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Revolutionising clinical trials: Computer simulations instead of tests on animals or humans

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Clinical trials to test new drugs, devices or treatments are not only expensive, they are also risky for the test subjects; animals or humans. Solution: Perform the tests using high-quality and reliable computer simulations. The EU has granted nearly € 1 Million to the Avicenna project to make this possible.

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Avicenna, an Arabian physician and philosopher (980-1037), gave in his "Canon of Medicine" a formal structure to evaluate the effect of a treatment on a disease for the first time.

"Since then, the fundamental nature of clinical trials has changed surprisingly little", says project coordinator Dr. Keith McCormack of the University of Sheffield. "New medical treatments and devices are being tested in vitro – in a test system, and/or in vivo – clinical trials in living organisms. Both methods are far from ideal: they are costly, the former is often quite distanced from reality, and the latter puts both animals and humans at risk."

Birth of in silico medicine

The beginning of the 21st century, however, saw the birth of a completely new way to investigate living organisms through computer simulations, called in silico medicine.

Dr. McCormack: "It is now time to explore systematically how computer simulations can be used to improve clinical trials of drugs, devices, and biotechnology products. This will reduce the costs and the risks (both clinical and financial) involved in trials, and it will ultimately increase the rate of

innovation in healthcare."

Getting biomedical industry and researchers on board

The project will develop a "coordination and support" action, named after the great physician Avicenna, which will establish, in the span of 24 months, a partnership between biomedical industries and European research organisations. This has the purpose of developing the technology, methods, protocols, and standards required in order to make possible the use of computer simulations before "real" clinical trials.

"The primary users of in silico clinical trials technologies will be the biomedical industries", explains Dr. McCormack. "And the type of research required to develop the necessary technology, methods, protocols, and standards is pre-competitive in nature, and thus should facilitate multiple biomedical industries competing in the same market to collaborate around their development and use."

Roadmap

Avicenna will be designed around five large consultation meetings over the next two years. Each meeting is designed to bring together key experts in the field to collectively define the challenges that need to be addressed and to develop a Roadmap towards making in silico clinical trials a reality. The first meeting is to be held in Rome on the 20th and 21st March 2014.

The Avicenna project kicked off on 1st October 2013, will last for 2 years and is coordinated by the University of Sheffield (UK). Other partners are:

- Obsidian Biomedical Consulting Ltd (UK);
- Lynkeus srl (Italy);
- the European VPH Institute.

EU contribution: € 991.723 of a total of nearly € 1,2 Million.

If you are interested in becoming part of the Avicenna alliance, please contact the VPH Institute Manager at manager@vph-institute.org [2].

More info: www.vph-institute.org [3]

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