Cover Stories:

Major Scientific Publications Featuring NRI-funded Research

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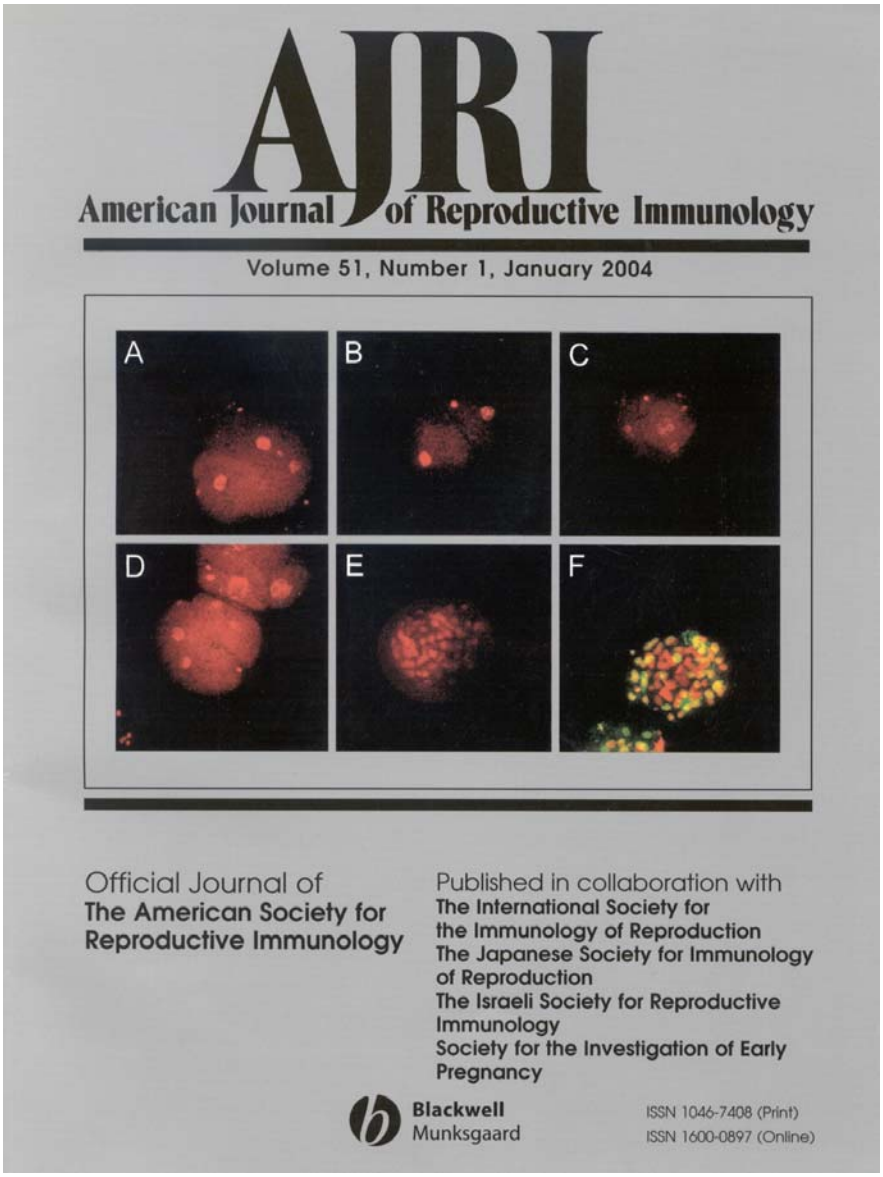
United States Department of Agriculture

USDA

Cooperative State Research, Education, and Extension Service

National Research Initiative Competitive Grants Program

2004 No. 6



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P. Soto, R. P. Natzke, and P. J. Hansen. 2003. Actions of Tumor Necrosis Factor-a on Oocyte Maturations and Development in Cattle. American Journal of Reproductive Immunology. ***50:380-388.***

The fate of a newly-fertilized embryo is an uncertain one. Large numbers of embryos die during the first few days after fertilization either because of inherent defects in the embryo or because the environment in the mother's reproductive tract is inadequate to support the embryo. In the dairy cow, the rate of fertilization and embryonic failure has increased in the last 30-40 years and is now a major factor limiting dairy farm profitability. One of the factors causing embryonic death is stress on the pregnant female, such as summer heat stress or infectious disease. Using research funding from the USDA-NRI, Dr. Hansen and colleagues have shown that one response of embryos to various stresses is the phenomenon called programmed cell death or apoptosis. Often likened to cell suicide, apoptosis involves activation of processes within the cell that lead to the cell's death. Although large-scale apoptosis is likely to lead to the embryo's death, Hansen's work suggests that a limited apoptotic response in the embryo may be beneficial to its chances for survival by removing cells most damaged by stress. Regulation of apoptotic responses may provide new approaches for enhancing fertility in farm animals and humans.

This research was supported by the Animal Reproduction Program of the Competitive Programs Unit

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