 2011.

| Acronyms | | | |
|---|---|---|---|
| **ANLIS** | Administración Nacional de Laboratorios e Institutos de Salud | **IAA** | Instituto Antártico Argentino |
| **ANPCyT** | Agencia Nacional de Promoción Científica y Técnica | **IGM** | Instituto Geográfico Militar |
| **CICyT** | Consejo Interinstitucional de Ciencia y Tecnología | **INA** | Instituto Nacional del Agua |
| **CITEFA** | Instituto de Investigaciones Cientificas y Tecnicas para la Defensa | **INIDEP** | Instituto Nacional de Investigación y Desarrollo Pesquero |
| **CNEA** | Comisión Nacional de Energía Atómica | **INPRES** | Instituto Nacional de Prevención Sísmica |
| **COFECyT** | Consejo Federal de Ciencia y Tecnología | **INTA** | Instituto Nacional de Tecnología Agropecuaria |
| **CONAE** | Comisión Nacional de Actividades Espaciales | **INTI** | Instituto Nacional de Tecnología Industrial |
| **CONICET** | Consejo Nacional de Investigaciones Científicas y Técnicas | **SADOSKY** | Fundación Sadosky |
| **FAN** | Fundación Argentina de Nanotecnología | **SEGEMAR** | Servicio Geológico Minero Argentino |
| **GACTEC** | Gabinete Científico Tecnológico | | |

Moreover, INTI, provides technological advice and support, facilitating the integration of the entire community into the economic system by promoting the association, underpinning local development, the creation of new enterprises, including micro enterprises. INTI, works as a public assistant to improve industrial competitiveness, contributing to the development and transfer of technology through the implementation of innovative solutions from design to finished product, strengthening the nodes of value chains with national importance.

**CONICET (www.conicet.gov.ar)**, is the leading organization devoted to the promotion of science and technology in Argentina. Its activity is focused in four major areas: agricultural sciences, engineering and materials, life sciences and health, natural sciences, social sciences and humanities. Like INTA and INTI, CONICET is autonomous; it operates under the Ministry of Science, Technology and Productive Innovation of Argentina. Its overall objective is to ensure initial and ongoing training of researchers and support, promote and implement relevant scientific research and quality to contribute to an equitable development of society.

Argentina is also part of a number of different international R&D initiatives in areas related to FAFB. These include, among others, the BiotecSur biotechnology platform and the Programa Iberoamericano de Ciencia y Tecnología para el Desarrollo (CYTED).

**BiotecSur (www.biotecsur.)**, is the platform of biotechnology of Mercosur[1], with the participation of Brazil, Paraguay, Uruguay and Argentina.
This institution, which emerged in 2005 as a joint initiative between the EU and the Mercosur countries, mobilizes and coordinates public and private actors for sustainable solution of problems at regional and global levels, and proposes the production of highly competitive goods, services and biotechnological processes. In a first stage, this was mainly concentrated on funding projects related to issues associated with cattle production, agriculture (oil), forestry and poultry production.

Integrated Projects:

- Strengthening the Regional Poultry Health Status by the Use of Biotechnological Tools in the Development of Diagnostic Methods and Generation of Epidemiological Information, Applied to the Control of Avian Pathogens Important Impact on Trade and Health.
- Application of functional genomics and other biotech tools for development and testing of vaccines against foot and mouth disease virus
- Strategies for control of biotechnological bacterial, viral and protozoan intracellular cattle in MERCOSUR.
- Development of an integrated platform for bioprospecting genotyping of candidate genes of interest in the MERCOSUR Eucalyptus germplasm
- Integrated genomics approach in MERCOSUR to explore for useful genes to improve soybeans against biotic and abiotic stress

**CYTED (www.cyted.org)** is defined an intergovernmental program of multilateral cooperation in Science and Technology, which provides different perspectives and views to promote cooperation in Research and Innovation for Development in the Iberoamerican region. The main objective of CYTED is to contribute to the equitable development of the Latin American Region through the establishment of mechanisms for cooperation between research groups from Universities, R&D and innovative companies in Latin American countries, which aim to achieve scientific results and technology transferred to productive systems and social policies.

[1] *MERCOSUR: Southern Common Market (Mercosur) is a customs union comprising Argentina, Brazil, Paraguay and Uruguay. It was created on March 26, 1991 with the signing of the Treaty of Asuncion.*

## National Funding Programmes for KBBE/FAFB Research


FAFB activities are financed based on regular budgets of the institutions, resources from various sources of external cooperation and specific projects within the **National Agency for the Promotion of Science and Technology (ANPCyT – www.agencia.gov.ar)**. The Agency has several funds that cover a wide variety of beneficiaries, including the private sector, ranging from basic research to activities linked to innovation. Its main instruments are:

- **Fund for Scientific and Technological Research (FONCyT).** The mission of this Fund is to support projects and activities aimed at generating new scientific and technological knowledge, both in basic and applied topics, developed by researchers from public and private nonprofit companies based in the country.
- **Technology Fund (FONTAR).** This funding mechanism supports projects aimed at improving the competitiveness of the private sector from technological innovation. For that purpose, it manages resources from different sources, both public and private and finances innovation projects.
- **Trust Fund for the Promotion of Software Industry (FONSOFT).** This fund promotes the strengthening of the software production activities nationwide. The FONSOFT is supported by the national budget and finances various activities through calls for credit and grants
- **Argentinean Sector Fund (FONARSEC).** Through this fund, projects and activities aimed at developing critical skills in areas of high potential impact and permanent transfer to industry are funded. Indeed, the mission of this fund is to improve competitiveness in the sector, contribute to solving the identified problems and respond to the demands of society, business and the state.

**Further details:**
MINCyT
Ms. Magdalena Arancedo
(marancedo@mincyt.gov.ar)

## *Food, Agriculture, Fisheries and Biotechnology in Mexico, a Megadiverse country*

Mexico counts on institutions and facilities able to generate human resources and to export knowledge and technology in diverse FAFB sectors. During the last decades not only Mexico City, but also cities such as Cuernavaca, Monterrey, Irapuato and Guadalajara are rising as highly capable life sciences, agriculture and biotechnology research centers, as well as sites for current – and future – industry growth.

**Picture 1:** Mexican diversity not only shows in Nature but also in the country national institutions.

### Institutions & workforce

Mexico has a considerable biotechnology infrastructure already in place along with excellent research institutions and researchers. There are over 100 institutions dedicated to various aspects of biotechnological research and development, and more than 1800 professors and researchers are officially registered in the National System of Researchers (SNI, its acronym in Spanish) in the FAFB thematic. Mexico's National Academy of Science (AMC, as for its acronym in Spanish) has a Biotechnology Committee dedicated to the publication of books in the area and to foster discussions among stakeholders.

The country has two big leading educational institutions: the National Autonomous University of Mexico (UNAM) where more than 55% of the National Research is carried out, and the National Polytechnic Institute (IPN). Both comprise centers and institutes, as well as faculties with labs and pilot plant facilities to perform basic as well as applied research on FAFB. The National Council of Science and Technology (CONACYT) provides funding to the second research force in the country: the so-called CONACYT CENTERS. These institutions are scattered on the national territory and are devoted to provide technological and scientific solutions to the local problems found on all scientific areas, including food, fisheries and biotechnology.

**Picture 2:** Agave tequilana field

**There are more than 1800 professors and researchers (officially registered in the National System of Researchers) in about 100 institutions working in biotechnology in the FAFB thematic.**

There is a third important set of instances devoted to research: the "NATIONAL INSTITUTES OF RESEARCH" which apart from performing medical as well as engineering research, they provide shelter to agriculture and food / nutrition-related research.
Research in Agriculture is another very important area covered in Mexico by national institutions such as INIFAP, and several other agronomical universities, as well as one international center: CIMMYT, the International Center for Maize and Wheat improvement, home of Norman Borlaug's green revolution.

## Trends

Traceability in food chains, especially regarding the combat versus pathogens for humans, animal or plants is of great importance.

There are great opportunities to create and patent new products through collaborative partnerships with Mexican research and development institutions. Their teams constantly develop new biotechnological ideas and projects in all FAFB areas as well as on FAFB overlaps with Health, Nanotechnology, Energy and Socio-economical research. Relationships with European teams are still on the rise: however, there have been already multiple examples of bilateral relationships of Mexican research teams with European partners.

Mexico has participated in 65 different FP7 projects, of which 9 are KBBE and approximately 56 other projects in the rest of the areas of FP7, such as Energy (3 participations), Environment (4), ICT (3), Health (3), IDEAS (1), infrastructures (3), INCO (7), NMP (6), People (15), Transport (1), SSH (4), Space (3), SME (2) and Science in Education (1).

One unique great strength of the country relies on the megadiversity existent in all ecosystems that provides fertile ground for the discovery and design of new products and bioactive molecules based on functional genomics of plants, animals and microbes from marine and land environments. Environmental biotechnology is always an area of big overlaps with FAFB: wastewater treatment, microbial metagenomics are both areas of great opportunities for cooperation with Europe and the rest of the world.

**Research areas discussed in the 2011 National Congress of Biotechnology and Bioengineering in Mexico**

| Microbial and Cell Physiology | Marine Biotechnology |
|---|---|
| Bioenergy and Biofuels | Food and Drink Biotechnology |
| Bioengineering and Fermentations | Environmental Biotechnology |
| Emerging Biotechnologies and Omics | Agricultural and Plant Biotechnology |
| Biotechnology Transfer and Entrepreneurship | Pharmaceutical and Veterinary Biotechnology |
| Enzymatic Biotechnology and Biocatalysis | |

**Picture 3:** Beans and legumes seeds from Chiapas

**Picture 4:** Opuntia plants

**The megadiversity in all Mexican ecosystems is crucial for the discovery and design of new products and bioactive molecules based on functional genomics of plants, animals and microbes from marine and land environments.**

It is of great interest the current research that uses genetic information of desert Mexican plants in order to create new drought resistant and heat tolerant crop varieties.

Mexico's relationship with Europe still requires encouragement: naturally, scientific and technological cooperation relies on regional relationships, e.g., NAFTA partners, although Mexico's culture relates more with countries such as Spain and France in Europe. For sure, however, Coordination and Support actions, such as Food N' Co and BIOCIRCLE have reinforced the Mexican capacities of networking and research with the European Union and some other Third Countries participants.

## Conclusions

FAFB research in Mexico has an interesting potential for working with Europe. The country is megadiverse itself and the environments found in the country can also be found in the wide research areas that National researchers undergo. Participation in European consortia is growing. Researchers in centers and universities have been finding the virtues in cooperating with a block different from NAFTA (North American Free trade Agreement).

**Further details:**

Universidad Nacional Autónoma de México
Dr. Amanda Galvez Mariscal
BIO NCP of Mexico
(galvez@unam.mx)

Ms. Nayeli Hernandez Mejia
(nayeli.hernandez.m@gmail.com)

**Picture 5:** Participants of the 1st Infoday & Work-programme 2012 at Queretaro, Mexico (18-19/06/2011) during the XIV Congress of Biotechnology & Bioengineering, partially financed by BIOCIRCLE 2.

### Mexico at a glance

Mexico is located in North America and is bordered by the United States to the north, Belize and Guatemala to its south, the Gulf of Mexico to its east and the North Pacific Ocean to its west, covering a total area of 1,972,550 $Km^2$. Mexico is the 11th most populous country in the world with 113,724,226 inhabitants. Its capital, Mexico City is the 3rd most populous metropolitan area in the world with 20,450,000 inhabitants in 7,346 $km^2$, i.e., 2,784 People/$km^2$.

- **Area**: 1,964,375 sq km**;** Land: 1,943,945 sq km**;** Water: 20,430 sq km
- **Population**: 113,724,226 (2011 est.) (78% urban population)**; Growth rate**: 1.102% (2011 est.)
- **Language**: Spanish, various Mayan, Nahuatl, and other regional indigenous languages
- **Ethnic groups**: Mestizo (Amerindian-Spanish) 60%, Amerindian or predominantly Amerindian 30%, white 9%, other 1%
- **Climate:** Varies from tropical to desert
- **Terrain:** high, rugged mountains; low coastal plains; high plateaus; desert
- **Major industries:** food and beverages, tobacco, chemicals, iron and steel, petroleum, mining, textiles, clothing, motor vehicles, consumer durables, tourism
- **Natural resources:** petroleum, silver, copper, gold, lead, zinc, natural gas, timber
- **Agricultural products:** corn, wheat, soybeans, rice, beans, cotton, coffee, fruit, tomatoes; beef, poultry, dairy products; wood products
- **Export commodities:** manufactured goods, oil and oil products, silver, fruits, vegetables, coffee, cotton
- **Major Export Partners:** US 80.5%, Canada 3.6%, Germany 1.4% (2009 est.), Spain 0.9%
- **Labour force**: 46.99 million (2010 est.): agriculture: 13.7%, industry: 23.4%, services: 62.9% (2005)
- **GDP**: US$1.039 trillion. (2010 est.) [agriculture: 4.2%, industry: 33.3%, services: 62.5%]; **GDP per capita**: US$13,900 (2010 est.)

# Research twinning activities

## *EU and Canada to 'twin' agricultural bioproduct projects*

Europe and Canada have a long history of research collaboration. At the national level, many Member States work bilaterally with Canadian partners. 10 years ago Canada signed a science and technology agreement with the EU starting an active participation in the EU's research framework programmes.

The new twinning arrangement came about when Canadian and European officials realised that the FP7 agriculture theme and Canada's new Agricultural Bioproducts Innovation Program (ABIP) share a number of points in common. The ABIP is five year initiative which aims to build on Canada's considerable experience in the agricultural biotechnology sector. This is a new programme that will allow the production and development of commercial and industrial bioproducts, for example active molecules for health in humans and animals, and the aim is to merge the best researchers together in networks and clusters.

Under the twinning arrangement, both the EU and Canada will issue their own calls for proposals as usual. When each party has selected the projects it would like to fund, officials from each side will meet to see how the projects selected on either side of the Atlantic could complement one another.

It is hoped that this simplified and less formal style of collaboration will avoid much of the cumbersome bureaucracy and legal complications involved in more formalised cooperation activities. If it is successful, Canada hopes to expand the initiative to its joint research activities with other countries.

**Further information:**
Canada's Agricultural Bioproducts Innovation Program: www.agr.gc.ca/index_e.php

## *EU-Argentina twining programme*

Research cooperation between the European Union (EU) and Argentina is carried out under the umbrella of the Science and Technology Cooperation agreement, signed in 1999 in order to strengthen the institutional foundations of this cooperation and extending and intensifying research cooperation in areas of mutual interest.

As a novel activity, it was proposed to launch an initiative of a twinning research project respectively from the EU seventh Framework Programme for Research and Technological Development (FP7), theme 2 " Food, Agriculture and Fisheries, and Biotechnology" FAFB and the Argentinean national research programmes (MINCYT) and other mechanisms available in both sides. Emphasis was placed on making the fullest use of existing instrument and on combining bilateral cooperation with bi-regional cooperation.

In the EU FP7, "Food, Agriculture and Fisheries, and Biotechnology" work programmes, twinning of projects with related programmes in third countries that have signed bilateral S&T agreements with the European Community will be encouraged on the basis of mutual benefit and reciprocity.

Research Programme implemented by Argentina and MERCOSUR have several common points with European FP7 FAFB activities and intense dialogue between managers of these programme led to identification of shared areas of interest such as soil, plant and food research where fruitful cooperation between selected twin projects can be encouraged.

**Further information:** www.ec-argentina.eu

## *BILAT – Looking for a partner?*

Latin American countries that have a cooperation agreement in S&T with the European Union have liaison offices (BILAT), which are designed as platforms to improve and expand cooperation activities in the science, technology and innovation area both with the European Union and with its member states. Their final aim is to facilitate the establishment of successful partnership between local and European research groups through:

- The development of an information programme about the European Research Area (ERA) and the opportunities it offers to the researchers,
- The establishment of a help desk to solve specific doubts about existing financing tools and opportunities,
- The promotion of the dialogue between Latin America and the European Union about priorities in science, technology and innovation.

**Liaison offices and National Contact Points (BIO-NCPs):**

| | | | |
|---|---|---|---|
| ABEST II | Argentine Bureau for enhancing cooperation with the European Community in Science, Technology and Innovation | www.abest.com.ar | Argentina |
| BBice | Bureau Brasileiro para Ampliação da Cooperação Internacional com a União Européia | bbice.ibict.br | Brazil |
| CHIEP-II Oficina de Enlace | Chilean European Portal | www.chiep.cl | Chile |
| UEMEXCYT² Oficina de Cooperación México-Unión Europea en Ciencia, Tecnología e Innovación | Oficina de Cooperación México-Unión Europea en Ciencia Tecnología e Innovación | www.conacyt.mx/uemexcyt | México |

| Country | NCP Name | Institution | e-Mail |
|---|---|---|---|
| Argentina | Eduardo, Trigo | Ministry of Science, Technology and Productive Innovation | ejtrigo@gmail.com |
| Brazil | Paulo José, Péret da Sant'ana | Ministério da Ciencia e Tecnologia | pperet@mct.gov.br |
| Canada | Carole, Morneau | Agriculture et Agroalimentaire Canada-International Scientific Cooperation Bureau | Carole.Morneau@agr.gc.ca |
| Chile | Gonzalo, Ruiz | Universidad Católica de Valparaíso | gonzalo.ruiz@ucv.cl |
| Mexico | Amanda, Galvez | Instituto Mexicano de Tecnología del Agua. Programa Universitario de Alimentos, Universidad Nacional Autónoma de México. | galvez@servidor.unam.mx |

# Boosting research potential

## *Unprecedented initiatives in Russian S&T and Innovation policy to attract leading international scientists to Russian institutions*

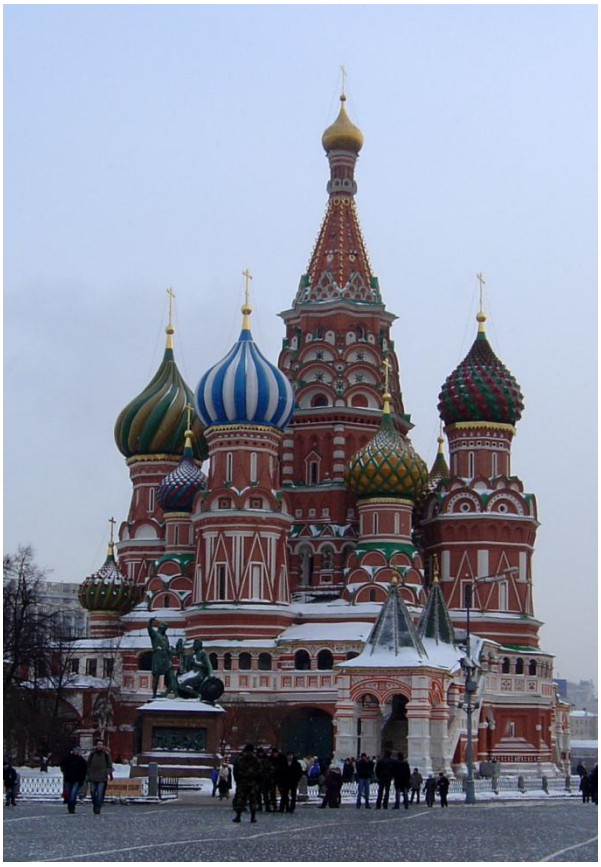
*The EC – Russian relations develop on a new level. Nowadays Russia becomes more and more open for the international cooperation due to the implementation of global initiatives in different spheres of collaboration. The crucial instrument aims the attraction of modern international research experience and practice to Russia by inviting leading scientists to Russian universities.*

At Russian level, various initiatives and programmes support research and innovation, most of them have no formal restrictions for the participation of foreign researchers, but nowadays several crucial initiatives from the Russian side have been applied. The active changes in Russian S&T landscape demonstrate the real Russian involvement in cooperation with EC, and also reflect the **reciprocity principle** that offer the chance for both sides to build relations afresh on the basis of a more constructive and even-handed approach.

In the interview to Rossiyskaya Gazeta[2] (Russian Newspaper), Manuel Hallen, Minister Counsellor of the Science & Technology Delegation of the European Union to Russia, describing the close EU - RF cooperation in S&T sphere, highlighted in particular "the fruitful co-operation developed in the spheres of bio- and nanotechnologies" .

For the period from 2007 to 2010, **173** Russian organizations took part in FP7, in the frame of "Food, Agriculture, Fisheries and Biotechnology". With 36 Russian partners in 20 projects from 2007 to 2010, and a success rate of 19%, **Russia ranks No 2** among the successful Third Countries in this Theme. Comprehensive organizational, informational, consultative and other actions in the sphere of biotechnology, food quality, safety and other related sectors in Russia are the field of activity of **Russian National Contact Point** on "Biotechnology, Food and Agriculture" (http://fp7-bio.ru/en/).

Russia enlarges the scale and amount of international co-operation in various spheres. Talking about RF participation in FP7, Sergey Ivanets, Deputy Minister of Education and Science of the Russian Federation stated that "nowadays approximately 350 Russian groups work under 190 of such projects, obtaining about 40 MEuros from EC budget".



**Picture 1:** St. Basil cathedral; Red square, Moscow, Russia.

[2] All quotes are from Rossiyskaya Gazeta (Russian Newspaper), special addition dated 9 June 2011 (http://www.rg.ru/special/)

## Overview of access opportunities for the European organisations and researchers to the Russian S&T programmes

Nowadays, the access to EU researchers to the Russian S&T and innovation programs basically could be provided via several channels, such as Russian Federal Targeted Programmes (FTPs), bilateral and multilateral programmes, new Russian initiatives.

In order to form innovative environment, to develop cooperation between educational institutions and industrial enterprises, to support federal educational institutions of higher professional education, to provide the access opportunities for foreign organisations and researchers to Russian S&T programmes, the innovative infrastructure development **with new mechanisms** is carried out in Russia.

There are already several changes in the legislation in this regard. Now, there is an observed success in facilitating of some procedures, such as, for example, obtaining the scientific visa; simplifying administrative procedures; social security; developing scholarships, etc. An important breakthrough has been also achieved in **immigration law**. The procedures for obtaining permits have been substantially simplified and the number of permits has been reduced for top-level specialists. Ministry of Education and Sciences sent for approval the unilateral **recognition of diplomas and certificates** of academic degrees obtained in the leading world universities. This will remove some restrictions to hire scientists and researchers who have been trained abroad.

As the new crucial initiatives several Russian **federal degrees** could be mentioned, such as Decree N219, "On state support of development of innovative infrastructure in the federal educational institutions of higher professional education[3]" and Decree No. 220, "Measures to Attract Leading Scientists to Russian Educational Institutions[4]".

## Initiative to attract leading scientists to Russian universities

Russia managed to solve one of the basic problems that impeded the process of attraction foreign scientists to the national programs, which was the lack of information on the opening projects. On April 9th, 2010, Russian Prime Minister Vladimir Putin signed **decree No. 220, "Measures to Attract Leading Scientists to Russian Educational Universities"**, allocates three billion roubles in federal funds for 2010, followed by additional five billion roubles for 2011 and another four billion roubles for 2012. The aim of this decree is for Russian government **to award grants to internationally renowned scientists** to stimulate top research at Russian universities. The grants are awarded once every three years for a period of three years, with a possible extension of two years.

The Decree served as a starting point for the Ministry of Education and Science of the Russian Federation entering upon the broad **Grant Programme** and announcing within its frame an Open Grant Competition designed to support research projects to be carried under the direct surveillance of scientists of international repute at higher education institutions of Russia. Both Russian and foreign scientists are eligible for the grants. The number of projects undertaken by each institution of higher education is unlimited, but only one research project is allowed per scientist applicant. Upon approval of project funding, scientists will form their research team from members of the host university. Each research team should consist of no fewer than two PhD candidates, three graduate students, and three undergraduate students. Salaries and compensation for the visiting scientist and members of the research team are not to exceed 60% of the total grant allotment.

[3] Read more on this initiative on website of Russian Ministry of Education and Science (http://eng.mon.gov.ru/pro/ved/infr/)

[4] Read more on this initiative on website of Russian Ministry of Education and Science (http://eng.mon.gov.ru/pro/ved/uch/)

The Grant Council of the Russian Government, headed by Education Minister Andrei Fursenko, will determine priority areas for research and evaluate submitted proposals for funding. Scientists will have free range in determining the area of their research, limited only by the general guidelines determined by the Council.

All conditions for fulfilling project proposals will be subject to special agreements between visiting scientists and their host universities. In accordance with that agreement, the visiting scientists will assume responsibility for organizing and managing their work.

In order to receive a Grant and allowing any project whatsoever, even though it may be very large, to be given an adequate support, a leading scientist, or principal investigator, will have to negotiate with a relevant higher school and lodge a joint Application. In case of his winning, a scientist shall be present in person at a selected college or university for no less than four months in a calendar year in order for him to supervise the activities carried under research project in his/her research laboratory. A provision is made for extending the term of any such project for up to another year or two. Although not yet finalized, the exact terms and conditions for such extension will be defined by the end of the current year.

A research project team to be formed by a Leading Scientist must include at least: 2 candidates of science (PhDs), 3 post-graduate and 3 undergraduate university students.

The competition attracted enormous interest in Russian academic circles. From June 25, 2010 to July 26, 2010, 507 grant applications from 179 Russia's institutions of higher education were submitted. The initial plan was to select all 80 winners at once but the Council on Grants established by the Russian government chose to endorse only 40 applicants and to launch a second competition by the end of 2010.

This Programme is superior to anything one has tried to apply before, whether in Russia or abroad, and every effort is exerted to lend it the broadest conceivable promotion in order to attract as many prominent scientists as possible.

Such programmes are deemed a necessity and should in any case be developed, for we are to create precedent. Russia must signal to the western community clearly the will to invite distinguished scientists from over the world.

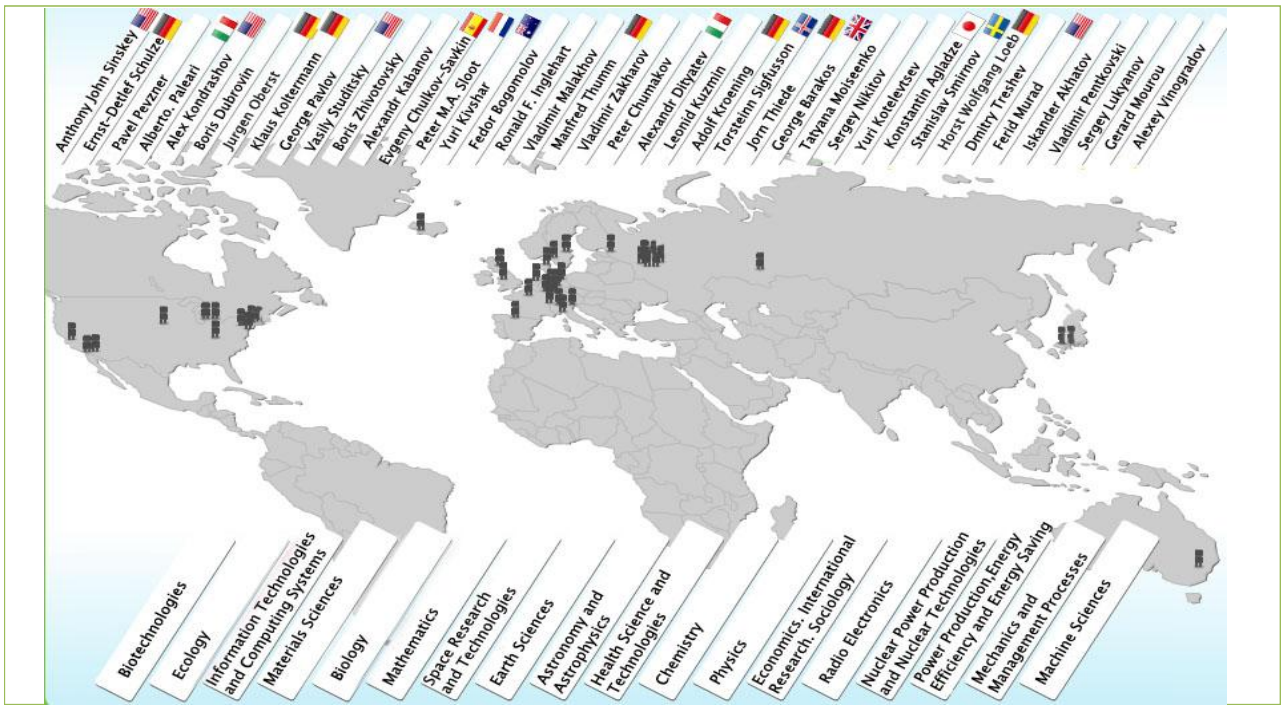



**Figure 1:** 40 Grant competition winners were determined in November 2010

## Developing the mechanisms aiming at reinforcement of the EU-RU S&T

Dynamic development of Russian state S&T and innovation policy especially in the field of cooperation with international scientists and scientists-compatriots, living abroad through different new crucial initiatives, such as, for example, unprecedented Grant Competition to attract leading international scientists to Russian universities, assumes the **new level of EC – Russian relations**.

The issues and questions concerning the participation opportunities for European R&D organisations and researchers to Russian S&T programmes should be discussed to develop the mechanisms (including funding) aiming at reinforcement of the EU-RU S&T cooperation in general. It is a matter of political will, not only at the level of the European Commission, Members states and Russian Federation authorities, but also at the level of universities, research centres and innovative companies involved in the collaboration process.

The debates on such important issues, the work for the measurable increase of collaborations between European and Russian S&T organisations and facilitation the access of European researchers and research organisations to the Russian research and innovation programmes are carried out under the **ACCESSRU project** (FP7-funded)[5].

Recently, the second round table on ACCESSRU project was organized in Moscow under the general theme "**Development of mechanisms facilitating access for EU R&D organizations and researchers to Russian S&T Programmes**".

At the end of the round table work, the main points to facilitating access of the European specialists to Russian programs were summarised, such as, for example, information support; support to infrastructure (through, for example, a system of National Contact Points or Russia's Technology Platforms); organisation of web-seminars for the stakeholders (to clarify how the European scientists can participate in Russian programs); balanced financial support for the projects; support of joint calls (twinned and coordinated) and other mechanisms of co-operation; focus on attraction of young scientists to ensure long-term co-operation; use of the Marie Curie Programme, widely and bilaterally; creation of suitable "success" indicators; use of the experience of those Russian companies that have created their own approach on the leading scientists attraction, etc.

The impact of the Russian research and innovation programmes' screening and identification of the access opportunities for the EU scientists will be maximized by the implementation of the visibility actions and policy dialogue support. All member states will be addressed by the project information and awareness campaign aiming beyond the promotion of the collaboration opportunities with Russia to increase the reciprocity between the two research systems.

**Contact person:**
Dr. Irina Sharova (sharova@inbi.rar.ru),
Deputy Head of Biotechnology, Agriculture and Food, FP7 NCP of Russia,

**Picture 1:** The debate in an event of the ACCESSRU project

[5] ACCESSRU project "Strengthening of access for European researchers to Russian research and innovation programmes" (http://www.access4.eu/russia/index.php)

## *Brazil: A look at EMBRAPA and the Virtual Lab initiative*

The Brazilian Agriculture Research Corporation (EMBRAPA) was created in 1973 with four major purposes in mind: firstly, to guarantee food supply to cities, where most of the poor population of the country lived; secondly, to help develop the hinterlands; thirdly, to preserve the natural resources in our territory; and, lastly, to produce a sufficient surplus for export.

Today, Brazil is a noteworthy actor in the world agricultural scene. The driving force behind this agricultural revolution was the adoption of modern and daring technologies developed by agricultural research. Brazil created and adapted to typical tropical conditions sets of plants and animals, practices, management, and machinery that constitute a totally different agriculture, admired throughout the world. The Brazilian population is no longer exposed to food supply crises and the country produces increasing amounts of grain, through increases in productivity, rather than farmed area. Most of our researchers hold PhD degrees in varied research areas applied to agriculture.

The agricultural revolution in Brazil resulted from the efforts of EMBRAPA and **the National Agricultural Research Systems**, made up of public federal and state institutions, universities, privates companies, and foundations, linked together to carry out research in the different geographical areas and fields of knowledge.

EMBRAPA has a special interest in:

- Impacts of climatic changes on agriculture
- Food Quality and Safety
- Advanced biology
- Applied nanotechnology
- Animal production and health
- Plant protection
- Genetic resources and plant breeding
- Agroenergy
- Aquaculture
- Forestry
- Organic Agriculture, and
- Environmental management.

In 1998, EMBRAPA introduced a new concept of international relations by creating a **virtual laboratory**, staffed by senior researchers, in the United States. The experience with this new structure, called **EMBRAPA Virtual Laboratory Abroad** (Labex, in Portuguese), was so positive that the company set up a similar structure in Europe, with headquarters in France and extensions in the Netherlands and England. Another Labex has been established in Asia, with headquarters in South Korea.

Labex has three main functions:

1. undertaking strategic research in partnership with the world's centers of excellence
2. monitoring science and technology in areas of interest to Brazil, and
3. articulating projects of common interest to the Brazilian teams, the United States, Europe and Asia.

Labex laboratories abroad have already obtained important results, such as:

- Adaptation, for application in the Brazilian food industry, of the Pathogen Modeling Program (PMP), used to predict the growth of pathogens and prevent contamination by destroying the bacteria in food.
- Techniques for processing digital satellite images to estimate soil moisture.
- Development of new, low-cost technologies to remove nitrogen from pig wastes.
- Development of molecular markers with a view to obtaining animals more resistant to ticks, worms and others parasites.
- Development of new composite materials based on agricultural products using nanotechnology, such as quitosane, which enhances the mechanical resistance of edible films.
- Experiments to validate commercial processing technologies, for the purpose of ensuring the safety of ready-to-eat foods and dairy products.
- Food Technologies: Combining sensory evaluation and experimental economics to investigate the role of innovation of traditional products on consumer's food choices and willingness to pay, aiming at providing healthier products to consumers.
- Food Processing: The effect of combined thermal and pressure treatment on spores mainly in dehydrated food is being elucidated, considering structural, morphology and methabolic aspects. The results have provided further possibility of design new preservation technologies and optimize traditional process.
- Natural Resources Management: Agriculture Monitoring and its impacts on ecosystem services based on Remote Sensing.
- Plant Pathogen Interactions: the identification of key genetic mechanisms of fungi that are responsible for causing economically important diseases to wheat plants. Such information can provide new targets for the sustainable control of highly damaging diseases like Fusarium Head Blight, Septoria and Wheat Blast as well as related diseases of other plants, including banana.
- Animal Production: development of knowledge-based production systems for the reduction of greenhouse gases and improved feed conversion through the manipulation of the gastro-intestinal microbiota.

Another example of the international collaboration work is Labex's participation in an international research network in Nanotechnology, Agroenergy and Agribusiness, involving the United States, China, India, South Korea and New Zealand, through the Alan MacDiarmid institutes in those countries. This partnership is essential for Brazil to muster efforts in the race for scientific and technological development and its search for innovation and social development.

**Contact person:**
EMBRAPA
Dr. Milene Castellen
(milene.castellen@embrapa.br)

# A glance at research in Third Counties

## *Chilean scientists turn their eyes to Antarctica in search of microorganisms with biotechnological applications*

*There is a growing interest in carrying out scientific research in Antarctica. Microorganisms living in Antarctica bring the promise of new products that could protect humans from solar and UV radiation, for instance. Many researchers are trying to understand how these microorganisms exist in these extreme habitats and are seeking to create new biocomposites with industrial potential.*

Chile is one of the five gateways to Antarctica, and certainly one of the closest to the continent. Today there is a growing interest in carrying out scientific research in Antarctica. When compared to 2007, the number of project proposals submitted to the funding instrument of the Chilean Antarctic Institute (INACH) and other Chilean funding agencies increased by 250% in 2010. One of these cases refers to Jenny Blamey, Director of the Biociencia Foundation, who has been researching extreme microbes in the Antarctic region. In 2011, she announced she had found approximately 300 microorganisms, 70% of which were previously unknown to science. These organisms might have practical biotechnology applications and could eventually lead to products designed to protect people against solar and UV radiation, or to produce frost-resistant plants and antibiotics effective against multi-resistant nosocomial (pertaining to or originating in a hospital) bacteria.

The Chilean mainland is very close to the Antarctica and therefore is a natural bridge from America to the Antarctic continent. Chile has a long tradition in Antarctic research.
The study of Antarctic resources is opening new opportunities for the development of science and technology in Chile. Some areas like geology, palaeontology, climate change, biodiversity and bioresources based on the study of extreme life conditions represent a unique opportunity for the development of Chilean science. During the last season (southern summer of 2010-2011), Chile had the largest number of field projects in the Antarctic continent in 47 years of history with a record number of 124 researchers *in situ*. International cooperation was also very important: 56% of the research in the **Chilean Antarctic Science Programme (PROCIEN)** was made in alliance with other countries.

### The Cure Could Come From the Cold

One of these researchers is **Jenny Blamey**, a biochemist and director of the **Biociencia Foundation** in Santiago (Chile). This is one of the organisations working in Antarctic bioresources, which in the past three years and in association with the Chilean Antarctic Institute, has been carrying out one of the largest projects in

PROCIEN brings together the projects that are financed, organised, coordinated, and executed by the INACH, whether directly or through the support of universities and centres for scientific research. Projects are funded through various sources by an open and transparent competition system subject to peer review. The Chilean investment in Antarctic science is more than US$2 million (1,4 million euros), however, considerably lower than that of other nations' Antarctic Programmes and possible only thanks to various funding programmes from several governmental agencies, including the Chilean Department of Defence and the Ministry of Foreign Affairs. The escalation in funding sources and funds for Antarctic scientific research has meant a threefold increase (55 projects in 2011) compared to the number of research projects performed in 2004.

Antarctic science, with financing from **CORFO** (Corporación de Fomento de la Producción, the Chilean Economic Development Agency), through its **INNOVA** unit , the innovation Committee within CORFO.

She and her colleagues have been researching "extremophiles", microorganisms that are able to live in extreme environments including high or low temperatures, high salinity, etc. in Antarctica. In March 2011, she announced that she had found over 300 microorganisms, 70% of which were species previously unknown to science. These organisms might have practical biotechnological applications and could eventually lead to products designed to protect people against solar and UV radiation, for example.

"The Biociencia Foundation is a private research institution interested in opening a line of basic and applied research in extremophiles", says Jenny Blamey. "Chile is one of the seven most diverse geographic places in extreme environments on our planet".
The institution is trying to understand how these microorganisms exist in these extreme habitats and is looking for new biocomposites that could have industrial applications.

These extremophiles are able to thrive in the most extreme conditions. Some of them do it at temperatures cooler than -15 ºC, others in high concentrations of salt or with extreme pH. They found one microbe able to survive at 95 ºC in Antarctica. There are also microorganisms capable of tolerating gamma ray exposures 5,000 times greater than those survived by any other organism. One can only imagine the possibilities of a product that could make humans immune to gamma ray exposures!

"If they are immune to radiation, we are interested in understanding which are these defence mechanisms, and find out if it is possible these mechanisms or composites may give a certain level of resistance to other organisms that do not have it", explains Jenny Blamey.

Extremophiles have a large potential in the development of applications for the chemical and pharmaceutical industry.

**Picture 1:** Jenny Blamey is shown here doing research on King George Island, one of the South Shetland Islands.
*(Photo: Jeniffer Muñoz/INACH)*

"From the developments of this basic science project, we hope to generate new products that may compete in the international market with those already existing there", says Jenny Blamey.

International cooperation has been a key in the work of the Biociencia Foundation. "About 60% of the world biotechnology market is in Europe, so they are very important for us. We can offer basic research and part of the applied research to complement what they can do in terms of scaling and of the knowledge of the industrial processes in which these organisms may be used", says Jenny Blamey.

The study of Antarctic resources is opening new opportunities for the development of science and technology in Chile. Some areas like geology, palaeontology, climate change, biodiversity and bioresources based on the study of extreme life conditions represent a unique opportunity for the development of Chilean science and international cooperation.

**Contact persons:**
CONICYT
Dr. Astrid Waltermann (awaltermann@conicyt.cl)

BIOCIENCIA
Dr. Jenny Blamey (jblamey@bioscience.cl)

## *Research in Brazil: Facing the interrelated trends on global climate changes and agriculture*

*Embrapa is the Brazilian Agriculture Research Corporation, which was created in 1973. Embrapa leads a National Platform for Research in Climate Change that focuses on the interaction between agriculture and climate change to give scientific basis for national policy making for the sector, mainly mitigation and adaptation actions and agriculture sustainability.*

The main tools used for the study of agriculture – climate change interaction are crop modelling and simulation using, as input, climate projections data from global and regional atmospheric circulation models adapted to Brazil by its national meteorological Institutions. Embrapa's platform is structured in national wide projects for future scenario simulation for crop growing and for its pests and diseases, green house gases emissions and carbon balance in livestock, forests and grains systems, water resources and genetic adaptation. Agricultural modelling techniques are integrated to economic modelling and simulation, information organization and access, geoprocessing and spatial-temporal analysis, and other related activities. These projects integrate about 30 Embrapa unities and about 40 other research institutions. Moreover, based on this research platform, Embrapa collaborates to understand and reduce the vulnerability and emission of Brazilian agriculture and provides support for Agriculture and Foreign Affairs Ministries on UNFCCC negotiation and guaranteeing the sustainability, while keeping the goal of being one of the major world's agriculture products export leaders.

Will future climate scenarios configure a new Brazilian production matrix and geography and will then affect national sustainability? That is the main question that Embrapa's Platform for Research in climate change and agriculture pose as its scientific challenge.

**Defining the problem**

The main research hypothesis is that climate change impacts on the most important crops for Sao Paulo State, and for Brazil, are going to induce new agro-livestock and forestry future scenarios. These future scenarios will configure a new national production matrix and geography and will affect national economy, being possible to analyze and quantify them by using simulation and mapping techniques, feed by regional and global climate change scenarios, and economic analysis methods to achieve productive matrix optimization.

**Picture 1:** Climate change can effect agricultural production
*(photo by T. Henderson under a CC license; www.flickr.com/photos/tom_henderson/)*

**Justification and rationale**

The economic importance of Brazilian agricultural and forestry sector is undeniable, either on domestic supply or on international transactions. Due to the importance of the agriculture, livestock and forestry sectors and to the high indexes of losses in the country in the middle of the `90s, the federal government

detected the need to invest in an agricultural zoning for the main cultures produced. That would take into account the climatic risk, looking for the determination of the success chances of growing a crops and susceptible venture of being insured and receiving credits. This initiative worked well and still remains active in increasing the number of crops year by year, with strong contribution from Embrapa, Cepagri/Unicamp and partner institutions. It allowed the country to save about R$ 150 million per year as a consequence of rationalization, credit concession and insurance control and is an inductor of technological update by farmers.

Despite of this contribution of the agriculture, the sector (forest and agro-livestock) may be threatened in face to global warming caused by increasing concentrations of greenhouse gases. In 2007, the Intergovernmental Panel on Climate Change (IPCC) attributed the responsibility for increasing the greenhouse gases concentration to human actions and also highlighted the vulnerability of countries in development, including the agriculture sector. The first fact leads to a questioning of agricultural production systems in Brazil that, through burnt, deforestation and agricultural expansion and misuse of land, places the country among the five largest emitters of the world. On the other hand, the second fact leads to the need for vulnerability evaluation through scaling the impacts of future scenarios of global climate change on agriculture, thus setting up agricultural future scenarios subject to different climate risk conditions than today.

Some progress related to this theme present a first approximation, applying developed models in the simulation on zoning future climate risks based on scenarios from IPCC (2001). This first approach was of extreme importance because gave a direction in the discussion about the possible climate change impacts on crops. From this important discussion, suggestions for improvement occurred and now it is necessary to deploy them and advance on a new access through the increase of spatial and temporal resolution of the projections used, incorporation of physiological processes and technological advancement to the models used and an economic analysis of the new Brazilian production geography.

This first approximation, however, included some assumptions that should be reviewed to improve the projection of future agricultural scenarios that include new determinant factors. Some of these improvements concern to:

- the spatial and temporal resolution of the climate scenarios input,
- the projections of the increased frequency of extreme events and their impact on the productive capacity,
- the physiological processes through models of growth for the crops that already have them available and also to make possible to adapt/develop new models,
- the effect of increased $CO_2$ concentration on plant productivity, and
- the effect of technological development, reducing the impacts of GCC.

Although there are several challenges to overcome, the Brazilian society must achieve this knowledge level so that it can develop new techniques for mitigation and adaptation to the effects of global climate change.

Specific issues of interest include:

- Trend Analysis
  - Trends on meteorological and hydrological variables and extreme events
  - Trend on land use change, desertification and sandy area advance
- Carbon Balance, Stocks and Fluxes: Modelling and Estimation
- Experiments on temperature, water availability and $CO_2$ concentration influence on plants, pests and diseases
- Modelling and spatial analysis on plant growing, pests and diseases, water resources
- Scenario Simulation: information technology, spatial analysis, uncertainty, ensemble and disclosure
- Economic Analysis
- Policy making and international negotiation support
- Risk and sustainability analysis
- Scientific challenges and the means and methods to overcome them

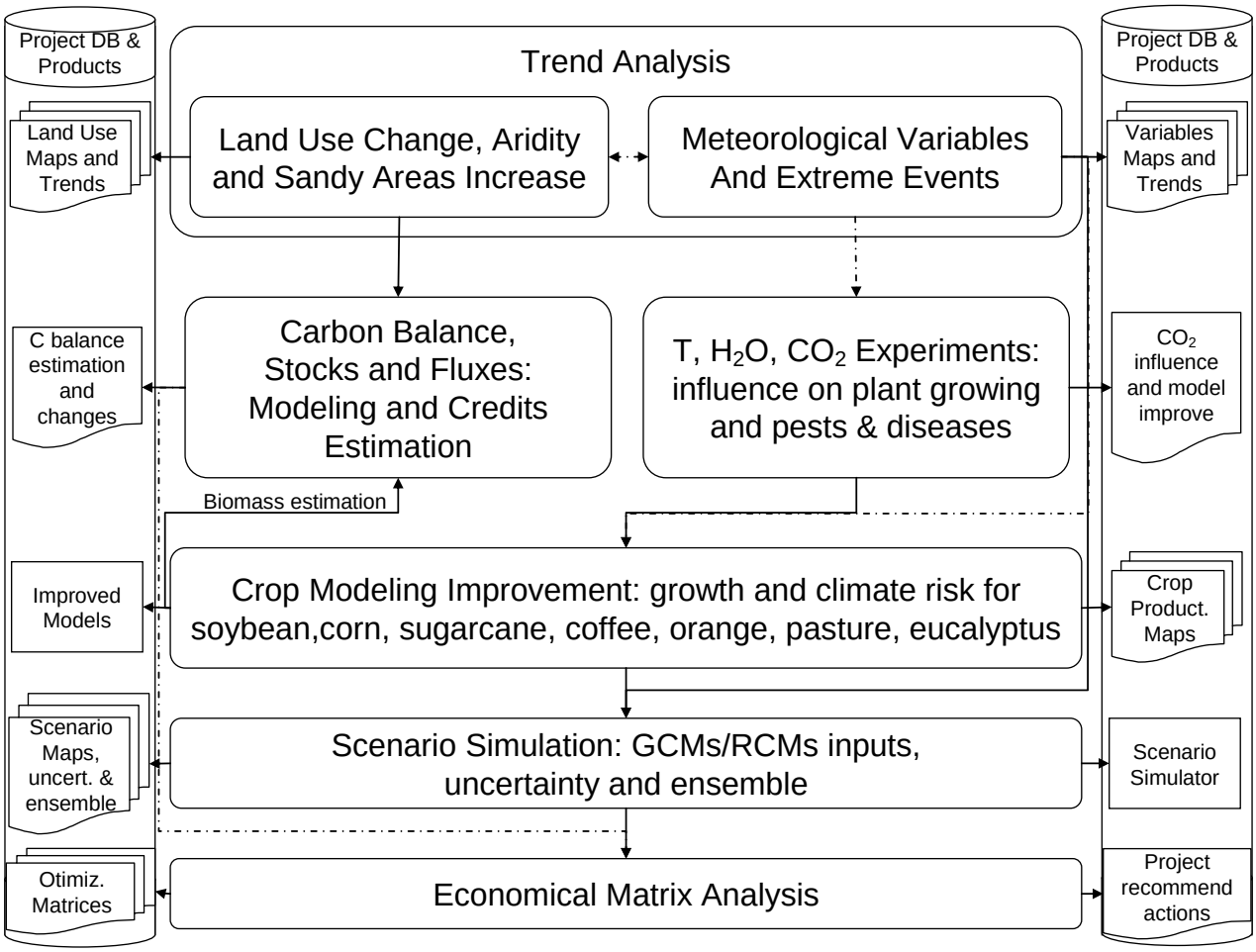



**Figure 1:** Research Flowchart related to the specific issues of interest

Hypothetically, climate changes will induce new agro-livestock and forestry future scenarios.-will configure a new national production matrix or geography and will affect national economy, once agribusiness has an important contribution to Brazilian GDP. So the scientific challenge is to project agro-livestock and forest future scenarios closer to the real unknown future scenarios resultant from the climate change impacts on the most important crops for Brazil, including analysis of production, yield, pests and diseases. Currently, work is done on thirty crops, divided in five groups: grains, industry-processed fruits, pastures and forestry.

The specific challenges under study are:

- Detect climate and land use changes on last few decades and determine how they are correlated, considering the increase on extreme events frequency and their impact on the productive capacity;
- Understand the carbon balances of agro-livestock and forestry systems and how land use change affect them;
- Understand the physiological influence of temperature and water stress and, mainly, $CO_2$ concentration increase on crop development as a base for improvements on crop modelling and on genetic breeding programs;
- Adapt or develop crop growth models that are based on physiological processes and that include the effect of increased $CO_2$ concentration on plant productivity and the effect of technological advance on reducing the impacts of climate change.
- Develop a simulator that can deal with the multiplicity of global and regional circulation

models and their climate scenario projections as input for growth and pest & diseases different models for different crops generating a range of agricultural scenarios and scenario uncertainty and ensemble;

- Analyze the impact that these future scenarios will bring on Brazilian economy considering, not only the low risk area decrease, but also the new possible combination of crops determining some possible new geographic distributions or production matrices.

In conclusion, the climate change impacts on crops are going to induce new agriculture scenarios. Once they are determined, they will configure a new geography on the production matrix affecting the economy. The possibility to analyze and quantify them, by using simulation models, fed by regional and global climate change scenarios will allow the world to adjust the production matrix.

**Contact person:**
EMBRAPA
Dr. Giampaolo Queiroz Pellegrino
(giam@cnptia.embrapa.br)

**Picture 2:** Agricultural area in Mato Grosso, Brazil
*(photo by Leoffreitas – www.flickr.com/photos/leoffreitas/ – under a CC license).*

# From research to innovation

## *Focusing on Knowledge Transfer*

The conversion of scientific knowledge to practical innovation that can find its way into industrial applications or products is a challenging step in the knowledge value-adding cycle.

Knowledge transfer between research organisations and the industry can be hindered by several factors. According to the partners of Knowledge2Innovation[6], the limiting factors for knowledge transfer in the agro-food sector range from a lack of resources that would enable knowledge transfer to take place, to a lack of a suitable mentality that would favour a tighter academia–industry cooperation.

Recently, in the conference "Knowledge transfer as a key tool of innovation in sustainable bio-economy", which was organised on 3-4 May, in Budapest, by Knowledge2Innovation with the support of the European Commission and which gathered strong international participation, it was re-affirmed that effective knowledge transfer goes beyond a simple allocation of resources for the adaptation of knowledge to the needs of practical application. Several interesting points emerged from the conference discussions:

- Scientific results should undergo further processing in order to be within reach for the industry, i.e., their **practical value should be demonstrated** and communicated in the right way
- Innovation adoption in the bio-sectors can be affected by **consumer perception**, thus effective communication to the consumers may be an additional necessary element for knowledge transfer in the bio-economy

**Picture 1:** Boosting knowledge transfer of scientific output is a priority world-wide; the Knowledge2Innovation conference (Budapest, 3-4/ May) gathered participants from 35 countries.

- The **personal approach** within academia and the industry needs to be encouraged to become more favourable to knowledge transfer cooperation
- In some cases, "**social innovation**" can contribute to a stronger knowledge transfer culture

International cooperation in research projects can prove beneficial, not only towards improving scientific output but also for promoting knowledge exploitation rates: Operating in transnational consortia allows for an exchange of best practices regarding knowledge transfer and, in addition to that, provides project participants access to a **larger pool** of potential relevant end users.

**Contact person:**
ETAT S.A.
Dr. Gorgias Garofalakis (garof@etat.gr)

[6] Knowledge2Innovation: "Promoting the exploitation of scientific knowledge through academia–industry cooperation in the Knowledge-Based Bio-Economy in Europe and beyond", is a project funded under FP7. The project is coordinated by ETAT S.A. and is implemented by 9 partners from 7 EU countries. For further information please refer to: www.knowledge2innovation.eu

## *Focusing on Knowledge Communication*

Getting research results out of the research lab walls is an increasingly pressing need. The desired goal is to improve the cost effectiveness of the dissemination processes, targeting all stakeholders taking part in the communication procedure. Better communication will allow to fully exploit the results from agri-food research activities by enhancing the transfer of knowledge to the end-users. AgriFoodResults was an FP7 EU funded project, which worked towards the need for a better dissemination of results of food research.

The project combined capacity building with the creation of sustainable services for dissemination managers. These services include web-sites, innovative approaches to communicate research results and guidelines for project dissemination managers. The scope of AgriFoodResults was food science with an emphasis on food safety, food processing technology, nutrition and health. The focus was primary on SMEs and small research projects. Some of the main final results of the AgriFoodResults project include:

**Virtual supermarket**

A new dissemination instrument, called Web3D Knowledge Hot Spots, which relies on the fact, that SMEs need intuitive access and guidance to R&D, instead of long texts with scientific information written in a specific domain language. "Web3D" is a virtual world where someone may navigate oneself and "Knowledge Hot Spots" are public access points for easy information transfer, like the internet, including points of interest, where someone may easily access knowledge, e.g. from a digital library.

**AgriFoodResults.eu/wiki**

AgriFoodResults.eu/wiki is a collaborative platform presenting results of food research projects. Results from national and European research projects have been made available there. Information can be searched by keywords, by projects or by categories.

**AgriFoodResults guidelines and reports**

The AgriFoodResults guidelines consist of a general guideline for dissemination managers and three guidelines with specific recommendations for reaching the main target audiences of food research projects, i.e.: food SMEs, policy makers and consumers. The project also developed several other reports, which can be found at http://www.agrifoodresults.eu.

**Communication Star 2011**

Under the auspices of the project a competition for the best dissemination activities of projects was organized. The selection of the nominees was made by a jury according to three main criteria: the communication plan, its implementation and its outcomes. The initiative raised a lot of interest as 25 European projects entered the competition. Seven nominees were selected by the jury. The final decision, based on short presentations by the nominees, was made during the award ceremony. HELENA and CASCADE projects won the Communication Star award in the category of Small and Large projects, respectively.

**Directory**
The AgriFoodResults directory contains more than 200 contact data entries of multipliers (relays) relevant to communication managers of food research projects. The contact details of each multiplier can be searched by country and by type (food industry magazines, consumer associations, food industry associations and food authorities). Only registered members can access the information.

**Further information:**
http://www.agrifoodresults.eu.

# Find out who we are…

We, the BIO CIRCLE 2 team, are a consortium aiming to foster international cooperation in the Agri-Food Sector. We try to think and act both locally and globally.

Our aim is to increase the participation of researchers from outside Europe in research projects under the Food, Agriculture, Fisheries and Biotechnology theme (FAFB) of the 7th Framework Programme for Research and Technological Development (FP7).

The project brings together the National Contact Points for FP7 in 18 different countries outside Europe, and in 5 European countries. We are your source of information to connect with FP7-FAFB research. The BIO CIRCLE 2 project is funded by the European Commission.

**Why international research cooperation?**

Research in the FAFB theme often addresses challenges that are of global interest. Take, for instance, the dual effect of agriculture on climate change and vice versa, the need for amelioration of use of water resources or even livestock diseases common to South America, Africa and China, or plants pests that occur in Australia, India and North America. To find the best solutions to these problems in the most effective way, collaboration is needed between researchers from around the world.

**What can BIO CIRCLE 2 do for you?**

BIO CIRCLE 2 assists researchers from outside Europe to improve their visibility in Europe. By using research profiling and the Research * TC publication (that you are holding), BIO CIRCLE 2 will promote scientific achievements from outside Europe towards readers in Europe!

BIO CIRCLE 2 assists researchers in strengthening their capacity regarding FP7. Via trainings organized locally or regionally, researchers will be guided through a series of administrative aspects of FP7 research projects, starting by consortium building and project proposal writing to financial reporting and project auditing!

BIO CIRCLE 2 helps non European researchers to network with European researchers providing for a hosting scheme that allows Third Countries to invite European researchers. Also, vice-versa, BIO CIRCLE2 helps European researchers to network with non European researchers providing for a working visit scheme that allows researchers outside Europe to visit European research organisations.

BIO CIRCLE 2 also helps bring together European researchers and non European researchers by organising 2 large partnering events in Europe, the first of which you are most probably attending, the Partnering Event on Call FP7-KBBE-6-2012, held in Brussels on 15/07/2011.

**More information?**
Contact your National Contact Point for FP7-FAFB research or see www.biocircle-project.eu for the list of BIO CIRCLE 2 partners.

**Contact person:**
APRE - Agency for the Promotion of European Research,
Ms. Chiara Pocaterra
(pocaterra@apre.it)

Biocircle2

Research TC, Issue 1, July 2011

This publication has been produced under the BIO CIRCLE 2 project "Reinforcing the international cooperation in FP7 FAFB strengthening the CIRCLE of Third Countries BIO NCPs", contract no. 265608. BIO CIRCLE 2 is funded by the European Commission – Directorate General for Research – 7th Framework Programme.

The views expressed in this publication do not necessarily reflect the views of the BIO CIRCLE 2 consortium, the project partner organisations or the European Commission.


Biocircle2