

***In Vitro* Fertilization and Non-Surgical Embryo Transfer in Swine**

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During the past decade considerable interest has been generated for the development of new reproductive technologies in swine. It was not until the early 1990s that it became possible to successfully culture embryos recovered from donor gilts through the 'four-cell block' to the blastocyst stage. This advancement then led to increased research and the possibilities of the *in vitro* production (IVP) of porcine blastocyst from oocytes recovered from the ovaries of gilts and sows slaughtered for food. Since it had been shown previously that fertilization of *in vivo* oocytes was possible, focus has been directed more recently on the *in vitro* maturation (IVM) and *in vitro* fertilization (IVF) of IVM oocytes. Major progress has been made with the present ability to produce blastocyst from 30% of the oocytes collected from ovaries and subjected to IVM. However, what remains as a persistent problem in the IVP of developmentally competent embryos is a high frequency of polyspermy and research continues in this area in an effort to be able to obtain both a high fertilization rate of IVM oocytes coupled with a low frequency of polyspermy. This development would than make it possible to provide a large number of embryos for use in the increased production of swine from genetically superior females, as well as for related emerging reproductive technologies and biomedical research.

One related emerging biotechnology is the non-surgical transfer of porcine embryos. The use of embryo transfer in swine is presently limited to unique situations due to the requirement to perform surgical transfers of both *in vivo* and *in vitro* embryos in order to obtain an acceptable fertility

level in recipients. Recently, however, major progress has been made in the development of new instrumentation and procedures for the transfer of blastocyst to both gilts and sows non-surgically. However, continued research will be required to develop this technology further in order to obtain an acceptable farrowing rate and a larger litter size in recipients.