Activity report
2012-2015
Preparing the future

Higher education and research are the drivers of intelligent, sustainable growth. They lay the foundations of the knowledge society in which future generations will grow.

The University of Bordeaux and its partners intend to support this process by creating a campus of excellence with an international outreach, bringing together key research players in cutting-edge scientific fields: neuroscience, technologies for health, public health, materials of the future, environment/climate, archeology, optics-photonics-laser and informatics/certification.

These centers of excellence, backed by innovative educational programs, now offer major prospects for research, innovation and France’s international outreach.
Meeting the research challenges

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The goal: a competitive international research university in tune with its environment.

The 'Investments for the Future' scheme (PIA)

In 2010, the French government launched the Investments for the Future scheme to finance the projects which will shape the France of tomorrow.

A 10-year budget of €22 billion was earmarked for higher education and research, identified as key priorities.

These investments target the creation of some ten world-class clusters of excellence in higher education and scientific research.

One of the major programs selected for this far-reaching endeavor is the University of Bordeaux Initiative of Excellence (IdEx Bordeaux).

The University of Bordeaux Initiative of Excellence (IdEx Bordeaux)

In close collaboration with research bodies and partner institutions, the University of Bordeaux offers innovative research, training and knowledge transfer programs.

These programs are financed with the income stemming from a €700 million endowment granted to IdEx Bordeaux. These funds must be supplemented by partner investments and external resources (ANR or European call for proposals, private funding, etc.).

The University of Bordeaux also coordinates other projects under the ‘Investments for the Future’ scheme concerning higher education and research in the Bordeaux area, in synergy with the Clusters of Excellence (LabEx), Facilities of Excellence (EquipEx), University Hospital Institute (IHU) and Technology Transfer Office (SATT).

The Investments for the Future Unit operating within the University of Bordeaux structures and coordinates these projects and programs.

Members

› Founders: University of Bordeaux, CNRS, Inserm, Sciences Po Bordeaux, Bordeaux INP, Bordeaux Sciences Agro, Bordeaux Montaigne University.

› Partners: Bordeaux University Hospital, Inra, Inria, Ifremer, CEA, Ilemer, Aquitaine Regional Government, Urban Community of Bordeaux.

Timetable

› 2012-2015: Emergence of a major world-class multi-disciplinary research university in Bordeaux, in collaboration with the partners of IdEx Bordeaux.

› 2016-2020: “Université de Bordeaux” as a brand name and the spearhead of the international development of higher education and research in Bordeaux.
Meeting the research challenges

Through the LabEx, Clusters of Excellence, Emerging Programs and InterPIA Projects, researchers come together to focus on major research issues to prepare the future. Their efforts are backed by International Associated Laboratories, Initial Support for Exploratory Projects and Associated International Chairs.

Focusing on talents

As today’s researchers and doctoral students are increasingly mobile, specific programs are offered in the aim of attracting and supporting the projects of top talents. The actions of IdEx Bordeaux particularly aim to improve the quality of the working environment, career prospects and incoming and outgoing mobility. Five dedicated programs: International Doctorates, International Post-Doctorates, Visiting Scholars, Junior Chairs and Senior Chairs.

Innovative educational programs

Creating tomorrow’s innovative courses

To prepare students for today’s and tomorrow’s career requirements, IdEx Bordeaux invests in the constant renewal of its full-time and lifelong training programs. This renewal is based on the Innovation in Education, International Master’s Degrees and Training Platforms programs.

Promoting students empowerment

Nurturing students’ spirit of initiative to accelerate their professionalization is a core focus of IdEx Bordeaux. Six dedicated programs: PhD Career Center, Ambassadors, Innovation Pathways, Entrepreneurship, Student Jobs and Alumni.

Effective knowledge transfer

Building an international outreach

IdEx Bordeaux’s international dimension underpins all of its research, training and knowledge transfer activities. Four specific programs support this ambition: Bordeaux International Support, Travel Scholarships, International Summer Schools and International Conferences.

Connecting with society

To fully contribute to the region’s competitiveness, the University of Bordeaux and its partners work in close collaboration with socio-economic stakeholders. Five initiatives promote the circulation of people and knowledge between academia and society at large: Social Innovation Connectors, Social Innovation Projects, Arts and Sciences, Multi-disciplinary Research Agendas and Spring.
Meeting the research challenges
ARCHEOLOGY

Cluster of Excellence (LabEx)

LabEx Sciences Archéologiques de Bordeaux (LaScArBx)

Under the leadership of Valérie Fromentin, Pierre Guibert, Bruno Maureille, Jérôme France and Nathalie Fourment

Objective

Studying the relationship between man and his surroundings from Prehistory to the end of the Middle Ages.

29 projects / 179 researchers involved

78 publications citing LabEx / 47 international academic collaborations

Over €7 million in public–private co-financing / 2 IUF nominations and 2 CNRS medals

I have the pleasure to work with Dr. Marian Vanhaeren, CNRS Researcher at the PACEA laboratory, on a cooperative project within the framework of LaScArBx, dealing with body decoration in several of the many ethnolinguistic groups of Mainland and Island New Guinea as a model to better understand personal ornaments in archeology contexts worldwide, especially of the Aurignacien in Europe. This period is characterized by a spatial and temporal pattern of types of body decoration ("beads") suggesting that they were ethnic markers and had symbolic function. The same is true for New Guinea. Modelling environmental niches ("ecolinguistic niches", the PhD work of Nicolas Antunes within our project) can predict the habitat and borders of a small number of ethnic groups, whereas the same environment (e.g. of the central mountain range) usually is home of many such groups. The concept of "cultural pseudospeciation" and the ethological concept of character enhancement are promising avenues to shed light on the question why humans form culturally coherent groups and subgroups.

Wulf Schiefenhövel, Anthroplogy Professor, Max Plank Institut für Ornithologie (Germany)

Zoom

The launch of a partner international laboratory (LIA) dedicated to prehistoric art in Eurasia

Studying and comparing the prehistoric art works discovered in Western Europe and Siberia – such is the objective of the new partner international laboratory (LIA) with the IdEx Bordeaux status, Commonly called ARTEMIR (Multidisciplinary Research on Prehistoric Art in Eurasia), this new laboratory was launched following the signing of a memorandum of understanding on January 5, 2015 between the University of Bordeaux, the Novosibirsk State University, the Institute of Archeology and Ethnography (Siberian branch of the Russian Academy of Sciences) and the Russian Foundation for Basic Research. This cooperation is aimed at harmonizing methodological approaches and adjusting and sharing analysis tools, in particular those allowing 3D reconstruction.

http://lascarbx.labex.u-bordeaux.fr/en
Cluster of Excellence (LabEx)

Bordeaux Région Aquitaine Initiative for Neurosciences (BRAIN)
Under the leadership of Daniel Choquet

Objective: Addressing the major challenges facing neuroscience research by initiating multi-disciplinary projects with an international scope.

Zoom

The Bordeaux School of Neuroscience (BSN)
Unique in Europe, BSN aims to offer the international community a high-level technology platform, allowing the set-up of training in neuroscience research, based on experimental practice. On the strength of this distinctive asset, BSN entered into a partnership in July 2014 with FENS and IBRO – two of the major organizations dedicated to neuroscience research – for the launch of the Cajal Advanced Neuroscience Training Program. The School will thus host the first two sessions of this program in 2015, followed by four more in 2016. The BRAIN LabEx is providing support of €17 million for this project. A large part of this funding is earmarked for the purchase of initial equipment and the running of the School of Neuroscience. Additional support is guaranteed by IdEx Bordeaux (€100,000 for the first year) and other funding will be sought from the Aquitaine Regional Government.

Daniel Choquet, Research Director at the CNRS and Director of the Interdisciplinary Institute for Neuroscience (CNRS, University of Bordeaux)

http://brain.labex.u-bordeaux.fr/en
Facility of Excellence

Human phenotyping and virtual reality (PHENOVIRT)
Under the leadership of Pierre Philip

Objective
Simulating ecological environments in virtual reality to study the behavior of users in situations such as sleep disorders, attentional disorders and cognitive disorders; increasing knowledge of those conditions in order to improve their treatment; using virtual reality technologies to analyze behaviors and create virtual agents for diagnostic purposes, healthcare and education.

4 cutting-edge virtual reality simulators
A 150m² platform and dedicated technical and clinical research personnel
€3.5 million budget / 4 industrial partnerships

Driving simulator

A virtual doctor to diagnose sleep disorders
Excessive daytime sleepiness (EDS) affects 10% of the population. It can now be diagnosed by a virtual doctor developed by the Sleep, Attention and Neuropsychiatry Laboratory (SANPSY) of the University of Bordeaux. The team has developed an animated conversational agent (ACA) capable of conducting a clinical interview with a patient to diagnose EDS, based on a medically validated sleepiness scale (Epworth Sleepiness Scale). The results published in the scientific journal Presence revealed the tool’s high effectiveness, as 80% of the results matched those obtained by real doctors. Moreover, most of the subjects who tested the system found it a pleasant experience. Likewise, the diagnosis of depression is currently being validated and a new-generation ACA is being developed to work on the detection of addictions.

For doctors, this is diagnostic aid. For patients, it allows home-based care. In the case of symptoms such as excessive daytime sleepiness, the virtual doctor allows regular follow-up and can help to prevent accidents.

Pr. Pierre Philip,
Director of the SANPSY laboratory
Facility of Excellence

**OptoPath**

Under the leadership of Véronique Deroche-Gamonet

**Objective** Establishing a platform for innovations in instruments and procedures in experimental psychopathology.

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8 academic research groups / 3 industrial partnerships
€6 million budget / 4 targets: addiction, obesity, post-traumatic stress disorders, amnestic disorders associated with aging

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**Zoom**

**COCADDICT: a transnational project for the translational study of addiction to cocaine**

OptoPath provided decisive arguments that convinced key partners to take up the joint challenge of understanding the neuronal alterations involved in addiction. The COCADDICT consortium was founded and obtained funding of over €700,000 following a call for proposals from ERA-Net NEURON II. Coordinated by Véronique Deroche-Gamonet, this project involves a unique combination of neuroimaging in humans (Professor Marco Leyton, Department of Psychiatry, McGill University, Montreal), neuroimaging in rats (Professor Rainer Spanagel, CIMH, Heidelberg University, Mannheim) and the detailed analysis of neural circuits via electrophysiology and optogenetics (OptoPath, France).

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OptoPath is dedicated to innovation in instruments and procedures. It seeks to understand psychopathological mechanisms and identify relevant therapeutic targets: the real-time recording and manipulation of the neuronal populations involved in the expression of pathological behaviors in rodents, with a high validity in translational terms.

Véronique Deroche-Gamonet, Research Director of Inserm’s Physiopathology of Neuronal Plasticity Unit

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http://optopath.equipex.u-bordeaux.fr/en
Cluster of Excellence (LabEx)

Translational Research and Advanced Imaging Laboratory (TRAIL)
Under the leadership of Vincent Dousset

**Objective**

Fostering technological and methodological innovation applied to physiopathologic and clinical research.

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47 publications and 8 patents / €8.360 million in co-financing
€4 million invested by TRAIL / 18 industrial partners
Multidisciplinary community of 240 collaborators (physicists, biologists, mathematicians, chemists, computer scientists, clinicians, etc.)

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TRAIL has strongly impacted the Bordeaux imaging community by structuring research through 7 scientific pillars (work-packages) and by organizing multidisciplinarity between 8 core laboratories. The input of the 28 TRAIL granted projects made the cement to build translational research using the world-class imaging platform (part of national France Life Imaging infrastructure) and offered the capability to perform research from the most basic to clinical applications and cohort imaging in association with hospitals and cancer institutes. The leverage effect made it possible to raise 8.3M€ (1M€ private cofinancing) leading to 30 staff recruitments, 20 international collaborations, 4 European projects, 5 invited professors, 18 industrial partners, and a strong interaction with the "Initiative of Excellence" IdEx of Bordeaux and other PIA projects (Clusters on mathematics and on neurosciences, IHU Cardiology, i-Share, Ofsep).

Vincent Dousset, Head of TRAIL

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**Zoom**

Translational Research

Translational research involves developing techniques and applying them to humans. A good example of TRAIL: Focused Ultrasound. After technology maturation and multiple trials, a prototype to treat breast cancer under MRI control without surgery was developed by the TRAIL group, a Bordeaux company and the University of Utah. A world first is currently in progress at Institut Bergonié. Similarly, FUS is now being tested on the heart to treat arrhythmias in collaboration with the IHU Liryc. Translational research also involves improving existing techniques for understanding pathophysiology. TRAIL physicists and neuroimaging specialists have just done this by improving the anatomical resolution of MRI to find the vulnerable area of the brain in memory disorders of patients with inflammatory diseases.

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http://trail.labex.u-bordeaux.fr/en
University Hospital Institute (IHU)

Electrophysiology and Heart Modeling Institute (Liryc)
Under the leadership of Professor Michel Haïssaguerre

Objective

Studying, diagnosing and treating electrophysiological disorders of the heart, which are the cause of numerous cardiovascular diseases and sudden deaths, and are consequently directly or indirectly responsible for nearly one third of deaths worldwide. The Liryc IHU is jointly supported by the University and by Bordeaux University Hospital. The Bordeaux University Foundation directly contributes to its structuring by acting as an umbrella organization for Liryc.

150 researchers of 15 different nationalities / 20 practitioners
Over 200 scientific publications per year
No.1 contributor of communications to the Heart Rhythm Society meeting (Denver, USA)
No.1 annual international event in electrophysiology and heart stimulation

Zoom

Liryc moves into its new building in 2015

This innovative, upscale building located on the site of Xavier Arnozan Hospital in Pessac was co-funded by the Aquitaine Regional Government and was delivered in stages starting in June 2015. A total surface area of nearly 6,000 m² will be dedicated to the study, diagnosis and treatment of electrophysiological disorders of the heart. This unique European platform will bring together some 150 researchers, for an exceptional concentration of world-class medical and scientific skills in cardiology, electrophysiology, medical imaging, image analysis and modeling. The construction of the building was launched in 2014, with the first stone being laid at the February ceremony, during which Manuel Tunon de Lara, President of the University of Bordeaux, recalled that Liryc «is a challenge that we have chosen to address together. The University of Bordeaux is a major innovation player and large-scale projects like the Liryc IHU enable us to play this role in our society». The building is due to be delivered at the end of 2015.

www.ihu-liryc.fr
Facility of Excellence

**MUSIC**

Under the leadership of Pierre Jais

**Objective**

Developing a cardiac exploration instrument to improve the defining of electrophysiological disorders of the heart.

120 cases of atrial fibrillation and 20 cases of atrial tachycardia treated every year through MUSIC

Over 150 patients were treated on site with the MUSIC software and over 40 patients were treated abroad within the consortium (cf. zoom)

10 or so training sessions per year for doctors

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*Thanks to MUSIC – the software we developed using a combination of X-ray and IRM equipment – we have wonderful guidance during the operation. It is possible to reconstruct in 3D the internal and external walls of the ventricular cavity. We thus see the thickness of the tissue, the coronary arteries, the phrenic nerves and all scarred areas. It’s as if we’ve turned on the light in a room in which we previously worked in the dark.*

Pierre Jais, Professor of Cardiology at the University of Bordeaux and cardiologist at the Bordeaux University Hospital

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**Remote treatment through MUSIC**

The purpose of MUSIC was to develop a multimodal electrophysiological and imaging data processing platform, and to process this data in the highest available standards by combining it to obtain a highly detailed 3D model of the patient’s heart. MUSIC has achieved this objective for ventricular arrhythmias. A website was created to enable a dozen leading centers worldwide to send in their raw data. This data is processed in less than 24 hours and multi-parameter models are sent to the centers. They can then load these models into their catheter navigation systems. The customized model is then used to guide procedures in diseased areas and to avoid sensitive structures like coronary arteries and phrenic nerves. The American centers are particularly active and the MUSIC software was used by the group led by F. Marchlinski at the VT Symposium of Philadelphia in October 2015. « This annual meeting is the world’s major event in ventricular arrhythmia ablation techniques. We are thus particularly happy that the fruit of our project was presented there by people other than us. » - Pierre Jais
Cluster of excellence

CPU
Under the leadership of Thierry Colin

Objective: Unite key Bordeaux stakeholders in the digital sciences to develop these to a level allowing their use as a certification tool; stimulate the innovation, competitiveness, visibility and attractiveness of the CPU community in terms of research, education and development, especially internationally.

43 research projects with CPU funds / 3 start-up projects maturing
8 research projects with IdEx funds involving CPU (3 from the InterLabEx program,
5 from the CPU transfer program)
220 members (lecturers, researchers, engineers, etc.)
Backings of 5 training courses at University of Bordeaux and Bordeaux INP

In the field of IT, nothing should crash or freeze. If this were the case, it is definitely due to human error. To overcome such issues, we have set up a software platform for visualization and simulation of distributed algorithms, Visidia; a platform that has been approved within the framework of CPU. It relies on visualization to understand the basics of distributed computing. When you write an algorithm, it is sequential in your head, you write for one process at a time. But today, once you are behind a computer, you do not address a single user, but a group connected by the network, up to several million at the same time. You have to think differently.

Mohamed Mosbah - Deputy director of LaBRI - Bordeaux INP

VolBrain: an online MRI brain volumetry system

Pierrick Coupé (LaBRI - University of Bordeaux, CNRS, France) - a member of the CPU cluster - and José V. Manjón (IBIME - UPV, Spain) have developed volBrain: a new, free online system able to automatically analyze MRI data from the brain. The system enables scientists worldwide to obtain key cerebral information in order to advance in research on neural pathologies. It provides information on the tissue volume in the intracranial cavity, as well as the cerebral hemispheres, the cerebellum and the brain stem.

http://cpu.labex.u-bordeaux.fr/en

Automatic segmentation of 3D MRI obtained with volBrain
Cohort on student health

i-Share
Under the leadership of Christophe Tzourio

Objective. Collecting, analyzing and exploiting the results of a study conducted with 30,000 students over a period of 10 years, to improve understanding of their current health issues and determine the impact of their current habits on their future health.

30,000 students / 10-year study
8 main fields of research: mental health (anxiety, stress, depression, etc.), migraine, sexually transmitted infections, high-risk conducts and behaviors (alcohol, drugs, etc.), sleep, nutrition, physical activity, and brain function.

The i-Share cohort came to be because there is little information on the health of young adults. By monitoring their health over a 10-year period, i-Share will provide better understanding of their health status and its determinants, and make it possible to track its development over time. This platform will also allow targeted research projects to be set up.

Pr. Christophe Tzourio, neuroepidemiologist in Bordeaux and in charge of the i-Share study

The brain MRI projects conducted with the cohort

The study of brain maturation and, in particular, that of brain reserve which is related to cognitive capacities and, in old age, to Alzheimer’s disease, is a major i-Share project. This year, the University of Bordeaux acquired a state-of-the-art 3 Tesla MRI system, partly funded by i-Share, to carry out 2,000 MRI scans on i-Share participants over a period of 18 months. «It is now recognized that brain reserve develops in early adulthood and that higher education is a known protective factor against brain aging. These MRI scans will enable us, inter alia, to examine the link between higher education, social/psychological/genetic factors and brain maturation», explains Pr. Christophe Tzourio, neuroepidemiologist in Bordeaux and in charge of the study. «We will also study the impact of stress and depression on brain areas such as the hippocampus, since we know that these factors have a negative impact on memory», he adds. The i-Share program also includes a study of the treatment of stress via a smartphone application. Concerning migraine, the study of brain microvessels will improve knowledge of the physiopathology of this disorder.

Reconstruction of tracts of white matter via diffusion MRI

www.i-share.fr
Emerging Program

HEAlth Determinants in Societies (HEADS)
Under the leadership of Pascal Ragouet

Objective
Accelerating innovation in research and the organization of healthcare systems by promoting and supporting multi-disciplinary brainstorming and research.

- 4 research projects launched on the loss of autonomy in old age, the impact of medication regulation, successful schooling, and psychosocial risks in the workplace
- 4 theses produced (health law, psychology, and political science)
- 3 internationally renowned speakers giving talks on crucial issues for the future (the economic and social determinants of health, mental health categorization, and occupational stress)
- 2 editions of the Bordeaux International School of Population Health Sciences (BISPHS)

Interdisciplinarity helps to take account of the complexity of the subjects on which we are working. To allow dialog between disciplines, their representatives firstly need to listen, exchange, and become aware of the mutual benefits to be drawn for their own work. HEADS can and must contribute to the development of structures within the Bordeaux site which will promote real interdisciplinary dialog on the relationships between health and society. And, since disciplinary traditions vary from one country to another and health systems are not organized in the same way, it is important that this interdisciplinarity be rooted in a comparative approach and that we intensify our exchanges with foreign colleagues.

Pascal Ragouet, University Professor and Research Fellow at the Émile Durkheim Center

Zoom

Allen Frances in Bordeaux

In order to create an inclusive research community in Bordeaux focused on the links between health and society, the HEADS emerging program offers a series of scientific seminars led by internationally renowned researchers specializing in this field. One of the most prominent was the lecture given on November 26, 2014 by American psychiatrist Allen Frances, Professor Emeritus at Duke University. This researcher is best known for chairing the think-tank that produced the fourth revision of the Diagnostic and Statistical Manual (DSM-IV), a reference work published in 1994, characterizing and classifying all known mental disorders. He is also at the vanguard of the critiques of the subsequent version of this manual (DSM-5), a highly controversial update, due to the extension of the list of pathologies to disorders until then considered as minor – giving rise to the risk of overdiagnosis and excessive medicalization. Allen Frances' lecture focused on health classifications and categories, and in particular on the social, political, ethnic and cultural factors to be taken into account in the defining of mental disorders. The lecture is available in full on the HEADS website.

http://heads.u-bordeaux.fr/en
Objective
Developing tools to understand and predict the evolution of ecosystems and developing adaptive management and governance methods to ensure their sustainability.

35 projects carried out and in progress / 46 publications
20 European projects financed / Over €9 million in public/private co-financing
Over 70 socio-economic partners
2 ERC grants, 3 INRA awards and 1 prize from the Entomological Society of France

The pesticides in question

The COTE laboratory of excellence is setting up a pesticide research project using a bottom-up approach. Since France is Europe’s biggest consumer of pesticides, knowing their current and future impacts on our ecosystems, as well as the possible alternatives for their reduction while meeting user expectations, is a priority which must be addressed. This project, set up in close collaboration with the region’s socio-economic stakeholders, aims to understand the various processes involved in the transfer, contamination and impact of pesticides, from the agrosystems where the pesticides are used to the ecosystems affected across the region (soils, Gironde estuary, etc.), according to agricultural practices. Secondly, on an economic level, this project aims to define and assess various scenarios of changes in practices, and predict their environmental impacts.

http://cote.labex.u-bordeaux.fr/en
Facility of Excellence

**Xyloforest**
Coordinated by Jean-Michel Carnus (Inra)

**Objective** Preparing the forests of the future and making optimal use of wood resources.

- 6 technical platforms / €10.2 million in PIA financing between 2011 and 2020
- 14 laboratories mobilized across 6 French regions
- 8 institutional and financial partners
- 1 project set up in collaboration with partners from the Xylofutur competitiveness cluster
- 1 project included in 2 European R&D infrastructures (ICOS and Tree4future)

The prime and overall objective is to contribute to the adaptation of forests and to the mitigation of climate change through the optimum use of wood and the development of a sustainable forest bio-economy. In scientific terms, this means improving our basic knowledge of forest ecosystems, the formation of wood, wood-based materials and wood chemistry.

Jean-Michel Carnus, Coordinator of the Xyloforest platform (Inra)

**Zoom**

**XYLOMIC, a tree genomics and phenotyping platform**

Using cutting-edge technological tools, geneticists seek to understand the environmental and genetic determinants of the variability of wood, as well as the biological and ecological processes involved in its production. XYLOMIC is dedicated to the study of the genome of trees and to the detailed study of the measurable characteristics of wood, covering the specific characteristics from its DNA to its phenotype. XYLOMIC aims to identify efficient genotypes for sustainable silviculture. The 2020 objective is to deliver significant databases of sequences, genotypes and phenotypes to improve the understanding of the formation of wood according to the environment and its variability within populations, and to identify DNA markers associated with remarkable characteristics.

[www.xyloforest.org/en](http://www.xyloforest.org/en)
AMADEus
Under the leadership of Étienne Duguet

Objective
Designing functional materials for tomorrow’s uses and needs by bringing together experienced researchers.

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3 projects / 46 researchers involved and 36 lecturer-researchers, i.e. a total of 82 people
48 publications and 13 patents / Over €9 million in public-private co-financing
2 industrial partnerships
3 IUF members, 4 CNRS medals and 1 ERC nomination

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The University of Bordeaux is renowned for its research in materials science. In particular, several electrochemical teams have earned recognition by linking this discipline with that of the architecture of materials. The advantage of being part of the AMADEus LabEx is the possibility of developing my scientific and personal skills by participating in international conferences, exchange programs and inter-laboratory meetings.

Aleksandar Karajic, Serbian doctoral student at AMADEus

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Zoom

Could the fantasy of invisibility become a reality?

Who hasn’t dreamed of wearing an invisibility cloak like Harry Potter? Thanks to metamaterials, this may soon become a reality. Researchers from the AMADEus Laboratory of Excellence recently developed the first acoustic metamaterials in 3 dimensions. Boasting electromagnetic properties unseen in any homogeneous natural material, metamaterials are composite materials capable of bending and controlling waves, in particular sound and light waves. Based on these uncommon properties, researchers have developed the first negative index 3D material supporting ultrasounds. To achieve this, they have created a new type of metamaterial made up of porous silicone micro-beads suspended in a water-based gel, and literally had ultrasounds doing the moonwalk. These new-generation “flexible” metamaterials hint at numerous applications in ultrasound imaging (ultrasound scans, sound insulation, stealth in submarine acoustics, etc.) or for the manufacturing of materials. Most significantly, they bring the old fantasy of invisibility back into the limelight.

The results of this research were published in the Nature Materials journal on December 15, 2014.

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http://amadeus.labex.u-bordeaux.fr/en/
Facility of Excellence

ELORPrintTec
Under the leadership of Georges Hadziioannou

Objective
Tackling the challenges of flexible and printable organic electronics.

Zoom
Cluster 3, from basic science to industry

Cluster 3 (vacuum processing and physico-chemical properties evaluation line) is a world-unique cutting-edge system that makes it possible to understand phenomena at the level of the interfaces and surfaces of thin films used in electronic devices, as well as produce small series of devices for the manufacturing industry such as display panels for e-books, photovoltaic cells for solar panels and OLED lamps for low-energy lighting. On an economic level, the 2027 market is estimated at €240 billion across a wide variety of fields such as e-books, solar energy and lighting. In the face of competition set to be fierce, it is important to take position in this high-tech sector which will provide numerous jobs. ELORPrintTec addresses this major challenge.

Chemistry has provided me with the means to understand and transform matter, and do wonders. Chemistry is the basis of everything. Without chemistry, there is no medication, no food. And chemistry becomes even more powerful when it interfaces with physics and engineering. ELORPrintTec is a unique tool that enables us to go even further by exploring these frontiers in the emerging fields of science, technology and medicine.

Georges Hadziioannou, Professor of Chemistry at the University of Bordeaux, Holder of the Industrial Chair of ANR/ARKEMA HOMERIC, Scientific Director of AMADEus

http://ELORPrintTec.u-bordeaux.fr
Cluster of Excellence

Laser and Photonics in Aquitaine (LAPHIA)
Under the direction of Lionel Canioni

Objective
Strengthen research linked to different sites’ federal projects through the support of its teams of excellence working in physics and material sciences.

22 research teams (about 120 researchers and professor-researchers)
11 laboratory partners / 32 projects launched
41 recruitments (76% foreign nationals) / 1 Student Chapter in Optics
15 international internships

More than 200 publications (RICL) per year (more than 30 of which have an IF greater than 6) / 4 IUFs

Firstly, LAPHIA helped me find a very good Master’s internship in one of its partner laboratories. In connection with the cluster’s manufacturing partners, I received a grant from the company Amplitude Systems, which specializes in new generations of lasers, and that enabled me to continue my research work on the optimization of laser performance for three months in the laboratory. I then applied for and received a CIFRE doctoral placement. Moreover, thanks to the LAPHIA initiative, I am also part of the «Bordeaux SPIE Student Chapter in Optics» network which enables the Bordeaux-based student community focused on laser and photonic fields to unite around this discipline along with a worldwide network. Aside from this opportunity for professionalization, my academic path shows how the LAPHIA community is organized in such a way that it can help any motivated student continue their education in the best conditions.

Wendwesen Gebremichael, former Master’s student, Friedrich-Alexander University (Germany)

Collaborative project on innovative phonotics materials

Collaborative projects are cornerstones of the LAPHIA programs and INPHOTARCH (Integrated Photonics Architectures) is one of them. Started by LAPHIA, it brings together more than twenty people from four different laboratories with cutting-edge skills in optics, lasers, and materials chemistry. Its objective: developing a new generation of hybrid photonic structures (organic/inorganic) through the use of molecular and supramolecular photonic engineering as well as through structuring via lasers and different-scale electric fields (which will be compatible with their inclusion in assistive devices). This project offers two focal points of highly ambitious work: structuring via lasers and electric fields on one hand, and molecular photonic structures on non-conventional surfaces on the other. Promising scientific results have already been obtained: around 100 publications in leading international journals, 16 international invited conferences, 8 international invited seminars, 60 oral communications, 3 filed patents, one of which is on the μ-structuring of glass materials via electric field, granted outside funding (Aquitaine région, ANR, etc.), the launch of an International Associated Laboratory between the University of Laval, the INRS (Canada) and the University of Bordeaux «LUMACQ».

http://laphia.labex.u-bordeaux.fr/en
Facility of Excellence

PETawatt Aquitaine Laser + (PETAL +)
Under the leadership of Dimitri Batani

Objective
Developing the first plasma diagnosis for the LMJ/PETAL facilities, where the Laser Megajoule developed by the CEA will be coupled with the short-pulse high-intensity PETAL laser (financed by the Aquitaine Region); allowing the measurement of the properties of laser-irradiated matter under extreme conditions of density, temperature and pressure; developing insertors (SID) to insert the diagnosis in the interaction chamber.

49 scientists involved / 15m: length of the final devices (transfer box + insertor + diagnostic extension)
1 set of 4 diagnostics: SPECTIX (X-ray spectrometer), SESAME (electron spectrometer), SEPAGE (ion/proton spectrometer) and CRACC (radiography module)
€9.3 million budget

Zoom

Young French and European researchers working on the preparation of the first physics experiments on LMJ/PETAL

Guillaume Boutoux (a former PhD student from CENBG) and Katarzyna Jakubowska (a former employee from Institute of Plasma Physics and Laser Microfusion in Warsaw) are taking part in the Equipex PETAL+ related to study, development and optimization of diagnostics for the PETAL laser (PETawatt Aquitaine Laser). They are involved in calibration and testing of X-ray, electrons and ions detectors. The work includes several studies related to reflection of the crystals proposed for the X-ray spectrometer as well as the calibration and simulation of the imaging plates (IP) that record all the signals. In the framework of the PETAPHYS project (LAPHIA), they are also developing two additional diagnostics that will characterize the focal spot of the PETAL laser and the production of hard X-rays. They are also involved in the preparation of first LMJ/PETAL “academic” experiments that will take place by the end of 2016.

Together with Laser Megajoule (LMJ), PETAL will be a unique facility in the world allowing creating states of matter in extreme conditions of temperature, density and pressure. This will allow to simulate astrophysical events at small scales in the laboratory but also to study material science, and to progress in the field of inertial confinement fusion. With PETAL we will also be able to study the generation of high-energy radiation and particles. Understanding the physics of such process will open the way to new applications including new particle and radiation sources for medicine and plasma diagnostics.

Dimitri Batani, Physicist, lecturer-researcher at the University of Bordeaux

http://petal.aquitaine.fr
International Associated Laboratories (LIA)

**Objective**
Using the CNRS LIA initiative to develop research relationship with IdEx Bordeaux’s international partners on scientific priorities.

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**18 LIAs involving the University of Bordeaux**
4 with Japan / 6 in nuclear physics
4 years: duration of the LIAs, with the possibility of their renewal
6 LIAs coming under the IdEx Bordeaux status

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**Primary objective of LIA-CNPA is to promote collaboration between the associated laboratories but also to provide an official and global framework for French/Japanese exchanges. For this purpose, I participate actively in the establishment of double/joint degrees between Japanese universities and the University of Bordeaux.**

Reiko Oda, Research director, CNRS, coordinator of LIA «Chiral Nanostructures for Photonic Applications»

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**Zoom**

**Collaboration between France and Japan**

The LIA «Chiral Nanostructures for Photonic Applications» (CNPA) was launched on October 2, 2015. This LIA fits into the scope of the France-Japan collaboration and concerns the design, synthesis and characterization of hybrid chiral nanostructures for applications such as light management, sensors, chiral separation and chiral catalysis. This new LIA is the fruit of over 15 years of collaboration between the University of Kumamoto, the University of Kyoto and the University of Bordeaux’s CBMN (Chemistry and Biology of Membranes and Nano-objects), Bordeaux INP (National Polytechnic Institute) and the CNRS (French National Scientific Research Center).
InterPIA Projects

Objective

Encouraging high added value projects between multi-disciplinary research communities as part of projects coming under the PIA in Bordeaux and using all the skills of the Bordeaux site.

4 distinct interPIA programs: interLabEx, common call for projects with SIRIC, CPU Transfer and Joint Facilities / 7 interLabEx projects
4 projects supported under the joint AAP with SIRIC BRIO (interdisciplinary oncology research)
5 CPU Transfer projects / 1 joint facility: IRM XT

Zoom

LITAQ: reconstituting the history of Aquitaine’s coastline in order to predict its evolution

LITAQ is an InterLabEx project which established synergies between the communities and the expertise of LaScArBx and COTE. The objective: reconstituting the evolution of Aquitaine’s coastal populations in prehistory and antiquity, as well as their environments. This project was voluntarily limited to a first case study (the coastline of northern Médoc), on which the two LabEx entities had already worked on an individual basis. Indeed, the interactions between man and his environment in Aquitaine are a focus of study for both the LaScArBx and COTE laboratories, using different yet complementary approaches. The archaeologists of LaScArBx, who possess data on the human occupation of Aquitaine dating back several thousand years, provide COTE’s (paleo)environmentalists with information on the evolution of settlements and societies. Reciprocally, the COTE laboratory’s (paleo)environmental data on the evolution of the climate and landscape is essential for understanding changes in human settlements.

This project, which runs until the end of 2015, has already provided precious information on the evolution of environments in the Gironde estuary. Its follow-up will most certainly be assured by national funds requested from the INSU (EC2CO) and the ANR.

The idea of the ExtraBrain project stems from two facts: the lack of methodology to investigate the intimate structure of the brain’s extracellular space and the hypothesis that this extracellular space plays a key role in the brain’s physiology and pathologies (in particular Parkinson’s and Alzheimer’s diseases). The discussion involving 4 Bordeaux researchers from different disciplines led to the proposal of new methods to investigate this space in order to understand physiological and pathological roles. This project thus seeks to achieve both methodological and conceptual progress. Indeed, the two aspects are closely linked since totally new tools and concepts in the fields of nanophysics, chemistry and neurobiology have been put forward for this project. The project was submitted to the «ERC synergy» call for proposals in 2012 and again in 2013, where it received an excellent rating but was unable to obtain funding. The ERC’s Synergy program was subsequently discontinued. In parallel, preliminary experiments were conducted using the internal budget. It was at that time that the project was submitted to and supported by IdEx Bordeaux.

Laurent Cognet, Research Director at the CNRS, talking about the ExtraBrain project (LAPHIA and BRAIN)
Initial Support for Exploratory Projects (PEPS)

**Objective**
Fostering new multi-disciplinary research momentum through exploratory research projects known to comprise risks and involving several players.

- 4 calls for proposals since 2012
- 74 exploratory projects provided with initial support since 2012
- 1 year: duration of the support

**Zoom**

**CaRaMel3d (3D Medical Imaging Calibration and Adjustment)**

The clinical monitoring of slow-growing tumors is a major medical problem. The doctors at Institut Bergonié (regional cancer institute) seek to assess the aggressiveness of lung tumors. A partnership between the institute’s teams and mathematics researchers from the Institute of Mathematics of Bordeaux (IMB) – mixed research unit 5251/University of Bordeaux INP – has already made it possible to develop a mathematical model associated with an imaging calibration technique to assess the aggressiveness of tumors through 2D cross-sections. While these results are very encouraging, the 3D view of the growth of a tumor cannot be taken into account for the moment. The objective of the project led by Olivier Saut and his team at IMB is to develop new imaging machine adjustment and calibration algorithms in order to take into account this 3D image, which is indispensable for the clinical monitoring of slow-growing tumors. The bulk of the work done in this project has focused on the calibration of imaging devices. The approach used for this process has been totally reviewed. An application is being developed to take account of all of the 3D spatial information contained in the patient’s medical images. This new calibration method considerably reduces the amount of time required to adapt the devices’ mathematical model to each patient.

Associated International Chairs

**Objective**
Developing large-scale projects on the Bordeaux site in terms of research, innovation and knowledge/technology transfer, through projects led by internationally renowned academics carrying out their main work abroad and wishing to develop new activities in the research and training units or in innovation facilities in Bordeaux.
RESEARCH FOR THE FUTURE

Focusing on talents
Visiting scholars

Objective: welcoming internationally renowned researchers and lecturers to share their experience and set up international collaborations and partnerships.

138 financing operations

I’ve always wanted to explore the world of aeronautical engineering in France and this is the perfect opportunity to work alongside a capable team of experts. The main focus of my work at the University of Bordeaux is in the area of multi-rotor Unmanned Aerial Vehicles (UAV). (...) Furthermore, we are discussing a possible research program on developing new, unique, and effective fault tolerant flight control strategies for multi-rotor Unmanned Aerial Vehicles. We would like to involve graduate and undergraduate students from UBx and University of Cincinnati in this research program. We are also looking into joint educational opportunities in the area of aeronautical engineering.

Kelly Cohen, professor of Aerospace Engineering at the University of Cincinnati, has moved to Bordeaux for several months as part of the Visiting scholars’s scheme.

International Doctorates

Objective: Increasing the expertise of the new generation of researchers through the international opening-up of doctoral studies. Support is granted to doctoral students with promising projects doing their theses in a specific international context (jointly supervised by a French and a foreign institution) or in a joint international laboratory (key institutional partners).

104 projects supported (including 74 doctorates, of which 35 are co-financed)
1 out of 3 doctoral students are foreign nationals
53 international academic partners
50% of the projects lead to double doctorates (jointly supervised theses)

On a purely scientific level, this exchange has increased the scope of my technical skills and enabled me to investigate an in vivo aspect of my project. [...] Moreover, this joint supervision gave me the opportunity to create links with the University of Bordeaux and the MIT. [...] On a more personal level, having been able to benefit from the exceptional environment of the MIT campus is clearly an asset for my young scientist’s career.

Julie Jezequel, doctoral student, International Doctorate Campaign 2012, under the leadership of Laurent Groc, Institut Interdisciplinaire de Neurosciences.
International Post-Doctorates

**Objective** Allowing young international researchers to carry out their research projects in one of Bordeaux’s research laboratories. Support is granted to researchers from all disciplines demonstrating excellence in terms of their profile and their project.

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28 projects financed
13 different countries of origin

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**Zoom** The work of Philip Von Paris doing a post-doctorate at the Bordeaux Laboratory of Astrophysics (LAB, UMR CNRS 5804), working with Franck Selssis

Are the atmospheres of (terrestrial) exoplanets detectable from Earth? Is it possible to characterize these atmospheres, their composition, their temperature? How can we determine the habitability of discovered exoplanets? To address these fundamental questions, this project aims at developing a consistent retrieval system for the interpretation of spectroscopic data of exoplanetary atmospheres. It is the first to investigate consistently the retrieval process for general types of exoplanets, ranging from (hot) terrestrial planets to hot Neptunes and Jupiters.
Junior Chairs

Objective | Supporting young high-level researchers in their own research activity in one of Bordeaux’s laboratories. Support is thus provided to young foreign researchers coming to do research in Bordeaux in any field, having demonstrated a capacity to lead a research team at the highest level.

2 campaigns (2014, 2015)
5 Chairs awarded, including 3 to researchers coming from the United States
5 laboratories involved (Incia, Biogeco, ICMCB, Cirid, IBGC)

After 10 years abroad, I wanted to return to France. I had read a summary of the research of Ivan Huc in a journal, and that’s how I found out about the Institut européen de chimie et biologie (IECB), an interdisciplinary chemistry and biology institute with a system that allows young researchers to be independent. That’s what I was looking for – to be the leader of my own team. And from a geographical point of view, Bordeaux seemed a pleasant place to live. For my financing, I was awarded an IdEx Junior Chair which matched my needs. This Chair is crucial for my laboratory since, in addition to my salary and the cost of equipment purchases, it will finance my post-doctorate. After 10 years abroad, this IdEx Chair at IECB is a good way of coming back into the French system and, at the same time, getting real support for my research.

Frédéric Friscourt, Chemist who arrived at IECB in October 2014

Last year I was interviewed for a group leader position at the Institute of Biochemistry and Cellular Genetics in Bordeaux and was then offered a position. The Institute’s research expertise matches perfectly with my own research interests and my overall impression was that the researchers collaborate together as one big family. This made me sure of my decision to come to France. The next challenge was to obtain research funding. However, I was lucky to get a CNRS CR1 position together with an Initiative of Excellence (Idex) Junior Chair position and an Atip Avenir grant.

Milos Filipovic, biochemistry researcher at the Friedrich-Alexander University of Erlangen-Nuremberg, will move to Bordeaux in January 2016
Senior Chairs

**Objective**
Providing support to eminent researchers coming to join the academic community long term and bringing new skills to the Bordeaux site. Support is thus provided to eminent researchers of international standing working in any field, coming to Bordeaux.

- 2 campaign (2014, 2015)
- 15 Chairs awarded
- 2 ERC Starting Grant

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**Welcome center for international researchers (BACI)**

**Objective**
Assisting international researchers (lecturer-researchers, researchers, doctoral students and post-doctoral students) with French entry and residence formalities, administrative procedures and everyday living requirements.

- Over 1,000 researchers hosted in 2014
- 1 local interface with all major public administrations
- 1 logistical support service for the settlement and socio-cultural integration of academics and their families coming to France for the first time
- An active member of the European EURAXESS Researchers in Motion network

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I was contacted by the BACI who offered me help to settle in. I was really surprised that there was a university service dedicated to the reception of foreign researchers and doctoral students. Such a service is a real advantage when we don’t know the administrative system.

Aleksandar Karajic, doctoral student in materials science and electrochemistry
Illustration of lecturers and researchers supported through the Attractiveness dynamic

Focus on researchers’ countries of origin

**Senior Chairs**
2 campaigns (2014, 2015) = **15 Chairs**
2 supported researchers: 
*ERC Starting Grant* financing

- France
- United States
- Canada
- Australia
- Italy
- United Kingdom

**Junior Chairs**
2 campaigns (2014+2015) = **5 Chairs**
Associated with the laboratories: 
(Incia, Biogeco, ICMCB, Cirid, IBGC)

- United States
- Germany
- France
International Post-Doctorates
3 campaigns (2013+2014+2015) = 28 financings

Visiting Scholars
5 campaigns (2013+2014+2015) = 138 financings

+17 other esteemed guests from other countries
INNOVATIVE EDUCATIONAL PROGRAMS

Creating tomorrow's innovative courses
Innovation in Education

**Objective**  
Supporting the development of an innovative range of courses for the new 2016-2020 accreditation through the implementation of active teaching methods, the internationalization of training, the use of ICT, etc.

2 priority focuses: digital and international projects

6 areas

17 supported projects to date

The ‘Social Sciences for all’ project responds to an open and multidisciplinary challenge, and not only within our center as these teaching units are designed to be part of any initial and continuing training branch. It is also an opportunity for thirty teachers from the Human Sciences College to improve their distance learning teaching skills while experimenting with unprecedented educational forms.

Sandrine Rui, Director of the Human Sciences College of the University of Bordeaux and ‘Social Sciences for all’ project leader

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**Zoom**  
The collection of serious games in health of the University of Bordeaux

Faced with the growing offer of serious games for medical training, teachers of the College of Health Sciences, are developing a collection of virtual clinical cases in partnership with a Bordeaux company, Interaction Healthcare. They will be characterized by their pedagogical quality, scientific rigor and their superior playability. Their content will comply with the ECN program, which prepares sixth year students to take the national exam that determines their medical specialty. Each serious game will describe a clinical situation related to a given disease and related items of the ECN, and will be addressed to various health professionals in training at the University of Bordeaux (medical and paramedical).
International Master's Degrees

**Objective**
Developing a high-quality international offering to take in promising international students and increase the competitiveness of international consortia. Hence, international master’s programs in the launch phase or development phase are supported.

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24 training programs supported since 2012
3 bachelor and 21 master’s level
208 months of student travel scholarships funded since September 2014

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The financial support of the International Master’s Degrees program allowed us to develop very ambitious projects and to set up international partnerships, which were initially difficult to establish due to a lack of financial means. As a result declarations of intent between international partners were often not followed up, whereas now we have established meaningful contact. What is more, teaching staff have been able to establish realistic collaboration with international partners more naturally.

Review of a lecturer supported by this program

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The University of Bordeaux’s Green Campus

The University of Bordeaux’s Green Campus is a very ambitious project undertaken by our teaching staff with cross-disciplinary skills in plant biotechnology. The main objective is to set up a center focused on two main fields: functional and progressive ecology and agroecology of continental ecosystems; and integrative plants’ biology and their pathosystems. This project is based on two strategies: creating an international track, through the bilateral and multilateral collaboration between Bordeaux and identified international partners (Japan, China, and Chile) and developing a specific «vertical» programme, from bachelor to doctoral level. Indeed, from the undergraduate level, students are integrated in an open and international environment. Then, at the master level, the teaching staff has implemented cooperation agreements with the partners involved and has switched courses from French to English. Finally, for the same purpose of the implementation of Green Campus, the involved teaching staff is now working on the set up of the PhD programme based on co-supervision of research thesis with the international partners.
Training Platforms

**Objective**
Developing a full-time and lifelong training offer in key regional fields which are competitive on the European scale. Four fields are covered: forestry and timber, optics–photonics–laser, aeronautics, ocean

1 forestry school, the Agreaux Forest (nearly 1,000 hectares)
500 m² dedicated to professional training in optics–photonics–laser
1 international master’s degree created in 2015 through the national civil aviation school (ENAC)

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**Zoom**
**VP2L, a serious game laser**

The Virtual Photonic Learning Lab, a project that designs a total 3D virtual environment makes it possible to experience laser or laser equipment simulation. The physical properties are as close as possible to reality. This serious game draws on highly advanced technologies in 3D gaming to offer optic and laser systems. Pedagogic scenarios will be created to train technicians, engineers, students, and end users in maintenance, development, assembly, and adjustment. Training in optic and laser technologies requires practical lessons on expensive, stationary equipment that needs high-level maintenance. This project offers real pedagogic innovation, utilizing attractive methods for learners that are more intuitive and help introduce complex concepts. This project brings together teachers and researchers in the fields of physics, the companies IDSC Group, NOVO 3D and the laser training center PYLA. It is funded by the Aquitaine region and by IdEx Bordeaux.

Through the University of Bordeaux’s Initiative of Excellence, the current concern is how to develop and highlight the offer of initial and continued training to students and professionals, while also proposing innovative teaching methods. The Agreaux Forestry School project is a striking example of this. Simply put, it involves both classroom teaching and a natural laboratory.

Olivier Lavialle, director of Bordeaux Sciences Agro
In addition to the focus on teaching in English, the intensive course introduces different teaching methods. Some of them are already in use (work in small groups, ongoing theme-based work, etc.), while others are more innovative, like the flipped classroom. To teach in English, non-native teachers are obliged to use such methods in order to avoid exhaustion or losing students. For French teachers used to conventional classroom teaching methods, these new practices are easier to implement in small groups. Teaching in English requires a change in teacher practices as well as in student practices.

Valérie Schurdi-Levraud, Lecturer, UMR Fruit Biology and Pathology 1332 / Plant/Virus Interactions Group at the University of Bordeaux

SUPPORT FOR PROJECTS

International Challenge

Objective: Offering educational and linguistic support for the development of teaching in English and offering high quality international diplomas.

159 teachers supported through the program
90 teachers trained via the intensive course
4 three-day courses offered in each academic year
8 conversation workshops offered on 8 sites every week

Zoom: Intensive courses to learn to teach in English

This 3-day course provides both pedagogical and linguistic training for teaching in English. The course includes an introduction concerning the implications, constraints and benefits of offering courses in English in France, as well as a focus on appropriate teaching aids, which will be tested live (interactive courses, flipped classroom, work in small groups, etc.). Pronunciation, intonation and key teaching terms are also focused on. During the sessions, the trainees can test out the teaching of a course in English. The days are short but intense, with a little homework to do in the evening. It’s a real international teacher/student experience.

Providing support for innovation in teaching methods is one of the objectives of MAPI. The succession of technological advances calls for an improvement or even a transformation of teaching practices. As far as substance is concerned, the teachers remain in charge of the content of their courses; MAPI provides them with appropriate tools and technical solutions to enhance that content. With its expertise in the development of teaching methods, MAPI also assists teachers in their assessment of the quality of the courses – a must for the overall improvement of all academic programs at the University of Bordeaux. By bringing together – within MAPI – teachers and personnel specialized in the development of teaching methods, the development of teaching platforms, and the evaluation of courses, the University of Bordeaux has set up an original structure, the only one of its kind in France.

Marthe-Aline Jutand, Director of MAPI

www.u-bordeaux.fr/MAPI
INNOVATIVE EDUCATIONAL PROGRAMS

Promoting student empowerment
PhD Career Center

Objective

Improving the preparedness of future graduates for high-level careers through initiatives which reinforce, promote and capitalize on the skills of doctoral students and the PhDs awarded by Bordeaux universities.

Zoom

PhD graduates honored through the Thesis Prize

Since 2012, the Thesis Prize has been the opportunity to highlight the quality of the work done by PhD graduates in Bordeaux’ universities. A multi-disciplinary jury composed of international experts hears and selects the prize winners from among the previous year’s PhD graduates (pre-selected by the doctoral schools). 4 prizes are awarded every year: Humanities and Social Science Prize, Science and Technology Prize, Biology/Health Prize, and Special Prize of the International Jury.

For doctoral students who contemplate the possibility of setting up a business, I recommend this program. It shows them that entrepreneurship can offer a promising future. Meetings and discussions with IAE professors and entrepreneurs provide a clear vision of how to set up a business, from the initial idea to the business plan, showing that this is not insurmountable.

Jérémie Parot, doctoral student, talking about the «Entrepreneurial Seminar» organized by Entrepreneuriat Campus Aquitaine (ECA)

162 doctoral students enrolled in programs in 2014/2015

4 Thesis Prize awards (16 winnings)

2015 Thesis Prize award, during the solemn reception held on the occasion of the beginning of the new academic year
Ambassadors

**Objective** Nurturing the students’ spirit of initiative while reinforcing the international reputation of the University of Bordeaux by supporting multi-disciplinary international projects involving at least five students and drawing upon Bordeaux’s acknowledged research strengths.

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6 projects supported
Over 70 participants in international challenges
3 medals

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**Zoom**

**iGem 2015, a gold medal for the Bordeaux team**

Their names are Hiba, Édouard, Savandara, Charlotte and Jean-Rémy… Their average age is 22. On Thursday evenings, they could have chosen to do sporting activities, take part in plays, or just go out on the town like most young people. Instead, these biology students spend several hours cooped up in the European Institute of Chemistry and Biology (IECB) with a mission for 2015: finding a cure for mildew on grapevines. The solution of these self-called Padawans of science is to create a curdlan-based spray to be used on the plants. «This natural polysaccharide, used as a food additive, has numerous beneficial effects on the grapevine, including the stimulation of its immune system to combat the disease». These young researchers won the gold medal in the international competition in synthetic biology – iGem 2015 – which took place in Boston in September 2015.
Entrepreneurship

Objective
Stimulating the students’ entrepreneurial spirit and project undertakings. This program amplifies the action of the PEPITE scheme and GRP Lab aimed at promoting student entrepreneurship, through the support of projects or startups.

In 3 months 30 students were guided in their entrepreneurial schemes.
More than 50% of the guided students want to receive «student-entrepreneur» status.

Zoom
The launch of a new university incubator in January 2016

A student project support incubator will be launched in January 2016 at the IAE Bordeaux, the University of Bordeaux’s school of management. The service is diverse and comprehensive: a co-working space (already functioning) to foster interaction between students (lever for creativity and innovation), tutoring and mentoring by economic stakeholders in business creation, a series of experience feedback discussions with creative enterprising students… A mission head from the business world guides the students along each step in constructing their business model.

This incubator extends the measures taken by the University of Bordeaux centered on student entrepreneurship. Since 2010 nearly 11,000 students have discovered entrepreneurship through the GRP model, and the university incubator, CreaSport, located in the Basque Country, has been supporting students in developing their projects in the field of boardsports for the past 10 years.

The vape (electronic cigarette) sector is young and currently undergoing intense expansion, gaining greater scientific attention each day while current efforts continue to be needed. U-SAV, standing for Universal System for Analysis and Vaping, is a «vaping» robot that can generate controllable e-cigarette emissions for vapor analysis purposes. It is a standardization support tool (through the AFNOR group), a debate platform for questions concerning health, a unit for basic research on e-cigarettes while also creating space for innovation. IdEx Bordeaux contributed to its development by creating internships at the LFEL for 2 people with complementary technical skills. These internship posts made it possible to conduct scientific research on e-liquids as well as e-cigarette mechanics (articles are currently being written). While developing the U-SAV with a large number of partners and contributors, one of these internships led to a short-term work contract aimed at the industrialization of the system.

Sébastien Soulet, vapology engineer, LFEL (French e-liquid laboratory)

Innovation Pathways

Objective
Enabling students to gain concrete experience of the dynamics of innovation in connection with their professional goals and allowing enterprises to benefit from additional skills.

54 internship grants awarded, the majority of which during the period lasting from January to May.
43 internships in the Aquitaine Département
90% of internships are postgraduate level

© LFEL
Alumni

Objective: Creating a network of former students to promote the development and increase the outreach of the University of Bordeaux.

This network aims to strengthen ties with the socio-economic world, promote the employment of graduates, raise funds and develop international collaborations.

Through the Partnerships & Innovation department, the University of Bordeaux intends to support the many existing former student networks, constituted by training and by providing services and tools, notably communication tools.

Meetings have been held in recent months with the Alumni heads of international partner universities to build a strategy inspired by best practices.

Student Jobs

Objective: Developing a student job offering in line with the objectives of IdEx Bordeaux programs (internationalization, educational innovation and innovative projects in the departments) and enabling the students hired to gain professional experience in their fields of study.

The employment of a student within an entity or for a project for one academic year, under a work schedule which is compatible with the academic program (generally 35 hours a month).

Department of University Life

Objective: Welcoming new students, in particular international students.

Examples of activities undertaken: sponsoring international students and Jobs and Apartment listings.
EFFECTIVE KNOWLEDGE TRANSFER

Building an international outreach
Bordeaux International Support (BIS)

**Objective**
Encouraging and supporting the development of international collaboration with key partners in the fields of training, research and innovation. The initiation of long term collaboration, in some geographical areas, is supported via transfers of lecturers, researchers, administrative staff or students.

8 destinations open to projects with universities in these areas: Japan, Euskampus, California, Canada, Taiwan, India, China and Brazil
9 BIS targeted at specific priority universities in Canada, the USA, Japan and Taiwan
Approximately 50 supported transfers
More than 20 internationalization projects launched

**Zoom**
4 new destinations in 2015
As of November 2015 and in addition to the already existing BIS calls for project proposals in Japan, California, Canada and Euskampus, the Bordeaux International Support Program (BIS) encourages and supports projects with Indian, Brazilian, Chinese and Taiwanese universities as priority partners for the Bordeaux site.

Bordeaux–Basque Country, a breeding ground for projects

One of the flagship projects stemming from this Euro-regional collaboration has been the signing of a Memorandum of Understanding for the creation of a cross-border laboratory between the DIPC (Donostia International Physics Center) and the ISM (Institut des sciences moléculaires) focused on theoretical physics and chemistry. This laboratory, called QuantumChemPhys, illustrated the results of one year’s work by its initiators Pascal Larregaray and Ricardo Diez and their colleagues. This Memorandum of Understanding formalized the setup of this cross-border laboratory, also accredited by IdEx Bordeaux. This long-term collaboration will continue this year for the development of projects through joint theses and international training programs, within a European framework.
Travel Scholarships

Objective: Encouraging student travel to key geographical areas and universities for IdEx Bordeaux, within the scope of the international academic programs of the University of Bordeaux and its partners. Support is given to students enrolled in a higher education institution, which is a member of IdEx Bordeaux, from their 2nd year (Bachelor’s Degree years 2–3, Master’s Degree years 1–2, healthcare programs, technology degree, etc.). IdEx Bordeaux travel scholarships are granted on merit.

2 parts: priority destinations and international training courses

208 months of student travel scholarships funded since September 2014

(international training courses part)

1,079 months of student travel scholarships funded since September 2014 (priority destinations part)

4 most requested destinations (priority destinations part): Canada, USA, Japan, UK

In an exchange program at the University of Tsukuba, I’m in Agro-Bioressources science and technology program of The Global 30 program. In my class, I study with a lot of foreign students from Indonesia, Thailand, Afghanistan, China, Malaysia etc. In parallel, I work in the ARIIZUMI lab for my research program on tomato, with foreign and Japanese students, PhD and postdoc. The University of Tsukuba offers excellent training facilities with easy access to labs and equipment, with a very beautiful campus, very large and woody, and with lots of extra scholar activities. […] I want to say that my actual Japanese experience after 1 year in Japan is very interesting: this is a total different culture and I encourage future students to think about the possibility of undertaking this exchange with Tsukuba. A quiet campus near many shops, and the capital (Tokyo) for people who want to move. The possibility to meet students from across the globe and make lots of contacts and friends.

Georges Johan Hunziker (Extract of the student’s report on mobility)
International Summer Schools

Objective | Supporting the development of a summer school offering and promoting Bordeaux expertise internationally. Thus are supported summer schools with a high international profile (specific lecturers and students), a socio-economic slant and a sustainable economic model.

8 summer schools per year / 11 disciplinary topics addressed since 2012
3 international partnerships in 2015 / 15 countries represented in 2015
1 Bordeaux Summer School label created

Zoom | Neurepiomics, first summer school in neuroepidemiology in France

An extensive training program on advanced brain imaging techniques and familiarization with «omics» tools and their applications in epidemiology of vascular and brain aging was proposed during the Neurepiomics summer school. Various subjects were dealt with, from data acquisition to future needs specific to each topic. The latter, which was addressed through various forms of teaching, enabled adaptation to the knowledge of each participant, and thus to address the needs of as many as possible. Launched by Prof. Stéphanie Debette and Prof. Christophe Tzourio of the University of Bordeaux, Neurepiomics was organized in close collaboration with Prof. Sudha Seshadri of Boston University. Following the partnership established with the latter, the next summer school of this type will take place in 2016 in Boston, with the assistance of two speakers from Harvard.
International Conferences

**Objective** Promoting the organization of top-ranking international conferences in Bordeaux and across Aquitaine. Includes conferences of scientific interest for the Bordeaux site attracting students, researchers and socio-economic stakeholders.

29 international conferences supported since 2012 / 18 topics covered
3,000 participants at 9 conferences funded in 2015

**Zoom** Conference themes supported since 2012

Conferences linked with Clusters: 4 with AMADEus, 8 with BRAIN, 1 with COTE, 1 with LaScArBx, 1 with CPU, 1 with Trail.

Conferences in others fields: 6 science and technology, 2 humanities and social science (economy, finance), 1 plant biology, 1 oenology, 1 environment, 1 microscopy, 1 interface of physics/medicine/biology.
**SUPPORT FOR PROJECTS**

## European Project Platform

**Objective** Assisting those who want to set up a European research project and/or academic program (network coordinators and/or collaborative project coordinators, ERC candidates, candidates for individual Marie Sklodowska-Curie scholarships).

2 European project officers hired (identification of relevant calls for proposals for the Bordeaux teams and assistance with the presentation of their projects)

1 support program set up for collaborative project coordinators, ITN or ERC training networks, facilitating the use of consulting services

195 contracts under the Framework Program for Research and Development (PCRD, 2007-2013)

46 H2020 contracts financed (2014 and 2015) / Nearly 50% of H2020 projects submitted as coordinator (4 times more than for the 7th PCRD)

6 ERC workshops organized by the CLAIRE network (with the support of IdEx)

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The support provided by the IdEx Grant Office, as on previous occasions, has been instrumental to the success of the project. We are extremely grateful for the availability and highly relevant advice and support of Mrs. Andriamandroso on the items listed above, despite very short notice. This type of support is a key element to help researchers comply with European grant requirements and specific scopes and rules of each type of European call, and to understand and address questions related to ethics and PPI related aspects.

Stéphanie Debette, Professor of Epidemiology at the University of Bordeaux (Inserm Center U897), Neurologist at the Bordeaux University Hospital and ERC granted (starting)

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**Zoom** Valuable assistance for the BRIDGET project

The BRIDGET project (Brain imaging, cognition, dementia and future genomics: a trans-disciplinary approach to search for risk and protective factors in neurodegenerative diseases) seeks to explore the genetic and epigenetic determinants of quantitative MRI markers of brain aging, which are powerful predictors of dementia and the risk of Alzheimer’s disease, and to examine the clinical significance of these markers in a given population. The objective is to establish an efficient strategy for the prevention of dementia and Alzheimer’s disease. Coordinated by Stéphanie Debette, this project called on the European project officers to respond to a call for proposals issued by the EU Joint Programme – Neurodegenerative Disease Research (JNPD) initiative. The European project officer thus provided assistance with the following: determining the relevance of the project with respect to the objectives of the call for proposals, preparing the submission, assessing the quality of the proposal, the impact and effectiveness of the implementation, and the critical review of the project. She also provided her expertise for the «ethical» aspect of the project and the part concerning Patient and Public Involvement (PPI) in the JNPD. This assistance was highly beneficial as the BRIDGET project was selected.
SUPPORT FOR PROJECTS
Conference Platform

Objective
Assisting researchers who want to organize colloquia, conferences or scientific events.

Zoom
Success of the 33rd annual conference of the International Society of Cardiology Research - European Section

From July 1 to 4, 2015, the University of Bordeaux had the pleasure of hosting the 33rd annual conference of the International Society of Cardiology Research - European Section, through the Liryc university hospital institute (IHU). Nearly 500 researchers, including renowned personalities in their fields, were thus able to exchange on the basic science of the cardiovascular system during the 4-day event.

36 countries represented / 27 sessions / 48 oral presentations / 225 posters / 10 poster awards.
EFFECTIVE KNOWLEDGE TRANSFER

Connecting with society
Since 2011, a Bordeaux team of artists and scientists have been working on the relationships between movements and emotions, bodies and machines. Their collaboration, seen as a long experimental process, has already resulted in several residences and encounters with the public. Their work started with Acroban, the first humanoid robot developed within the Flowers team at Inria, in collaboration with the Bordeaux Laboratory of IT Research (LaBRI). In 2013, Flowers unveiled Poppy Humanoid, a light, sturdy, open-source robot, easier to reproduce and modify than its predecessor Acroban. Poppy Humanoid was immediately adopted by Amandine Braci and Marie-Aline Villard, in the process of setting up the association Comacina–Capsule Créative. Their project of an artistic/robotic encounter (around body movements) took root. Selected by IdEx Bordeaux in its 2015 call for art/science projects, they are now preparing a new performance – Monstration – to be revealed in November at the FACTS festival.
**Social Innovation Connectors**

**Objective**  
Fostering social innovation by setting up dedicated centers and supporting the development of their services (tools, expertises, courses, etc.) to various stakeholders (enterprises, public entities, students, etc.). 3 projects were given support over the 2012–2015 period in the fields of technological intelligence (Via Inno), entrepreneurship (GRP Lab) and law (Montesquieu Forum).

10 partnerships signed between Via Inno and Michelin, Airbus, CEVA animal health, Avril Group in particular
1 Montesquieu Law review, circulating in English the excellence of French law work (Montesquieu Forum)
4,000 users working with GRP software to create their business models

---

**Thanks to active listening and the attention paid to the industry, the Via Inno project provides Michelin with methodological developments, operational indicators, and decision-making tools in the area of innovation. Together we are working to build solutions to current problems and search for answers. Our collaboration also includes the ongoing transfer of methodology that provides a rise in the skill progression of the team responsible for technology intelligence at Michelin. Via Inno’s involvement at the first meetings on technology intelligence (07/2015) organized by Michelin contributed to the success of this one hundred-person event.**

Nicolas Dubuc, Chief Knowledge and Technology Intelligence Officer, Michelin

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**With GRP’s help, it was very easy for me to write a convincing business model that I needed to present to my financial partners.**

Julien Chopard, creator of Trendy Place

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**The Law Clinic: a legal information and aid service**

Open since November 2013, the Law Clinic serves as a legal services clinic. It provides free and open legal information and aid service for people who need someone to listen to their legal problems and explain them.

Guided by law professionals and supervised by university advisors, second-year master students, student judges (French National School for the Judiciary), student lawyers (ALIENOR Law School), and student notaries (Professional training center for notaries) place their knowledge at the service of the public.
Social Innovation Projects

Objective
Supporting the emergence of projects that can enhance the Social Innovation Connector offering. 5 emerging projects focusing on the city (Urban Forum), public health (Cassiopée Platform), e-health (Virtual Health), social innovation (CRISALIDH) and culture (UBIC) were supported.

20 research laboratories involved
1 to 2 years of support in the feasibility phase

Capitalizing on experiences and securing the means to irrigate, based on a transfer of practices rooted in scientific analysis, seems essential to me. [...] I would like the Departmental Council to contribute to the success of CRISALIDH by actively participating in the link-up of local players, social needs and innovative practices.

Pierre Camani, President of the Departmental Council of Lot-et-Garonne, Senator of Lot-et-Garonne

Zoom – The Eva TSN project

The Cassiopée Platform put together the bid that won the call for projects launched by the Health Care Directorate General (DGOS) to evaluate the uses and impact of the national program « Digital Health Care Territory » (TSN), and it is currently participating in its implementation. Deployed in five pilot regions, one of which is Aquitaine, the TSN program aims to introduce organizational changes to the health care system through digital technology (telemedicine, mobile care, etc.). The evaluation conducted by the Cassiopée Platform will focus on the implementation of TSN and its results (system quality/safety, organization, health status, use of resources, technology usage, etc.), while offering an evaluation model, which will be reproducible once the TSN program is set up on a large scale.
Multi-disciplinary Research Agendas

Objective
Developing research, training and innovation in areas that represent major social challenges.

1 pilot project on water initiated in September 2014
3 work seminars and 1 report seminar in 2015
38 working group participants: 21 researchers on site in Bordeaux working on water-based projects, 6 international researchers, 11 local socio-economic players
142 questionnaires sent out to researchers working in the field of water
30 interviews with research managers and researchers

The Water Agenda initiative launched by the University of Bordeaux is interesting because of its ambition to unite all of the water-based research stakeholders, whether they be public or private. I appreciated the willingness to put this initiative in an international context through the presentation of similar initiatives found abroad. The discussions, which were very open, helped produce several possible scenarios for bringing the water agenda to fruition. Through its LyRE R & D center, Suez will continue to be involved in the structuring process for a center of expertise on water and the environment at the University of Bordeaux.

Xavier Litrico, LyRE director

The water agenda
For the water agenda project, an innovative method of scientific investigation has been developed and refined. By combining theoretical research in the sociology of science with in-depth empirical investigations, and by mobilizing the community of Bordeaux researchers working on the topic of water, the agenda-driven approach now boasts a solid method to define future research. This method, which is transferable to other fields of research and other geographical regions, is one of the major strengths of this approach.
Drones and buildings

The project studies the feasibility of using land-based drones for activities dealing with the inspection and management of a building’s energy performance and functionality. The partners involved are Nobatek, RoboSoft, and Aquitaine Robotics, and they are currently at work on calculating the work specifications.

3D and health care

A project has recently been created. It focuses on the creation of synthetic pieces that reproduce patient’s body parts for pre-operation simulation. The request comes from surgeons who have been waiting for some time to work with precise anatomical and sensory equipment. In order to better respond to these requests, university and manufacturing sectors have combined their knowledge and skills in the formulation and characterization of materials, 3D printing, and software development in order to guarantee the precision of a printed part.
i-MediaLab

Objective: Supporting people with digital innovation projects dedicated to research, training, knowledge transfer or mediation.

1,600 students and 3,000 MOOC learners will take part each year in the upcoming learning lab 2.0 of the INNOV+ project. 112 educational innovation projects supported by digital technology, including 2 devoted to developing simulation for medical training. 2 infrastructures for open access to knowledge produced in Bordeaux research laboratories.

Bordeaux University Foundation

Objective: Helping to raise funds for projects coming under the Investments for the Future scheme. The Foundation is the sole sponsorship operator for the entire university campus.


59% in research, 22% in initial training, 11% in continuing education, 8% in publishing

In the Laboratoire Ondes et Matière d’Aquitaine, we identified a young Ethiopian student, Wendwesen Gebremichael, of a very good level, who came to do his internship in Bordeaux thanks to a scholarship funded by Cluster of Excellence LAPHIA. While waiting to start a CIFRE thesis with him, we were able to keep him by making a donation to the Bordeaux University Foundation to fund his salary for three months in the laboratory.

Eric Mottay, CEO of Amplitude Systèmes

Zoom: SPINE, the online participatory neuroscience laboratory

SPINE mobile application allows the general public to play at annotating MRI brain images to contribute to research in neuroscience. By mobilizing forces of hundreds and thousands of contributor Internet users, huge medical image collections can thus be analyzed very quickly to answer pressing questions about Alzheimer’s disease, multiple sclerosis and other neurodegenerative diseases. The game mechanics follow the progression of the contributors to them to take on ever more challenges offered by participating researchers – in France, the USA and elsewhere. For this project, the University of Bordeaux is working with Brigham and Women’s Hospital (affiliated with Harvard Medical School, Boston). Contribution workshops for young people are also being organized with Cap Sciences as part of the activities of their Espace 127°.

The University of Bordeaux is getting organized to cooperate more actively and effectively with e-health companies. We really appreciate finding relevant representatives, useful resources and opportunities to promote Bordeaux research. Our common goal is to develop new products and services in a market where innovation is the common currency. Hence a first collaborative project is underway between Interaction Healthcare and the SANPSY laboratory.

Jérôme Leleu, President of Interaction Healthcare

www.fondation.univ-bordeaux.fr
In 2014, the University of Bordeaux launched a «UB friendly» campaign to highlight the businesses that are committed to working alongside the University. The principal is simple. Businesses that have taken on an intern or trainee, paid their Apprenticeship Tax, been involved in one of the training programs, collaborated in research with one of the laboratories, or sent their employees to a training program at the university can receive the «UB friendly» title.

With this label, the University of Bordeaux wishes to acknowledge businesses as close partners and encourage different types of collaboration in the future. This label also is a way of confirming their commitment to the University of Bordeaux ecosystem and thereby their desire to stay in close contact. Once they receive this label, a «UB friendly» business strengthens its position in the university partnership ecosystem.

http://entreprises.u-bordeaux.fr
**Objective** Highlight academic research and improve the process for the transfer of technologies to businesses.

3 stages covered for the transfer of technologies: detection and protection of inventions + management and investment in the maturing phase + highlighting innovations through the negotiation of licensing or preparation in creating innovative start-ups

10 million euros in grants over the first three years, dispersed to some 80 different projects

1,126 partnership research contracts signed, 120 patents and certificates issued, 14 licenses signed, and 5 start-ups created

---

**The main challenge in 2014 was to consolidate our assets in order to shape the economic and social value of the first transfer projects. This positive assessment is a strong indicator showing that Aquitaine Science Transfert® can quickly capitalize, and more quickly than first thought, on its first successes.**

*Maylis Chusseau, president of Aquitaine Science Transfert®*

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**Zoom** More than 400,000 euros invested in 4 innovations in the wine-making and green sectors in 2015

The five investment committees bound by Aquitaine Science Transfert® since the start of 2015 voted for 407,250 euros in investments for 4 new maturation projects in the wine-making and green sectors. Objectives: accelerate the time-to-market period of technologies coming from academic research and make these innovations profitable and creators of jobs and economic value. The projects supported by Defi Carbone (recycles carbon fibers into new composite materials), So2wine (measures easily and quickly the sulfite in wine), Phérowine (fight against insects that are harmful to vines) and Earn (predicts the wine plot yields).
Regular business partners of IdEx Bordeaux (by scientific fields)

Informatics Certification

CPU

Environment
Climate

Xyloforest
COTE

Total

Technicolor
Veolia
EDF

Thalès

Social innovation

Social Innovation Connectors

Materials of the future

ELORPrintTec
AMADEus
Image assessment of the University of Bordeaux (items concerning both researchers and students)

%: items that applied to the University of Bordeaux for the 452 respondants

**Watch-Points**
*Important and poorly-rated dimensions*

- **42%** Adapts its education courses and research options for Intl students and researchers
- **43%** Network of industrial partners
- **43%** Supports newcomers with administrative procedures upon arrival
- **53%** Well-equipped with IT resources
- **60%** Provides many resources to help succeed in work
- **63%** High quality working environment
- **66%** Features in international ranking systems
- **61%** Recommended university in your country
- **55%** Sufficient information (website, brochures etc.)
- **60%** Dynamic campus environment
- **51%** Modern and efficient digital working environment
- **51%** Network of international academic partners
- **61%** Interesting development projects

**Secondary Watch-Points**
*Less important and poorly-rated dimensions*

- **27%** Enough courses in English
- **55%** Watch-Points

**Performance of the dimensions**
Adapts its education courses and research options for intl students and researchers.

Enough courses in English.

Supports newcomers with administrative procedures upon arrival.

Well-equipped with IT resources.

Network of industrial partners.

Provides many resources to help succeed in work.

Sufficient information (website, brochures etc.).

High quality working environment.

Features in international ranking systems.

Recommended university in your country.

Dynamic campus environment.

Rich and wide range of sports and cultural activities.

Well integrated in European and worldwide universities network.

Modern and efficient digital working environment.

Innovative university.

Internationally active and dynamic.

University of excellence.

Network of international academic partners.

Strong international ambitions.

Interesting development projects.

Attractive university.

High quality education.

Recognized for scientific expertise.

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Statistical Review
Financial structure of the program

€700 M

Total grant in 4 years €118.2 M

3 core challenges 50%

Excellence in research 25%
Reputation in education 13%
Performance in knowledge transfer 12%

3 key levers 40%

An innovative and open digital campus 13%
An international dimension 5%
Attracting and nurturing talents 22%

Steering 10%

Contribution from partners €212.6 M
External Resources €118.2 M

Partners’ co-investments and external resources (funds from European or ANR calls for projects, industrial financing via the Bordeaux University Foundation, etc.) provide the rest of the financial backing for the IdEx Bordeaux’ program expenses. The principle is as follows: for 1 euro invested by IdEx, 2 euros should be provided by partners and 1 euro by external funds.
The IdEx Bordeaux is a multi-annual investment program. Therefore, the sums committed for each program and project in the first year can be spent in the second and third years. Thus in financial monitoring, the distinction between commitment and expenditure is noted. The following graph shows the tracking of multi-annual commitments and per-year expenditure.
An action on cross-sectoral projects/programs

<table>
<thead>
<tr>
<th>Category</th>
<th>2012 + 2013 + 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clusters of excellence</td>
<td>€783,040 ••• €9,616,720</td>
</tr>
<tr>
<td>Social Innovation Connectors (CIS)</td>
<td>€490,850 ••• €2,673,780</td>
</tr>
<tr>
<td>Training Platforms</td>
<td>€80,840 ••• €1,260,000</td>
</tr>
<tr>
<td>On-site PEPS</td>
<td>€297,765 ••• €600,000</td>
</tr>
<tr>
<td>International Doctorate</td>
<td>€742,520 ••• €6,672,350</td>
</tr>
<tr>
<td>Initiatives and innovative training programs</td>
<td>€238,880 ••• €1,910,800</td>
</tr>
<tr>
<td>&quot;Expecting U&quot; Campaign</td>
<td>€73,485 ••• €10,105,250</td>
</tr>
<tr>
<td>PIA inter-projects - multi-disciplinary Agendas</td>
<td>€510 ••• €575,200</td>
</tr>
<tr>
<td>Ph.D Career center</td>
<td>€56,578 ••• €498,112</td>
</tr>
<tr>
<td>Innovation and partnerships</td>
<td>€44,908 ••• €1,223,000</td>
</tr>
<tr>
<td>International campus</td>
<td>€456,010 ••• €1,740,000</td>
</tr>
<tr>
<td>I-MediaLab</td>
<td>€146,840 ••• €9,616,720</td>
</tr>
<tr>
<td>PIA Fundraising</td>
<td>€41,690 ••• €240,000</td>
</tr>
</tbody>
</table>

LabEx: €13,619 M ••• €36,042 M
Co-financing of IdEx programs (excluding LabEx)

Total co-financing received in 2014 by typology

<table>
<thead>
<tr>
<th>Public: ANR</th>
<th>€2,876,611</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public: local authorities</td>
<td>€2,149,808</td>
</tr>
<tr>
<td>Public: other organizations</td>
<td>€1,731,957</td>
</tr>
<tr>
<td>Private</td>
<td>€1,602,455</td>
</tr>
<tr>
<td>International: European Commission</td>
<td>€2,147,492</td>
</tr>
<tr>
<td>International partners</td>
<td>€233,826</td>
</tr>
</tbody>
</table>

Total: €10,742,149
reported by the projects in 2014

Breakdown of co-financing in 2014 by contributing program

- CPU: €4,647,236
- LAPHIA: €3,077,852
- PEPS: €200,000
- HEADS: €10,000
- International campus: €976,657
- International conferences: €709,000
- Summer schools: €709,000
- SPRING: €202,500
- Social Innovation Connectors: €324,137
- Chairs: €299,600
- Bordeaux University Foundation: €709,000
- International Master’s Degrees (FidEx international): €100,000

Total: €10,742,149
Governance and steering
IdEx Bordeaux benefits from a delegation of authority from its partners via the Management Committee (uniting representatives from all of the program’s partners), which relies on the advice of two independent committees composed of outside members (Strategic Committee and Audit Committee) as well as on an Operational Committee (Coop). The president of the Management Committee is Manuel Tunon de Lara, president of the University of Bordeaux.

The collection of adhoc committees was set up for the steering of projects and programs financed by IdEx Bordeaux in order to have the higher education and research community participate more widely in the program’s creation and management, and to benefit from the expertise of stakeholders in the field.
The Management Committee brings together representatives from all the IdEx Bordeaux stakeholders. It is a deliberative body with majority representation of the University of Bordeaux. Beyond the steering and supervision of the proper use of funds provided by the government, its purpose is to advance the mobilization of funding from all the partners to benefit IdEx’s objectives. At the same time, the Management Committee makes sure that the site’s Investments for the future schemes at the site level are consistent.

Its members:

**College of founders**
- Manuel TUNON DE LARA, president of the IdEx Bordeaux Management Committee, president of the University of Bordeaux
- Achille BRAQUELAIRE, vice-president in charge of curriculum, University of Bordeaux
- Pierre DOS SANTOS, vice-president in charge of research, University of Bordeaux
- Jean-Jacques TOULMÉ, University of Bordeaux
- Jean-Paul JOURDAN, president of the University of Bordeaux Montaigne
- François CANSELL, general director of the Polytechnic Institute of Bordeaux
- Vincent HOFFMANN-MARTINOT, director of Sciences Po Bordeaux
- Olivier LAVIALLE, director of Bordeaux Sciences Agro
- Michel MORTIER, deputy advisory scientific director CNRS (representing Catherine Jessus, advisory scientific director at the CNRS)
- Valérie MAZEAU-WOYNAR, director of partnerships and external relationships, Inserm

**Local and regional authorities**
- Mathieu HAZOUARD, regional advisor, Aquitaine Regional Government
- Franck RAYNAL, vice-president, Bordeaux Métropole

**College of socio-economic partners**
- Rodolphe GOUIN, director, Bordeaux University Foundation
- Agnès PAILLARD, president, Aerospace Valley
- Eric MOTTAY, CEO, Amplitude Systèmes
- Stéphanie NADAUD, cooperative life and communication director, Crédit Mutuel du Sud-Ouest

**Ex officio members**
- Michel DELPUECH, regional prefect
- Olivier DUGRIP, academy rector

**Permanent guests**
- Hélène JACQUET, head of the Investments for the future Mission (MIA)
- Maylis CHUSSEAU, CEO, Aquitaine Science Transfert
- Michel HAÎSSAGUERRE, director, IHU LIRYC

**Other guests**
- Gaëlle BUJAN, regional delegate, CNRS
- Philippe LECONTE, regional delegate from Aquitaine, Poitou-Charentes, Inserm
Guidance
The Strategic Committee

Instantiated in 2012 with its first startup meeting on November 29 and 30, 2012, this advisory body helps the Management Committee with defining the IdEx strategy and implementing its inclusion into the strategy of the site. It provides opinions on the opportunities for launching, pursuing, or halting projects according to the results or impact that it does its best to detail.

It brings together 5 figures who are internationally recognized for their outstanding expertise in higher education and research:

- Suzanne FORTIER, principal and vice-chancellor of McGill University, Montreal, (former president of CRSNG)
- Richard FRACKOWIAK, professor of Neurology, IHU jury president (UNIL)
- Olaf KUBLER, president and professor emeritus, Swiss Federal Institute of Technology in Zurich
- José Ramón MONTERO, professor of Political Science, Autonomous University of Madrid
- Martin WIRSING, professor of Information Technology, vice-president of the University of Munich (LMU).

After each of its work sessions (up to 2 times per year), the Strategic Committee provides recommendations for the IdEx program’s guidance. The committee's reports are available on the IdEx website.

The Audit Committee

The objective of the audit is to examine a group of IdEx’s procedures as well as their organizational and governance conditions in order to evaluate their conformity in relation to the commitments taken on when the agreements were made. The analysis of detected discrepancies and non-conformities will result in the drafting of an audit report detailing all the strategic recommendations and suggestions meant for IdEx governance.

Its members:

- M. Michel PRADA, president of public sector accounting standards board
- M. André MARBACH, consultant in International and European Strategies
- M. Didier LANGMANTIL, president of TRANSPARENCE group, financial and accounting audits consulting firm

1 Detailed biographies available on-line on the IdEx Bordeaux website
In a framework expressly given by the Management Committee, the IdEx Bordeaux program’s Operational Committee has the freedom to define, implement, and watch over the projects in IdEx. In particular, it is responsible for establishing the COMs (objectives and means contract), which guide the allocation of IdEx resources. It is held accountable for decisions during each meeting of the Management Committee.

Its members:
- Manuel TUNON DE LARA, expert in international strategy and partnerships
- Hélène JACQUET, head of the Investments for the future Mission (MIA)
- Claude SORBETS, expert in multi-disciplinarity and scientific animation tools
- Régis RITZ, expert in European policies
- Jean-Jacques TOULMÉ, responsible for monitoring the research component and also LabEx, Clusters and inter-LabEx
- Laurent SERVANT, responsible for internationalization
- Fabrice LATURELLE, responsible for monitoring the transfer of technologies and innovation policies component

The preparation of proposals for the Management Board and the implementation of resulting actions are ensured by the Operational Committee and the MIA, administrative team and project support. It coordinates all the engineering functions and directly runs the multi-annual IdEx programs. It also mobilizes the resources of the partnership establishments to perform at an equivalent level. The timeline of this structure’s development complies with the forecast described in the IdEx Bordeaux dossier.

The activities of the MIA were structured at the end of 2013 under the form of a 3-hub organization:
- The program hub, whose mission is to prepare the programs’ content (benchmarking, working groups, etc.), to organize the activities for their implementation (call for projects, external evaluations, organization of decision-making processes), and to ensure developed projects/actions monitoring, including monitoring of result objectives, internal and external promotion of the programs/projects, and assistance with raising external funds;

- The resources hub, whose mission is to support projects/actions in their financial and administrative execution, and the relationship with all the departments of partner establishments (human resources, finance, legal) to ensure the conditions of their implementation.

- The projects hub, ensures the cross-sectoral development of the portfolio dealing with chosen projects in the framework of future investments or set-up projects like IdEx structuring projects, with the aim of sharing good practices and pooling resources.

Moreover, the MIA has a support team for program steering, their mission being to evaluate the impact of implemented actions and to enable their ongoing development.
The Observatory for the IdEx program

Since the end of 2012, enhanced tracking and observation provisions have been in place for:
- a scientific director (DR, CNRS, emeritus)
- a mission head (profile: Ph.D in political science)
- outsourcing resources (doctoral student advisor in particular)

The objectives of the observatory:
- reflexivity on actions taken, tracking of program/project impact
- ongoing improvement of actions
- anticipation of actions that need to be launched

Working arrangements:
- observation and monitoring missions (qualitative assessments), aiming at providing recommendations for the continued development and improvement of the programs
- prospective missions for preparing new actions
- participation in national and international actions
The University of Bordeaux heads the 'Initiative of Excellence' program in association with:

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