

BDR SEMINAR in Kobe

"CDB SEMINAR" and "QBiC SEMINAR" have been renamed "BDR SEMINAR".

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Tuesday, August 28, 2018

16:00-17:00, Seminar Room A7F

The many faces of estrogen signaling in the male gonad

Summary

For the first time, estrogen production in the male testis was documented in 1934, through the discovery of the intratesticular conversion of androgens into estrogens in equine. For next decades estrogens role in male physiology remained not elucidated and linked rather to their unimportant or inhibitory function. In 1988, pioneering study by Kula et al., in immature rats, clearly demonstrated that estrogen signalization is crucial for initiation of spermatogenesis. Discovery in the middle 90ties of the estrogen receptors (ERs) in male, and data showing functional disturbances of the reproductive system and infertility in transgenic mice lacking ER α or estrogen synthase (aromatase) together with clinical data from patients (with mutations in ER and aromatase genes) considerably extended the knowledge and strongly established positive/stimulatory role of estrogens in males. However, ERs role for individual cell function and ERs expression pattern in testicular cells (somatic, spermatogenic and spermatozoa) is still controversial in many aspects. Currently, growing evidences are available on estrogenic regulation of differentiation, proliferation as well as apoptosis and tumor transformation of testicular cells. In these cellular processes, estrogen action through ERs contribute only to a small part to the complexity of estrogen signaling. Newest data confirm presence of membrane estrogen receptor (GPER) that binds also xenoestrogens in various testicular cells. In addition, estrogen-related receptors (ERR) appeared to be involved directly and indirectly in estrogen signal transmission. ERRs are structurally and functionally similar to ERs playing a role in diverse metabolic (energy and lipid metabolism), developmental and differentiation processes in many cell types in the organisms. Moreover, last data confirm that tumor development is under ERRs control. These and other related issues on exogenous and endogenous estrogen signaling in various types of testicular cells including mechanisms of their action and cellular effects will be presented herein based on literature data and own one.



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