**ΕΡΕΥΝΗΤΙΚΟ ΙΝΣΤΙΤΟΥΤΟ ΧΗΜΙΚΗΣ ΜΗΧΑΝΙΚΗΣ ΚΑΙ ΧΗΜΙΚΩΝ ΔΙΕΡΓΑΣΙΩΝ ΥΨΗΛΗΣ ΘΕΡΜΟΚΡΑΣΙΑΣ**

**Οδός Σταδίου, Πλατάνι, Πάτρα**
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# ΣΕΜΙΝΑΡΙΟ

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**ΘΕΜΑ:** **TISSUE REGENERATION AND WOUND HEALING: EXPERIMENTAL AND COMPUTATIONAL APPROACHES**

**ΤΟΠΟΣ:** Αίθουσα Σεμιναρίων ΕΙΧΗΜΥΘ-ΙΤΕ

**ΗΜΕΡΟΜΗΝΙΑ:** Τρίτη, 5 Ιουνίου 2001

**ΩΡΑ:** 19:00

## ΠΕΡΙΛΗΨΗ

One of the most promising techniques of tissue engineering involves the use of three-dimensional scaffolds. The first step of this technique involves harvesting a small tissue sample from the patient. Cells from this tissue are isolated, cultured and seeded into scaffolds formed from biomaterials engineered to promote cell differentiation and proliferation. The seeded cells migrate in all directions and proliferate to populate the scaffold and form the new tissue. Finally, the regenerated tissue is implanted in the patient.

The development of bioartificial tissue substitutes is a long and costly process that is currently based exclusively on experimentation. Computational models with predictive capabilities will significantly speed up this process and reduce the development costs. For example, the availability of simulation tools will enable tissue engineers to rapidly screen design alternatives and select only the most promising ones for experimentation. Predictive models can only be developed, however, if we have a thorough understanding of fundamental cellular processes.

Starting with a brief overview of cell migration, this talk will summarize results from recent experimental studies that elucidate the role played by growth factors and substrate-adhesion molecules in modulating cell migration. We will then discuss the development of 2D and 3D stochastic models that describe the dynamics of large populations of migrating and proliferating cells. These models are then employed to study how scaffold properties, initial seeding and cell migration parameters affect tissue growth rates. Simulation results reveal some surprising effects of cell population dynamics on tissue regeneration and would healing.

Για περισσότερες πληροφορίες μπορείτε να επικοινωνείτε με την Κλεάνθη Ζαχαροπούλου
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