Discipline MCP5845  
Computational Modeling of Molecular Networks

Concentration area: 5131
Creation: 20/03/2019
Activation: 20/03/2019
Credits: 1
Workload:

<table>
<thead>
<tr>
<th>Theory (weekly)</th>
<th>Practice (weekly)</th>
<th>Study (weekly)</th>
<th>Duration</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5</td>
<td>5</td>
<td>1 weeks</td>
<td>15 hours</td>
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</tbody>
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Professors:

Jose Eduardo Krieger
Jefrey John Sauceman

Objectives:

OBJECTIVES The course intends to discuss advanced topics in genetics and molecular cardiology in biomarkers associated with cardiovascular disease, vascular remodeling and strategies for cardiac regeneration. Developing models and simulating molecular networks using our user-friendly software, Netflux (https://github.com/saucermanlab/Netflux). Network visualization of simulation results using Cytoscape. Use of network modeling to explore emergent properties of signaling networks such as adaptation, oscillation, and memory. Examples from the literature and the Saucerman lab of how network modeling has been applied to understand complex molecular networks. Each attendee will develop their own model of the molecular network of their choice. Before the course: 1. Install the Windows or Mac version of Netflux (software being updated before course). 2. Bring a diagram of the molecular network of your choice. Here are some examples: https://www.wikipathways.org/index.php/Special:BrowsePathways

Rationale:

Justification The prevention and treatment of cardiovascular diseases are increasingly dependent on integrated knowledge that includes genetic approaches, preclinical and clinical experimentation, and strategies for implementing new knowledge in the health system to serve the population. These measures pose a challenge for researchers, educators, health professionals and the health system as a whole. In this context, this course aims to familiarize the health professional with new research strategies at the prevention and treatment of cardiovascular diseases.

Content:

CONTENT: The student will be able to identify the experimental strategies used in biomarkers research associated with cardiovascular disease, vascular remodeling or strategies for cardiac regeneration therapy; familiarize themselves with the evolution and the state of these research areas and identify the main challenges in those areas of study.
Type of Assessment:

EVALUATION: The acquired skills will be evaluated by final dissertation with literature review to test the objectivity and accuracy of the answers.

Notes/Remarks:

NOTE: Minimum number of students: 10 Maximum number of students: 20 The course is taught in English.

Bibliography:

Será objeto de pesquisa do aluno após discussão com o coordenador do curso além do material enviado por email 1 semana antes do curso.