In Vivo Calcium Imaging of Neural Network Function
Werner Göbel and Fritjof Helmchen

This article reviews basic principles and recent advances of two-photon imaging of population activity in neural circuits of the living mammalian brain.

EMERGING TOPICS

Fusion, Fission, and Secretion During Phagocytosis
Kassidy K. Huynh, Jason G. Kay, Jennifer L. Stow, and Sergio Grinstein

Phagocytosis is essential for the elimination of pathogens and for clearance of apoptotic bodies.

Metabolic Control of Proteasome Function
Fengxue Zhang, Andrew J. Paterson, Ping Huang, Kai Wang, and Jeffrey E. Kudlow

Proteasome is under metabolic control. The physiological and pathological importance of this finding is reviewed in this paper.

The Role of Shear Stress on ET-1, KLF2, and NOS-3 Expression in the Developing Cardiovascular System of Chicken Embryos in a Venous Ligation Model
Bianca C. W. Groenendijk, Kim Van der Heiden, Beerend P. Hierck, and Robert E. Poelmann

In this review, the role of wall shear stress in the chicken embryonic heart is analyzed and its effect on cardiac development through regulating gene expression.

Tandem Mass Spectrometry in Physiology
Trairak Pisitkun, Jason D. Hoffert, Ming-Jiun Yu, and Mark A. Knepper

Recent progress in tandem mass spectrometry, including development of quantitative methods, phosphoproteomic analysis, and targeted proteomics, has made it a powerful tool for the study of cell physiology.

The Role of Matrix Metalloproteinases in Stromal/Epithelial Interactions in the Gut
N. Sengupta and T. T. MacDonald

Review of the role of matrix metalloproteinases in the gut in health, in gut inflammation, and in cancer.