

Healthcare industry BW

New Modeling Platform for Industrial Bioproduction

Insilico Biotechnology is one of the partners in a transnational EU-project out to find a common, easy-to-use computer-based platform for modeling metabolic processes in organisms which are of interest for biotechnological applications. The main advantage of this approach is that it will shorten the time from concept to marketable European biotechnology product considerably for all involved.

A model is only as good as the database behind it but there is more to the picture than just the quality and quantity of the data stored there. Vast volumes of data on the metabolism of organisms have to be managed and processed for quick and easy access if the outcome of production processes in industrial biotech applications is to be predicted reliably. For this reason, Insilico Biotechnology and two other industrial partners together with several academic research groups from various parts of Europe are designing a common and efficient computer-based platform for modeling metabolic processes. A variety of methods for analyzing data and modeling processes will be brought together on this platform and then harmonized but beforehand, innovative mathematical approaches and computer algorithms will have to be developed.

Insilico has already reconstructed the metabolism of various production-relevant microorganisms and cell lines on a broad basis and currently runs its own platform for modeling and predicting metabolic processes so that the joint project will definitely benefit from Insilico's expertise in these fields. Insilico will also provide company-owned data records and metabolic reconstructions to be used for further development within the transnational research group. New software solutions will be sought for modeling signaling pathways and regulatory networks, for example, so that they can be incorporated in already existing models. Step by step, this combination of European interdisciplinary expertise in data management, computer-based visualization, statistics, mathematical modeling and biotech engineering will create a framework enabling both research groups and industrial companies to predict metabolic processes much more efficiently than at present.

In turn, Insilico Biotechnology will itself profit from such developments. "We will use the joint results to optimize our own pipeline as regards modeling and simulations for industrial bioproduction purposes. This will put us in the favorable position of being able to offer our customers state-of-the-art solutions for their specific bioproduction needs – especially in the fields of healthcare and food products – so that they will be a jump ahead of their rivals", says Klaus Mauch, Insilico's CEO.

The project entitled **BioPreDyn** (New Bioinformatics Methods and Tools for Data-Driven, Predictive Dynamic Modeling in Biotechnological Applications) has a total volume of nearly three million EUR and is being supported by the European Commission for the next three years. The project partners are eight research institutions from Spain, the Netherlands, Italy and Great Britain together with EMBL (European Molecular Biology Laboratory) which is based in Germany. Insilico Biotechnology is the only industrial partner from Germany.

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