BBS – Technology Request Form

Technology Request:

Title:

PS Eurostars: Systemic modeling and simulation of bioproduction.

Abstract of the request *(max. 500 characters)*:

A French SME specialized in complex systems modeling is preparing a project to be submitted in September under the Eurostars program. The project aims at developing a numerical model linking molecular and cellular parameters to physical parameters of bioreactors. The project is looking for a bioproduction partner in the pharmaceutical field to co-develop the numerical model of bioproduction process

Description of the request *(min. 100 characters)*:

Modeling, simulation and real-time monitoring of the bioproduction processes are a major challenge in the pharmaceutical industry. It does not currently have the necessary tools to answer this challenge in an optimal way and avoid extensive and expensive testing process as well as deviation in the cell production generating a lot of unusable batches.. The project aims at developing a numerical model dedicated to bioproduction processes, linking molecular and cellular parameters to physical parameters of bioreactors. It is expected that the model will allow to:
- anticipate complex systems behavior
- run a virtual experiments on scalable systems
- Reduce development costs

The French SME coordinating the project is specialized in the development and distribution of software solutions for modeling and simulation of complex systems in various fields (logistics, security systems, systems biology, etc) and already has an EU project experience.

The technological objectives of the project will be:
1- **To develop a software dedicated to the systemic modeling of a bioproduction process.**
2- **To develop libraries of models answering the practical needs of the production industry in CHO, yeast… therefore allowing to better understand mechanisms and to get a more accurate picture of the macroscopic consequences of a change at the molecular level and vice versa.**
3- **To finalize a software which monitors parameters in real time in order to optimize the production of recombinant proteins by ensuring that key parameters are maintained in a specific window.**

The requested partner (bioproduction partner) will be involved at all stages of development of the project but would more specifically lead the work related to bioprocess run: the goal of this phase is to generate bioreactors physical parameters and biological samples by running a usual bioprocess.

Technical Specifications / Specific technical requirements of the request *(min. 50 characters)*:

Call: Eurostars cut off date Sept 20th 2012
Development stage: under preparation, 2 other partners already involved
Technical requirements: the partner should already work in the pharmaceutical field

Technology Keywords:
6.2.2 Cellular and Molecular Biology
6.2.3 Enzymology/Protein Engineering/Fermentation
1.2.16 simulation
6.3.1 bioinformatics

Domain of Application

Current and Potential Domain of Application:

Development of new drugs and vaccines

Collaboration Details:

Joint further development: Eurostars

Collaboration Details / Comments:
Mandatory

- Type of partner sought: **SME of a "Eurostars country"**

- Specific area of activity of the partner: **bioproduction partner (ideally a contract manufacturing organization) in the pharmaceutical field to co-develop the numerical model of bioproduction process**

- Task to be performed:
Leader of work package on bioprocess run; participate in all other stages of the project.