

Press Release



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Insilico banks on high-performance computing

(Stuttgart) – Insilico Biotechnology is cooperating with HLRS, the High Performance Computing Center Stuttgart, in order to take computations for the fields of industrial and pharmaceutical biotechnology to new superior levels. The joint project, which is being funded by the German Federal Ministry of Economics and Technology, aims at developing methods for using thousands of computational cores simultaneously so that innovative predictions can be made much faster than today.

Biotechnological processes are being applied more and more often for industrial purposes e.g. not only bioethanol and vitamins are being produced with microorganisms and mammalian cells but also drugs and other bio-products. However, the economic potential of such new bio-products depends entirely on how efficiently they can be produced. This is why improving the efficiency of such processes on a long-term basis is one of Insilico Biotechnology's major goals. The company has set up a unique platform, unequalled in the world, for predicting metabolic performances. Insilico Discovery, Insilico's modelling and simulation environment, was devised for the graphically-oriented set-up and evaluation of large metabolic networks. The greater the number of metabolic data which can be processed and analysed, the more accurate the resulting predictions become.

It would be ideal to know which metabolic products are present in cells and how high their concentrations are at every stage of a bioproduction process. This would mean that precise predictions could be deduced for the key components of metabolism. However, it would take a huge number of computers months to analyse such time-patterns rendering this method economically unpractical, at least at the present moment. But if sufficient computing power were available to deliver the results in just a few days, the resulting simulations could put their users far ahead of any competition.

This is where the new project funded by the Federal Ministry of Economics and Technology comes in. The goal is to widen Insilico Biotechnology's scaleable computing environment to match HLRS's newest high-performance computing architectures within the two year project term. The main aim is to predict increases in efficiency based on the total metabolites of a production organism with several hundred components for the very first time – and within only a few days. This is virgin territory because up to now scientists have only worked on subsystems of metabolism with hardly more than twenty metabolic compounds. Besides speeding up the proceedings through the parallel use of the fastest processors, the project partners will concentrate on modularising metabolism.

By choosing HLRS, one of the three existing high-performance computing centers in Germany, Insilico Biotechnology has secured one of the few partners in the world able to master this challenge. As computer scientists are already coming up against limits as far as the development of faster processors is concerned, the

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HLRS is branching out to find new means of increasing the performance of computers and thus improving simulations. Its scientists are pioneers in the use of multi-core processors and graphics cards for computing purposes and also have, amongst other superior equipment, one of the fastest vector computers in Europe at their disposal.

Insilico Biotechnology is using these new technologies to develop innovative, system-oriented services for the industrial and pharmaceutical biotechnology sectors. By doing so, it is setting new international standards bringing direct benefits to all its partners and customers.

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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