Reproductive Sciences

The Reproductive Science Program at the University of Michigan aims to develop new diagnostic and therapeutic strategies for diseases that result in reproduction failure and disease processes that have their origins in reproductive processes but that are expressed later in life. Processes as varied as gametogenesis, fertilization, embryonic-fetal development, stem cell biology, fetal programming and pregnancy are all part of reproduction and such reproductive processes have long-term effects on health that go beyond fertility. Hence, the Reproductive Sciences Program encourages broad, multidisciplinary involvement in reproductive sciences. Reproductive sciences are central to women’s and men’s health, fertility, and embryonic stem cell biology. This proposed Interdisciplinary Junior Faculty Initiative has three primary goals: 1) Infusion of junior faculty into a long-standing successful Reproductive Science Program at University of Michigan with emphasis on developing new interdisciplinary fields of study directly related to translational research and improved reproductive health. This infusion will capitalize on the recent recruitment of three internationally renowned reproductive scientists who will serve as outstanding mentors; 2) Establish the infrastructure to facilitate translational science advancements integrating biomedical engineering and reproductive/stem cell biology, physiology and genetics; 3) Build new bridges of collaboration across departments and across schools. Toward this last goal, our interdisciplinary proposal brings together six departments from two schools: The College of Engineering (Department of Biomedical Engineering) and the Medical School (3 clinical and 2 basic science departments). We are proposing 5 hires in the following departments and areas: 1) Obstetrics and Gynecology, Pediatrics or Urology focused on reproductive genetics as it relates to the clinical applications of preimplantation genetic diagnosis; 2) Molecular & Integrative Physiology and/or Pediatrics to establish a research program in gonadal physiology as it relates to fertility preservation in the new field of oncofertility; 3) Cell and Developmental Biology to enhance understanding of embryonic stem cell growth regulation and directed differentiation with a translatable focus on regenerative medicine; 4) Biomedical Engineering to develop and expand transforming technologies that integrate with genetic analysis, gamete/embryo culture, and/or control of stem cell development.