

News Release

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Technology Gives Hope to Infertile Couples

Researcher Develops Artificial Insemination Device to Improve Quality of Semen

One in ten couples worldwide have infertility problems, and approximately two million couples actively seek treatment.

Samuel Prien, Ph.D., a professor in the Department of Obstetrics and Gynecology at Texas Tech University Health Sciences Center (TTUHSC), developed a device to improve the quality of semen used in fertility treatments. The ProTex patented technology encompasses the method of collecting sperm, as well as the container into which the sperm are collected.

“Traditional sperm collection methods consist of a plastic cup in a clinical setting,” Prien said. “We’ve tried to provide an environment which allows for a better-quality sample.”

In traditional collection methods, sperm cells are often “shocked” by pH or temperature changes. The new collection device features a more stable environment for the sperm with controlled pH levels, temperature and a collection of nutrients, creating an environment for the sperm cells that is similar to a male’s body. A better quality of sperm cells will be beneficial for both medical and veterinary purposes.

“Currently, for artificial insemination purposes, male patients are limited to collecting semen in a clinic,” Prien said. “This device, however, will allow the semen to survive up to an hour, so the patient may collect in the home setting and later drive to the clinic.”

Improvements in artificial insemination also will reduce the need for couples to undergo the expensive process of in vitro fertilization, the next step when insemination doesn’t work. Currently, treatment options for the male are limited. Either to attempt what is thought of as the low-tech procedure of intrauterine insemination (IUI) or to go very high tech and perform some type of assisted reproductive technology (ART), such as in vitro fertilization (IVF). While IUI procedures cost a few hundred dollars per attempt, ART range from \$10,000 to \$25,000 per attempt and do not guarantee success. Anything that improves the quality of the gametes used in the procedures has the potential of improving outcomes.

“With this technology, 10 or more attempts at artificial insemination can be made with one sample, thereby decreasing the likelihood that in vitro fertilization will be necessary,” Prien said. “Other standard specimen cups, while fairly inexpensive, do not have the

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advantages of the ProTex. The lack of protective ability actually may lead to degradation of the quality of the semen to the point of uselessness.”

The ProTex device is based upon the “needs” of sperm cells at the time of collection. The patented technology provides a stable environment for sperm cells allowing them to maintain their physiological and biochemical activities which results in increase viability. By improving the collection environment, ProTex 1) improves the semen parameters normally associated with fertility and 2) improves conception rates in trials in animal species. Laboratory-based trials with human sperm show the same improvement in overall viability. Further, in a small human clinical trial there was an increased semen quality, equivalent pregnancy rates and significantly higher delivery rates when the ProTex was used for semen collection.

ProTex Founder:

Prien, the director of Clinical and Research Laboratories in the TTUHSC Department of Obstetrics and Gynecology, holds a joint appointment as professor of Animal and Food Sciences at Texas Tech University (TTU). He completed his undergraduate and graduate work at TTU, earning a Ph.D. in Animal Science with an emphasis in reproductive physiology in 1991.

Prien is a board certified high-complexity clinical laboratory director and is certified in both clinical andrology and embryology. He directly works with the medical team to assist in the treatment of infertility patients as part of the assisted reproductive technology program. In addition to his clinical duties, he is a teaching professor on each campus and is an active researcher.

Prien conducts diverse physiology-based research in both animals and humans. He has received numerous grants, has published more than 90 journal articles and has made approximately 300 presentations at regional, national and international meetings. Prien serves as a peer reviewer for several professional organizations for both grants and publications. Additionally, he currently holds four U.S. patents, twenty international patents and three copyrights, with others pending. Many of these patents have been licensed and are progressing toward commercialization.