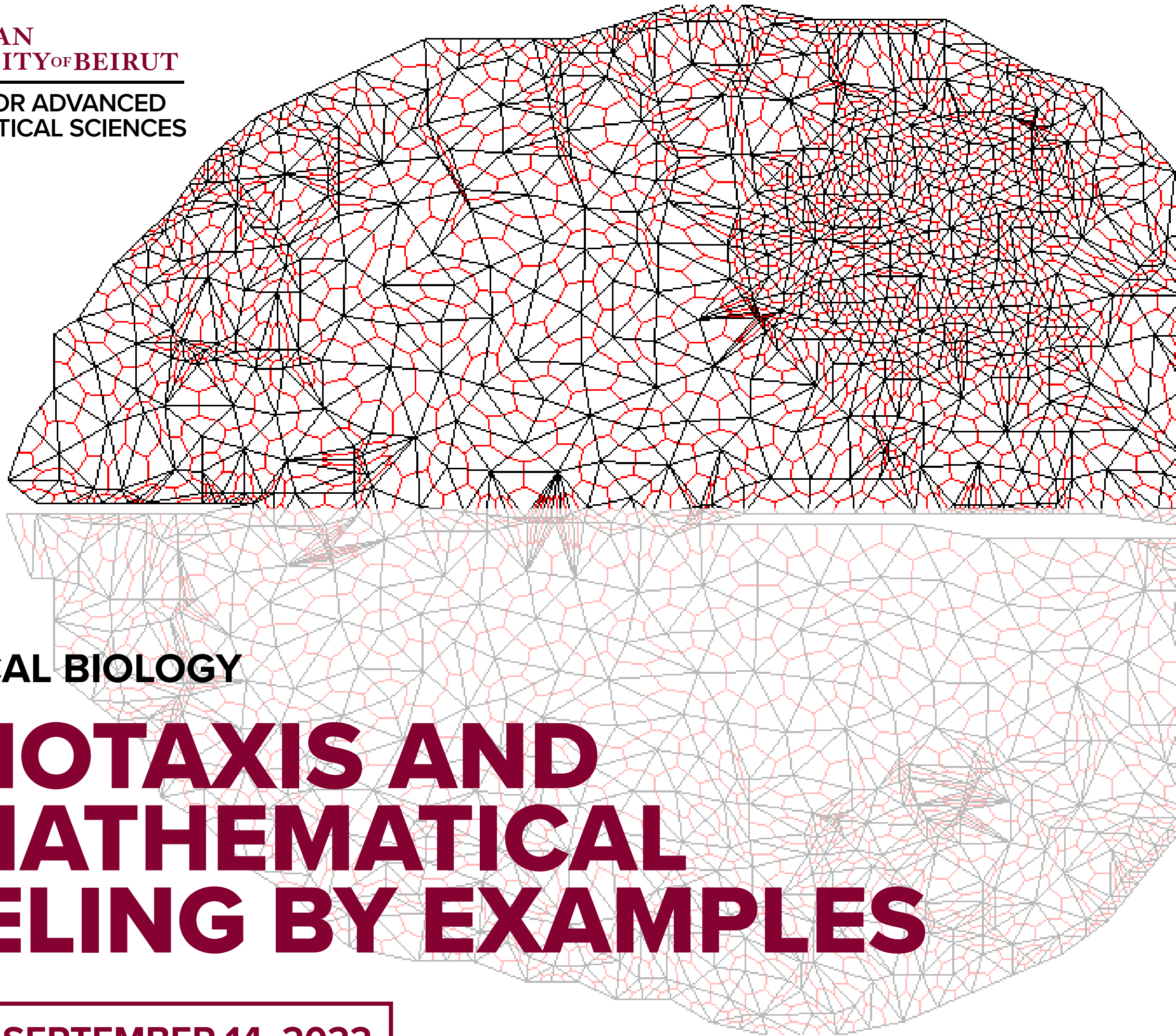




AMERICAN
UNIVERSITY OF BEIRUT
CENTER FOR ADVANCED
MATHEMATICAL SCIENCES



MATHEMATICAL BIOLOGY

CHEMOTAXIS AND BIO-MATHEMATICAL MODELING BY EXAMPLES

WEDNESDAY, SEPTEMBER 14, 2022

5:00 pm (Beirut time) | ONLINE

Chemotaxis is the directed movement of cells and organisms in response to chemical gradients. It has attracted significant interest due to its critical role in a wide range of biological phenomena. The Keller-Segel model has provided a cornerstone for theoretical and mathematical modeling of chemotaxis. For instance, it can be used to model the displacement of some bacteria, the bone regeneration mechanism, the breast cancer development and growth, and to simulate the behavior of Glioblastoma Multiforme...

In this talk, we describe the biological mechanisms of the above phenomena and their mathematical modeling. We also present some numerical simulations.



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Mazen Saad is a full Professor of Applied Mathematics at the engineering school Ecole Centrale de Nantes (ECN). He is the President of the Scientific Council of Centrale Nantes since 2017, he was also responsible of the mathematical team of the Laboratoire de Mathématiques Jean Leray at ECN (2007--2021). He obtained the Delegation CNRS to be researcher at the National Scientific research Center for 2012--2013 and 2018--2019. He is also member of the Federation of Mathematics, FR no 2962 from CNRS. The national French council has attributed to M. Saad the prime for his excellent scientific research since 2013. His research interests focus on multiphase flow in porous media, on modeling in biomathematics, and on finite volume methods. He is currently a referee for many international journals. He is often invited to many international conferences for his high competencies in the field of numerical analysis. He has a large teaching experience: Master research, graduate courses. He also supervised 18 PhD students. M. Saad authored more than 88 journal articles and proceedings.