Reviews

Aging of the Immune System as a Prognostic Factor for Human Longevity
Anis Larbi, Claudio Franceschi, Dawn Mazzatti, Rafael Solana, Anders Wikby, and Graham Pawelec
The mechanisms and consequences of age-associated immune alterations, designated immunosenescence, are briefly reviewed here.

Neural Systems Controlling the Drive to Eat: Mind Versus Metabolism
Huiyuan Zheng and Hans-Rudi Berthoud
Review of recent studies that suggest that the cross talk between brain areas involved in cognitive, emotional, and metabolic-regulatory functions may explain why energy homeostasis breaks down for many obesity-predisposed individuals in our modern environment.

Mitochondria: The Hub of Cellular Ca2+ Signaling
György Szabadkai and Michael R. Duchen
The review describes the principles of mitochondrial Ca2+ handling and how the organelle directs the cellular Ca2+ signaling machinery and cell fate according to its metabolic state.

Apical Transporters for Neutral Amino Acids: Physiology and Pathophysiology
Stefan Bröer
The molecular identification of apical neutral amino acid transporters has shed a light on the molecular basis of Hartnup disorder and iminoglycinuria.

The Solute Carrier 26 Family of Proteins in Epithelial Ion Transport
Michael R. Dorwart, Nikolay Shcheynikov, Dongki Yang, and Shmuel Muallem
This review highlights structural features, the functional diversity, and several regulatory aspects of the SLC26 transporters.

Ion Transport and Energetics During Cell Death and Protection
Elizabeth Murphy and Charles Steenbergen
This review discusses mechanisms involved in alterations in ions and high-energy phosphate metabolites in perfused or intact heart during ischemia and reperfusion.

On the cover: Changes in early T-cell receptor signaling as a cause for age-associated hyporesponsiveness. See Larbi, Franceschi, Mazzatti, Solana, Wikby, and Pawelec, p. 64.