

University of Northern Colorado Professor Receives Grant from the USDA to Improve Reproductive Efficiency in Cows

Dr. Patrick Burns, a faculty member in the University of Northern Colorado's College of Natural and Health Sciences, School of Biological Sciences, recently received \$97,691 from the United States Department of Agriculture National Research Initiative – Animal Reproduction. This program provides grants to increase basic knowledge in reproductive biology with a goal of improving reproductive performance in agriculturally important animals. The USDA-NRI grant will provide funds to investigate the use of fish oils to regulate prostaglandin metabolism. Prostaglandin is a hormone secreted by reproductive tissues to regulate the heat cycle in non-pregnant cows. In the pregnant cow, the embryo must block prostaglandin release between days 16 and 24 after mating so that pregnancy can be established. Often the embryo fails to block this release resulting in abortion. Fish oils contain omega-3 fatty acids eicosapentaenoate (EPA) and docosahexaenoate (DHA), which have been shown to block prostaglandin release in several non-reproductive tissues. It is anticipated these omega-3 fatty acids in fish oil may reduce prostaglandin secretion in reproductive tissues in the pregnant female and improve fertility.

The project's goals are to examine the effects of omega-3 fatty acids in fish oil on gene expression of key regulatory enzymes that play a pivotal role in prostaglandin secretion and to investigate whether fish oil affects regulation of key intracellular signaling proteins that may lead to prostaglandin production.

Besides teaching numerous biology courses, Dr. Burns is the Pre-Health advisor for UNC. He has previously received over \$500,000 in external grants and published 25 peer-reviewed journal articles in the area of reproductive biology.