

同時通訳（英語→日本語）有

卵形性を制御する因子のマウスを用いた 遺伝学的探索

Genetic identification of key factors controlling oocyte development in mice

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Abstract

Development of fertilization-competent oocytes depends on integrated processes controlling meiosis, cytoplasmic development, and maintenance of genomic integrity. These oocyte quality-determining processes are controlled primarily by autonomous genetic programs intrinsic to the oocytes, but are also influenced by extrinsic factors cumulated in the follicular microenvironment surrounding the oocyte. When these processes go awry, they will cause miscarriage, birth defects and infertility, as well as other leading female reproduction-related diseases. My laboratory is focused on using mouse genetic approaches to identify the key intrinsic factors that directly control oocyte development, and to understand how the extrinsic factors incorporate into the “oocyte-granulosa cell regulatory loop” to indirectly regulate oocyte development. In particular, using the “ENU-mutagenesis”-based forward genetic approach, we have identified several genes that are essential for the control of oocyte development.

Specifically, we found that meiosis-arrest female 1 (Marf1) is highly expressed in mouse oocytes, and is a master regulator of key oogenetic processes including meiotic resumption, preimplantation development, and maternal genomic integrity.

Selected publication

Su YQ et al., Science, 2012

Su YQ et al., PNAS, 2012

Zhang M, Su YQ et al., Science, 2010

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