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EDITO

The European programme Erasmus Mundus ... A case study : EuroAquae

Erasmus Mundus is a European cooperation and exchange programme whose goal is to strengthen European cooperation and international links in higher education by supporting high level European Masters programmes.

1 Basics on the programme ?

1. Who does *Erasmus Mundus* concern?

Launched in July 2001, *Erasmus Mundus*' objective is to raise the visibility of European higher education. 230 million euros were spent over 5 years by the European Commission to support the following **4 activities**:

- 1) *Erasmus Mundus* Masters – High level programmes offered by a consortium of higher education institutions from at least 3 different European countries.
- 2) *Erasmus Mundus* scholarships (90% of the total budget) – Dedicated to third-country graduate students coming to Europe to follow an Erasmus Mundus Master programme.
- 3) Partnerships – Can be established between a European consortium with a third-country institution.
- 4) Attractiveness Enhancement – Every institution involved in projects that enhance European education visibility and promotion could be supported by the *Erasmus Mundus* programme.

2. How does *Erasmus Mundus* work?

Higher education institutions from countries other than Europe have the possibility of entering a partnership with a Europe-based institution or consortium. Calls for proposals are issued every February.

Over the last four years, *Erasmus Mundus* has supported 100 Master programmes, 6000 Master students from third-countries and 4000 European students (going to third-countries), and 60 partnerships between European Masters and non-European higher education institutions.

Similar to FP7 (cf. previous FranceST edito on the “7th Framework Programme”), there are national contact points or “*Erasmus Mundus National Structures*” in each European country to assist interested individuals/institutions in their application.

2 A case study: *EuroAquae*

EuroAquae is a joint *Master of Science in hydroinformatics and water management*, endorsed by *Erasmus Mundus*. About **25 scholarships** are offered yearly to **non-EU students**. This joint degree programme is given by 5 European universities in 5 different countries: France (*Université de Nice-Sophia Antipolis*), Germany, Hungary, Spain and the United Kingdom (*University of Newcastle upon Tyne*).

Getting a degree from this Master is equivalent to getting a degree from each of these 5 European universities!

1. The programme

This 2-year 4-semester programme is mainly in English:

- First semester: introduction and common skills and knowledge (mathematics, physics, software engineering, hydrology and hydraulics, water and aquatic environment management...),
- Second semester: acquisition of the hydroinformatics concepts, methods and tools at the university of Newcastle Upon Tyne for all the student,
- Third semester: specialization in 1 of the 4 other universities of the consortium,
- Fourth semester: research project or professional practice.

2. The research part of the Master programme

Managed by the consortium, **HydroEurope** is an intensive collaborative research programme closely linked to its Asian counterpart: **HydroAsia**. HydroAsia involves Singapore's *Tropical Marine Science Institute* of NUS, South Korea and Japan. It aims at promoting sustainable water management.

3 For more information

More information may be obtained from the following websites:

* General information about the programme:

http://ec.europa.eu/education/programmes/mundus/index_en.html

* For institutions wishing to check the calls:

http://ec.europa.eu/education/programmes/mundus/call_en.html

* For interested students:

http://ec.europa.eu/education/programmes/mundus/projects/index_en.html

* For more information through the Erasmus Mundus National Structures:

<http://ec.europa.eu/education/programmes/mundus/doc/national.pdf>

* About the Master of Science EuroAquaë:

<http://www.euroaquaë.org>

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Rethinking agronomy for sustainable development

The Saint-Sauvant test center, which was set up in 1994 to test the seeds marketed by Jouffray-Drillaud, is now a research facility where a dozen engineers and technicians, under the responsibility of Vincent Beguier, are preparing tomorrow's seeds. The selection work mainly involves forage and lawn grass species as well as so-called inter-culture species used for soil cover between two major crops. Over the past years, the Center has developed a large-scale research program on white lupins, an oilseed that produces very high-protein crops.

... Read more: <http://www.bulletins-electroniques.com/actualites/51026.htm>

Well-deserved success for MF Tech and filament winding

MF Tech will soon be three years old. The very small business was created by Emmanuel Flouvat and Arnaud Menard whose main assets when they embarked upon this adventure were a promising technology, i.e., filament winding, skills, expertise and courage to spare. After having carved out a niche for their paddle-sticks, especially on the export market that now accounts for 80% of their production, they are gradually breaking into different markets, ranging from the oil and space industries to top level car racing.chnology Appealing to Numerous Industries...

... Read more: <http://www.bulletins-electroniques.com/actualites/51027.htm>

Why not practice astronomy in Antarctica? Good idea!

On a continent known for its violent storms, the idea may seem surprising at first. But, take a closer look. The Antarctic high plateau is a vast, virtually flat expanse of snow and ice at an altitude ranging from 3,000 to 4,000 meters. Hardly any wind blows but sky quality is like sky over high mountain ranges. Not to mention that nighttime lasts several months. All these reasons beg the question of the Antarctic's potential for astronomy. Of course, the most appropriate type of astronomy for the region remains to be determined. Eric Aristidi, Senior Lecturer at Nice Sophia-Antipolis University and research scientist at the Laboratoire Universitaire d'Astrophysique de Nice (LUAN, Nice university laboratory for astrophysics) talks about current and future projects ...

... Read more : <http://www.bulletins-electroniques.com/actualites/51157.htm>

Natural coloring materials for industry

This is now offered by a small business, the result of a commercialization project involving natural coloring materials, initiated at CRITT Horticulture of Poitou-Charentes. Called Couleurs de Plantes, i.e., the Color of Plants - a very evocative name -, the Rochefort based business now has five employees. Madder and reseda, dyer's broom and calliopsis, orange cosmos, and more recently sorghum dye from a plant mix are only some of the plants that the small team is working on. The cosmetics and textile are the main industries interested in the small business's production.

Patrick Brennac, the man heading Couleurs de Plantes, a 2005 spin-off from CRITT Horticulture, has been working on this topic for about ten years. The young business is the outcome of a dozen years of work put in by a team...

... Read more : <http://www.bulletins-electroniques.com/actualites/51158.htm>

100 million euros for Renault Technologies Romania (RTR)

Renault Engineering, a key feature of the 2009 Renault Commitment Plan, has a development workload extending to eight new models per year. Renault Engineering is a global function with two main components, i.e., a central engineering department and regional engineering centers (Brazil, South Korea, and Romania) covering Renault's strategic markets. Indeed Renault plans to invest about 100 million euros over the next two years in Renault Technologies Romania (RTR). RTR will be handling the development of powertrain and vehicle projects (passenger cars and LCVs) that will be made at regional production plants or sold on Euromed markets.

... Read more : <http://www.bulletins-electroniques.com/actualites/51028.htm>

High blood pressure - INSERM and CNRS sign partnership agreement with Quantum Genomics Corp

INSERM and CNRS have signed a partnership agreement with Quantum Genomics Corp (QGC), a biotech company developing new drugs for metabolic and cardiovascular diseases, based in New Jersey, USA. The purpose of the agreement is to codevelop innovative drugs for high blood pressure (HBP) and related cardiovascular diseases. Under the terms of the contract, Quantum Genomics Corp acquires rights to exploit three patents and associated skills and expertise. INSERM and CNRS will be working on the physiopathology, chemistry and understanding of compound mechanism of action whereas the Jersey City based company will be handling preclinical and clinical development, and regulatory aspects. Called QGC001, the first candidate drug selected...

... Read more: <http://www.bulletins-electroniques.com/actualites/51029.htm>

3D software: Graphanim, a good model of INRIA technology transfer

Graphanim, the outcome of collaborative work between the Grenoble-based Artis project team and Studio Broceliande, is a program to develop a plug-in for integration into 3D professional software and produce watercolor effects in comic strip animations or children's picture books. Watercolor appearance has numerous special features: heterogeneous hues, shadow and light effects, grainy effect or irregular contour thickness.

Rendering the texture involves controlling the effects, which are sources of variations from one image to the next, and ensuring the temporal consistency of the animation. One solution that is being looked at for program development is based on...

... Read more: <http://www.bulletins-electroniques.com/actualites/51030.htm>

INRA and CIRAD sign cooperation agreement with Algerian Agricultural Research Centers

The cooperation agreement that INRA, CIRAD and Algerian agricultural research centers (Institut National de la Recherche Agronomique d'Algerie, national institute for agricultural research of Algeria and Institut National de Recherche Forestiere algerien, Algerian national institute for forestry research) fits in perfectly with the drive to step up cooperation with Mediterranean Rim countries, one of the strategic priorities for the public interest group (GIP) recently set up by INRA and CIRAD. In 2006, the French and Algerian Ministers of Agriculture launched a large-scale program to revitalize bilateral cooperation between the two countries, to cover agricultural training, higher education and research.

... Read more: <http://www.bulletins-electroniques.com/actualites/51031.htm>

Foundation of Geogreen, a company providing CO2 geological storage

Today CO2 technologies are considered as a way to make a significant dent in greenhouse gas emissions. Industries emitting CO2 are taking a closer look at mass geological storage solutions and pilot CO2 capture and injection facilities are mushrooming across the world. Accordingly, Geostock, an international engineering group and leader in the field of underground hydrocarbon (with a focus on natural gas) storage, the Institut Francais du Petrole (IFP, French Petroleum Institute) and BRGM have decided to set up a joint company specializing in engineering services for CO2 transport and geological storage.

... Read more: <http://www.bulletins-electroniques.com/actualites/51032.htm>

French company Orolia acquires US spectracom

French group Orolia specializing in high-precision time and frequency systems has just acquired Spectracom Corporation, a leading US provider of synchronization products, for 10 million dollars. The operation involves the operational merger of Spectracom Corp. with Orolia subsidiary Temex Sync, a Tier 1 vendor of time and synchronization systems for French Defense and the world's number one company for synchronization equipment for terrestrial digital broadcasting networks. The two companies will market their products and systems under the Spectracom brand name in a global partnership...

... Read more : <http://www.bulletins-electroniques.com/actualites/51033.htm>

France acquires a new platform for fast genotyping

Thanks to fast genotyping, researchers hope to gain further insight into the correlation between the genetic profile of an individual, genotype, disease evolution, and phenotype. For this very purpose, a new fast genotyping platform has recently been set up at the Paris VI School of Medicine at Pitie-Salpetriere Hospital. The tool is the outcome of efforts by the *Agence Nationale de Recherches sur le Sida et les hépatites virales* (ANRS, national agency for research on Aids and viral hepatitis), INSERM, and Universities of Paris VI and Paris XI. The tool will also contribute to the study of the entire genome in a group of persons and not only one gene. The researchers will be using the tool on a large-scale...

... Read more : <http://www.bulletins-electroniques.com/actualites/51159.htm>

ATMEA 1, a new generation 3 nuclear reactor

The new nuclear reactor combining the innovative nuclear technologies of AREVA, world lead in nuclear energy, and of MHI (Mitsubishi Heavy Industries), a world leader in heavy industry, will be developed and marketed by a joint venture called ATMEA formed by the two groups. The 1100MW pressurized water reactor, whose design principles have been researched since October 2006, could be ready for licensing in less than 3 years.

... Read more : <http://www.bulletins-electroniques.com/actualites/51160.htm>

Computing grids, CNRS creates the Institut des Grilles

The new institute brings together more than fifteen CNRS laboratories from four scientific departments and two national institutes. The *Institut des Grilles* (Grids Institute) will be consolidating the existing grid production infrastructures to reinforce research on the topic and increase synergy between the various players. Generally speaking, the action will make extremely powerful computing means available to different scientific communities. Computing grids have made major progress and attained advanced maturity over the past years. For instance the EGEE grid is a world production infrastructure, processing several millions of jobs each month...

... Read more : <http://www.bulletins-electroniques.com/actualites/51161.htm>

SWIFTS, the smallest spectrometer ever designed

The principle of spectrometry, which has numerous applications (medicine, astronomy, dangerous gas detection, water quality monitoring, and so on), is the accurate measurement of the wavelengths emitted or absorbed by an object, to determine its exact composition. The only problem is that spectrometers are sometimes bulky. For instance in medicine, the study of cancer cells is done with a spectrometer that fits in a shoe box. Therefore, the procedure for taking a patient's sample is sometimes painful. In astronomy, too, current spectrometers are very bulky. Thus, it is easy to see why SWIFTS (Stationary-Wave Integrated Fourier Transform Spectrometer) has an edge: it is a high resolution compact spectrometer, the smallest one ever designed.

... Read more : <http://www.bulletins-electroniques.com/actualites/51162.htm>

First nanometric alternating current generator

NEMS (Nano-Electro-Mechanical Systems), which are the successors of MEMS (Micro-Electro-Mechanical Systems) that were already installed in a growing number of daily household appliances, are booming. However, until now the devices were still 'passive'. In other words, NEMS required an outside, bulky (several millimeters) source of alternating current. This is why the research of the scientists at the *Laboratoire de Physique de la Matière Condensée et Nanostructures* (LPMCEN, laboratory of condensed matter physics and nanostructures) is so important. They have just engineered the first active NEMS that can emit a periodic electric signal, thus gaining six orders of magnitude at once. The results were published in the August 2007 issue of Nanoletters...

... Read more: <http://www.bulletins-electroniques.com/actualites/51034.htm>

Long distance transfer of terahertz waves

Carlo Sirtori's team at the *Laboratoire Matériaux et Phénomènes Quantiques* (MPQ, materials and quantum phenomena laboratory) working with Thales R&T and Cambridge University (UK) have developed a technology that now makes it possible to inject terahertz (10¹² hertz) waves into optic fibers and transfer them over hundreds of kilometers. These waves are in the far infrared range, between medium infrared and microwaves. For a long time, they were largely unknown. They have the characteristic of penetrating a large range of nonconductive materials. They can go through skin, clothing, paper, wood, cardboard or plastic, heralding numerous applications in the medium to long term (medical imaging, security and the environment).

... Read more: <http://www.bulletins-electroniques.com/actualites/51035.htm>

Complete genome sequence of farm fish bacteria

In 1948, *Flavobacterium psychrophilum*, Gram-negative bacteria, was isolated after very high mortality rates in salmon fish farms, in the United States.

The bacteria is to blame for cold water flavobacteria mainly affecting salmonids. Depending on the age of the contaminated fish, the disease has different clinical forms, viz., brachial necrosis, ulcers, skin and muscle necrosis. As no vaccine is available, the only efficient way to fight the disease is the oral administration of massive, repeated doses of antibiotics. However, the large-scale use of antibiotics causes environmental impact problems and the emergence of resistant strains.

Although the bacteria was long confined to the North American West, the first strains appeared in Europe during the mid-eighties. Today, it can be found in every salmon fish-farming region in the world...

... Read more: <http://www.bulletins-electroniques.com/actualites/51036.htm>

Mycoplasma sexuality!

This is suggested by the findings of the research conducted by INRA scientists working at the Joint Research Unit on 'Host-Pathogen Agent Interactions' (INRA-ENVT) at the Toulouse Center. Comparative genome analyses conducted on several mycoplasma species (*Mycoplasma agalactiae* and several species belonging to the mycoid group) enabled the scientists to demonstrate the exchange of a large amount of genes between remote species of ruminant pathogen mycoplasma. Bacterial sexuality involves the exchange of genetic material...

... Read more: <http://www.bulletins-electroniques.com/actualites/51037.htm>

A network of nanometric rivets with unique properties

Researchers at two CNRS laboratories in Toulouse, the *Laboratoire de Chimie de Coordination* (LCC, the laboratory for chemistry and coordination) and the *Laboratoire d'Analyse et d'Architecture des Systèmes* (LAAS, system analysis and architecture laboratory) have designed just that. The Toulouse based scientists used a sequential assembly technique, which was recently patented by Azzedine Bousseksou (LCC) and Christophe Vieu's (LAAS) team, and an electronic lithography technique to accomplish the feat. This involved turning a spin transition material into nanometric rivets called DOTS. The rivets have...

... Read more: <http://www.bulletins-electroniques.com/actualites/51163.htm>

A fruit bat species is a reservoir for the Marburg virus

IRD researchers with their colleagues at the *Centre International de Recherches Médicales de Franceville* (CIRMF, international medical research center of Franceville) in Gabon and at the Centers for Disease Control and Prevention (CDC) in Atlanta, USA, have found that the Egyptian fruit bat (*Rousettus aegyptiacus*), a migratory fruit bat, is a reservoir of the Marburg virus, an infectious agent belonging to the same family (Filoviridae) as the notorious Ebola virus...

... Read more: <http://www.bulletins-electroniques.com/actualites/51164.htm>

Climate: global warming increasing aphid biodiversity

Aphids are important insects because they are a major food resource in ecosystems and are among the main crop pests in temperate regions. That is why researchers at the Joint Research Unit on the Biology of Organisms and Populations Applied to Plant Protection at the INRA Rennes Center working with the EXAMINE Consortium, Rothamsted Research, the Institut Français de la Biodiversité (French Institute for Biodiversity), Agroclim, and Météo France (the French Weather Bureau) are studying the impact of global warming on aphid populations. The study involves processing the data from the European EXAMINE network (est. 1968) to which INRA researchers belong.

... Read more: <http://www.bulletins-electroniques.com/actualites/51165.htm>

New research tracks after identification of a leptospirosis virulence gene

Leptospirosis, a zoonosis found throughout the world, is caused by a bacterium from the *Leptospira Interrogans* complex, which is to blame for about 500,000 severe human cases per year worldwide, specifically in Latin American and Southeast Asia. It also affects some 300 people per year in France. In 5 to 20% of the cases, leptospirosis causes kidney failure leading to death. It is also a veterinary problem. A century after American born Arthur M. Stimson discovered the germ, Mathieu Picardeau from the Spirochetes Biology Unit, Pasteur Institute, working with a team at the Oswaldo Cruz Foundation, Brazil, used random gene inactivation techniques, and identified a virulence gene essential to the bacterium, for the first time.

... Read more: <http://www.bulletins-electroniques.com/actualites/51166.htm>

Spotlight on the regions

Picardie - a European cluster for green chemistry

In September 2008, the Compiègne University of Technology (UTC) will be welcoming the *Ecole Supérieure de Chimie Organique et Minérale* (ESCOM, higher school of organic and mineral chemistry) now based in Cergy Pontoise, to its campus. At the same time as the move, a rapprochement should take place with the Institut Polytechnique LaSalle Beauvais, created in September 2006, after the IGAL and ISAB merge. The plan for a rapprochement is an original answer to the needed reorganization of French higher education. The goal is to hoist Picardie to the rank of European Cluster for Green Chemistry. This is also consistent with the framework of the Industries and Agroressources (IAR) competitive cluster.

The two schools will be drawing on their skills and expertise in Earth and Life Sciences for LaSalle Beauvais and in biotechnologies and process engineering for the UTC. The schools plan to ...

... Read more : <http://www.bulletins-electroniques.com/actualites/51167.htm>

SISCom-Bretagne, a tool unlocking the key to the world for information Sciences

Last April 19, ten public research organizations met in Rennes and created SISCom-Bretagne, a scientific interest group in the field of information and communication science for telecommunications and their applications. What is the purpose of the new facility? It is to increase Brittany's academic research dynamics in the field, enhance the group's international profile, and give it weight in the world of European research. By organizing major scientific events, the initiative should also increase the appeal of the network of players to welcome renowned foreign scientists and increase synergy between members, namely by pooling extant and planned scientific platforms. The group will also be providing support to innovation and competitiveness in the telecommunications industry.

... Read more: <http://www.bulletins-electroniques.com/actualites/51168.htm>