Remodeling on molecular mechanisms of pregnancy establishment and regulation

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【Outline of survey】

It is generally believed that a “life” begins at the process of fertilization. However, up to 50% of fertilized eggs die during the period of conceptus implantation to the maternal endometrium. In fact, the probability of a living birth at the fertilization is less than 30%, however, it reaches more than 88% right after the completion of implantation. In this study, the principle investigator proposes the research on the elucidation of molecular mechanisms by which the expression of trophoblast interferon-tau (IFNτ) is regulated in a temporal and spatial manner. Such knowledge will be applied to construct in vitro conceptus implantation model, which will be used to reconstruct regulatory mechanisms of implantation processes, remodeling.

【Expected results】

Molecular mechanisms of implantation, particularly the initial establishment of placenta have not been elucidated. These results not only shed a light on unsolved problems, but elucidate potential mechanisms on placental insufficiency seen in cloned animals, and improve the success rate on embryo transfer in assisted reproductive technology.

【References by the principal researcher】

• Nagaoka, Nojima, Watanabe, Chang, Christenson, Sakai and Imakawa (2003) Regulation of blastocyst migration, apposition, and initial adhesion by a chemokine, interferon γ-inducible protein 10 kDa (IP-10), during early gestation. J. Biol. Chem. 278: 29048-29056.

• Imakawa, Kim, Matsuda, Ishida, Iizuka, Suzuki, Chang, Echternkamp and Christenson (2006) Regulation of the ovine interferon-tau gene by a blastocyst-specific transcription factor, Cdx2. Mol. Reprod. Develop. 73: 559-567.

【Term of project】 FY2006－2010

【Budget allocation】18,000,000 yen

【Homepage address】 http://www.vm.a.u-tokyo.ac.jp/ikushu/implantation/