

*IPM-POLYTECHNIQUE-WPI Workshop on Bioinformatics and Biomathematics,
April 11-21, 2005, IPM, Tehran*

Introduction to Chemotaxis

(3 Lectures)

F. Chalub

*Centro de Matematica e Aplicacoes Fundamentais,
University of Lisbon
Lisbon, Portugal*

Chemotaxis is the cell movement induced by chemical substances. It has been studied in a mathematical way since '50s but experienced a boost after the seminal work of Keller and Segel (late '60s).

In this talk we show the basic features of chemotaxis (why is it relevant?, what has been studied?) and present a short introduction to the main models in the literature.

First we present the Keller-Segel model and subsequently the so called Othmer-Dunbar-Alt model. We show the relevance of studying two different scales of description by pointing out questions that have different and similar answers in each scales. In particular we try to shed light on the question of blow up.

Afterward we show precise mathematical relations between these two models and point new directions in this work.