Chem F675

Cellular Signaling

"Biochemistry of Signal Transduction and Regulation"

Instructor: Thomas Kuhn, 474-5752, tbkuhn@alaska.edu
Department of Chemistry and Biochemistry
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Office Hours: Tuesdays 1:00 pm to 2:00 pm

Lecture: Tuesdays, Thursdays, 2:00 pm – 3:30 pm, REIC 165

Text: ***Signal Transduction***
Gomperts BD, Kramer IM, Tatham PER
2^{nd} Edition, Academic Press 2009
ISBN 978-0-12-369441-6

Course:
This 3 credit course will concentrate on cellular signal transduction and regulation in higher animal and humans only. Cellular signaling is of vital importance in complex biomolecular systems, development, physiology, and pathology and thus, constitutes a major topic in modern medical and pharmacological research. Major topics include G-proteins, Protein kinases, Ca^{2+}, cAMP, lipid mediators, adaptor proteins and signal recognition domains. The suggested textbook serves as a basic reference. Course material is exclusively composed of review articles and primary research literature pertinent to the topics. All material will be distributed on a timely basis. Individual assignments will be distributed throughout the course of the semester.

Course Goals:
This course provides 1) an understanding of the basic principles of intra- and intercellular signaling on the molecular level and 2) a perspective of signaling process in the context of major cellular processes and their relation to diseases such as cancer. The underlying theme of structure-function relationships of proteins strongly emphasizes these aspects in the context of signaling.

Learning Outcomes

Understand specificity of signals and amplification
Integrate the structure/function relations in signal transduction
Apply concepts to interpret experimental data, propose meaningful experimental approaches, and formulate hypotheses.
Critical understanding of current research areas and problems