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■ Biowissenschaften Chemie



Andalucía Investiga

Researchers of the UGR analyse tumours in depth using mathematical equations

A group of researchers of the University of Granada (UGR) 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. 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

According to the experts, Biomats first objective is to create a work framework on Biomathematics that becomes an international scientific referent. In order to do so, Biomats 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 Biomats), 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'.

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