

Press Release



28 May 2010

Insilico supplies bio-bricks for virtual liver

(Stuttgart) – The human liver is a highly efficient and extremely complex organ. After all, thousands of different substances are channelled through this vital organ every day for processing. Systematic research is being carried out to determine just exactly what happens there, and Insilico Biotechnology is providing models and analyses particularly for degradation pathways.

Clinics and scientists from all over Germany have been studying the liver systematically since 2004 as part of the HepatoSys competence network funded by the German Federal Ministry of Education and Research. The liver is the key organ for metabolism, responsible for the degradation, conversion and synthesis of substances. These functions are why the liver plays a major role in the degree of effectiveness of drugs.

Now, in the third phase of HepatoSys activities, a complete virtual model of the liver is to be drawn up. This is the first project in the world to combine all information about a single organ, incorporating all knowledge from the biochemical to the organ level. How do biochemical reactions in the liver relate to one another? What kind of signalling pathways regulates these reactions? What are the best therapeutic strategies and where should they be applied? The researchers are confident that answers to these questions will help them to combat diseases more effectively and specifically.

Insilico Biotechnology is leading a sub-project studying in particular detoxification. Piece by piece, the various project partners will carry out experiments on the dynamic metabolic processes involved. The results will then be integrated in an Insilico model and evaluated comprehensively. »One of our major goals is to find the molecular switches which control metabolic reactions. We are also aiming to identify markers for detecting pathological disturbances of metabolism in the liver«, explains Klaus Mauch, CEO of Insilico Biotechnology AG.

The project will profit from Insilico's expertise and numerous years of experience in the fields of modelling and simulating cellular metabolic processes. Focussing especially on detoxification, Insilico Biotechnology will spend the next five years developing genome-based network models of liver cells (hepatocytes) for humans – and for mice, to provide a comparison.

The results will be put to good use in the project and will also help Insilico Biotechnology to strengthen its services portfolio. In the long run, the company aims at expanding its biopharmaceutical services by offering virtual models of organs as well as its already established cell and tissue models which are permanently refined. Insilico's models and metabolism simulations are designed to provide its clients, for example, with individual predictions for the long-term effects of drugs and other foreign substances.

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Insilico Biotechnology designs and optimises biotechnological processes for the chemical and pharmaceutical industries. Successful in business since 2001, Insilico has internationally renowned expertise and a unique technology platform for connecting cell model libraries with simulation processes. Insilico analyses the latest biotech data and integrates it in genome-wide network models. With its high-performance computing techniques, Insilico develops new improved solutions for manufacturing biochemicals and biopharmaceuticals and achieves considerable cuts in the time needed for the development of bioprocesses. Insilico is a privately-owned company, located in Stuttgart, Germany.

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