

Researchers in the VCU Department of Obstetrics and Gynecology are actively pursuing research in several areas important to women's health, including preterm birth, preeclampsia (hypertension in pregnancy) and ovarian function. Research is supported by the National Institutes of Health (NIH), the March of Dimes and other local and federal agencies.

A five-year Center Grant totaling nearly \$6.4 million from the National Center on Minority Health and Health Disparities of the NIH is supporting a multidisciplinary research team in basic and clinical research that will help identify African American women at risk of adverse pregnancy outcomes and evaluate new interventions to improve maternal and neonatal health. The Center is led by Jerome F. Strauss, III, M.D., Ph.D. of the Department of Obstetrics and Gynecology and Dean of the VCU School of Medicine. African Americans experience adverse pregnancy outcomes much more frequently than other races, resulting in neonatal morbidity and mortality rates that are twice that of Whites, Hispanics or Asians. The primary focus of the Center is to explore reasons for the high occurrence of preterm birth among African Americans which is one of the leading causes of infant morbidity and mortality. The research team is focusing on three main areas of investigation: 1) The genetics of preterm birth in African Americans; 2) Immunological responses to periodontitis that may lead to preterm birth and preeclampsia; and 3) Ways to increase safe-sex awareness skills among pregnant women at high risk of HIV infection. Dr. Strauss is the principal investigator (PI) for Project 1, Harvey A. Schenkein, D.D.S., Ph.D. of the Dental School is PI for Project 2, and Dace Svikis, Ph.D. of the Department of Psychology is PI for Project 3. Working closely with the VCU Center on Health Disparities, the Center also has outreach components to raise awareness and promote participation in evidence-based research among minority populations, to provide research training opportunities for disparity population students and to support pilot research projects concerning minority health disparities.

In addition to being the leader of the Center Grant, Dr. Strauss has active research programs related to the genetics of preterm birth, preeclampsia, polycystic ovarian syndrome (PCOS), and studies on infertility related to dysfunctional sperm motility. The primary focus of the studies concern gene variations caused by single nucleotide polymorphisms (SNPs) that contribute to women's health issues. A recent discovery identified a SNP that results in premature weakening of the membranes that surround the fetus in the womb. This weakening causes the membranes to rupture which results in preterm labor. This SNP is more common in individuals of African descent and can help explain the disparity in the higher rates of premature birth in African Americans.

Scott W. Walsh, Ph.D. is Director of Research for the Department. He is Principal Investigator of the Research Core of the Center Grant and active in the projects involving the genetics of preterm birth and immunological responses to periodontitis that may lead to preterm birth. He also directs an active program in preeclampsia in which he is investigating the immunological role of neutrophils to induce vascular inflammation as a cause of preeclampsia and how this may relate to obesity as a major risk factor for preeclampsia. Research also focuses on epigenetic alterations in genes involved in inflammation that may be caused by neutrophil induced vascular inflammation. These studies may explain recurrent preeclampsia and cardiovascular disease that often occur later in life in women who have had preeclampsia.

Elizabeth A. McGee, M.D. is a reproductive endocrinologist and conducting research in the regulation of ovarian function. Her studies concern signal transduction mechanisms that regulate growth of ovarian follicles. Dr. McGee has found that transforming growth factor beta (TGF β) and the SMAD proteins play important roles in follicular development. By using gene knockout mice that lack certain SMAD proteins, she has found that follicular development is abnormal. Dr. McGee also has research interests relating to fertility in women after they have had cancer.