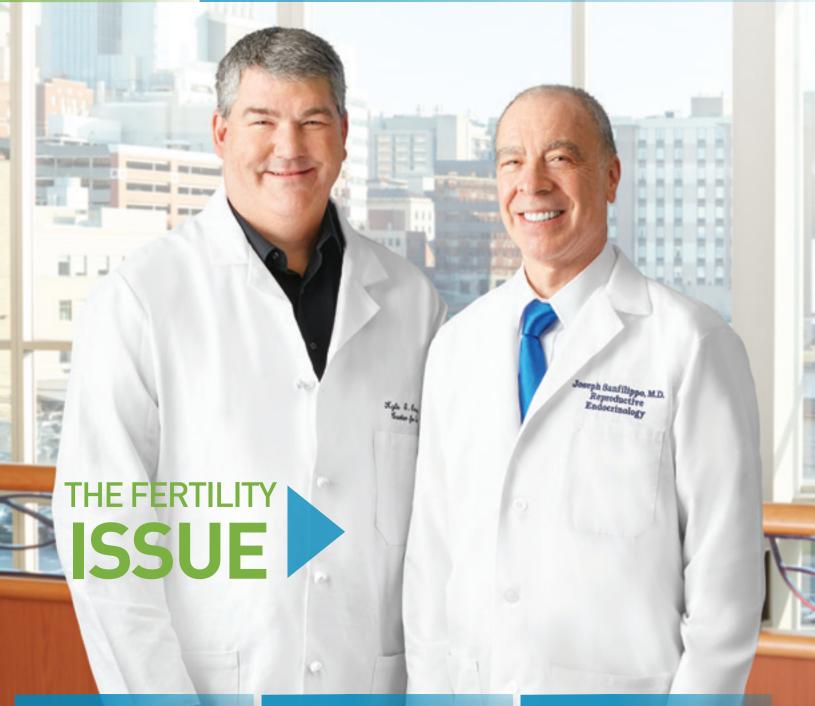
**SPRING 2017** 

A PUBLICATION OF MAGEE-WOMENS RESEARCH INSTITUTE & FOUNDATION



### CONQUERING CANCER WHILE PROTECTING FERTILITY

Current breakthroughs to protect future fertility.

### **WORKING THROUGH INFERTILITY**

Successfully balancing IVF treatments and a career.

### INSURANCE AND INFERTILITY

Expecting coverage? Read the fine print.

# MAGEE

MAGEE is published two times a year for supporters of Magee-Womens Research Institute & Foundation.



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- 4 CONQUERING CANCER WHILE PROTECTING FERTILITY
- 9 INSURANCE AND INFERTILITY
- 10 WORKING THROUGH INFERTILITY
- 18 HEALTH AND WELLNESS UPDATE: COMMUNICATING ABOUT MARIJUANA USE DURING PREGNANCY
  - 20 CEO Update: Where We've Been, and Where We're Going
  - **22** What's New in 9-90<sup>TM</sup>?
  - **24** Exercise Can Improve Side Effects, Reduce Recurrence in Breast Cancer Patients
  - 28 Kendra Scott Jewelry Empowers Breast Cancer Patients
  - 29 Community Comes Together to Support Breast Cancer Patients
  - 30 Noteworthy
  - 32 Happenings
  - 34 Morsels







Dr. Joseph Sanfilippo

Dr. Kyle Orwig



Receiving a diagnosis of cancer can be frightening. And many people, including physicians, can understandably get so focused on treating the disease, that they overlook an important life choice—preserving the ability for the patient to have their own genetic children.

Some cancer treatments are known to cause temporary or permanent infertility. While chemotherapy can cure cancer, it often wipes out the sperm or egg supply. Fortunately, doctors and researchers at Magee-Womens Research Institute have developed some options that allow patients to protect their reproductive abilities.

"Oncologists, primary care doctors, OB/GYNs, and patients—anyone who deals with an initial diagnosis of cancer needs to be educated about what can be done to preserve fertility before treatment begins," states Dr. Joseph Sanfilippo, Director of the Division of Reproductive Endocrinology and Infertility at Magee-Womens Hospital of UPMC. All too often, Sanfilippo sees patients who have already undergone chemotherapy, and by then, their options are limited.

Today, it's possible to cryopreserve ovarian tissue, testicular tissue, sperm, eggs, and embryos. But the decision to do so must be made quickly by cancer patients.

"If you have a recent diagnosis of cancer, you obviously want to get your treatment started as soon as possible," Sanfilippo remarks. If the patient is a woman, the Fertility Preservation Program of Pittsburgh works with her oncologist to fast track her through an In Vitro Fertilization (IVF) cycle to produce eggs, which they then harvest and freeze. She also has the option to add her husband's sperm to produce embryos that can be frozen for future use. And in male cancer patients, sperm can be cryopreserved. For patients who cannot produce eggs or sperm, ovarian tissue freezing and testicular tissue freezing are experimental options offered by the center.

...anyone who deals with an initial diagnosis of cancer needs to be educated about what can be done to preserve fertility before treatment begins."

-Dr. Joseph Sanfilippo

Sanfilippo also stresses the importance of preserving the reproductive possibilities of child cancer patients. "We deal with everyone—boys, girls, women, and men," he states. "We can treat patients as young as one year old. In this case, we can take a biopsy of the testis and cryopreserve it for many years. Hopefully when that little guy is cured, we can mature his tissue to produce sperm in culture or transplant it to produce sperm in the body. The same thing goes for the ovaries. This whole process can start at a very early age. If it's a girl who's eight or nine years of age, we can take out an

ovary and freeze it. When she gets the chemotherapy, unfortunately her other ovary will get wiped out, but now there are procedures where you can reimplant ovarian tissue or mature the tissue to produce eggs in culture."

Sanfilippo adds that they also have protocols for preserving tissue after one dose of chemotherapy. "That's an ongoing project for patients who weren't advised ahead of time," he says.

For less traditional infertility treatments and research, the lab of Kyle Orwig is investigating new ways to preserve fertility in cancer patients. Dr. Orwig is a primary investigator at Magee-Womens Research Institute, a PhD and a Professor in the Department of Obstetrics, Gynecology & Reproductive Sciences at the University of Pittsburgh School of Medicine and Director of the Fertility Preservation Program at Magee.

"We focus our work on the stem cells that are in the testes and make sperm. In the past decade, we have been developing methods to transplant those stem cells and regenerate sperm production in the testes of males that are infertile," Orwig said. "But the specific patient population that we have focused on during this time is males that have become infertile due to chemotherapy or radiation treatments for cancer, or even other conditions. The idea is that we can take stem cells from their testes through a biopsy that is collected and frozen

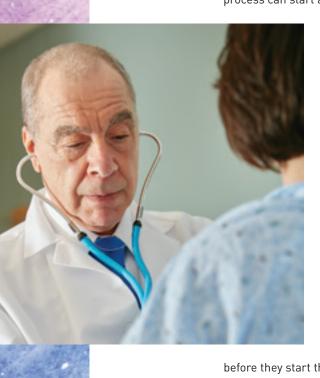
before they start their cancer therapy. Sometime in the future, we can thaw the sample and transplant their own stem cells into their own testes which will generate sperm production and hopefully help them regain fertility. This is a robust technology that has been proven in several animal models and is ready for translation to the human clinic."

This work has garnered national and international attention in fertility research. But Orwig echoes Sanfilippo's sentiments that fertility needs to be part of the discussion early with cancer patients.

"In the perfect world, we would have the conversation with a patient at the time of diagnosis and before he or she begins treatments. You can imagine this is a very emotional and stressful time when patients get a cancer diagnosis. And of course the doctor's main mission is to treat the cancer," Orwig remarked. "But we need to educate the patients and doctors about our fertility preservation options and that we can fast track the fertility preservation component so they can begin their cancer treatments as soon as possible. Often the patient is so overwhelmed with considering the prognosis of survival and treatment options, fertility preservation isn't top of mind."

Orwig remembers an important conversation he had with a mother of a young cancer patient which crystallizes the importance of educating everyone about fertility options.

"The most important feedback I've ever gotten is from a mother of a boy whose testicular tissue we froze. His doctor said, 'Yes infertility is a side effect but there's nothing we can do about it and we need to get on with therapy. And I don't want to burden you with the fertility topic.' But that mother said to me that she felt this decision wasn't up to that doctor. She wanted the information and the decision in her hands," Orwig remembers.



For those patients who have already undergone chemotherapy treatment, the chances of regaining fertility are smaller. But there are avenues to explore for highly motivated patients.

Often Orwig will see a patient who has already begun cancer therapies. In some circumstances, if the patient is still in the early stages of treatment, he advises that it may still be possible to preserve fertility.

"For almost everyone who gets cancer treatments, their fertility will decline for some period of time. In most cases for both men and women, their fertility will come back. But in 10-20% of the cases the fertility goes away and doesn't come back, leaving patients permanently infertile. So for example, say a man was treated as a child, grew up and found he was infertile. If he was really motivated he would undergo a procedure called Testicular Sperm Extraction (TESE) which is a biopsy of the testes. Even though he is not making sperm in his semen, there might be small pockets of sperm in the testes that can be retrieved by this biopsy," Orwig explained.

Magee's Fertility Preservation Program is part of a national consortium that receives referrals from all over the world. It is a team effort that includes urologists, reproductive endocrinologists, fertility specialists, oncologists, medical oncologists, gynecological oncologists, and surgical oncologists. Due to the need for quick action, service is available 24/7. The program works closely with the Magee-Womens Cancer Program for easy, fast-tracking of those patients. "We keep a slot open on the days they see patients, so patients can go from point A to point B quickly," says Sanfilippo. "We make a sincere effort to accommodate these patients and facilitate their treatment to minimize any delay of chemotherapy or radiation therapy."

Magee also makes an effort to minimize expenses. While the pharmaceutical companies usually provide the medications, the services of the Center for Fertility and Reproductive Endocrinology are all provided at cost.

#### Other options besides cryopreservation

While cryopreservation is the surest way to protect tissue, eggs and sperm, there are other options that may increase a cancer patient's possibilities to become a parent.

For example, the type of chemotherapy that the oncologist selects can have different effects on the ovaries, eggs or sperm supply. In the case of radiation therapy, suspending ovaries out of the field of radiation may also preserve fertility.





# INSURANCE AND INFERTILITY Expecting coverage? Read the fine print.



People who think they might need infertility treatment need to take a good, hard look at their insurance plans.

Currently only fifteen states mandate at least some level of coverage for infertility, and Pennsylvania is not among them.

State mandates vary widely. For example, only eight of the fifteen states require coverage for IVF.

A Mercer LLC study performed last year reported that 60% of employers with more than 500 employees offer some type of fertility benefit. While coverage can be limited to a consultation with a doctor, the study found that only about a third of those employers cover fertility drug therapy, 24% cover IVF, and 23% cover artificial insemination.

Cost is the biggest deterrent. The American Society for Reproductive Medicine reported that the median price of one cycle of IVF in the United States costs \$19,200. While that sounds high, the economics aren't so simple. When employees pay out of pocket for treatments like IVF, they often choose to have multiple eggs implanted to increase their odds and save the cost of another IVF cycle. When this results in twins or other high-risk pregnancies that lead to premature or low-weight babies, employers can spend twelve times as much on health care costs than for one healthy baby.

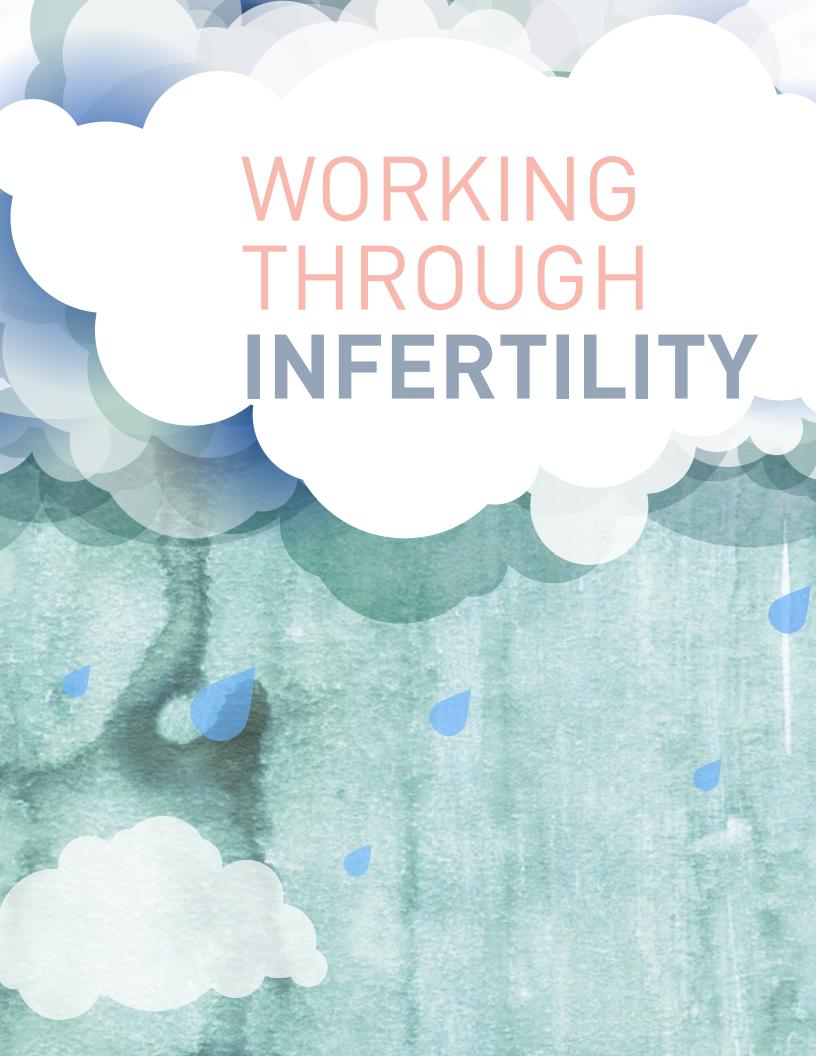
Not surprisingly, state-mandated coverage increases the use of IVF, but it can also reduce the occurrence of multiple births, especially if the benefits include genetic screening and embryo evaluation. Then it may be mandated that only a single embryo be implanted to ensure a healthy, one baby pregnancy.

As it stands now, the majority of patients who undergo IVF in the U.S. do so at their own expense. A survey by Resolve: The National Infertility Association, states that of 1,600 men and women diagnosed with infertility, 46% said their insurance plans don't cover infertility treatments and 15% said their plans cover less than a quarter of the costs.

### WHAT YOU NEED TO KNOW:

- Many health insurance plans pay for services related to infertility testing. Once the diagnosis has been established, the coverage ends.
- Learn whether your employer is fully insured or self-insured. Only fully insured plans have to follow state law. Self-insured plans are exempt and follow federal law.
- If you live in a non-mandate state, you may still be able to find a plan that includes fertility services if you work for an employer that's based in a mandate jurisdiction.
- The eight states that require plans to include IVF are Arkansas, Hawaii, Illinois, Maryland, Massachusetts, New Jersey, Rhode Island and Texas.
- If your plan is mandated to include fertility services, check to see what services are covered. Many mandates include exceptions.







"Eventually, saying that we didn't want to have kids was easier than telling people what was going on."

-Samantha Faler

Like many couples who have tried for years to get pregnant, Samantha Faler and her husband Ben grew tired of people asking when they were going to have kids. "Just hearing that question over and over again was hard," recalled Samantha. "Eventually, saying that we didn't want to have kids was easier than telling people what was going on."

The question was, what was going on? Frustrated, they turned to the Internet which wasn't a great source of comfort or clear answers. But Samantha did find the definition of infertility. "That let me know something wasn't right," remarked Samantha. "It led us to call my doctor, who referred us to Magee."

Samantha and Ben made an appointment at the Center for Fertility and Reproductive Endocrinology at Magee-Womens Hospital of UPMC.

"When I walked in that first day, I was excited because I knew what could happen," Samantha remembered. "I was also very scared. I remember just crying in the office, and they were so good with me and my husband."

Ben agreed. "They did a good job of keeping us at ease even though it was a stressful situation."

The couple met with Dr. Joseph Sanfilippo, Director of the Division of Reproductive Endocrinology and Infertility. He explained that the definition of infertility is dependent on a woman's age. If she's less than 35 years old, infertility means failing to conceive after one year of unprotected intercourse. If she's 35 or older, then it's six months. Dr. Sanfilippo recommended infertility testing for both Samantha and Ben.

"Many women postpone childbearing, and then their ovarian reserve is diminished and their chances of spontaneously conceiving are





significantly decreased. That's the more common scenario," said Sanfilippo. "We also always check the sperm count. If there's any problem with the male, we work closely with male infertility specialists."

According to Sanfilippo, the sensitive nature of infertility can be a problem in and of itself. Many people don't openly talk about it, which leads couples to feel as if they're facing it alone. And waiting too long to confront the problem not only adds stress, but it can also reduce the opportunity for pregnancy.

"It's a very private issue," said Sanfilippo. "The realization that you have a problem is difficult. Going to your primary care doctor and saying it's not happening is difficult. Coming in to see the specialist is difficult. I always tell my patients, 'Let me do the worrying. You're here, and we're going to do all the diagnostic tests, and utilize our state-of-the-art treatments."

Samantha expressed a similar experience. "Infertility is such a quiet thing. I had no idea that my best friend went through it also. Both of her children were conceived through In Vitro Fertilization (IVF) at Magee. During the process, we barely told anyone. Since then, we've come out with our story and have referred a lot of people to Magee."

#### First things first—a diagnosis

Upon Sanfilippo's recommendation, Samantha and Ben embarked on extensive infertility testing. This was also a test of resolve for the busy couple. As a kindergarten teacher, Samantha's days were full of children who needed her attention. The couple also owns a gym, where Ben works as a personal trainer. If he doesn't work, they don't make money. On top of that, they live in Jamestown, PA, about an hour and a half drive from Pittsburgh.

"I always tell my patients, 'Let me do the worrying. You're here, and we're going to do all the diagnostic tests, and utilize our state-of-the-art treatments.'

-Dr. Joseph Sanfilippo

# "Unexplained infertility accounts for about 25% of the patients we see."

-Dr. Joseph Sanfilippo



Fortunately, the center is very conscious that infertility diagnosis and treatment can be time-consuming processes, and especially difficult for working women. But this is something the specialists at Magee understand. "We have made the philosophical decision to offer services seven days a week," said Sanfilippo. "There is always one of us who's on call, and we even do procedures like IVF on the weekends. We are here to accommodate patients."

Samantha recalled times when the Center set them up with two or three appointments in one day so they wouldn't have to miss too much work. Still, when all was said and done, the couple was diagnosed with unexplained infertility.

"Unexplained infertility accounts for about 25% of the patients we see," Sanfilippo said. After receiving the diagnosis, Samantha and Ben made the decision to proceed with IVF, which was what Dr. Sanfilippo believed gave them their best chance at success.

### Life during IVF

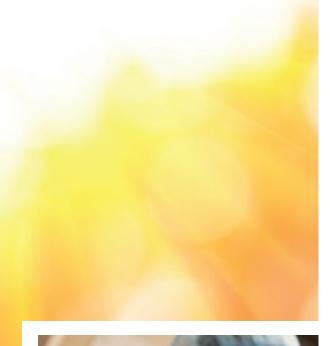
Going through IVF is never an easy process. Going through it while working is an even greater undertaking. Although Samantha and Ben were committed to not letting infertility get in the way of their responsibilities to her students and his clients, there were some trying times.

"My wife is really goal-oriented and successful," said Ben. "This was something she didn't have control over, so it really got to her. Trying to keep her on an even keel during it was probably the hardest part."

"I have all these people's children in my classroom," said Samantha. "Even if I'm going through a rough time, they need the very best of me."

So what had the couple committed to undergo? IVF is a procedure where a woman's eggs are retrieved, then fertilized with sperm outside of her body. The embryos are then placed back into the uterus to achieve pregnancy. It sounds simple, but the reality is a lot more grueling.

At the start of an IVF cycle, a woman has baseline blood work and an ultrasound. Next, she receives injections to stimulate the







"I would drive to Magee around 4:00 or 5:00 in the morning and be back here in time to work from lunch through the rest of the day."

-Samantha Faler

ovaries to produce mature eggs. Progress of the developing eggs is then monitored through more blood work and ultrasounds. When the time is right, she'll receive an injection to help the eggs mature. About 36 hours later, the eggs are retrieved. This is done under conscious sedation (twilight anesthesia) and usually takes less than half an hour. The mature eggs are then combined with semen from the partner or donor. About 18-24 hours later, the eggs are checked for fertilization. Fertilized eggs are called embryos. Three to five days later, the woman returns for an embryo transfer. The healthiest looking embryo is injected into the uterus. Normally this doesn't require sedation. For women under 35, usually one embryo will be transferred. Women in their 40s may decide to have more.

After the embryos are transferred, the woman receives progesterone to maintain the pregnancy. About two weeks later, a pregnancy test is performed. If the result is positive, an ultrasound will be performed a week or two later to see if the pregnancy is developing normally.

"IVF requires a lot of medication and doctor's appointments," recalled Samantha. "It requires a lot of tests, blood work and ultrasounds. I remember my arm being so many different colors of blue it was unbelievable."

She added, "I would drive to Magee around 4:00 or 5:00 in the morning and be back here in time to work from lunch through the rest of the day. Ben had 5:30 classes in the morning, so we had to find a way to make it work. I don't think we realized it would be quite that hard, but I was glad when that first month of IVF was over."

Samantha and Ben were lucky. They were successful the first time, and they credit Sanfilippo. "Our process lasted longer than

normal. We kept going and waiting for the numbers to look a certain way. I think some people wanted him to call it off and try the next month, but of course, then we would have been out of all the money and all that medication. And he was right! He was wonderful."

### Pregnant, but not out of the woods

The Falers soon learned they were having twins. As with any multiple pregnancy, that meant it was high-risk. They were referred to the Maternal-Fetal Medicine (MFM) specialists at Magee-Womens Hospital of UPMC. "We were in the mindset that anything worth having is worth working for," said Samantha. Nothing has ever come easily to either one of us, so just like the infertility journey, we recognized we were fortunate to have such amazing people watching over us. Of course we were scared, but we knew the end result would be worth it, and the high-risk pregnancy people were wonderful."

The couple kept in touch with the MFM specialists throughout the pregnancy. Then Samantha developed severe preeclampsia, which is a serious pregnancy complication marked by high blood pressure.

"I went for a routine doctor's appointment and found out I had preeclampsia," Samantha relayed. "I was taken by ambulance to Magee."

After two weeks of going back and forth to the hospital, the preeclampsia started to affect Samantha's eyesight. She underwent an emergency C-section. The twins were born early—31 weeks and 5 days into the pregnancy. Babies Ava and Grayson went right into the Neonatal Intensive Care Unit (NICU) at Magee.

### Intensive care—an intense experience

"Throughout the process, I was always waiting for the unexpected," said Samantha. "That's the one process I don't think I was ready for. When you're preparing, they don't tell you that your children will be hooked up to monitors, and someone else is going to help you take care of your babies for the first eight weeks of their lives. In Grayson's case, we didn't even get to hold him until day four or five."

The twins went into the NICU December 1st and were there throughout the holidays that year. As difficult as the time was, the couple found a bright spot. "The NICU nurses at Magee were wonderful," said Samantha. "They literally taught us how to be parents. We were terrified but we gained such an appreciation for them."

"We were in the mindset that anything worth having is worth working for."

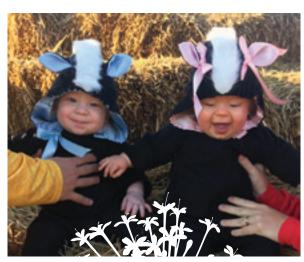






-Samantha Faler







#### Happy endings. Happy beginnings.

Today the twins are over a year old. Grayson runs. Ava walks. As preemies, they qualified for physical therapy, but now they no longer need it and they're doing everything children their age should be doing.

The Falers were also fortunate because insurance covered most of the infertility medication, as well as all the hospital stays. However, it didn't cover the IVF process, which is, unfortunately, not unusual.

Still, the couple can't say enough good things about their experience with Magee and Dr. Sanfilippo. "He has definitely found his calling," remarked Samantha. "And the people that work for him have found their calling. I realize how important that was. From the secretaries to the people who drew blood, they were phenomenal. They gave us hope when we needed it. He's the best and I'd recommend him to anyone."

Her husband had some advice for others considering infertility treatment. "You have to have perseverance and steady that emotional roller coaster, because it's up and down the whole time. And there are no guarantees. As a couple, you have to have a strong relationship. When we were labeled infertile, we told our doctor we wanted the best. He recommended Magee, so that's why we went there."

#### A unique resource

Magee is the largest center for infertility in the region, providing state-of-the-art evaluation and treatment for infertility and reproductive endocrinological problems. It offers services from pediatric adolescent gynecology to reproductive years and up to midlife menopause.

"We're the only center in the region that can do pre-implantation genetic screening in house-at Magee, which is great if the woman is concerned about genetic abnormalities," remarked Sanfilippo. "Basically, we can take one or two cells and some surrounding tissue, send it to the genetics lab for each embryo, and find the normal embryo to place in the uterus."

For high-risk pregnancies, Magee also allows the center to facilitate preconception counseling. Before pregnancy, specialists can map out a course to deal with various problems like seizures, headaches or thyroid disease. Many times, referring doctors, primary OB/Gyns and maternal-fetal medicine and infertility specialists work as a team to achieve pregnancy and better outcomes.

Infertility related research also plays a role at the Center for Fertility and Reproductive Endocrinology. "We work closely with basic scientists in the division," said Sanfilippo. "Some of that work is translational." That means the center is taking findings from basic scientific research and applying them to medical practices that can enhance health.

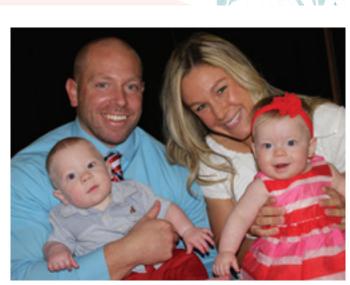
The division has five physicians who are reproductive endocrinologists. It has satellites in Altoona, Beaver, Butler, Cranberry and the South Hills, as well. While the doctors go out to deliver local consultative service, sometimes by telemedicine, any procedures are done at Magee. Sanfilippo stated, "We're pretty far reaching for a small group of physicians."

If you're a couple wishing to discuss your fertility options, call 412-641-1600. To learn more about how you can help support research into finding new ways to help couples dealing with infertility, visit mageewomens.org/donate or call 412-641-5056.

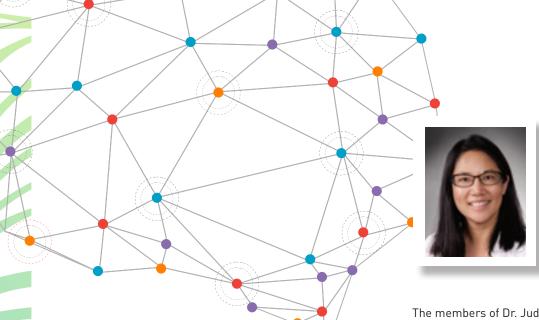
### **Fertility Facts:**

- Magee's Shared Financial Risk Program for IVF allows couples to get money back if treatment is unsuccessful.
- The success rate for women under 35 is 35-50% per IVF cycle.
- The success rate for women 40 or older is about 10% per IVF cycle.









Health and Wellness Update:
Communicating about marijuana use during pregnancy.

Judy C. Chang, MD, MPH
Associate Professor
Department of Obstetrics,
Gynecology & Reproductive
Sciences, and Internal
Medicine, Assistant Dean of
Medical Student Research

Primary Investigator, Magee-Womens Research Institute The members of Dr. Judy Chang's research group don't spend a lot of time behind a microscope. Yet their work is still making discoveries that can have a profound influence on women's health.

Chang's work focuses on the intersection between women in the context of their lives, social influences and relationships, and the health services they use. In particular, her research looks at patient-provider communication in obstetric care, with the goal being to identify and promote effective communication between doctors and patients. Hopefully, the results of this communication are positive behavioral changes that improve the health of the mother and baby.

A timely issue that Dr. Chang has been focusing on recently is understanding the use of marijuana during pregnancy.

Marijuana use is spreading and is now legal in certain states. As it has become more accepted, there is also more information on the internet, some even promoting its use for a variety of reasons. But these sites are certainly not run by doctors and are often people who have their own agendas or beliefs.

"There is a real concern about what information pregnant women are getting and how they are making decisions about using marijuana during pregnancy," Chang said. "This is challenging because there hasn't been a lot of research studying the effects of marijuana on pregnancy. Since it's been illegal for so long, it has been hard to get people willing to participate in a study."

A big concern is that the increase in acceptance of marijuana use has coincided with the drug's increased potency.

"Many of the studies on marijuana were done in the 1980s when women were smoking joints and the potency was a sixth of what it is now," Chang continued. "Often, women who report using it now are smoking marijuana as a blunt, using cigar paper, which is made out of tobacco leaves for dual exposure. Many women don't realize this. So there are larger amounts being smoked and it's more potent than ever."

Marijuana's main psychoactive ingredient — tetrahydrocannabinol, or THC —reaches the fetus through the placenta, potentially harming brain development, cognition and birth weight. Plus, THC can also be present in breast milk.

"We can have fantastic science to develop a great medication, but if the patient's surroundings lead her to not take the medication, then they don't get the benefit of it. It's these issues that we have to factor into a woman's overall health profile.

-Judy C. Chang, MD, MPH

Dr. Chang doesn't see the use of marijuana as a sign that women are being more reckless during pregnancy. She believes that these women just view marijuana as much less of a health concern.

"Just like we have found in our smoking cessation studies, women really want to do what's best for their babies," she said. "But when they have a dependence on a substance, it gets really tough. Smoking cessation helps them with those dependence issues. The challenge with marijuana usage is that there isn't a perception of dependence. In fact, many women we've talked to will contrast it with tobacco and say, 'Tobacco is hard to quit, but no one gets addicted to marijuana.' They often view it as a more natural way to deal with morning sickness. The perception is out there that marijuana is natural and harmless. But they don't think that way of tobacco. Medical marijuana usage also promotes that perception, but there are many medical treatments that can be prescribed and have medical benefits. That doesn't mean that it doesn't pose harm or is right for everyone. Even something like aspirin can be harmful if taken in the wrong amounts or by the wrong person."

Clinicians are advised to ask pregnant women about marijuana use and to urge them to quit. To find out whether that's happening, Chang's research team recorded more than 450 first visits with pregnant patients.

She found that the doctors were more likely to warn patients that child protective services might be called if they used marijuana, than to advise them of potential health risks. When pregnant women admitted to marijuana use, almost half of obstetric clinicians did not respond at all.

It's the misconceptions about marijuana's impact and the need for more open doctor/patient dialogue that interest Chang. Over the last decade, her research has found that many health and well-being issues are influenced by social and behavioral forces in a women's life. It's not just biological issues that impact health.

"We are social creatures that interact and communicate and emote. All of those external forces can influence our behavior for better or worse. They can impact whether a woman pursues health care services or whether she accepts certain medical treatments," Chang remarked. "We can have fantastic science to develop a great medication, but if the patient's surroundings lead her to not take the medication, then they don't get the benefit of it. It's these issues that we have to factor into a woman's overall health profile. My type of science fills in the gaps outside the lab, pharmacy, or operating room. We look at external factors that can have as big of an impact on a woman's health as her DNA. What are the other components we need to understand to advance women's health? And just as important, how do we find a common language to make sure we can keep the lines of communication open?"

Chang believes that doctors can improve those communication skills that can help them help their patients. "This is something that all doctors should focus on. It's a skill and practice that can't be taken for granted. The challenge is that most people think they are good communicators, and hopefully most of them are. But even the best communicators can reflect on their skills to see if what they are saying is getting through to the patient."

For more information on supporting research that can have a positive impact on pregnant women and their babies, visit mageewomens.org/donate.





### WHERE WE'VE BEEN, AND WHERE WE'RE GOING

"AS WE BEGIN OUR
JOURNEY TO THE
NATIONAL STAGE, WE
ACKNOWLEDGE THAT
ANY JOURNEY STARTS
WITH A ROADMAP,
A PLAN THAT GUIDES
OUR DIRECTION
AND ACTIONS.

-MICHAEL ANNICHINE, CEO,
MAGEE-WOMENS RESEARCH
INSTITUTE & FOUNDATION

### **CEO UPDATE**

### Magee-Womens Research Institute has had an incredible year.

As I reflect on the advancements we've made in research, the lives we've touched in the clinical settings, and the collaboration that inspires everything we do, I am excited about our future. We stand poised to launch new initiatives and programs which will elevate the study and treatment of women's health to much higher levels. To achieve a goal such as this, we must live and work by basic tenets that drive our success.

Be true to our mission. As we begin our journey to the national stage, we acknowledge that any journey starts with a roadmap, a plan that guides our direction and actions. In the last several months, we have been working hard on developing our roadmap, and in doing so, have realized two very important fundamentals. First, we at Magee-Womens Research Institute are the very best at what we do – women's and reproductive health research. And second, even though we are continuously looking for better ways to organize and manage ourselves, we must stay focused on delivering discoveries in basic and translational research. This is where we will make a transformational impact. We will continue our work to eliminate Zika and HIV, improve fertility in cancer patients, develop new and better treatments for breast and ovarian cancer, understand and intervene on premature births, and improve the quality of life for aging women. These are just a few of the areas in which our researchers are pioneers.

Communicate often and effectively. Our researchers, scientists and clinicians are very open and willing to discuss their work, and we are thrilled to report on it. The challenge with basic research is communicating in a way that everyone will understand. This is a challenge common to many in the research world, but we will improve the cadence and content of our communications. By engaging you, our supporters, we expand our network of influence to make an even greater impact on the health of humankind. We commit to telling you our story, and you will help us carry the torch.

Recognize and reward excellence. An initiative that you will soon hear more about is The Magee Prize and Summit. With the generosity and support of the Richard King Mellon Foundation, we will create The Magee Prize, and a new focus on women's health research. The Magee Prize will firmly establish MWRI as a global research leader; shine a spotlight on the innovations and scholarly activities taking place in Pittsburgh; and expand our worldwide collaborative research network to award monetary prizes to the best and the brightest in the world of women's health. The Magee Summit will be an international conference on women's health research that will bring the world's top medical minds together here in Pittsburgh, to foster collaboration and the exchange of ideas, and to ultimately select the winners of





The Magee Prize. The Summit will be a rare opportunity for exchange of ideas and dialogue among biomedical research disciplines. It will provide a natural platform to accelerate progress in translational science and promote new discoveries that impact not only women's health, but the wellness of every human being. MWRI will host the premier scientific thought leaders in Pittsburgh in this unique opportunity for interdisciplinary engagement, and through this interdisciplinary engagement, will establish the agenda in women's health research over the next several decades.

Inspire others to join us. In conjunction with The Magee Prize and Summit, the Magee Movement is a grass roots effort to ignite a spark among women and men of all ages and walks of life to keep women's health research relevant and at the forefront of medical research in terms of collaboration and funding. The Magee Movement is the vehicle through which everyone in the world can benefit from the research taking place here.

In the coming year, you will see and hear much more from Magee-Womens Research Institute. Stay tuned – you will not want to miss it!

Michael J. Annichine CEO

Magee-Womens Research Institute and Foundation







Carl Hubel, PhD,
Primary Investigator
at Magee-Womens
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### What new developments are taking place in 9-90 research?

We're pleased to have received funding from the American Heart Association as part of their Go Red For Women Research Network. This Network consists of five research centers, of which Magee-Womens Research Institute is one. The Network is dedicated to investigating cardiovascular problems in women, and we are the center focusing on the pregnancy angle of this research. We are also active in working with the other centers to collaborate on the research and help to develop the next generation of researchers.

#### What is the current focus of your research group?

For quite a long time we've been looking at adverse pregnancy outcomes including preeclampsia, pre-term birth, and fetal growth restriction. The data shows that these outcomes are associated with cardiovascular disease later in life. That's well known. But we want to do more than recognize this association. Our goal is to identify mechanisms of cardiovascular disease in women later in life that are unmasked - or perhaps even caused - by pregnancy.

### How does pregnancy give you a special look at a woman's cardiovascular health?

Pregnancy puts certain cardiovascular and metabolic stresses on a woman's body. In this way, you can think of pregnancy as sort of an early, natural stress test that we think can provide insight into discovering the pathways that link the events of a woman's pregnancy with her later-in-life cardiovascular disease. Pregnancy is a unique lens and early window of opportunity to identify women who stand to benefit most from targeted interventions to delay cardiovascular disease progression. By investigating abnormal responses to the stress of pregnancy, including adverse microvascular changes in the mother and the placenta, we may unmask risk and provide clues to the pathways of cardiovascular disease. The study of these relationships could then help define useful clinical tests for health care providers to identify women at highest risk for future cardiovascular disease and guide novel interventions.

### Can you give an example of what researchers are looking at during pregnancy to determine a connection to heart disease?

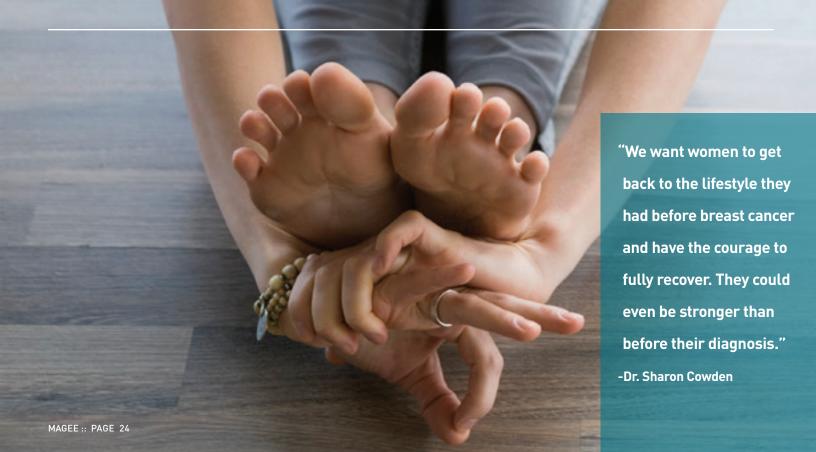
My lab's project looks at a very specific target on blood vessels that may signal the development of both preeclampsia and cardiovascular disease. There is a protective gel-like layer on all blood vessels. This protective coating on the vascular wall is in direct contact with the maternal blood. The erosion of this coating may be the central mechanism in developing preeclampsia. This same damage could be linked to later-life cardiovascular disease. And we are now able to study this using non-invasive techniques.

There are other areas the research teams are looking at including investigating the placenta as another window into future heart health, and research into the influence of pregnancy on future vascular dysfunction and atherosclerosis. As is often the case with researchers, we have more ideas than we have resources, which is why funding and support are so important.

For more information on how you can make a donation to continue this kind of groundbreaking research, visit mageewomens.org/donate.



### Exercise Can Improve Side Effects, Reduce Recurrence in Breast Cancer Patients



"We both thought, wouldn't it be great if everyone had access to these exercises? Not everyone can afford a personal trainer. So we came up with the idea to make a video."

-Dr. Sharon Cowden



Strength and Courage creators, Janette Poppenberg and Sharon Cowden, MD



Shannon Puhalla, MD

The search is always on for cancer cures and solutions to relieve the intense side effects of breast cancer surgery and treatment. But could the simple solution just be taking a walk a few times a week or following a fitness video?

Dr. Shannon Puhalla, director of the breast cancer clinical research program at Magee-Womens Breast Cancer Program, believes exercise can provide significant benefits to patients. "Clinical trials have shown that breast cancer patients who exercise have a decreased risk of recurrence compared to patients who are sedentary. Some studies even show that the benefits of exercise are similar to active treatment," she said.

Dr. Puhalla admits that starting an exercise regimen can seem daunting at first, but even small steps make a huge difference. "Many patients don't know where to start. But we aren't talking about marathon running. Just simply walking or doing moderate exercises four times a week would work. If you're sedentary or have arthritis before diagnosis, that might be too much. But there are other options out there that start slow and can be done in the comfort of your own home," she said.

### **Strength and Courage**

One of those exercise options originated from the journey and determination of two women to help others.

In 2002, Dr. Sharon Cowden, a Pittsburgh pediatrician, was diagnosed with breast cancer. After undergoing surgery and radiation, she could no longer hit a golf ball or lift her small patients because her upper mobility was greatly impacted. "I don't think people realize how affected you are. Simply reaching into a cabinet or making a bed became difficult after surgery. Flexibility and strength are completely compromised," Sharon explained.

To help improve her symptoms, Sharon reached out to Janette Poppenberg, an ACSM/ACS certified Cancer Exercise Trainer®, who incorporated exercises to regain Sharon's upper body strength. After seeing the improvements in Sharon and Janette's other clients, they came to a realization. "We both thought, wouldn't it be great if everyone had access to these exercises? Not everyone can afford a personal trainer. So we came up with the idea to make a video," Sharon said.

Sharon and Janette developed a business plan, garnered support from cancer experts, and worked tirelessly for five years until the Strength and Courage: Exercises for Breast Cancer Survivors video was released in 2008 through collaboration with Magee-Womens Research Institute and Foundation and the Pipitone Group, and produced by Janet Smith of

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Moment Media. It was a true labor of love for both women. The video focuses on weight training, stretching, and aerobic guidelines to help women regain their upper body strength. This year, a Spanish version of the video was released to make the exercises even more accessible to larger groups of people.

The feedback from patients has been extremely positive. Janette explained, "When we talk to patients who have used the video, they talk about how they are in a better place both emotionally and physically. Exercising can help with stress, anxiety, nausea, fatigue, range of motion, and even lymphedema. The video makes a huge difference in their lives."

Both Janette and Dr. Puhalla stress that getting a doctor's clearance is the first step when starting any exercise program as well as making sure a certified cancer exercise specialist is involved. "You can't go to just any trainer because there are specific side effects and concerns when it comes to breast cancer. You have to start out very slow and stay on a consistent path," Janette recommends. Dr. Puhalla commented on lymphedema concerns, "It is important to take it slow and keep an eye on lymphedema. Interestingly, recent data with exercise shows that it can improve lymphedema. Things like the exercises from the DVD and walking are safe bets." The Strength and Courage video has a whole section devoted to addressing lymphedema concerns and appropriate exercises.

Benefits of exercise not only help after treatment but during as well. "Patients used to only reach out to us after they completed their treatments, but now many women are working out during their treatment. I had one client who exercised throughout treatment and she did not feel the fatigue that most patients experience. Exercise helps patients tolerate the side effects," Janette explained.

Sharon hopes that exercise and the Strength and Courage program will help women get their quality of life back. She explained, "Rehabilitation should be more of a priority in the treatment process. We want women to get back to the lifestyle they had before breast cancer and have the courage to fully recover. They could even be stronger than before their diagnosis."

To get a copy of the Strength and Courage DVD, please visit www.strengthandcourage.net. To set up an appointment with Dr. Puhalla or another Magee cancer specialist, please call 412-641-4530.





## Kendra Scott Jewelry Empowers Breast Cancer Patients

In October 2016, Susan LeCornu, a Pittsburgh native, was working as a postal worker delivering mail near McConnellsburg, Pennsylvania. She noticed some bruises and lumps on her body but attributed them to the physical demands of her job. The bruises eventually faded but the lumps remained.

Her local physician was concerned and suggested that she go to Harrisburg for further evaluation. But Susan immediately knew what she needed to do. "I'm from Pittsburgh, the City of Champions, where there is brilliant medicine being done. It was time to go home," Susan said.

Susan and her husband, John, moved back to Pittsburgh so she could be cared for at Magee-Womens Hospital of UPMC. Doctors confirmed that Susan had Stage 3 breast cancer. Dr. Ronald Johnson, a surgical oncologist, performed her mastectomy. "Dr. Johnson walked in before my surgery and there was a sad feeling in the room. Dr. Johnson turned to everyone and said, 'Buck up! In an hour and a half, this woman will be cancer-free.' The compassion from the doctors, nurses and staff was overwhelming," Susan said.

Susan would not let her diagnosis get her down. She relied heavily on her faith and was committed to celebrating life. She dyed her hair Marilyn Monroe blonde before it started to fall out from the chemotherapy treatments. Susan explained her positivity, "You have to keep going in your life no matter what. After every chemo treatment, we celebrated each time with a visit to Mt. Washington, a special lunch, anything to feel alive and celebrate."



Another way Susan found empowerment was through wearing jewelry. "Cancer really tests your character. You lose your hair and even your female organs, so it feels like an attack on womanhood that you didn't ask for. Jewelry can be a nice distraction. Instead of asking where my eyebrows went, people would look at my jewelry," Susan explained.

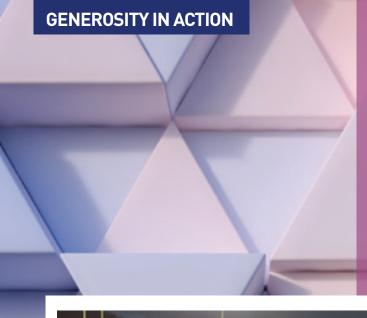
Through a personal connection, Susan was contacted by Kendra Scott Jewelry, a national fashion accessories brand based in Austin, Texas. During the month of October, for every piece of rose gold jewelry sold from a specific selection, a piece of rose quartz jewelry was given to someone undergoing breast cancer treatment. A portion of the proceeds were also donated to breast cancer research. Christine Osterhus, field events operations manager with Kendra Scott Jewelry, explained the company's philanthropic focus, "We live by the mantra 'What Matters to You, Matters to Us.' This past October, Kendra was driven to dedicate all of her philanthropic efforts to a single initiative: to be a voice for her dear friend Holley Kitchen, who passed away in January after a long battle with metastatic breast cancer."

Barb Acheson, Susan LeCornu, and Linda Ankrom, director of the Magee-Womens Cancer Center Kendra Scott Jewelry donated 15,000 pieces of jewelry around the nation and 50 pieces specifically to women currently undergoing chemotherapy at Magee-Womens Hospital of UPMC. Osterhus explained why jewelry can be empowering, "A piece of jewelry can make such a difference when you pair them with words of encouragement that remind a woman how strong, beautiful and unique she is. We were honored to be able to bring a smile to the faces of so many women across the country."

Each piece of jewelry was accompanied with a personal message of encouragement. Susan had the opportunity to deliver the jewelry in person to patients. "I felt a deep kinship to the women. Having the jewelry was the opening to the conversation. To be able to give this gift and say, 'I know what you are going through' was so special. One woman saw the necklace and her eyes lit up and she said it made her day," Susan said.

Today, Susan is feeling great and currently is cancer-free. She is very grateful for her experience. "There is such a commitment at Magee to make patients feel accepted and confident. How could something so awful, end up being such a good experience for us? It was because of the brilliant nurses and staff," she said.

To support breast cancer research, please contact the Magee-Womens Research Institute & Foundation at 412-641-5056 or info@mageewomens.org.





### Community Comes Together to Support Breast Cancer Patients

For the last four years, during Breast Cancer Awareness Month in October, the Moon Area Tigers Quarterback Club, football players, and cheer squad have raised money for the Patient Care Fund through the Magee-Womens Cancer Center. Since 2013, the event has raised more than \$20,000.

Students and their families raise money by selling pink t-shirts in the weeks leading up to the main event, a pink-out football game. Lisa Puhalla, a member of the Moon Area Tigers Quarterback Club and mom to a Moon Area football player and a cheerleader, said students go all out for the event. "The kids get really excited about it. Some dye their hair and wear makeup, dressed in pink from head to toe. It's a great way to raise awareness," she said. During pre-game festivities, breast cancer patients and survivors are recognized and escorted onto the field by Moon football players and cheerleaders.

The decision to donate to Magee arose from the students' personal connections. Lisa explained, "A few of our football players and cheerleaders have had mothers and grand-mothers treated or seen at Magee. Just this past year, a mother was treated for breast cancer. So, it hits close to home for our students and their families."

The Patient Care Fund at Magee-Womens Cancer Center provides support to patients struggling with the cost of basic necessities like medications, travel expenses, lodging, and meals. Lisa explained, "We felt that by donating to the Patient Care Fund, we could have an immediate and real impact on the patients. Whether it be covering their transportation or buying a wig, the money is directly supporting a patient."

The 2016 event raised \$8,000 which is the largest amount yet. Lisa said it was because of the whole community. "This originally started out as a small fundraiser at the high school but has grown to be an entire community effort. Our middle school and youth football program got involved selling t-shirts and promoting the game. It was a larger success this year. It brings our community together," she said. The funds were also raised through sponsorships with local businesses.

Lisa said even their opponent in the pink-out game was supportive of the event. "We played Chartiers Valley and they were also supportive. It's a night of competition but everyone comes together for this. You don't think about the game, you think about your mom, sister, or grandma and how you could help them," she said.

To donate to the Patient Care Fund, please contact 412-641-5056 or info@mageewomens.org.





### Celebrating the "Two Tonys" Esteemed Careers and Research Achievements

In November 2016, Drs. Tony Plant and Tony Zeleznik, were honored at the Magee-Womens Research Institute's Annual Retreat.

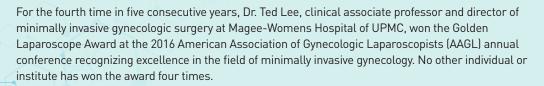
Drs. Plant and Zeleznik, both professors of Obstetrics, Gynecology and Reproductive Sciences and valuable faculty members of Magee-Womens Research Institute, are moving on to new endeavors; Dr. Plant will retire in 2017, and Dr. Zeleznik is transitioning from full-time science to teaching, mentorship and other scholarly activities.

Dr. Plant's research has contributed to a greater understanding of the brain control of testicular development, differentiation and function. His studies have focused on the neurobiology of puberty onset, which has direct relevance to infertility in humans. From 1985 until 2013, he served as director of the NIH-funded Center for Research in Reproductive Physiology.

Dr. Zeleznik has made significant contributions to the field of female reproductive biology and our understanding physiology and cell biology of ovarian follicle development and response to hormones. He used his knowledge in menstrual cycle physiology to help develop the highly successful in vitro fertilization program at Magee-Womens Hospital of UPMC.

The November Symposium featured lectures by internationally known scientists from New Zealand, Scotland, Canada, and the United States and their reflections on the fundamental roles that Drs. Plant and Zeleznik played in advancing their own research and the field-at-large. Investigators, clinicians and trainees from across the Magee and the University of Pittsburgh communities attended the program, which was generously supported by AbbVie Pharmaceuticals, EMD Serono and Ferring Pharmaceuticals.





The Golden Laparoscope award is a prestigious honor awarded to the team of physicians with the best surgical video. Out of hundreds of submissions, the 2016 winners were Dr. Lee and Dr. Christina Ramirez for their video titled, "Laparoscopic Management of C-sec scar ectopic pregnancy."

Dr. Lee expressed his feelings about the honor, "Most people would be lucky to win the award one time, so I am very proud to have won four times. I never expected it. I just wanted to create something educational that would demonstrate my approach to surgery. These videos are a great medium for teaching my colleagues and fellows."

Dr. Lee and his fellows also won the award in 2015, 2013, and 2012.





### Magee Clinician and Researcher Dr. Pamela Moalli Wins Top AUGS Prize

At the annual American Urogynecologic Society (AUGS) meeting, the top award for Best Overall Paper was awarded to Dr. Pamela Moalli, Associate Professor, Division of Urogynecology and Pelvic Reconstructive Surgery for her paper titled "Regeneration of vaginal support utilizing an ECM bioscaffold: Impact on vaginal structural proteins".

AUGS is a premier society dedicated to research and education in urogynecology and recognizing excellence in the field. Of 70 papers presented at the meeting, six papers received awards. Of those six awards, four of the awardees were Magee-Womens Hospital of UPMC current faculty or graduates, including Dr. Moalli.

### The other Magee winners are:

- Best Resident/Fellow Paper Tatiana Catanzarite, MD, University of California,
   San Diego for her paper "Pelvic floor muscle response to mechanical strains associated with birth injury" (Principal Investigator: Marianna Alperin Magee fellow graduate)
- Best Evaluation Testing Paper Heidi Brown, MD, MAS, University of Wisconsin-Madison School of Medicine and Public Health for her paper "Validation of an instrument to assess barriers to care-seeking for accidental bowel leakage" (Magee residency graduate)
- Best Technology/ Novel Therapies Paper Katrina Knight, BS, University of Pittsburgh for her paper "Preventing mesh pore collapse through auxetic geometries:

  A comprehensive evaluation via computational modeling" (Dr. Moalli graduate student)

Dr. Moalli commented on the awards, "I'm incredibly proud and touched to see Magee represented so well and my mentees receiving recognition for their research. We tailor our fellowship and residency programs to encourage curiosity and inquisitiveness beyond surgical training so that trainees are also interested in advancing the field through research."

### May 11, 2017

**Women Who Rock** 

**Where:** Hard Rock Café Pittsburgh, Station Square

A concert featuring Pittsburgh's best female musicians with proceeds benefiting women's and infants' research at Magee-Womens Research Institute.

www.womenwhorockpgh.com

### June 4, 2017

**Kids and Critters: Annual NICU Reunion** 

Where: Pittsburgh Zoo & PPG Aquarium

Presented by Giant Eagle

Proceeds benefit the neonatal intensive care unit family socials at Magee.

bidpal.net/2017nicureunion

### June 11, 2017

Women's Cancer Survivorship Breakfast

**Where:** Doubletree by Hilton in Greentree

Presented by UPMC Health Plan and Beverly Barkon and Frank Lieberman in memory of Carolyn and Morris Barkon

Please RSVP by June 1 by calling 412-641-4446 or emailing csdemail@upmc.edu

### June 25-26, 2017

10th Annual Noah Angelici Memorial Golf Event

Where: Mystic Rock Golf Course, Farmington, PA

Proceeds benefit the Center for Advanced Fetal Intervention at Magee

www.noahshouseofhope.com









Thursday, September 28, 2017 Petersen Events Center

6:00 p.m. - VIP Reception | 6:30 p.m. - General Admission

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Making a planned gift to Magee, whether for research, patient care, or education, is easy. Plus this is a gift that costs you nothing today, and creates a meaningful legacy that touches the lives of so many others in the future.

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- 2 IRA Name Magee as a beneficiary on your retirement account.
- Charitable Remainder Trust Create an income stream for your life while also making a gift to Magee.



There are many other gift options to choose from including life insurance, gifts of real estate, and gifts of stock. For more information about making a meaningful gift to Magee, please contact Arthur Scully at scullyam@mwri.magee.edu or 412.641.8973.