For more than 30 years, the University of Minnesota Physicians Reproductive Medicine Center (RMC) of the Division of Reproductive Medicine and Infertility (REI) has worked to change the lives of Midwest families.

The University of Minnesota established itself as a reproductive medicine pioneer in 1983 when Theodore Nagel, M.D. helped start the first in vitro fertilization (IVF) program in Minnesota. Although Nagel has since retired, the foundation he laid thrives, and infertility specialists at the University of Minnesota continue to provide comprehensive, coordinated care in the diagnosis and treatment of female reproductive disorders.

**Infertility**

Fertility can be one of the most private matters. For some couples, arriving at the miracle of birth is very complex. If a woman has struggled to get pregnant for more than a year, or is over 35 years of age and has been trying for six months, it’s highly recommended that she seek out the advice of a reproductive endocrinologist.

There are a number of causes of infertility, which means each patient’s case is unique. Some people are born with infertility problems, and for other people something can go wrong that results in infertility. In about one-third of infertility cases, the cause involves only the female. In about one-third of cases, the male is the cause of infertility. The last third of infertility cases do not have a cause, or the cause involves both the male and female.

Properly identifying if there is a reason behind a patient’s infertility is crucial for establishing the best treatment plan.

continued on page 2
RMC helps thousands of patients overcome the most challenging causes of infertility, and offers a wide range of clinical services. From the initial infertility investigation to hormonal management and drug therapy, or psychological services to help patients manage the stressful and very private concerns that surround infertility, the professionals at RMC work tirelessly to ensure each patient’s wants and needs are met.

Fertility preservation in cancer patients

For premenopausal women with cancer, fertility may be affected both during and after cancer treatment. An unplanned pregnancy can be a serious problem for a cancer patient going through treatment, while some cancer treatments can cause infertility.

Anne Blaes, M.D., a Hematologist/Oncologist at the Masonic Cancer Clinic, University of Minnesota and the Breast Center explained that chemotherapy can make a woman infertile and unable to have children down the road, while those with ovarian cancer often have surgical oophorectomies where their eggs are no longer present. “Patients with other cancers are at significant risk for both infertility and premature menopause, depending on the type of cancer they have and the treatment prescribed,” said Blaes.

For many patients, discovering that they may not be able to conceive can be a devastating blow to endure after battling cancer.

Luckily, fertility preservation options are potentially available for patients with many different types of cancers. The RMC staff sees patients with a wide variety of malignancies, with breast cancer likely being the leading indication.

“Our program has a full breadth of fertility preservation options available and for female patients, this includes IVF with embryo cryopreservation, oocyte cryopreservation and ovarian tissue cryopreservation,” said Mark Damario, M.D., F.A.C.O.G., a Reproductive Endocrinologist at the RMC.

Although the RMC sees cancer patients from a variety of clinics, the close relationship and proximity to the University of Minnesota clinics allows for teamwork within the University of Minnesota system.

“We use RMC for any woman interested in pursuing her fertility through cancer treatment,” said Blaes. “Even when I think the risk of infertility is low, I cannot promise with 100 percent certainty that they will be able to conceive.”

Blaes went on to say that within two to three days of seeing a new cancer patient in clinic, a consultation could be set up.

Egg Freezing

There are a number of different types of fertility options for couples who visit RMC; one of the options presented is still a rather new technique known as egg freezing, or oocyte cryopreservation.

Because of its nature, oocyte cryopreservation is a viable option for a number of patients. Women who are diagnosed with cancer and have not yet begun chemotherapy or radiotherapy can often freeze their eggs for when they are done with treatment, or for later in life when they are ready to have a family. Women who do not consider embryo freezing an option, but are candidates for assisted reproduction can also use oocyte cryopreservation for fertility. And finally, there are women who would like to preserve their ability to have children, either because they are not ready for personal or medical reasons, or because they do not yet have a partner, they too can have success with oocyte cryopreservation.

For some women seeking oocyte cryopreservation, a traditional in vitro fertilization approach can be used.

“When the circumstances allow, the patient will be treated with hormones to stimulate her ovaries to produce multiple egg-containing follicles,” explained Christopher De Jonge, Ph.D., an embryologist and Laboratory Director at RMC.

“Once mature, the oocytes will be harvested and given to the lab where a trained embryologist will go ‘egg hunting,’ so to speak,” said De Jonge. “Once ‘caught,’ each oocyte is then isolated and cultured.” The eggs are then frozen and stored until the patient is ready for pregnancy, at which time she returns to RMC, where her eggs can be thawed, fertilized, and transferred to the uterus as embryos.

For women who are suffering from cancer, there may not be adequate time for hormonal stimulation of her ovaries. In fact, the hormones used to prepare her body for harvesting eggs could make her condition worse. Therefore, if surgically removing one or both ovaries is part of the therapeutic approach, oocytes can be harvest after surgery.

In some cases, eggs in the form of ovarian tissue can be harvested while a patient undergoes surgery. At other times, patients under fertility medication protocols, which require careful monitoring at the RMC and two to three weeks to complete. Once the eggs are retrieved and safely stored, the patient is then ready to start chemo postoperatively without further delay and without the fear of infertility hanging over her head.

After about 8-11 days of hormone therapy, the patient receives a shot that will cause the oocytes in the follicles to fully mature.

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Advanced Reproductive Care

This past year, RMC announced its affiliation with Advanced Reproductive Care, Inc. (ARC Fertility), the largest network of infertility clinics in the United States. ARC works with patients to lessen the financial burden of pursuing infertility services.

This affiliation allows RMC to better assist patients by providing access to infertility treatments through a variety of self-pay competitively priced patient financial packages. These treatment packages include single cycle in vitro fertilization and multicycle in vitro fertilization packages as well as refund packages. These affordable packages minimize the costs for patients and maximize their attempt to have a baby.

ARC Fertility assists RMC by taking on a significant amount of the administrative burdens and financial complexities of administering multicycle, and/or refund programs, giving RMC physicians and support staff more time to focus on providing medical care.

Teamwork for success

At the Reproductive Medicine Center, we believe that a group of qualified individuals working together towards a common goal is how we consistently achieve high fertility success rates.

The clinic has formed a collaborative, supportive team of physicians, nurses, embryologists, laboratory technologists and IVF nurse coordinators, committed to providing the best care for each patient. To further assist patients, a financial counselor is on hand to answer insurance questions, while patient representatives schedule various needed appointments. The care team meets weekly to discuss patient, identify treatment plans and develop recommendations. The team then provides professional recommendations to each valued patient so they can direct their own care accordingly.

Celebrating 30 years

On September 7, 2013, families who used in vitro fertilization (IVF) to get pregnant came out to Como Park Zoo & Conservatory to celebrate with the doctors and staff who helped them become families.

More than 400 people joined the University of Minnesota Physicians Reproductive Medicine Center in celebrating its 30th birthday. The picnic was a chance for parents to meet other families who had gone through similar journeys, and to introduce children to the doctors who had helped make their lives possible.

Families at the picnic also had an opportunity to say goodbye to Theodore Nagel, M.D. who has since retired, and welcome Phoebe Leonard, M.D. as the newest physician to join

William Phipps, M.D. and Mark Damario, M.D., F.A.C.O.G., as reproductive endocrinologists at the Reproductive Medicine Center.

University of Minnesota Physicians established itself as the leader in reproductive medicine 30 years ago with Nagel, who helped start the first IVF program in Minnesota.
Grants Awarded

- **Minnesota Ovarian Cancer Alliance (MOCA)**
  - Targeting resistance associated pathways in ovarian cancer
  - **Martina Bazzaro, Ph.D.**

- **University of Minnesota Foundation (UMF)**
  - Ovarian Cancer Early Detection and Improved Survival
  - **Martina Bazzaro, Ph.D.**

**Minnesota Ovarian Cancer Alliance (MOCA)**

- **NK cell immunotherapy of ovarian cancer**
  - **Melissa Geller, M.D., M.S.**

**Department of Defense Office of Congressionally Directed Research Programs, Ovarian Cancer Research Program Pilot Award**

- **Mobile Phone Technology to Increase Genetic Counseling for Women with Ovarian Cancer and Their Families**
  - **Melissa Geller, M.D., M.S.**

**Randy Shaver Cancer Research & Community Fund**

- **A Model for Rapidly Testing Multiple Ovarian Cancer Therapeutics**
  - **Timothy Starr, Ph.D.**

**Grants Awarded**

**New faculty and research staff**

- **Sarah Hutto, M.D., M.P.H.** joined the Obstetrics and Gynecology division in the Department of Obstetrics, Gynecology, and Women’s Health in July 2013 as an Assistant Professor. She served as chief resident during her Ob Gyn residency here, and received her Master of Public Health in Epidemiology at the University of Michigan, Ann Arbor.

- **Clinical research interests**: High-risk obstetrics, contraceputive counseling, benign gynecology and surgery, preventive health care, and women’s reproductive rights.

- **Andrea D. Shields, M.D., F.A.C.O.G.**, joined our Maternal Fetal Medicine Division in September 2013 as an Associate Professor. Shields received her medical degree in 1988 from the University of Minnesota Medical School. She completed her residency in obstetrics and gynecology at Wright State/Wright Patterson Air Force Base Integrated Residency in Dayton, OH and her fellowship in maternal-fetal medicine at Madigan Army Medical Center in Tacoma, Washington. Prior to coming to the University of Minnesota, Shields was a practicing physician at Wright Patterson Air Force Base in Dayton, OH. She is board certified in obstetrics and gynecology and maternal-fetal medicine.

- **Clinical research interests**: Noninvasive prenatal testing, prenatal diagnosis, genetic counseling, and progesterone therapy for preterm labor.

- **Kathy Martin, C.N.M.**, joined our busy midwifery practice at Women’s Health Specialists and in October 2013. She earned her Master’s Degree in Nursing/Midwifery at the University of Minnesota and worked most recently at the Birthplace, University of Minnesota Medical Center. Martin is also a trained prenatal yoga teacher.

- **Cara Miller, R.N., M.S.N., C.N.P.**, recently moved to Minneapolis from Colorado to join our Gynecologic Oncology inpatient service at University of Minnesota Medical Center (UMMC)-Fairview. Miller earned her Master of Science in Nursing Degree from the University of Colorado and is board certified as an Adult Nurse Practitioner. She has spent the last three years working as a NP in gynecologic oncology at Penrose Cancer Center in Colorado Springs.

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**Honors and Awards**

**Honors**

- **Melissa Geller, M.D., M.S.,** was the winner of the SGO Basic Science Poster Award for her abstract, Intraproterional delivery of human natural killer cells for treatment of ovarian cancer, which was presented at the 2013 SGO Annual Meeting on Women’s Cancer in Los Angeles, California.

- The University of Minnesota College of Biological Sciences undergraduates selected **Timothy Starr, Ph.D.,** as the recipient of Best Research Mentor at The Golden Pipette Awards.

**Ob/Gyn faculty recognized as “Top Doctors”**

The July 2013 issue of Mpls./St. Paul Magazine featured the Top Doctors for 2013. Several physicians from the Department of OB/GYN and Women’s Health were recognized, including:

- **Gynecologic Oncology**
  - Peter Argenta, M.D.
  - Linda F. Carson, M.D.
  - Melissa A. Geller, M.D.

- **Obstetrics and Gynecology**
  - Carrie Ann Terrell, M.D.

- **Maternal Fetal Medicine**
  - Daniel V. Landers, M.D.
  - Tracey L. Prosen, M.D.
  - Kirk D. Ramin, M.D.

- **Reproductive Endocrinology**
  - Mark A. Damario, M.D.
  - William R. Phipps, M.D.

**What’s new?**

**Williams Retires**

Preston P. Williams, M.D., an Associate Professor in the Maternal and Fetal Medicine Division of the Medical School, retired from the University of Minnesota on December 31, 2013. During his 47-year career, he was a pillar of the perinatal teaching program and his support of the field was instrumental in the growth of the MFM program over the last 10 years. Williams was most recently recognized for his years of dedication to the practice and teaching of the specialty with the Clinical Care Award from UMMC Medical Staff. His dedication to his patients, his commitment to the creation of caring, competent physicians, and his support of junior faculty and certified nurse midwives will not be forgotten.
Dear friends,

Thirty years ago, the first in vitro fertilization (IVF) in Minnesota was performed right here at the University of Minnesota. Now, the University of Minnesota Physicians Reproductive Medicine Center (RMC) of the Division of Reproductive Medicine and Infertility (REI) is one of the most sought after reproductive clinics in the state, and welcomes patients from not only Minnesota, but around the region.

As we celebrate the anniversary of our IVF program, we also say farewell to the founder of the IVF program, Theodore Nagel, M.D., who retired this past year. Dr. Nagel touched the lives of many, and while his fun-loving spirit will be missed, his legacy lives on in the families he helped grow, and the precedent he set for the doctors who now fill his shoes.

Although we’ve said goodbye to Dr. Nagel, this past year we were fortunate enough to welcome new members to our team, including Sarah Hutto, M.D., Andrea Shields, M.D., Phoebe Leonard, M.D., Cara Miller, N.P., and Katherine Martin, C.N.M. These exceptional caregivers are true assets to the University of Minnesota, and we look forward to how they will grow and thrive throughout their tenure.

The upcoming year will continue to bring change and progress. A few of these changes come in the form of external research grants from the National Institute of Health to study psychiatric disorders and their relation to reproductive function and gynecological morbidity, and the Department of Defense and a mobile app for women with ovarian cancer. The Gynecologic Oncology Division is currently being led by Interim Director Peter Argenta, M.D., who recently returned from his sabbatical leave in Scotland, where he published a paper on vaginal reconstruction.

I’m very proud of the research conducted, and the care provided here at the University of Minnesota, and I look forward to what 2014 will bring.

Linda Carson, M.D.
Professor and Chair, Department of Obstetrics, Gynecology and Women’s Health