1-S15-3 Symposium15

Regulation of physiological lipid homeostasis by prostaglandin receptor

Tomoaki Inazumi, Yukihiko Sugimoto

Grad. Sch. Pharmaceut. Sci., Kumamoto Univ.

Adipose tissue is important not only for energy storage but also as an endocrine organ that regulates energy homeostasis and insulin sensitivity by secreting adipokines such as adiponectin and leptin. Excess lipid accumulation in adipose tissue results in an imbalance in the secretion of adipokines, leading to diabetes and other metabolic disorders. Hence, understanding of molecular mechanisms underlying physiological regulation of adipogenesis and lipid metabolism is an important issue both in biological and clinical aspects. Prostaglandins (PGs) are the arachidonate metabolites synthesized by the action of cyclooxygenase as a rate-limiting enzyme. It has been shown that several PGs regulate adipocyte defferentiation or lipolysis in cell culture system. Indeed, we previously identified that PGE_2-EP4 signaling suppresses adipocyte differentiation from 3T3-L1 preadipocytes and mouse embryonic fibroblasts. However it has not been examined the physiological roles of PG receptors in adipogenesis or adipocyte function in vivo. In this presentation, we would like to show the phenotypes regarding adipose tissue development and insulin response of PG receptor-KO mice and discuss on the physiological role of PG receptor signaling in the maintenance of lipid homeostasis.