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Technology Platform for Virtual Organs

(Stuttgart) – Insilico Biotechnology AG has successfully concluded another step in the further development of its existing technology platform for simulating biochemical processes in living cells. A model of the liver including blood flow is now available. The platform offers benefits in particular to customers from the pharmaceutical, chemical and cosmetics industries, who can use this technology to perform computer-based toxicity tests.

The liver is a key organ in the body and is responsible for breaking down and excreting metabolites, drugs and toxins. Stuttgart-based Insilico Biotechnology AG has been re-searching these complex processes over a number of years and as a system biotechnology expert has developed a platform that maps these processes in silico, i.e. on a computer. After initiating a virtual liver cell for drug development in 2007, the company has now created a spatial model of the liver including blood flow. The new model is able to process data at cellular and organ level. In the medium term, Insilico Biotechnology plans for the platform to be used as a modular system that can be expanded with other organs such as the heart and kidneys. Ultimately, this will produce a whole-body model on which all the characteristics and reactions of an individual organism can be simulated and tested. As well as characteristics such as sex, age and weight, the virtual liver can already map genome-based breakdown pathways for toxic substances, thereby enabling the generation of reliable information on time and dose-related effects among various groups of patients.

The platform, which is embedded into the company's high-performance IT structure, can be used in various locations and is highly efficient. For example, information on metabolic changes as a result of administering specific substances is available within a few minutes instead of one to two days, as was previously the case.

The platform technology can be deployed by the chemical, pharmaceutical and cosmetics industries to carry out toxicological tests. The model will therefore enable a cut in animal testing over the long term. This is also important in the context of the new EU chemical regulation REACH on registering, evaluating and authorising chemicals which stipulates that manufacturers and importers must examine the effects of chemicals on human health.

The company has grown rapidly since it was founded in 2001 and recently relocated to larger premises. Around 20 employees work on simulating biochemical processes in living cells at the site in the STERN BioRegion. "We are glad to be successful in solving technically demanding problems," says CEO Klaus Mauch. "But we're particularly proud that our solutions are being implemented commercially in collaboration with leading industrial partners."

Press Release



Insilico Biotechnology is the market leader in solutions and software to simulate living cells. Its interdisciplinary team of experts offers customised solutions for efficient manufacturing of biotechnological products and for testing drugs by utilising high-performance computing and the company's own software. Insilico technology cuts the time, risks and costs involved in development processes for leading international companies in the chemical and pharmaceutical industries. Insilico is a privately run Stuttgart-based company founded in 2001. www.insilico-biotechnology.com

BioRegio STERN: For ten years, BioRegio STERN Management GmbH has been a skill-sharing network in the cities of Stuttgart, Tübingen, Esslingen, and Reutlingen and the Neckar-Alb and Stuttgart regions in the Baden-Württemberg area of Germany, providing a source of help and advice for founders of new businesses, entrepreneurs and researchers from the biotechnology sector. BioRegio STERN Management GmbH represents their interests in dealings with politicians, the media and associations. It offers business promotion and marketing services and provides advice on grant applications and corporate financing. Regenerative medicine, medical technology and the automation of biotechnology are key focal points. The Managing Director, Dr. Klaus Eichenberg, is a molecular and cell biologist and investment analyst.

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