

The Virtual Human Being: simulating how the human body works

How can we use Mathematics to understand physiological processes?

Barcelona, 7th October 2010.- Tomorrow, Friday 8th October, is the last day of the meeting of the Virtual Physiological Human Network of Excellence (VPH NoE)'s second study group. This European Network of Excellence is coordinating a five-year series of activities on the development of the Virtual Human Being, with the aim of generating simulations of multi-scale models which reproduce the way the body works from the molecule to the organ.

The meeting, which was held in the facilities of the Barcelona Biomedical Research Park (PRBB, Parc de Recerca Biomèdica de Barcelona) and organised by Dr. Jordi Villà, coordinator of the computational biochemistry and biophysics group of the Biomedical IT research programme – GRIB (IMIM-UPF), aims to bring together mathematical models and knowledge on some physiological processes for the purpose of producing computational tools which help doctors to take decisions based on simulations of how the human body works, or at least of how a specific part works. For instance, some projects within the network are working on the effect drugs have on generating cardiac dysrhythmia, while others are working on simulating the process which leads to osteoporosis, and others on kidney simulations.

The meeting was attended by internationally renowned experts in Applied Mathematics for simulations, in modelling of aneurysm evolution, in brain process simulations, in cardiovascular simulations or breathing mechanism simulations, among others. According to Jordi Villà: ***"It is hoped that these contributions will enable us to create predictive models, at any level of complexity, from the molecule to the organ, and enable researchers to add to these models the information that they have a command of depending on their knowledge. Making global models is possible in a lot of cases: the tools are there, they just have to be integrated"***.

Running parallel to initiatives in countries such as Japan, New Zealand or the USA, the process in Europe started a few years ago and has become a reality through this network of excellence, which is made up of a series of institutions that hold discussions, generate a collection of tools, and promote various actions regarding dissemination and education on the idea of the Virtual Human Being. In this context, the VPH NoE, in which the IMIM (Hospital del Mar Research Institute) and the Universitat Pompeu Fabra (UPF) have participated as preferential members, organise this training activity annually at a European level in the format of a study group.

The meeting has been held to coincide with the 2nd Barcelona School on Biomedical Informatics (BSBMI), which aims to continue as a space for international meetings and multidisciplinary study enabling researchers to discuss and learn about multi-scale simulation in Biomedicine, irrespective of the specific funding. Over 50% of BSBMI participants come from countries such as Italy, the United Kingdom, Ireland, France and Poland, which ensures that questions related to the need for multi-scale simulation methods will be tackled from numerous points of view.

For further information

<http://grib.imim.es/news/128/second-vph-noe-study-group>

<http://www.bsbmi.eu>

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