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Applying Mathematics To The Study Of Tumours And Cell Mobility, University Of Granada

Main Category: [Cancer/Oncology News](#)

Article Date: 19 Apr 2006 - 0:00am (PDT)

A group of researchers of the University of Granada (UGR), Spain, is leading an excellence project funded by the Andalusian Ministry of Innovation, Science and Enterprise with 105,900 Euros whose objective is to apply mathematics to the study of tumours and cell mobility. With their project called 'Biomat: estudio de modelos de desarrollo y movilidad celular y tumoral' (Biomat: study of models of cell and tumour development and mobility), these Granada-based scientists, led by Juan Soler Vizcaíno, will analyse cell mobility and tumour growth from the interaction of testing and mathematical models. This research is conducted in the Biomathematics field, a priority area of Biotechnology where Biology, Physics, Mathematics and Medicine converge.

Scientists believe that there is a link that is common to all the problems that have risen in the project kinetic theory. In a great number of biological particles that interact among themselves there is an underlying mathematical structure that is supported by equations on non-linear partial derivatives. These systems are interrelated and, in certain cases, describe the same phenomenon depending on the observation scale that is used.

With this theory, scientists will carry out a study and modelling by means of kinetic equations of cell movement which introduce different phenomenologies such as concentration of chemical substances or intercellular interaction, among others. Also, they will make a comparative analysis of tumour models based on the superficial spreading on the edge that takes new tumour cells to places with more free space for their growth.

The social relevance of the project 'is unquestionable, like the social repercussion that any issue related to cancer has', Juan Soler said to Andalucía Investiga. 'It is also a competitive project that gives a great opportunity to share this initiative with Andalusia, or even the leadership, in such promising field'.

In addition to this, the Granada-based team will study the fragmentation and coagulation of biological particles, related to global ecology and the formation of nutrients.

A great work framework

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According to the experts, Biomat's first objective is to create a work framework on Biomathematics that becomes an international scientific referent. In order to do so, Biomat will train interdisciplinary teams (doctors, biologists, mathematicians and physicists), as well as pre-doctoral and postdoctoral students. The second goal is to establish a parallel Master, PhD and summer school teaching program, where they already have some experience (like Escuela Biomat), so as to train top researchers.

As far as Biomathematics is concerned, the work lines require top quality criteria to be applied to all the fields involved. It is only this way that the results can be validated by the corresponding scientific communities. Juan Soler also said to Andalucía Investiga that promoting excellence research from a multidisciplinary viewpoint is 'a possible fascinating challenge, intellectually profitable and important for young researchers' curriculum, as well as internationally fashionable'.

Last April 3rd, the Andalusian Programme for the Spreading of Scientific Knowledge, sponsored by the Andalusian Ministry of Innovation, Science and Enterprise, and coordinated by the Granada Science Park, launched its new press service in English, InnovaPress. The aim is give information in English about the main research studies and scientific projects being carried out in Andalusia, within the Andalusian universities, at the Higher Council for Scientific Research (CSIC), and by I+D+I enterprises.

Andalusia's I+D+I public system includes over 18,000 researchers and more than 1,700 research groups. Together with Madrid and Cataluña, Andalusia has a great potential, with 14% of the nation's total scientific output. This privileged position has been possible thanks both to the regional government's financial support to the I+D+I and the aid of the private sector.

Last January 9, the Andalusian Programme for the Spreading of Scientific Knowledge created the news agency InnovaPress in Spanish, with the aim of providing prompt information about scientific developments in the region. The project follows the European Commission's guidelines for the creation of a major scientific news agency that will enhance the spread of such information, and will serve as a new tool for the EU's economic reforms set out in Lisbon, as debated in Brussels last December 2004.

Now, from April 3rd, InnovaPress will also be available in English, in an attempt to spread scientific developments and results to mass media, researchers, and universities.

The Andalusian Programme for the Spreading of Scientific Knowledge is sponsored by the Andalusian Ministry of Innovation, Science and Enterprise. This is a pioneering project in Europe, which has managed to gather research, higher education and knowledge-based industry, I.T.s, and entrepreneurial, industrial and energy policies.

With the interaction of all these agents in mind, the Andalusian Ministry of Innovation, Science and Enterprise intends to create a major social alliance that will enable an "innovation explosion" in Andalusia as exclusive guarantee of progress and welfare development. In this vein, the Andalusian Regional Government has increased its investment in I+D+I by 37% with regard to the previous year, when investment was also increased by 32%. This shows the government's commitment to double investment in this area in the course of the present term of office.

Some of the actions carried out by the regional government include a brand new Multi-annual Plan for University Infrastructure Investment for the period 2006-2010, with a total budget of 480 million Euros for the ten Andalusian public universities. With this new Plan, investment in university

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infrastructure and equipment into agents in mind, by policies in groups. is increased by 32% with regard to the previous five-year period. Also, within five years, the Plan will match all investment made in the last 12 years (1994-2005), which amounted to 504 million Euros.

Also, a new system of incentives has been established for Research Groups and Excellence Projects, reaching a total of 87 million Euros, which means an increase of 79 million with regard to the previous official announcement made by the regional government before the new system was in force. In the new system, 12 million Euros have been allocated as incentives to the work of 1731 research groups, and 30 million more have made it possible to start 219 excellence projects dealing with Life Sciences, Food and Agriculture, Information Technologies, etc.

Through InnovaPress, the Andalusian Programme for the Spreading of Scientific Knowledge will channel this new sustainable economic and social model, based on the creation of social welfare, respect for the environment and equal opportunities, within the major framework of the second modernisation of Andalusia.

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