

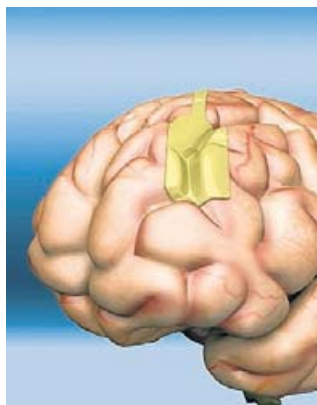
TURNING RESEARCH INTO INNOVATION

Catalonia has one of the strongest research systems in Europe. After years of research we have knowledge and technology ready to be transferred into innovation. Francesc Subirada, General Director of Research of the Department of Enterprise and Knowledge of the Generalitat, believes that to carry out this transfer process, as well as economic resources, it is important to have an ecosystem to

accompany it. For there to be expert human capital involved in this process, you must opt for training and attracting transformative talent. At the Research department, they are working to develop their own transfer model. "We are creating our strategy, a model of innovation which, as well as adding economic value, contributes specific value to society," says Mr. Subirada.

IMPLANTS FOR RECOVERING SPEECH

Over the last four years, the ICN2 (<http://icn2.cat>) has created five spin-offs, registered 10 patents and launched three products onto the market. At the last Mobile World Congress they presented the results of Brain-Com, a European project developing an ultrafine graphite film that will be implanted into the brains of patients who have suffered motor damage and have lost the ability to speak. The implant will be able to decode their communicative intent by mapping a large area of the brain. The electric device used records and stimulate the cerebral cortex, breaking down the electric signal into vowels, words and lines of thought. A synthesized voice will then vocalize what the person wishes to say. So far, this has been accomplished in mice and dwarf pigs, which only make sounds. The challenge for the coming years is to manage to decode human language.



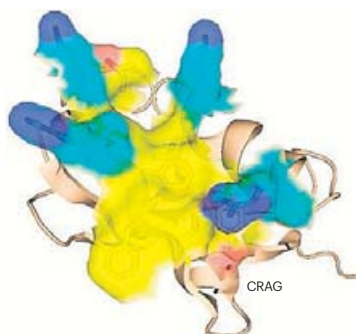
ICN2

ELECTROCHEMICAL SENSORS FOR CONTROLLING ISCHEMIA

Ischemurg is a project by the IBEC Nanoengineering Group (<http://ibecbarcelona.eu>). It's a device consisting of a matrix of miniature electrochemical sensors that can monitor post-operative tissue ischemia. When a tissue is reconstructed, because of burns or other types of accident, part of a tissue is transplanted onto the affected part. If there is blood shortage in the tissue in the first 48 hours, it becomes degraded and new surgery must be performed with another tissue. So far the post-operative controls that are carried out tend to be subjective and result in delays, based as they are on observing the colour of the transplanted tissue and controlling its temperature. "With Ischemurg, a sensor is inserted with a needle between the two tissues, and is then able to monitor it constantly to detect problems early enough to solve them. A part of the sensor sends information wirelessly to a computer. A warning signal is sent once certain parameters have been crossed. That way you can reuse the same tissue and the surgery is improved," explains Dr. Mónica Mir, the senior researcher for the project. "After 48 hours, you pull on the part of the sensor that hangs out, which is a biocompatible thread, and the process is finished. We are now beginning to test the device on pigs. If all goes well, we can then think about marketing the system".

NEW THERAPIES FOR CANCER

Maria Lois, CSIC researcher at CRAG (www.cragenomica.es), has always been focused on understanding how proteins communicate within the cell with the aim of modifying them when needed. For some years now, she has also worked on inducing the death of cells that are dividing uncontrollably because of cancer. To do so she applies technology derived from the study of SUMO plant protein, which modifies other proteins and has the same effect in animals. As proof of concept, her project responds to a medical necessity: the goal is to create a drug for acute myeloid leukemia, which until now has no effective functional treatment in patients of advanced age.



CRAG

PROFIT- MAKING COMPANIES

CIMNE Tecnología (www.cimnetecnologia.com) is a company that belongs to CIMNE, a public research center devoted to basic research. Since its creation in 2011, it has turned the technology and the results obtained into companies that triumph in the market. Its CEO, Javier Marcipar, explains that they are accompanying these new companies in the technology transfer process, looking for partners and investors, developing products and putting together a commercial network. The goal is to generate returns for the research center through the commercialization of the technology or the sale of the company once it has grown, depending on the individual case. During the seven years of its existence it has created 16 companies and sold three. Examples include Buildair (www.buildair.com), which makes large hangars for aircraft based on inflatable structures, and Inergy (www.inergybcn.com), an energy saving company, used by practically all the local councils in Catalonia.



Buildair