

グローバル COE 特別セミナー

疾患生命工学センター

生物物理学セミナー

(平成 19 年度)

演者: Amy Tse 博士

Professor, Department of Pharmacology & Centre for Neurosciences, Faculty of Medicine & Dentistry, University of Alberta

演題: Regulation of Stimulus-Secretion Coupling in Mouse Pituitary Corticotropes: Role of Arachidonic Acid

日時: 平成 19 年 12 月 17 日(月) 13:30-14:30

場所: 医学部教育研究棟 2 階 0202 号室(第2セミナー室)

要旨:

The secretion of the stress hormone, adrenocorticotropin (ACTH) upon stimulation by corticotrophin-releasing hormone (CRH) is an essential component of the neuroendocrine response to stress. CRH depolarizes corticotropes and activates voltage-gated Ca channels. In addition, CRH evokes the release of arachidonic acid from corticotropes. Using the whole-cell technique, we examined the action of arachidonic acid on the membrane excitability of single corticotropes (identified by their green fluorescence) isolated from transgenic mice that express enhanced green fluorescent protein (EGFP) from the pro-opiomelanocortin (POMC) promoter. We found that arachidonic acid causes hyperpolarization in corticotropes via the enhancement of a background K⁺ current. This K⁺ current can be inhibited by CRH or elevation of cellular cAMP. The opposing action of arachidonic acid and CRH on the membrane excitability of corticotropes raises the possibility that arachidonic acid may act as a negative feedback control to reduce the excitatory action of CRH on corticotropes and thus preventing excessive stress hormone secretion during chronic stress.

世話人: 院医・疾患生命科学部門(2) 河西春郎 (内 21440)