

The eCurrent

Growth and Rise in Publications

Since September 2005, the department of OB/GYN at Washington University in St. Louis has grown tremendously in its clinical research efforts. The number of articles published by residents and fellows increased dramatically from 2005 to present, due to Dr. Macones', the Chair of OB/GYN, strong emphasis on the importance of research.

Dr. Macones himself is recognized for his extensive work in perinatal clinical

research and has over 150 peer-reviewed publications.

Research in the department varies widely, covering an array of topics and issues pertaining to obstetrics and gynecology. The fellows and residents in the department have become active in many different research aspects and are strongly represented in the research publishing world.

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Our Mission

The Department of Obstetrics and Gynecology at Washington University School of Medicine provides specialized faculties and services to support research in women's reproductive health.

Our mission is to foster collaborative, multidisciplinary research aimed at improving women's health.

www.obgyn.wustl.edu



Obstetrics & Gynecology Sections and Divisions

Chairman: George Macones, M.D., M.S.C.E.
Vice Chair: D. Michael Nelson, M.D., Ph.D.

Basic Science

Division Director & Vice Chair: Kelle H. Moley, M.D.

Clinical Research

Vice Chair: Jeffrey F. Peipert, M.D., Ph.D.

Fetal Care Center

Co-Director: Aaron Hamvas, M.D.

Co-Director: Anthony Odibo, M.D., M.S.C.E.

General OB/GYN

Division Director: Eric Strand, M.D.

Gynecologic Oncology

Division Director & Vice Chair of Gynecology: David
G. Mutch, M.D.

Maternal-Fetal Medicine

Division Director: George Macones, M.D., M.S.C.E.

Minimally Invasive Surgery

Division Director: Scott Biest, M.D.

Pediatric & Adolescent Gynecology

Division Director: Diane F. Merritt, M.D.

Reproductive Endocrinology & Infertility

Division Director: Randall R. Odem, M.D.

Ultrasound & Genetics

Division Director & Vice Chair of Women's & Fetal

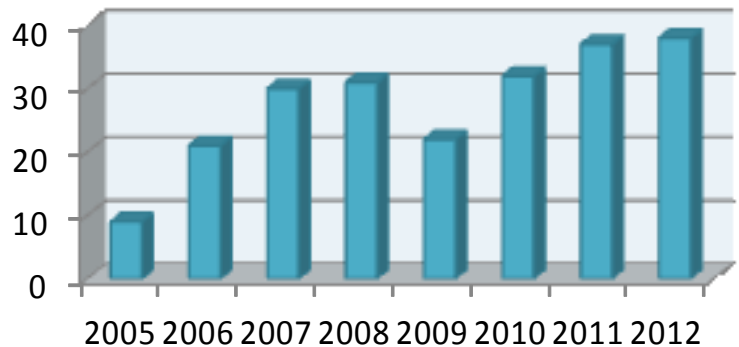
Imaging: Anthony Odibo, M.D., M.S.C.E.

Urogynecology

Division Director: Lewis Wall, M.D.

Growth and Rise in Publications, cont.

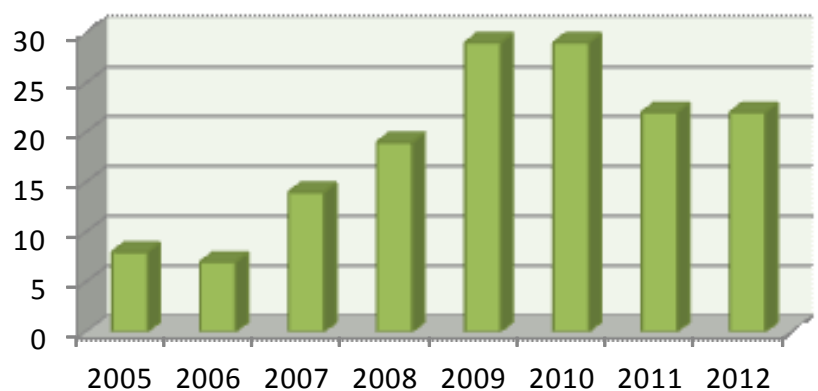
Fellows



The chart above and below display the rise in articles published by fellows and residents. The dramatic rise in publications by both residents and fellows gives proof of the increase in research efforts in obstetrics and gynecology at Washington University.

This newsletter provides some examples of the different clinical, basic, and translational research in the department of OB/GYN.

Residents



Staff Highlights



Dr. Nelson received his M.D. and Ph.D. in the Medical Scientist Training Program at Washington University in 1977 and went on to complete his residency at Barnes Hospital and his fellowship at The Ohio State University.

D. Michael Nelson, M.D., Ph.D., is the Virginia S. Lang Professor and Vice-Chair of Obstetrics and Gynecology at Washington University School of Medicine.

He is board certified in Obstetrics and Gynecology and in the sub-specialty of Maternal-Fetal Medicine. With over 30 years of clinical experience in the care of an ethnically diverse, high-risk obstetrical population at Washington University Medical Center and Barnes-Jewish Hospital, he was able to establish an ongoing collaborative practice that enrolled nurse practitioners, nurse midwives, and Maternal-Fetal Medicine specialists to join into a complementary practice for underserved women in the St. Louis region in 1993. His specialty clinical focus is in preeclampsia and hypertensive disorders of pregnancy.

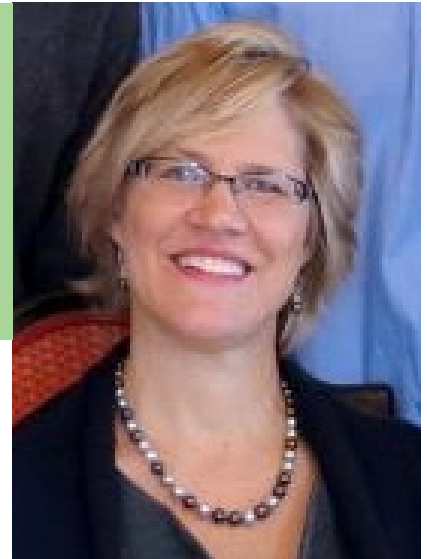
Dr. Nelson's clinical expertise was recognized in 2009 when he received the State of Missouri Maternal, Child and Family Health Coalition outstanding clinician award. His teaching expertise was most recently recognized by receipt of the 2011 Samuel R. Goldstein Award for Leadership in Medical Student Education. Beyond his duties within the medical school, Dr. Nelson also serves on the oversight committee of the NICHD for the institute's program in Perinatal Research and Obstetrics and spends time reviewing grants for the March of Dimes, National Institutes of Health, the Society for Maternal-Fetal Medicine, and the Reproductive Scientist Development Program.

Some of his many accomplishments include receiving 18 years of funding from the National Institutes of Health, serving as editor for the international journal *Placenta* from 2005–2012, and receiving the Distinguished Senior Scientist Award from the Society for Gynecologic Investigation in 2007. In 2011, he co-edited a comprehensive book entitled *The Human Placenta: From Development to Disease*.

His research focuses on bench-to-bedside studies of placental function in normal pregnancy and the dysfunction that contributes to adverse outcomes in pregnancies complicated by preeclampsia and fetal growth restriction.

Dr. Nelson has been listed as one of the Best Doctors in America from 2002 - 2012.

Kelle H. Moley, M.D., co-directs the Institute of Clinical and Translational Sciences at Washington University School of Medicine.



Dr. Moley received her M.D. from Yale University School of Medicine and completed her residency and fellowship at Washington University School of Medicine.

She is a professor of obstetrics and gynecology and was named vice chair for basic science research and director of the Division of Basic Science Research in the Department of Obstetrics and Gynecology at Washington University School of Medicine in St. Louis in March 2006, and the inaugural James P. Crane Professor of Obstetrics and Gynecology in June 2009. As part of her appointment, Dr. Moley is responsible for developing a strategic plan and direction for the new division and enhancing the current program in Reproductive Science.

Also a professor in cell biology and physiology, Dr. Moley is one of a handful of people in the world studying the effects of maternal type 1 and type 2 diabetes and obesity on gametes, implantation, and development. Her work has established that short-term exposure of mouse embryos to high concentrations of glucose or insulin during the first 72 hours following fertilization is enough to alter the embryos and result in the increase in congenital malformations and miscarriages, as seen in women with diabetes and other metabolic disorders.

She also is known for cloning and characterizing two novel glucose transporters - GLUT8 and GLUT9. Her work on these proteins demonstrates altered location and expression of these transporters in response to insulin exposure and diabetes, respectively. Her research has impacted our understanding of reproductive performance and glucose utilization in diabetic animal models how this may be applicable to the pathophysiology of diabetes in humans. She is principal investigator on several NIH grants exploring reproductive biology.

Dr. Moley is director of the Clinical Fellowship Program in Reproductive Endocrinology and Infertility. She also leads the Clinical Mentorship Program for the University's Markey Pathway, a graduate program that provides students with a deeper understanding of the nature of disease. She is Principal Investigator on the first National Institute of Health training grant awarded to the Department of Obstetrics and Gynecology at Washington University School of Medicine for Ph.D's interested in Reproductive

Sciences. Dr. Moley is also Director of the Women's Reproductive Health Research Career Development Award at Washington University.



Dr. Moley received the "Academic Women's Network Mentor Award" in 2008.

Highlighted Studies

Basic Science

ABNORMAL ENDOMETRIAL RECEPTIVITY IN PCOS PATIENTS MAY BE RESPONSIBLE FOR SUBFERTILITY
PI: Maureen Schulte PGY-3, Jui-He Tsai Ph.D., Kelle Moley M.D.

This study is working to further elucidation of multiple pathologic processes contributing to subfertility in PCOS patients so targeted therapies can be designed. Two groups of reproductive age women (age 18- 40) are enrolled – controls are normo-ovulatory women with regular menstrual cycles and proven fertility and cases are patients with primary infertility and PCOS with exclusion criteria of known endometriosis. Both groups undergo endometrial biopsy, receive a blood draw, and complete a survey. By controlling in vitro hormonal environment and measuring proven markers of endometrial decidualization, we find women with PCOS have ESCs demonstrating reduced ability to undergo normal decidualization compared to non-PCOS women.

GLUCOSAMINE INHIBITS DECIDUALIZATION OF HUMAN ENDOMETRIAL STROMAL CELLS AND DECREASES LITTER SIZES IN MICE

PIs: Maureen Schulte PGY-3, Kelley Moley M.D.

Jui-He Tsai Ph.D., Kathleen O'Neill M.D., Maggie Chi, Antonia Frolova Ph.D.

This study hypothesized the amino sugar glucosamine may block the pentose phosphate pathway via inhibition of the rate-limiting enzyme glucose-6-phosphate dehydrogenase in human ESCs and mouse uteri, therefore impairing decidualization and embryo implantation, thus preventing pregnancy. A 60-day-release glucosamine or placebo pellet was implanted in female mice and the number of pups per litter was recorded. Female mice with a glucosamine pellet delivered fewer live pups than controls, and pup number returned to normal at the end of the pellet-active period. Glucosamine has potential to be developed as a novel, reversible, non-hormonal contraceptive.

Family Planning

LIFE: LEVONGESTREL INTRAUTERINE SYSTEM FOR EMERGENCY CONTRACEPTION

PI: Colleen McNicholas, D.O.

This research study is evaluating the hormonal intrauterine device as a form of emergency contraception as compared to the current most common oral levonorgestrel regimen. Increasing the use of intrauterine contraception as a method of emergency contraception, and as a result, providing long term reversible contraception, has the potential to significantly reduce unintended pregnancy and abortion rates. Information regarding efficacy and satisfaction of the hormonal intrauterine device will be collected through clinic visit and phone surveys.

EPIC: EFFECTIVENESS OF PROLONGED USE OF IUD/IMPLANT FOR CONTRACEPTION

PIs: Jeffrey Peipert, M.D., Ph.D., Colleen McNicholas, D.O., RA: Jen Wade

Sponsored by a Family Planning Fellowship Grant

This research study is looking to evaluate the use of the Implant or the hormonal intrauterine device (IUD) for contraception past the FDA approved duration of use. This study will provide essential information to inform patients, their clinicians and the field. Through phone surveys, information will be collected regarding extended use.

Gynecologic Oncology

Disease site-Ovary: For women with complete response after first-line therapy

GOG 225: CAN DIET AND PHYSICAL ACTIVITY MODULATE OVARIAN, FALLOPIAN TUBE AND PRIMARY PERITONEAL CANCER PROGRESSION –FREE SURVIVAL?

PI: David G. Mutch, M.D. CCRP: Lynne Lippmann, CCRP

Sponsored by: Gynecologic Oncology Group (NCI)

This is a study of women who have completed first-line treatment and achieved complete clinical response. They are randomized to general health education vs. lifestyle intervention, defined as >20% total energy as dietary fat, >6 servings daily of colorful fruits and vegetables, and an additional 4,000 steps per day. The aim is to determine if women who are disease-free after completing initial chemotherapy who are randomized to healthy life-style intervention will have increased progression-free survival compared to women randomized to a usual care group. Participation lasts up to 24 months, if no evidence of recurrent disease. Target accrual group-wide is 1,070. Washington University anticipated accrual is 5.

Disease site-Ovary: For women with recurrent disease after 1-3 prior cytotoxic regimens

GOG 9928: PHASE I STUDY OF INTRAPERITONEAL EGEN-001 ADMINISTERED IN COMBINATION WITH PEGYLATED LIPOSOMAL DOXORUBICIN (PLD), DOXIL AND LIPODOX IN PATIENTS WITH RECURRENT OR PERSISTENT EPITHELIAL OVARIAN, FALLOPIAN TUBE OR PRIMARY PERITONEAL CANCER

PI: David G. Mutch, M.D. CCRP: Lynne Lippmann, CCRP

Sponsored by: Gynecologic Oncology Group (NCI)

This is a study of women who have undergone 1-3 prior cytotoxic chemotherapy regimens (1 front-line and <2 regimens in the recurrent setting) for treatment. The aim is to determine the maximum tolerated dose and dose limiting toxicities of the combination, to examine the tolerability of this regimen, and to determine the recommended Phase II dosing of EGEN-001 in combination with PLD. EGEN-001 is a novel immunotherapeutic agent designed to treat cancer by enhancing the immune system by increasing IL-12 concentrations. Target accrual group-wide is 24. Washington University anticipated accrual is 5.

Maternal-Fetal Medicine (MFM)

IMPACT OF MATERNAL POMEGRANATE INTAKE ON BRAIN INJURY AND PLACENTAL PATHOLOGY IN INFANTS WITH INTRAUTERINE GROWTH RESTRICTION (IUGR)

PI: Terrie Inder MD, D. Michael Nelson MD, PhD, George Macones MD MSCE, Methodius Tuuli MD, MPH

CRNC: Rachelle Busam, RN, BSN, Karen Lukas, RN, BSN

Sponsored by POM Wonderful

This prospective study seeks to investigate the impact of maternal dietary supplementation with pomegranate juice or its extract on the placenta and newborn brain development and function. 80 women with a diagnosis of IUGR will be enrolled from WHC/CAM between 24-34 weeks gestation and randomized to one of 4 treatment arms: Treatment Groups - POM juice or POM Extract pill; Placebo Groups - juice lacking pomegranate juice or placebo pill. Newborns will be followed through 2 years of age.

PreGO: WEIGHT MANAGEMENT IN OBESE UNDERSERVED AFRICAN AMERICAN WOMEN

PI/CO-I: Alison Cahill, M.D., MDCl, Sam Klein M.D., Kelle Moley, M.D., W. Todd Cade, PT, Ph.D., Amit Mathur, M.D., Debra Haire-Joshu, Ph.D., Rick Stein, Ph.D.

CRNC: Carla Chung R.N., BSN, Tracy Burger R.N., BSN, RA: Jessica Bergmann

Sponsored by NIH

A multicenter study testing an innovative lifestyle intervention program (PAT+) compared to a control condition (standard PAT), both delivered by Parents as Teachers Parent Educators during pre-natal and post-partum home visits. The two conditions will be compared in regard to improving maternal gestational weight gain, post-partum weight retention, insulin sensitivity, neonatal/infant weight and neurodevelopment, and other maternal and neonatal/infant metabolic and health outcomes.

Pediatric & Adolescent Gynecology

EVALUATION OF THE SAFETY AND EFFICACY OF ELAGOLIX IN MODERATE TO SEVERE ENDOMETRIOSIS-ASSOCIATED PAIN

PI: Diane F Merritt, M.D.

This is a multicenter phase 3 randomized, double-blind, placebo-controlled study to evaluate the safety and efficacy of elagolix for premenopausal women with moderate to severe endometriosis-associated pain. For recruitment please contact Jane Muckerman, RN at 314-747-1413 Washington University School of Medicine.

EVALUATION ON THE EFFICACY SAFETY AND PHARMACOKINETICS OF TRIPTORELIN PAMOATE IN PATIENTS WITH CENTRAL PRECOCIOUS PUBERTY

PI: Diane F Merritt, M.D. Co-Investigator: Abby Hollander, M.D.

This is a Multicenter Phase 3 Trial to evaluate the safety and efficacy of triptorelin pamoate (embonate) in suppressing premature puberty in children under the age of nine years. For recruitment please contact Jane Muckerman, RN at 314-747-1413 Washington University School of Medicine and St Louis Children's Hospital.

Reproductive Endocrinology & Infertility (REI)

LIFESTYLE INTERVENTIONS TO IMPROVE FERTILITY OUTCOMES IN OBESITY (LIFTO)

PI: Emily Jungheim, M.D., MSCI

This study is aimed at investigating and designing strategies for improving reproductive health among obese women and men through lifestyle modifications. We are currently collecting lifestyle and reproductive survey data from obese couples presenting for fertility treatment. Ultimately this data will be used to inform strategies that will be implemented prospectively in obese couples hoping to conceive. Outcomes will include time to pregnancy and other parameters related to maternal obesity. Recruitment will take place in Reproductive Endocrinology & Infertility.

GENETIC ETIOLOGIES OF NORMAL AND PATHOLOGIC OVARIAN AGING

PI: Amber Cooper M.D., MSCI

This is a multidisciplinary whole exome sequencing project in collaboration with The Genome Institute and Department of Genetics. Identifying novel genetic causes of primary ovarian insufficiency, (POI, otherwise known as premature ovarian failure) will improve understanding of not only the mechanisms underlying abnormal ovarian function, but also key factors in oocyte recruitment, depletion, and follicular dysfunction. Though POI borders on a rare disease, affecting 1-2 % of reproductive aged women, similar pathogenic mechanisms may be involved in diminished ovarian reserve, a less severe phenotype, as well as unexplained infertility/subfecundity impacting a large proportion of women worldwide.

Ultrasound & Genetics

3D DOPPLER AND INTRAUTERINE GROWTH RESTRICTION

PI: Katie Goetzinger, M.D. CRNC: Linda Odibo, R.N., BSc, MN

A prospective cohort study to determine if IUGR fetuses are more likely to exhibit evidence of altered cerebral blood flow compared to normal fetuses when quantified using 3-D power Doppler studies. Secondary aims are to determine if elevated cerebral vascular flow indices can be detected in IUGR fetuses without evidence of other abnormal 2-D pulse Doppler findings and if an association exists between elevated cerebral vascular flow indices and adverse neonatal outcomes in IUGR fetuses. Recruitment will occur in the Obstetric Ultrasound department in the Center for Advance Medicine, BJH prenatal clinic and Missouri Baptist Medical Center. Three hundred and forty patients will be enrolled 170 IUGR and 170 controls.

EPAPP STUDY: EARLY PREDICTION AND ASPIRIN FOR PREVENTION OF PREECLAMPSIA STUDY

PI: Anthony Odibo, M.D., MSCE Co-Investigators: Methodius Tuuli M.D., MPH, Katherine Goetzinger M.D., MSCI

CRNC: Linda Odibo, R.N., BSc, MN

A prospective randomized control trial to estimate the efficacy of low dose aspirin for preventing preeclampsia in women identified as high risk from a first trimester preeclampsia prediction model. Women will be randomized on a 1:1 ratio to either placebo or low dose aspirin. The intervention will be taken daily from recruitment to 37 weeks or delivery whichever comes first. A total of 220 women will be randomized. Recruitment will take place in the Center for Advance Medicine, BJH prenatal clinic and Missouri Baptist Medical center from women undergoing ultrasound examination at 9 – 13 6/7 weeks gestation.

Grants & Awards

Grants Awarded in 2012

Society of Family Planning

PI: Gina Secura, Ph.D.

Award period: 10/01/2011 – 09/31/2013

RANDOMIZED CLINICAL TRIAL OF A COMPUTERIZED CONTRACEPTIVE DECISION AID

Barnes Jewish Hospital Foundation

Special Research Program

PI: Kenan Omurtag, M.D.

Award period: 01/01/2012 – 12/31/2012

ONCOLOGY DATA SERVICE (ODS) SURVEY MAILING

National Institute of Health

National Institute of Environmental Health Sciences

F32 / NRSA Fellowship

PI: Kenan Omurtag, M.D.

Award period: 01/01/2012 – 12/31/2013

THE EFFECT OF DIOXINS ON GLUCOSE HOMEOSTASIS IN MURINE TESTES

Barnes Jewish Hospital Foundation (Poetting Fund)

PI: David Mutch, M.D.

Award period: 01/01/2012 – 12/31/2012

SUPPORT FOR GYNECOLOGIC ONCOLOGY RESEARCH

Society of Family Planning

PI: Colleen McNicholas, M.D.

Award period: 01/09/2012 – 06/28/2013

EFFECTIVENESS OF PROLONGED USE OF IUD/IMPLANT FOR CONTRACEPTION (EPIC)

CIMED Pilot & Feasibility Program

PI: Sarah K. England, Ph.D.

Award period: 2/1/2012 – 1/31/2013

ROLE OF KATP CHANNELS IN REGULATING GESTATIONAL TIMING

March of Dimes

PI: Sarah K. England, Ph.D.

Award Period: 3/1/2012 – 2/28/2015

MECHANISMS UNDERLYING MYOMETRIAL SMOOTH MUSCLE
RELAXATION DURING PREGNANCY

National Institute of Health

Eunice Kennedy Shriver National Institute of Child Health & Human Development

PI: Tessa Madden, M.D.

Award Period: 3/8/2012 – 01/31/2015

EVALUATION AND TESTING OF A DECISION SUPPORT AID
IN CONTRACEPTIVE DECISION MAKING

Grants & Awards

Transdisciplinary Research on Energetics and Cancer (TREC)
Developmental Research Award

PI: Joan K. Riley, Ph.D.

Award period: 06/01/2012 – 05/31/2013

THE EFFECTS OF OBESITY ON BREAST CANCER DEVELOPMENT AND NK CELL-MEDIATED
ANTITUMOR IMMUNE RESPONSES

The American College of Obstetricians and Gynecologists
Merck Research Fellowship in Infertility

PI: Maureen M.B. Schulte, M.D.

Award period: 07/01/2012 – 06/30/2013

ABNORMAL ENDOMETRIAL RECEPTIVITY IN PCOS PATIENTS MAY
BE RESPONSIBLE FOR SUBFERTILITY

American Heart Association

PI: Sarah K. England, Ph.D.

Award period: 07/01/2012 – 06/30/2014

ASSESSING THE ROLE OF POTASSIUM CHANNELS IN FETAL LOSS AND MATERNAL
CARDIOVASCULAR DYSFUNCTION DURING PREGNANCY

American Heart Association

PI: Ramon Lorca, Ph.D.

Award period: 07/01/2012 – 06/30/2014

MODULATION OF BKCa CHANNELS BY LRRC PROTEINS AND ITS ROLE ON INCREASED
VASODILATION OF UTERINE ARTERY DURING PREGNANCY

POM Wonderful

PI: D. Michael Nelson, M.D., Ph.D. & George Macones, M.D., MSCE

Award period: 07/01/2012 – 06/30/2013

PILOT PROSPECTIVE RANDOMIZED TRIAL OF POMEGRANATE AFFECTS ON PLACENTAL
FUNCTION AND NEWBORN BIRTH IN INTRAUTERINE GROWTH RESTRICTION (IUGR)

National Institute of Health / Institute of Diabetes and Digestive and Kidney Diseases

PI: George Macones, M.D., MSCE

Award period: 09/15/2012 – 07/31/2017

MOLECULAR AND EPIDEMIOLOGIC BASIS OF UTI IN WOMEN
PROJECT II: POLYMICROBIAL SYNERGY IN URINARY TRACT INFECTION AND PRETERM BIRTH

Meeting Highlights

Special thanks to all those who made this newsletter possible.

Monica Anderson

Ryan Colvin

Linda Odibo

Jamie Rose

Questions or comments?

Feel free to contact Monica Anderson at andersonm@wudosis.wustl.edu

Gynecologic Oncology

Gynecologic Cancer Intergroup Endometrial Cancer Clinical Trials Planning Meeting

The December 2012 meeting was held in Leiden, Netherlands.

Dr. David Mutch was one of the Co-Chairs of the Working Group Session on translational research and targeted therapy.

Maternal-Fetal Medicine

Society of Maternal Fetal Medicine (SMFM)

The February 2012 meeting was held in Dallas, Texas.

Many of the MFM faculty and fellows attended this meeting. The Department had 40 presentations of which six were orals and 34 were poster presentations. Some of the faculty also presented and moderated sessions.

Pediatric & Adolescent Gynecology

North American Society of Pediatric and Adolescent Gynecology (NASPAG)

The April 2012 meeting was held in Miami, Florida.

The Division of PAG had two platform presentations and one poster presentation.

Reproductive Endocrinology & Infertility

American Society for Reproductive Medicine (ASRM)

The October 2012 meeting was held in San Diego, California.

Nine total abstracts were presented by Washington University residents, fellows, and faculty, with three of them being our residents. Four were oral presentations and five were poster presentations.

Ultrasound & Genetics

American Institute of Ultrasound in Medicine (AIUM)

The March 2012 meeting was held in Phoenix, Arizona.

Dr. Goetzing won the young investigator award for the presentation "The efficiency of first-trimester uterine artery Doppler, ADAM12, PAPP-A and maternal characteristics in the prediction of pre-eclampsia".

International Society for Ultrasound in Obstetrics and Gynecology (ISUOG)

The September 2012 meeting was held in Copenhagen, Denmark.

There was one presentation.