



## ΙΔΡΥΜΑ ΤΕΧΝΟΛΟΓΙΑΣ ΚΑΙ ΕΡΕΥΝΑΣ

ΕΡΕΥΝΗΤΙΚΟ ΙΝΣΤΙΤΟΥΤΟ ΧΗΜΙΚΗΣ ΜΗΧΑΝΙΚΗΣ  
ΚΑΙ ΧΗΜΙΚΩΝ ΔΙΕΡΓΑΣΙΩΝ ΥΨΗΛΗΣ ΘΕΡΜΟΚΡΑΣΙΑΣ

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### ΣΕΜΙΝΑΡΙΟ

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**ΘΕΜΑ:** **DEVELOPMENT OF METABOLIC ENGINEERING TOOLS  
FOR THE OPTIMISATION OF BIOREACTOR  
PRODUCTION OF BIO-PRODUCTS OF THERAPEUTIC  
INTEREST**

**ΤΟΠΟΣ:** Αίθουσα Σεμιναρίων ΙΤΕ/ΕΙΧΗΜΥΘ

**ΗΜΕΡΟΜΗΝΙΑ:** Πέμπτη, 14 Οκτωβρίου 2004

**ΩΡΑ:** 16: 00

### ΠΕΡΙΛΗΨΗ

There are different ways to study process development with the goal of directing plant or animal cell catalytic activity towards the production of active bio-products. Classical bioengineering approaches relating cell behaviour to extracellular parameters now seem obsolete since the cell metabolism is mainly tributary of intracellular contents and processes. Novel research approaches are then required such as metabolic engineering, which deals with intracellular processes. Major breakthroughs have been made in the fields of genomics and proteomics with little understanding of the metabolic control mechanisms. Obtaining a complete description of cell behaviour in its culture environment may also require crucial physiologic parameters such as cell nutritional and metabolic states. Simulations from metabolic models can then be used as a tool to test hypotheses on metabolism, identify metabolic control fluxes, predict gene targets improving the flow of nutrients and metabolites towards the desire bio-products, and improve the culture environment (i.e. culture medium, bioprocess operating parameters, feeding mode). The establishment of a metabolic engineering approach based on a global metabolic modeling requires the development of efficient tools for on-line observation, description and prediction of the catalytic activity of the cells. *In extensio*, these tools can be applied to on-line evaluation of the potential of the culture. This Canada research chair is thus proposing an integrated effort in the development of analytical and modeling tools, which will allow decreasing the time of process development and improve process management for high-value complex bio-products.

*Dr. Jolicoeur, from August 2004 to August 2005, is Invited Professor at:  
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