



# Obstetrics and Gynecology

**Fiscal Year 2021 Annual Report**





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## 3





## **Mission and Vision Statement**

### **Mission**

We are a diverse community of healthcare professionals who:

- Partner with our patients to deliver world-class, comprehensive, and equitable obstetric and gynecologic care across the lifespan
- Lead groundbreaking research
- Drive policy change
- Educate the healthcare leaders of tomorrow
- Champion reproductive and sexual health and well-being in a highly collaborative culture that values and promotes diversity, equity and inclusion

### **Vision**

To be the global leader in obstetrics, gynecology, women's health and healthcare delivery through innovations in person-centered care, research and education.

### **Diversity, Equity and Inclusion Statement**

In the Department of Obstetrics and Gynecology at Northwestern University Feinberg School of Medicine, we believe that diversity, equity and inclusion enrich our department and strengthen our ability to better serve our patients and our community.

We acknowledge the role of medicine in the pervasive history of racism and inequity that contributes to ongoing healthcare disparities in our society. We recognize that science owes its development and advances to a long history of oppression and experimentation on people of color, and we honor individuals such as Anarcha, Lucy, Betsey and Henrietta.

We are committed to confronting these inequities by challenging ourselves to work towards an inclusive and just department and healthcare system through education, research, leadership and excellence in patient care. We celebrate diversity of race, ethnicity, culture, sexual orientation, gender identity, disability, age, education and socioeconomic background.

## Prentice Women's Hospital

Prentice Women's Hospital of Northwestern Memorial Hospital is a freestanding building and serves as the clinical and academic home for the Department of Obstetrics and Gynecology and its eight divisions

Through its partnership with Ann & Robert H. Lurie Children's Hospital of Chicago, Prentice provides uniquely tailored medical care and academic opportunities as the largest birthing center in the Midwest. In 2018, this partnership also fostered the creation of the Chicago Institute for Fetal Health, which allows specialists from our Maternal-Fetal Medicine Division to participate in fetal surgery cases jointly performed at both hospitals.

The Labor and Delivery floor at Prentice includes:

- 32 delivery rooms
- Four cesarean delivery rooms
- A separate floor with nine additional delivery rooms reserved for patients with COVID-19

We perform more than 12,000 deliveries annually.

A truly comprehensive hospital for female patients, Prentice also offers inpatient and outpatient breast care and state-of-the-art breast-imaging unit. The Maggie Daley Center for Women's Cancer Care is an outpatient facility where our Gynecologic Oncology Division runs a patient-focused clinic with an adjacent infusion suite and procedure rooms. They work collaboratively with breast surgery, clinical genetics, and hematology and oncology to deliver comprehensive care for patients with gynecologic and breast cancers.

Our department is grateful and proud of our ability to:

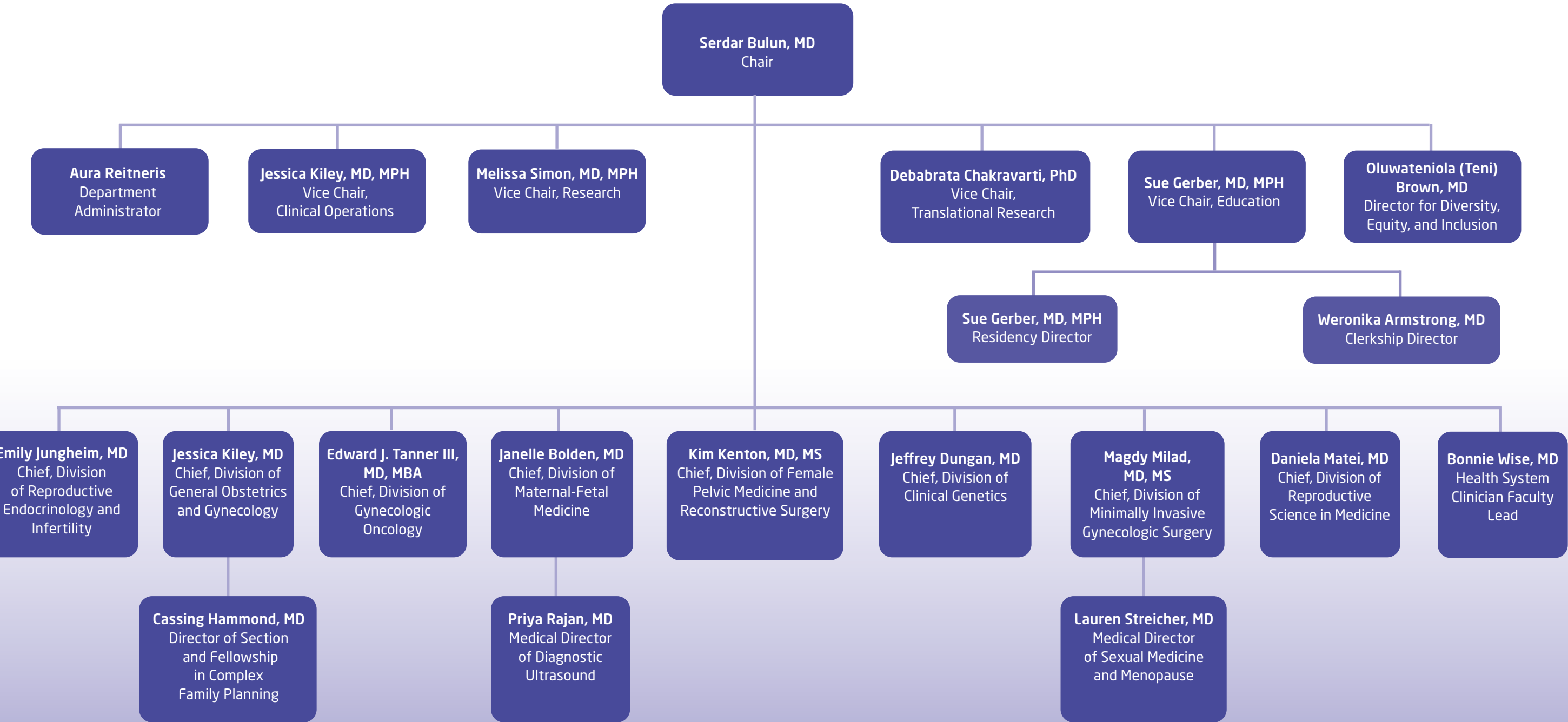
- Provide high-quality patient care across the lifespan
- Educate healthcare leaders of tomorrow
- Advance our mission of equity, inclusion and justice
- Lead groundbreaking research within a highly collaborative environment

Prentice has a separate surgical suite including **10** operating rooms used for all gynecologic procedures including minimally invasive gynecologic surgery, urogynecology and gynecologic oncology. More than **4,700** gynecologic surgeries, including more than **2,000** major procedures, are performed annually. Additionally, several operating rooms at Prentice are used for all forms of breast surgery as well as fetal surgery.



# Organizational Chart

## Department of Obstetrics and Gynecology Academic Structure



# By the Numbers

## Prentice Women's Hospital at Northwestern Medicine FY21

(September 2020 to August 2021)

**Total Deliveries 12,042**

**Vaginal Deliveries 8,643**

Operative Vaginal Deliveries **405**

Operative Vaginal Delivery Rate **4.7%**

Vaginal Birth After Cesarean (VBAC) Rate **20.9%**

**Cesarean Deliveries 3,399**

Cesarean Delivery Rate **28.2%**

**Total Hysterectomies 735**

Laparoscopic **306**

Robotic **256**

Abdominal **105**

Vaginal **68**

**Total Gynecologic Procedures**

**4,700**

Benign Gynecologic Surgeries **2,846**

Minimally Invasive Gynecologic Surgeries **787**

Gynecologic Oncology Procedures **642**

Urogynecologic Procedures **425**

**Total IVF Cycles 3,427**

Egg Retrievals **1,871**

Frozen Embryo Transfers **1,556**

**Intrauterine Inseminations**

**2,337**

**Cycles of Chemotherapy in Gynecological Malignancies**

**2,200+**

**Obstetric and Gynecologic Ultrasound Studies**

**37,000+**



## Highlights

### Health care for LGBTQ patients

The Department of Obstetrics and Gynecology is dedicated to meeting the unique care needs of LGBTQ patients. We have worked closely with community partners and the Northwestern University Office of Diversity and Inclusion to better identify these patients' needs as they relate to individual care and gender-inclusive facilities. We strive to create psychologically safe spaces by providing our physicians and staff with extensive training in gender-inclusive language and care, and through improvements in our gender-inclusive documentation and all-gender facilities.

Minimally invasive gynecologic surgeons in the Department of Obstetrics and Gynecology are founding members of the Northwestern Medicine Gender Pathways Program, the first multidisciplinary program in the Chicago area to address the medical and surgical needs of our transgender and nonbinary patients. We work closely with surgeons in the Plastic Surgery and Urology Departments to identify the needs of each patient and create surgical plans that match their

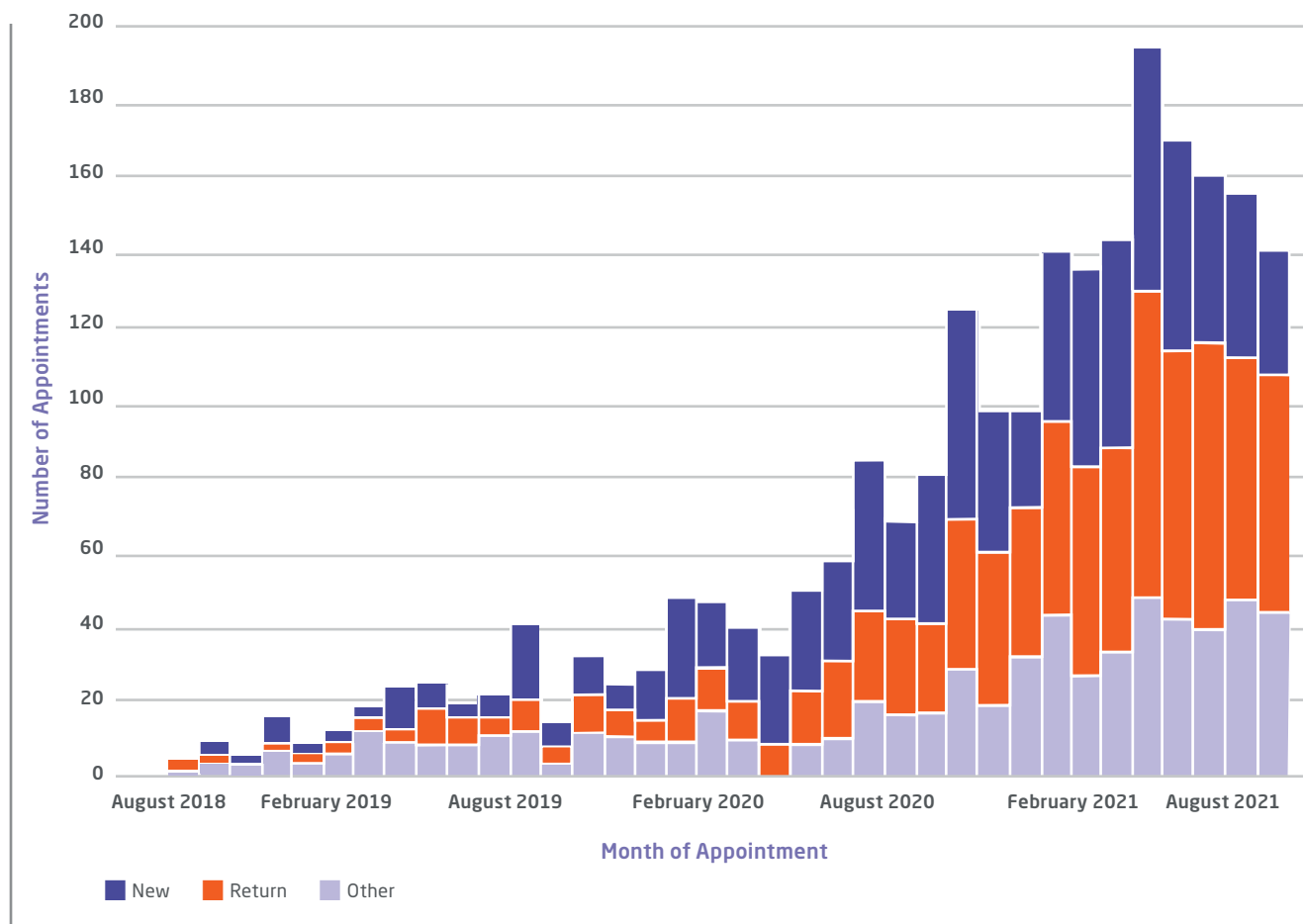
individual desires for transition. The program includes specialists from across Northwestern Medicine in:

- Medical gynecology
- Reproductive endocrinology and infertility
- General internal medicine
- Adult endocrinology
- Speech therapy
- Psychology
- Psychiatry

With a robust team of experienced practitioners, we are better able to offer comprehensive care, focusing on the acute needs of patients undergoing surgical transition while also considering preventive care for their long-term overall health.



## Growth of the Gender Pathways Program: Outpatient Appointments



\*\*“Other” category includes, but is not limited to: Transfer of Care, Consultation, Annual Exam, IVF Plan, Post-op Visit, Pre-op Visit, Procedure 30, Pre-op H&P (P), Procedure 90, Office Visit Extended (P), Uro Post-op, Post-op OB-GYN CCG, Post-op, Pre-op, Transfer of Care Annual, Hospital/ER Follow-Up, Procedure 60, Cystoscopy, Urodynamics With Cystoscopy, Procedure 45, Procedure 15, Pre-op, Post-op, Urodynamic Testing, Ultrasound FRM

## Center for Health Equity Transformation

The [Center for Health Equity Transformation \(CHET\)](#) aims to improve health for all by exposing root causes of health inequities and serving as a hub that pushes boundaries in research, education, workforce development and community engagement.

CHET defines health equity as the prioritization of historically marginalized and disenfranchised groups in order to extend and provide the fair and just opportunity for access and use of quality health and non-health social services, such as housing and education, without discrimination, racism, and additional undue burdens that create and sustain obstacles to health.

CHET's research addresses many racial disparities, especially in maternal health. Black and Latin American pregnant people have the highest risk of maternal mortality and severe maternal morbidity compared to any other group in the United States. The *OPTIMIZE* research study, funded by the National Institute on Minority Health and Health Disparities, is an evaluation of a comprehensive perinatal care checklist to mitigate maternal health disparities.

Similarly, the *Navigating Wellness* project utilizes library partnerships to improve health equity by increasing accessible health information for underserved populations. The supplemental module, *Well Mama*, addresses structural racism by creating accessible information and resources tailored to pregnant people in racial and ethnic minority groups. Both projects aim to increase health equity in maternal health through improved care quality and accessibility.

## Diversity, Equity and Inclusion Committee

We recognize the critical importance that [diversity, equity and inclusion](#) play in the success of our department's mission. We are committed to fostering an environment where these values guide us, and we welcome all we serve. In doing so, we have made significant strides to establish an infrastructure for sustainable and impactful diversity, equity and inclusion (DEI) efforts.

Departmental leadership commissioned an OB-GYN DEI Committee with representation from leadership, faculty, trainees and administration. Tasked with examining and developing diversity, equity and inclusion efforts for the department, the committee has identified key initiatives and created working groups to advance work in those areas. The committee is now working to expand and include nursing, staff and research personnel.

## Our Health System Clinician Faculty

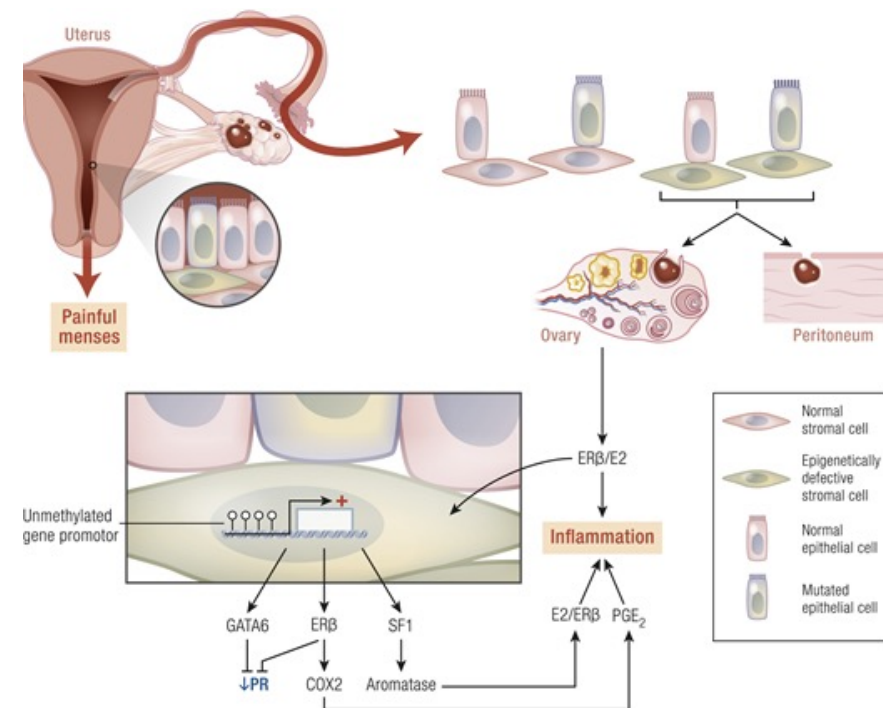
The Health System Clinician (HSC) faculty body of Prentice Women's Hospital is a group of approximately 100 faculty members from 18 self-employed practice groups. The HSC practices have a stellar reputation for outstanding care and professionalism. The HSC of Prentice represent an impressively collaborative group of communities of private practices and contribute significantly to our academic mission. The practices participate in resident and medical student education and serve as mentors and preceptors.

Many of these faculty participate in the hospital committees and boards of Northwestern Memorial Hospital, including a past chief of the medical staff. The HSC have close working relationships with the full-time faculty subspecialists of Prentice and support the recruitment of patients for important clinical research.

## Chicago Institute for Fetal Health

The [Chicago Institute for Fetal Health \(CIFH\)](#) is the regional leader in complex fetal surgery. The institute provides antenatal counseling and care, plus intervention and management. The multidisciplinary team approach allows for both the pregnant patient and fetus to receive optimal care. For FY21, 2,817 multidisciplinary consultations were performed for such conditions as bladder outlet obstruction, various neurological abnormalities, complicated twin pregnancies and complex cardiac conditions. The first fetoscopic myelomeningocele repair was performed in November 2020. In FY21, a total of 55 procedures were performed. These include open and fetoscopic myelomeningocele repairs, selective fetoscopic laser photocoagulation for complex twin pregnancies, EXIT procedures for various chest masses and bladder shunt procedures.





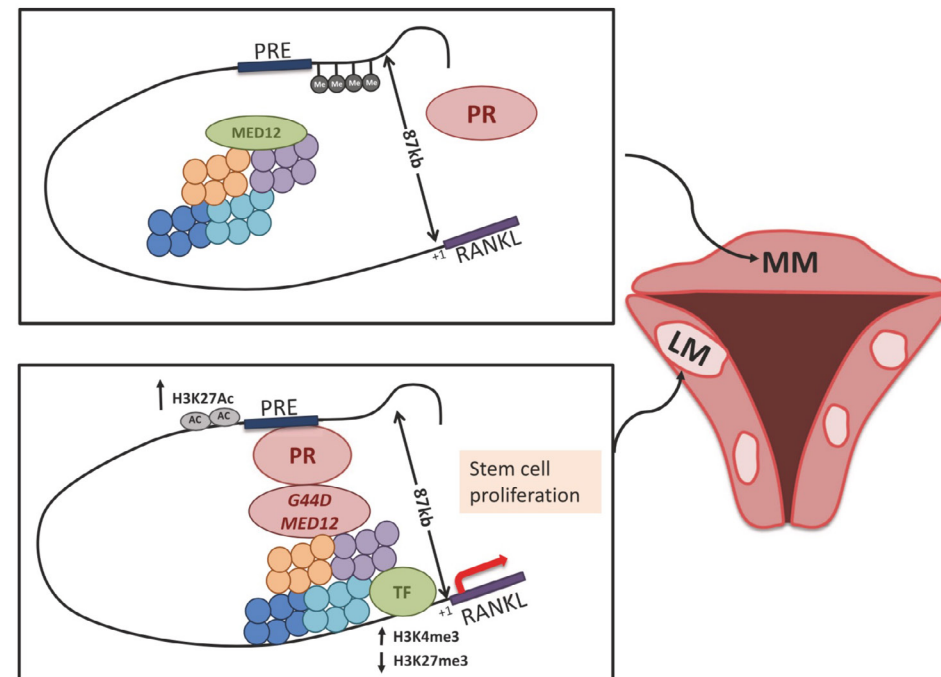
## References\*

- \*Bold names denote Northwestern Medicine Department of Obstetrics and Gynecology faculty, trainees and staff at the time of publication.
- Bulun SE, Yilmaz BD, Sison C, Miyazaki K, Bernardi L, Liu S, Kohlmeier A, Yin P, Milad M, Wei J.** *Endometriosis.* *Endocr Rev.* 2019;40(4):1048-1079.
- Critchley HOD, **Babayev E, Bulun SE**, Clark S, Garcia-Grau I, Gregersen PK, Kilcoyne A, **Kim JJ**, Lavender M, Marsh EE, et al. *Menstruation: science and society.* *Am J Obstet Gynecol.* 2020;223(5):624-664.
- Bulun SE.** *Endometriosis.* *N Engl J Med.* 2009;360(3):268-79.
- Pavone ME, Bulun SE.** *Aromatase inhibitors for the treatment of endometriosis.* *Fertil Steril.* 2012;98(6):1370-9.
- Bulun SE, Cheng YH, Yin P, Imir G, Utsunomiya H, Attar E, Innes J, Julie Kim J.** *Progesterone resistance in endometriosis: link to failure to metabolize estradiol.* *Mol Cell Endocrinol.* 2006;248(1-2):94-103.
- Miyazaki K, Dyson MT, Coon V JS, Furukawa Y, Yilmaz BD, Maruyama T, Bulun SE.** *Generation of progesterone-responsive endometrial stromal fibroblasts from human induced pluripotent stem cells: role of the WNT/CTNNB1 pathway.* *Stem Cell Reports.* 2018;11(5):1136-1155.

## Endometriosis Research Program at Northwestern Medicine (Established 2003)

Endometriosis is an estrogen-dependent chronic inflammatory and systemic illness that affects an estimated 200 million people across the world. It is the most common cause of chronic pelvic pain and also causes infertility. Our research team has made the following contributions to the body of knowledge about this condition.

- Aromatase enzyme, which is essential for producing estrogen, plays a central role in the mechanism of endometriosis. Our research was instrumental in introducing aromatase inhibitors as a new class of medications to treat endometriosis.
- We contributed to the concept of progesterone resistance, whereby endometrial and endometriosis tissues do not respond to progesterone in a healthy manner. This concept led to the use of selective progesterone receptor modulators (SPRMs) to be introduced as a new class of medications in the experimental treatment of endometriosis.
- Our work provided ample molecular evidence that endometriosis originates from intrauterine endometrial tissue, which migrates via backward menstruation through the uterine tubes onto the ovaries, bowel and other lower abdominal tissues.
- Our research identified epigenetic defects in DNA programming that play a central role in the mechanism of endometriosis.
- We were able to differentiate patient-derived induced pluripotent (iPS) cells from healthy endometrial stromal cells, opening the way for designing stem cell-based treatments of endometriosis. This work led to a number of paradigm shifts in our understanding of endometriosis and introduced two new classes of medications, aromatase inhibitors and SPRMs, to treat the symptoms of this formidable disease.



## Uterine Fibroid Research Program at Northwestern Medicine (Established 2004)

Uterine fibroids represent the most common tumor in people assigned female at birth and cause significant morbidity and suffering, including severe uterine bleeding, anemia, early pregnancy loss and concealment of other tumors of malignant nature. Our team has made significant contributions to the understanding of the causes and mechanisms of fibroids.

- We isolated tumor stem cells and showed that they are indispensable for fibroid growth.
- We showed that the sex steroid hormone progesterone is also indispensable for the development and growth of almost all fibroids. This led to the development of new medications to target progesterone and shrink fibroid tumors.
- We demonstrated that nuclear proteins that bind to DNA of fibroid cells facilitate the growth of fibroids, and they can be targeted with medications.
- We showed that major signaling pathways involving the critical enzyme, AKT cross-talks with progesterone to facilitate each other's actions for tumor growth. Experimental targeting of AKT also shrinks human fibroid tumors grown in animal models.
- Most of these pathways also cause tumor growth by building up large amounts of fibrosis or scar tissue between the tumor cells for further tumor expansion. Our work stimulated the interest of the pharmaceutical industry to develop new medications such as anti-progestins, exemplified by the introduction of ulipristal acetate in the European Union, although its use has been limited because of rare incidents of liver toxicity.

## References\*

\*Bold names denote Northwestern Medicine Department of Obstetrics and Gynecology faculty, trainees and staff at the time of publication.

**Bulun SE.** Uterine fibroids. *N Engl J Med.* 2013;369(14):1344-55.

**Moravek MB, Yin P, Ono M, Coon JS 5th, Dyson MT, Navarro A, Marsh EE, Chakravarti D, Kim JJ, Wei JJ, Bulun SE.** Ovarian steroids, stem cells and uterine leiomyoma: therapeutic implications. *Hum Reprod Update.* 2015;21(1):1-12.

**Liu S, Yin P, Xu J, Dotts AJ, Kujawa SA, Coon V JS, Zhao H, Dai Y, Bulun SE.** Progesterone receptor-DNA methylation crosstalk regulates depletion of uterine leiomyoma stem cells: a potential therapeutic target. *Stem Cell Reports.* 2021;16(9):2099-2106.

**Ono M, Yin P, Navarro A, Moravek MB, Coon JS 5th, Druschitz SA, Serna VA, Qiang W, Brooks DC, Malpani SS, Ma J, Ercan CM, Mittal N, Monsivais D, Dyson MT, Yemelyanov A, Maruyama T, Chakravarti D, Kim JJ, Kurita T, Gottardi CJ, Bulun SE.** Paracrine activation of WNT/β-catenin pathway in uterine leiomyoma stem cells promotes tumor growth. *Proc Natl Acad Sci U S A.* 2013;110(42):17053-8.

**Liu S, Yin P, Kujawa SA, Coon JS 5th, Okeigwe I, Bulun SE.** Progesterone receptor integrates the effects of mutated MED12 and altered DNA methylation to stimulate RANKL expression and stem cell proliferation in uterine leiomyoma. *Oncogene.* 2019;38(15):2722-2735.





**Faculty spotlight:**  
**Melissa A. Simon, MD, MPH**

Melissa A. Simon, MD, MPH, Gardner Professor and vice-chair for research in the Department of Obstetrics and Gynecology, runs one of the largest dry laboratory research enterprises in the country. Dr. Simon is a leader in implementation science research aimed at promoting health equity focused on diverse underserved groups, and she has received funding from the National Institutes of Health and foundations in support of this work.

Dr. Simon's research efforts include deployment of several patient navigation initiatives designed to improve access to preventive and other health services spanning:

- Breast and cervical cancer screening, diagnostic follow-up and treatment
- Pregnancy
- Mental health
- Elder well-being

Dr. Simon is founder and director of the Center for Health Equity Transformation and founder of the [Chicago Cancer Health Equity Collaborative](#), a National Cancer Institute comprehensive cancer partnership led by Robert H. Lurie Comprehensive Cancer Center of Northwestern University at Northwestern Memorial Hospital; Northeastern Illinois University; and University of Illinois at Chicago. In 2021, she was elected to the National Academy of Medicine.

**Simon Lab**

Total Grant Funding	<b>\$4,836,407</b>
NIH Funding	<b>\$4,518,908</b>
Active Grants	<b>13</b>
Publications	<b>276</b>

# Research

## Our Impact on Research\*

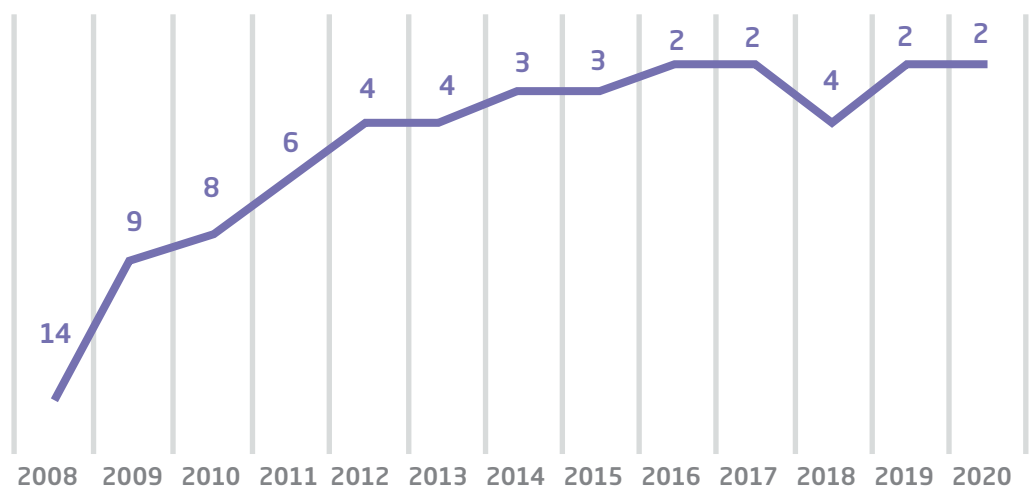
- **Ranked No. 4 by *U.S. News & World Report*, 2021, Best Medical Schools (Northwestern University Feinberg School of Medicine)**
- **No. 2 among all OB-GYN departments in the U.S. in NIH funding for 2020\*\***
- **\$18,319,763 in NIH funding**
- **\$26,573,845 in total grant funding**
- **96 proposals submitted, totaling \$171,514,578**

\*Data for FY21

\*\*The most recent available ranking at the time of writing (source: Blue Ridge Institute for Medical Research.



### NIH Ranking by Total Funding



Source: Blue Ridge Institute for Medical Research

### Current major research programs established over the past 20 years

#### Funded by National Cancer Institute:

[Chicago Collaborative to Promote and Advance Cancer Health Equity](#)

[Ovarian Cancer Research Program](#)

#### Funded by National Institute of Child Health and Human Development:

[Northwestern Uterine Fibroid Research Center](#)

[Endometriosis Research Program](#)

[Fertility Preservation Program](#)

[Reproductive Medicine Network Site](#)

[Maternal-Fetal Medicine Units Network Site](#)

[K12-Women's Reproductive Health Research Career Development Center](#)

# Education

**No. 3**

**Doximity Ranking:  
Residency Navigator for  
National Reputation**

## **6 clinical fellowships and 16 fellows**

Maternal-Fetal Medicine  
**3 Fellows**

Gynecologic Oncology  
**3 Fellows**

Female Pelvic Medicine and  
Reproductive Surgery  
**3 Fellows**

Reproductive Endocrinology  
and Infertility  
**3 Fellows**

Minimally Invasive  
Gynecologic Surgery  
**2 Fellows**

**Newly ACGME-accredited:**  
Complex Family Planning  
**2 Fellows**



**Residency  
program facts:**

**48**

**Residents**

**100%**

**board pass rate for both  
qualifying and certifying  
exams for the past  
5+ years**

**75%**

**of graduates apply and  
successfully match for  
competitive subspecialty  
fellowships**

**26%**

**of residents come  
from backgrounds  
underrepresented  
in medicine**

**Significant growth in  
gynecological surgical  
volume for trainees over  
the past five years**

## Advanced clerkships

For fourth-year medical students, the Department of Obstetrics and Gynecology at Feinberg School of Medicine offers many sub-internship options. To fulfill the sub-internship requirement, Feinberg students now have the option to complete this with our department either in Maternal-Fetal Medicine or Gynecologic Oncology.

**Each month, we can accept up to four sub-internship students.**

The sub-internship differs from a fourth-year elective by having elevated expectations of students to behave

like interns, taking ownership over admitted patients, practicing order writing, rounding and even taking overnight calls.

Additionally, our students have access to electives in Complex Family Planning, Reproductive Endocrinology and Infertility, Clinical Genetics, Urogynecology and Office Practice. Each of these electives accepts one student at a time and immerses them in appropriate clinical and surgical environments.







## Divisions

The divisions within the Northwestern Medicine Department of Obstetrics and Gynecology provide specialized education and training programs, conduct research and provide patient care through our affiliated hospitals and care sites.

## Reproductive Endocrinology and Infertility

### Division summary

The [Northwestern Medicine Reproductive Endocrinology and Infertility \(REI\) Division](#) in the [Center for Fertility and Reproductive Medicine](#) has 14 faculty, including clinical experts in the diagnosis and management of complex reproductive endocrine disorders, treatment of infertility, preservation of fertility and psychological impact of reproductive disorders.

Team members lead clinically relevant research and collaborate with investigators across the Northwestern University campus to investigate and answer pressing questions in reproductive medicine.

A number of faculty hold key leadership roles in national and international reproductive health and research organizations. Collectively, the faculty and their work attract world-class fellows to the REI Fellowship training program, rounding out tripartite excellence in clinical care, research and education.

### Faculty



**Emily S. Jungheim, MD, MSCI**  
(Division Chief)

Lia A. Bernardi, MD, MSCI

Christina E. Boots, MD, MSCI

Serdar E. Bulun, MD (Chair)

Eve C. Feinberg, MD

Kara N. Goldman, MD

Tarun Jain, MD

Helen H. Kim, MD

Susan C. Klock, PhD

Angela K. Lawson, PhD

Mary Ellen G. Pavone, MD, MSCI

Joan K. Riley, PhD, HCLD

Amelia C. Swanson, PhD

Jessica R. Walter, MD, MSCE

### Innovation and highlights

- Vetted a number of software options to move IVF embryology laboratory data to a digital format for improved efficiency of clinical care. Mellowood Medical Chosen solution will be implemented this fiscal year.
- Initiated a process improvement project for patient onboarding to IVF to address changes in patient care due to the COVID-19 pandemic and to improve workflow.
- Improving incorporation of genetic testing tools into the IVF program and improving patient understanding of available options for prevention of significant genetic disease. This project has included incorporation of a genetic counselor and an educational video for new patients regarding genetic carrier testing options.

### FY21 key achievements



#### Clinical

Saw significant clinical growth in the number of oocyte retrievals and transfers

Incorporated a genetic counselor to improve:

- Support and care of patients considering IVF to avoid vertical transmission of heritable disease
- Patient understanding of genetic testing in reproductive medicine (including prenatal carrier testing and aneuploidy testing of embryos)

Incorporated telehealth



#### Reproductive Endocrinology and Infertility team

Left to right: Jessica Walter, MD, Joan Riley, PhD, HCLD, Susan C. Klock, PhD, Mary Ellen Pavone, MD, Lia Bernardi, MD, Serdar Bulun, MD, Angela Lawson, PhD, Christina Boots, MD, Emily Jungheim, MD [Division Chief], Tarun Jain, MD, Eve Feinberg, MD, Helen Kim, MD, Kara Goldman, MD, Amelia Swanson, PhD



#### Research

Total Grant Funding	\$1,063,608
NIH Funding	\$619,731
Active Grants	6
Publications*	52

\*In calendar year 2020

Reproductive Medicine Network grant (R01): Launched Pre-IVF Treatment With a GnRH Antagonist in Women With Endometriosis – A Prospective Double Blind Placebo Controlled Trial (PREGnant)



#### Education

Elnur Babayev, MD, MSc, third-year fellow, received a Friends of Prentice Grant for his work on fertility preservation and the study of potential differences in oocyte maturation and egg development between adolescents and adults

Ten fellow-involved studies were published in 2020

During the course of 2020, REI fellows presented their research at several virtual national meetings:

- The American Society for Reproductive Medicine
- American College of Obstetrics and Gynecology
- American Association of Gynecologic Laparoscopists
- The Society for Reproductive Investigation



## Key Faculty Awards and Honors

### **Eve C. Feinberg, MD**

President, Society for Reproductive Endocrinology and Infertility  
Member, American Society for Reproductive Medicine COVID-19 Task Force

### **Kara N. Goldman, MD**

American Society for Reproductive Medicine 2021 Scientific Congress Prize Paper Award: Investigating the Impact of mTOR Inhibitor on Transgenerational Offspring Health and Fertility

### **Tarun Jain, MD**

Appointed to the Executive Council of the Society for Assisted Reproductive Technology (SART)  
Chair, SART Practice Committee  
Member, American Society for Reproductive Medicine Practice Committee

## Key division publications

Bold names denote Northwestern Medicine Department of Obstetrics and Gynecology faculty, trainees and staff at the time of publication.

Bedrick BS, Eskew AM, Chavarro JE, **Jungheim ES**. Dietary patterns, physical activity, and socioeconomic associations in a Midwestern cohort of healthy reproductive-age women. *Matern Child Health J*. 2020;24(10):1299-1307.

Bedrick BS, Eskew AM, Chavarro JE, **Jungheim ES**. Self-administered questionnaire to screen for polycystic ovarian syndrome. *Womens Health Rep (New Rochelle)*. 2020;1(1):566-573.

Blakemore JK, Trawick EC, Grifo JA, **Goldman KN**. Prognostic role of preimplantation genetic testing for aneuploidy in medically indicated fertility preservation. *Fertil Steril*. 2020;113(2):408-416.

**Hairston JC, Kohlmeier A, Feinberg EC**. Compassionate embryo transfer: physician practices and perspectives. *Fertil Steril*. 2020;114(3):552-557.

**Kohlmeier A, Sison CAM, Yilmaz BD, Coon V JS, Dyson MT, Bulun SE**. GATA2 and progesterone receptor interaction in endometrial stromal cells undergoing decidualization. *Endocrinology*. 2020;161(6):bqaa070.

**Lee JC, Bernardi LA, Boots CE**. The association of euploid miscarriage with obesity. *F S Rep*. 2020;1(2):142-148.

**McQueen DB, Mazur J, Kimelman D, Confino R, Robins JC, Bernardi LA, Yeh C, Zhang J, Pavone ME**. Can embryo morphokinetic parameters predict euploid pregnancy loss? *Fertil Steril*. 2021;115(2):382-388.

**McQueen DB, Robins JC, Yeh C, Zhang JX, Feinberg EC**. Embryo transfer training in fellowship: national and institutional data. *Fertil Steril*. 2020;114(5):1006-1013.

## General Obstetrics and Gynecology

### Division summary

The [Division of General Obstetrics and Gynecology](#) comprises 14 faculty (13 in FY21, and one new member as of September 1, 2021) who practice high-volume, broad-scope gynecology and obstetrics, and support all aspects of medical education and training in the department.

The division's mission is to *provide exemplary patient care in obstetrics and gynecology by prioritizing scholarship and education*. The division is highly regarded in the institution and recognized nationally as a high-performing group of academic specialists. In FY21, the division performed nearly 1,600 deliveries, and high volumes of inpatient and outpatient gynecologic procedures.

In addition to general obstetrics and gynecology, the division runs distinct programs in:

- Pediatric gynecology
- Adolescent health
- Cancer screening and detection
- Transgender care
- Vulvar conditions
- Menopause

Four faculty are fellowship-trained Complex Family Planning subspecialists.

Division faculty are recognized leaders in the field, and many have received distinctive honors from professional societies. Each faculty member serves important roles in our department, the local community and the national arena. They hold positions as:

- Medical society board members
- Grant reviewers
- Medical directors of hospital service units
- Clerkship directors
- Editorial board members
- American Board of Obstetrics and Gynecology oral examiners
- Legislative advocacy leaders
- IRB members
- Fellowship directors

### Faculty



**Jessica W. Kiley, MD, MPH**  
(Division Chief)

Weronika A. Armstrong, MD

Arjeme D. Cavens, MD

Emily A. Donelan, MD

Cassing Hammond, MD  
(Director of Section and Fellowship  
in Complex Family Planning)

Marybeth Lore, MD

Leanne R. McCloskey, MD, MPH

Tacoma A. McKnight, MD

Ismely F. Minaya, MD

Catherine A. Nosal, MD

Maura P. Quinlan, MD, MPH

Melissa A. Simon, MD, MPH  
(Vice Chair of Research)

Ashley M. Turner, MD, MS

Kristen R. Venuti, MD

Amber N. Watters, MD

## Innovation and highlights

- Amber N. Watters, MD, received Peer Choice and Best Project awards from the Northwestern Medicine Academy for Quality and Safety Improvement in 2021 for *CRIB in Your Crib: Outpatient Cervical Ripening for Induction of Labor (CRIB)*.
- Arjeme D. Cavens, MD, serves on the SASGOG/ACOG Uterine Cancer Expert panel.

## FY21 key achievements



### Clinical

Maintained clinical productivity and high outpatient and inpatient patient volumes during the COVID-19 pandemic

Made major service contributions for Prentice Ambulatory Care (or PAC) Resident Continuity Clinic, gynecology services and inpatient obstetrics

Had outstanding performance that exceeded target on patient experience metrics



### Research

NIH Funding	\$142,406
Active Grants	6
Publications	7

Received new grants, including those awarded by Friends of Prentice and Gates/Google



### Education

Appointed new clerkship leadership:

- Weronika A. Armstrong, MD, third-year clerkship director
- Marybeth Lore, MD, associate clerkship director

The fellowship in the Section of Complex Family Planning is a part of this division (see next section).

## Key Faculty Awards and Honors

### Leanne R. McCloskey, MD, MPH

Society of Academic Specialists in General Obstetrics and Gynecology Faculty Award

Member, Accreditation Council for Graduate Medical Education Complex Family Planning Milestones

2.0 Work Group

### Tacoma A. McKnight, MD

Elected to board of trustees, Central Association of Obstetricians and Gynecologists

### Melissa A. Simon, MD, MPH

Elected to National Academy of Medicine





### Key division publications

Bold names denote Northwestern Medicine Department of Obstetrics and Gynecology faculty, trainees and staff at the time of publication.

**McCloskey L, Wisner K, Cattan MK, Betcher HK, Stika C, Kiley J.** Contraception for women with psychiatric disorders. *Am J Psychiatry.* 2021;178(3):247-255.

Chen Y, Herrold A, Gallagher V, Martinovich Z, Bari S, Vike N, Vesce B, Mjaanes J, **McCloskey L**, Reilly J, Breiter H. Preliminary report: Localized cerebral blood flow mediates the relationship between progesterone and perceived stress symptoms among female collegiate club athletes after mild traumatic brain injury. *Journal of Neurotrauma.* 2021;38(13):1809-1820.

**Dahl CM, Turner A, Bales C, Cheu L, Singh A, Cowett A, McCloskey L.** Influence of the coronavirus disease 2019 (COVID-19) pandemic on delays in and barriers to abortion. *Obstet Gynecol.* 2021;138(5):805-808.

**Guo XM, Lore M, Madrigal JM, Kiley J, Zumpf K, Patel A.** Vasectomy interest and awareness among patients and their partners in prenatal clinics in the United States. *BMJ Sexual & Reproductive Health.* Published online ahead of print: July 16, 2021. doi: 10.1136/bmj.srh-2021-201062.

**Ross CM, Hammond C, Ralph JA, Balmert LC, Wisner KL, Kiley JW.** A prospective study to assess the impact of the etonogestrel implant on postpartum depression. *Eur J Contracept Reprod Health Care.* 2021;26(2):98-104.

## Section of Complex Family Planning

### Section summary

The Section of Complex Family Planning consists of four [Complex Family Planning subspecialists](#) who staff one of the region's longest-serving and most-respected hospital-based abortion practices.

The clinical practice includes a Complex Contraception Clinic for patients with medical or other issues that make contraception challenging.

For 20 years, the section has collaborated with [Family Planning Associates Clinic](#) to host the Fellowship in Complex Family Planning, an ACGME-approved program, training leaders in family planning throughout the United States. It also hosts a [Ryan Residency Training Program](#). In addition to education and research, the Section of Complex Family Planning's mission also includes advocacy – promoting the fundamental right to choose whether to become pregnant, remain pregnant or prevent pregnancy.



**Cassing Hammond, MD**  
(Section Director)

### FY21 key achievements



#### Clinical

Provide medical and surgical abortion for highly complex patients through 24 weeks gestation

Currently collaborating with leaders of the Obstetrics Triage Unit to introduce manual vacuum aspiration for treatment of early miscarriage

Expanded clinical services within the Complex Contraception Clinic to include integrated hematology consultation once a month



#### Research

Total Grant Funding **\$376,908**  
Active Grants **4**

Ongoing research projects include:

Transcutaneous Electrical Nerve Stimulation for Pain Control During Cervical Dilator Placement Prior to Dilation and Evacuation: A Randomized Controlled Trial

Trends in Non-resident Abortions in Illinois From 2005 – 2017

Factors Associated With an Increased Grief Response Following Termination of Pregnancy for Fetal or Maternal Indications



#### Education

Received ACGME accreditation in March 2021, one of the first programs to pursue accreditation since the ACGME assumed responsibility for fellowship accreditation and renamed the specialty Complex Family Planning in 2020. This was the culmination of a 30-year effort at the national level and a 20-year presence at Northwestern Medicine. The fellowship program has trained leaders in the field of Complex Family Planning throughout the United States.

Hosted a record number of students, including two from out of state, in the Complex Family Planning Fourth-Year Medical Student Elective.

## Gynecologic Oncology

### Division summary

The Gynecologic Oncology Division has grown substantially over the last three years. During that time, four high-caliber clinicians, surgeons, scientists and educators have been recruited. This has resulted in tremendous clinical growth and a new direction for education and research.

The division is well-funded and performing high-quality clinical trials that will influence the field of gynecologic oncology for many years. With new faculty, the division is entering a period of steady growth in all facets, including dissemination of high-quality care throughout the health system.

#### Faculty



**Edward J. Tanner III, MD, MBA,**  
(Division Chief)

Emma L. Barber, MD, MS

Emily M. Hinchcliff, MD, MPH

Jenna Z. Marcus, MD

Daniela E. Matei, MD  
(Division Chief of Reproductive  
Science in Medicine)

Dario R. Roque, MD

- Implemented a P20 Program Project Center Grant from the National Cancer Institute in Disparities for Gynecologic Oncology Care
  - This is a multi-institutional grant to create innovative translational research projects focusing on disparities in care with the goal of applying for a full SPORE in the near future. Necessary infrastructure, including data collection, tumor banking and solicitation for research collaborations, has been developed.
  - In support of this mission, Dario Roque, MD, received a Bristol Myers Squibb Foundation Diversity in Clinical Trials Career Development Program Grant, acknowledging his role as an investigator from an underserved minority group. Dr. Roque will help to implement further clinical trials programs that will better serve patients in minority and underserved groups across Northwestern Medicine.
- Implemented a multidisciplinary placenta percreta spectrum program involving Maternal-Fetal Medicine, Gynecologic Oncology and Obstetrical Anesthesia
  - All cases are discussed prior to surgery, and a detailed surgical plan developed.
  - The program has led to reduced perioperative morbidity and improved maternal outcomes since implementation.

### Innovation and highlights

- Recruited and placed faculty in positions that bridge across the Northwestern Medicine system, integrating new patient scheduling, tumor boards and clinical care among multiple hospitals
  - The goal is to standardize high-quality care across Northwestern Medicine, and increase research and educational opportunities for the Gynecologic Oncology program.



## FY21 Overview



### Clinical

Recruited two additional faculty with expertise in education and clinical trials

Built a new Hyperthermic Intraoperative Peritoneal Chemotherapy Program for management of advanced ovarian cancer

Volume has grown 15% from FY19



### Research

Total Grant Funding	\$3,153,681
NIH Funding	\$800,435
Active Grants	11
Publications	22

Emma L. Barber, MD, was awarded an R03 grant from the National Institute of Aging to evaluate rehabilitation during the neoadjuvant window of opportunity in older patients with ovarian cancer

Daniela E. Matei, MD, and collaborators in the Northwestern Medicine Nanoimaging Center received \$9,684,391 from the National Cancer Institute to explore chromatin function in ovarian cancer

Northwestern Medicine received generous donations from patients that supported hiring a new research nurse and research coordinator for divisional research projects



### Education

Gynecologic Oncology fellows have successfully participated in basic science laboratory experiences with Mazhar Adli, PhD, and Ji-Yong Julie Kim, PhD, which should lead to important publications over the next year

As a result of the high quality and volume of cases at Prentice, which have significantly increased over prior years, the fellowship has consolidated the clinical experience to Prentice Women's Hospital

Four medical students rotated on our new Gynecologic Oncology sub-internship rotation in summer 2020, all of whom applied to an OB-GYN residency in fall 2020

### Key Faculty Awards and Honors:

#### **Emma L. Barber, MD, MS**

Pepper Scholars Award (mini K): This award, given to support future leaders in geriatrics, is being used for Dr. Barber's work exploring perioperative care in aging patients (15% effort for two years)  
Faculty teaching award from residents\*

#### **Dario R. Roque, MD**

Career development grant from the Bristol Myers Squibb Foundation Diversity in Clinical Trials Career Development Program: The grant is to support Dr. Roque's early career clinical trials research efforts (\$120,000 in salary support for two years)  
Faculty teaching award from residents\*

#### **Edward J. Tanner III, MD, MBA**

Faculty teaching award from residents\*

\*Second year in a row when all clinical faculty won teaching awards from the residents

### Key division publications

Bold names denote Northwestern Medicine Department of Obstetrics and Gynecology faculty, trainees and staff at the time of publication.

**Barber EL, Garg R, Persenaire C, Simon M.** Natural language processing with machine learning to predict outcomes after ovarian cancer surgery. *Gynecol Oncol.* 2021;160(1):182-186.

Chiorean EG, Perkins SM, Strother RM, Younger A, Funke JM, Shahda SG, Hahn NM, Sandrasegaran K, Jones DR, Skaar TC, Schneider BP, Sweeney CJ, **Matei DE.** Phase I, pharmacogenomic, drug interaction study of Sorafenib and Bevacizumab in combination with Paclitaxel in patients with advanced refractory solid tumors. *Mol Cancer Ther.* 2020;19(10):2155-62.

**Cowan M, Swetzg WM, Adorno-Cruz V, Pineda MJ, Neubauer NL, Berry E, Lurain JR, Shahabi S, Taiym D, Nelson V, O'Shea KL, Kocherginsky M, Matei D.** Efficacy and safety of tivozanib in recurrent, platinum-resistant ovarian, fallopian tube or primary peritoneal cancer, an NCCN phase II trial. *Gynecol Oncol.* 2021;163(1):57-63.

Huh WK, Brady WE, Fracasso PM, Dizon DS, Powell MA, Monk BJ, Leath CA 3rd, Landrum LM, **Tanner EJ, et al.** Phase II study of axalimogene filolisbac (ADX-HPV) for platinum-refractory cervical carcinoma: an NRG oncology/gynecologic oncology group study. *Gynecol Oncol.* 2020;158(3):562-569.

**Persenaire C, Pyrzak A, Barber EL.** Survival and surgical approach among women with advanced ovarian cancer treated with neoadjuvant chemotherapy. *J Minim Invasive Gynecol.* 2021;S1553-4650(21)01212-7.

**Polan RM, Tanner EJ, Barber EL.** Minimally invasive surgery rate as a quality metric for endometrial cancer. *J Minim Invasive Gynecol.* 2020;27(6):1389-1394.

**Pyrzak A, Saiz A, Polan RM, Barber EL.** Risk factors for potentially avoidable readmissions following gynecologic oncology surgery. *Gynecol Oncol.* 2020;159(1):195-200.

**Roque DR, Zhang L, Wysham WZ, Han J, Sun W, Yin Y, et al.** The effects of NT-1044, a novel AMPK activator, on endometrial cancer cell proliferation, apoptosis, cell stress and in vivo tumor growth. *Front Oncol.* 2021;11:690435.

Russo S, Walker JL, Carlson JW, Carter J, Ward LC, Covens A, **Tanner EJ, et al.** Standardization of lower extremity quantitative lymphedema measurements and associated patient-reported outcomes in gynecologic cancers. *Gynecol Oncol.* 2021;160(2):625-632.

## Maternal-Fetal Medicine

### Division summary

The [Maternal-Fetal Medicine Division](#) has 15 physician faculty and provides compassionate, collaborative medical care to high-risk obstetrical patients. The division is dedicated to advancing the care of the pregnant patient and fetus by being leaders in clinical care, education and research.

In addition to providing prenatal care, division members are experts in labor and delivery, antepartum care of patients with complex conditions, obstetrical ultrasound and prenatal diagnosis. In conjunction with the [Chicago Institute for Fetal Health](#), the division provides the full spectrum of fetal therapy. The division aspires to provide care to patients in the greater Chicago area and beyond using various outreach methods.

### Faculty



**Janelle R. Bolden, MD**  
(Division Chief)

Nevert Badreldin, MD, MS

Patricia M. Garcia, MD, MPH

Susan E. Gerber, MD, MPH  
(Vice Chair of Education)

Michelle A. Kominiarek, MD, MS

Emily S. Miller, MD, MPH

LaTasha D. Nelson, MD, MS

Alan Peaceman, MD

Priya V. Rajan, MD  
(Medical Director of Diagnostic  
Ultrasound)

Michael L. Socol, MD

Bethany T. Stetson, MD

Lynn M. Yee, MD, MPH

Whitney B. You, MD, MPH

### Innovation and highlights

The [COMPASS: Collaborative Care Model for Perinatal Depression Support Services](#) offers treatment programs during and up to one year postpartum to address mental health concerns. Coordination of care is offered between obstetrician and mental health teams.

### FY21 key achievements



#### Clinical

Emily S. Miller, MD, MPH, chief of Obstetrics and a member of the Society for Maternal-Fetal Medicine COVID-19 Task Force, has served as a regional and national leader to address the COVID-19 pandemic in pregnant patients

Integrated telehealth to revolutionize the way obstetric care is delivered locally and beyond



#### Research

Total Grant Funding **\$3,673,112**

NIH Funding **\$2,941,746**

Active Grants **24**

Publications **74**

Division remains a key site of the Eunice Kennedy Shriver National Institute of Child Health and Human Development-funded [MFMU network](#), participating in many national trials and studies

The [Yee Lab](#) works diligently to promote health and equity in obstetrics

Emily S. Miller, MD, MPH, has received significant NIH grant funding to evaluate the impact of SARS-CoV-2 on pregnancy outcomes and health services interventions to optimize perinatal healthcare delivery during the pandemic



## Education

Fully accredited and successful three-year fellowship in Maternal-Fetal Medicine

Residents each year match in competitive MFM fellowships

Multiple division members honored with undergraduate and graduate teaching awards every year

## Key Faculty Awards and Honors

**William A. Grobman, MD, MBA**

Elected to National Academy of Medicine (2020)

**Emily S. Miller, MD, MPH**

Elected to the Perinatal Research Society

**Bethany T. Stetson, MD**

Council on Resident Education in Obstetrics and Gynecology in the American College of Obstetricians and Gynecologists

**Lynn M. Yee, MD, MPH**

Obstetrics and Gynecology “Top 10% Peer Reviewer for 2020”

## Key division publications

Bold names denote Northwestern Medicine Department of Obstetrics and Gynecology faculty, trainees and staff at the time of publication.

**Yee LM, Simon MA, Grobman WA, Rajan PV.** Pregnancy as a “golden opportunity” for patient activation and engagement. *American Journal of Obstetrics and Gynecology.* 2020;224(1):116-11.

**Badreldin N, Willert GG, Henricks AA, Peaceman A, Caldarelli LA, Yee LM.** Implementation of an antenatal late-preterm corticosteroid protocol at a high-volume tertiary care center. *Am J Obstet Gynecol MFM.* 2020;2(1):100076.

Mithal LB, Otero S, Shanes ED, Goldstein JA, **Miller ES.** Cord blood antibodies following maternal coronavirus disease 2019 vaccination during pregnancy. *Am J Obstet Gynecol.* 2021;225(2):192-194.

**Fisher SA,** Goldstein JA, Mithal LB, Isaia AL, Shanes ED, Otero S, **Miller ES.** Laboratory analysis of symptomatic and asymptomatic pregnant patients with SARS-CoV-2 infection. *Am J Obstet Gynecol MFM.* 2021;3(6):1000458.

Garfield CF, Lee YS, Warner-Shifflett L, Christie R, Jackson KL, Miller ES. Maternal and paternal depression symptoms during NICU stay and transition home. *Pediatrics.* 2021;148(2):e2020042747.

**Dahl CM, Zhang Y, Ong JX, Yeh C, Son M, Miller ES, Roy A, Grobman WA.** Patient characteristics associated with complications of external cephalic version. *J Obstet Gynecol MFM.* 2021;3(5):100411.



## Section of Diagnostic Ultrasound

### Section summary

The Section of Diagnostic Ultrasound provides comprehensive obstetric and gynecologic ultrasound services to patients throughout the region.

In addition to locations in downtown Chicago, the section has expanded its reach via remote ultrasound interpretation. All Northwestern Medicine diagnostic ultrasound locations in Chicago are accredited by the American Institute for Ultrasound in Medicine, and continually evaluate their practices to ensure the use of current techniques and frameworks for interpreting studies and counseling patients.

During the pandemic, section physicians learned new ways to enhance care via telemedicine. The section has grown with the Maternal-Fetal Medicine Division, and currently has 13 physicians offering interpretation and consultation for ultrasound-diagnosed obstetric and gynecologic conditions.

### Faculty



**Priya V. Rajan, MD**  
(Medical Director)

Leeber Cohen, MD

Ralph K. Tamura, MD

### Innovation and highlights

- Expanding clinical services, including increased use of telemedicine to expedite consultations on ultrasound findings
- Restructuring education for the range of learners that receive ultrasound
- Increasing ergonomic education and awareness with sonographers

### FY21 key achievements



#### Clinical

Established new workflows for outreach and to provide high-quality service to multiple off-site clinics

Providing high-quality ultrasound services at three Chicago locations as well as for multiple practices remotely

All ultrasound operations under the Department of Obstetrics and Gynecology have been awarded accreditation until 2023 in the areas of Standard Obstetric Ultrasound, Detailed Fetal Anatomic Evaluation Ultrasound, Gynecologic Ultrasound, and 3-D Gynecologic Ultrasound by the American Institute of Ultrasound in Medicine



#### Research

Several ultrasound research projects currently underway, most notably related to the impact of new guidelines for evaluation of fetal growth

Actively exploring ways to capitalize on large volume of ultrasounds to answer clinical questions

Robust clinical enterprise allows identification of patients for potential enrollment in several studies, including two Maternal-Fetal Medicine Unit Network (MFMU) trials evaluating the role of pessary in preventing preterm birth for patients with a short cervix

Serving as site for several MFMU multicenter studies



## Education

Provide ultrasound education to Obstetrics and Gynecology residents, Maternal-Fetal Medicine fellows, as well as Radiology residents, sonography students and medical students, and work with the directors of each of those programs to evaluate current teaching methods and ways to enhance the educational experience

Hold a monthly multidisciplinary conference attended by general OB-GYN and MFM providers as well as genetic counselors and geneticists, pathologists, neonatologists, and pediatric subspecialists to discuss the prenatal, genetic, pathologic and postnatal implications of a range of conditions that can be identified on prenatal ultrasound



## Female Pelvic Medicine and Reconstructive Surgery

### Division summary

The [Division of Female Pelvic Medicine and Reconstructive Surgery](#) includes seven board-certified subspecialty surgeon-scientists. The team members hold numerous local (Feinberg School of Medicine, McGaw Center for Graduate Medical Education) and national (ABOG, ACGME, AUGS, CREOG, IUGA, SGS, ACS) leadership positions, demonstrating a commitment to establishing standards for education, research and health equity in the field.

The division's Pelvic Health Program is a key clinical integration program within Northwestern Medicine Obstetrics and Gynecology. The goal of integration is to ensure that women with pelvic floor disorders have the same patient experience, outcomes and access to research participation at any regional location across the Northwestern Medicine health system.

The division offers several innovative, nationally recognized clinical and research programs to provide comprehensive subspecialty care for patients before, during and after pregnancy, and for young women with complex genitourinary anomalies. To improve health equity in the community, the division has expanded and now offers the same high-quality clinical care and access to clinical trials in the Cook County Health System through John H. Stroger, Jr. Hospital.

### Faculty



**Kimberly S. Kenton, MD, MS**  
(Division Chief)

Carol Emi Bretschneider, MD, MST

Oluwateniola (Teni) E. Brown, MD  
(Director for Diversity, Equity and Inclusion)

Sarah A. Collins, MD, MS

Julia Geynisman-Tan, MD

Christina Lewicky-Gaup, MD

Margaret G. Mueller, MD

### FY21 key achievements



#### Clinical

The Integrated Pelvic Health Program now serves patients in Chicago as well as the west, north and northwest suburbs, and plans to open a fourth site in the south suburbs in winter 2022

In partnership with pediatric surgeons and urologists from Ann & Robert H. Lurie Children's Hospital of Chicago and infertility specialists from Northwestern Medicine, a multidisciplinary team opened the [Collaborative Advanced Reconstructive Evaluation \(CARE\) Clinic](#) for Women with Congenital Anomalies to care for young women with complex genitourinary anomalies

A transdisciplinary team of urogynecologists, physical therapists and sexual counselors in the [Peripartum Evaluation and Assessment of the Pelvic Floor Around Delivery \(PEAPOD\) Clinic](#) provide comprehensive care to young women with birth injuries and have set the standard for high-impact research studies focused on prevention of birth injuries and improving birth-related pelvic floor outcomes



## Research

Total Grant Funding **\$5,045,820**

NIH Funding **\$4,192,541**

Active Grants **16**

Publications **47**

All divisional faculty are actively engaged in clinical and translational research centered around prevention and treatment of pelvic floor disorders, and health and gender equity as evidenced by the division's publication record

In the past year, the division received several important federally funded grants to:

- Study bladder health and prevention (U01 from the National Institute for Diabetes and Digestive and Kidney Diseases)
- Develop a culturally specific, home-based, nonsurgical intervention for patients in minority groups who have urinary incontinence (R01 from the National Institute for Diabetes and Digestive and Kidney Diseases)
- Facilitate Northwestern Medicine primary care screening for urinary incontinence (U18 from the Agency for Healthcare Research and Quality)



## Education

Consistently matches excellent Female Pelvic Medicine and Reconstructive Surgery fellow candidates who have all passed their certification examination, published their theses in respected journals and participate in academic medicine

Trains both Obstetrics and Gynecology as well as Urology residents from Northwestern McGaw Center for Graduate Medical Education in nonsurgical and surgical management of urinary incontinence and pelvic floor disorders with high evaluations

Actively engaged in research mentorship of numerous residents

Trains Obstetrics and Gynecology as well as Urology residents at Prentice Women's Hospital, John H. Stroger, Jr. Hospital and regional Northwestern Medicine sites

Currently holds local, national and international educational leadership positions, including:

- Feinberg School of Medicine (M2 Genitourinary Reproductive Module leader, Margaret G. Mueller, MD; Area of Scholarly Concentration leader, Julia Geynisman-Tan, MD)
- McGaw Center for Graduate Medical Education (assistant director for DEI: Oluwateniola E. Brown, MD)
- Accreditation Council on Graduate Medical Education (Obstetrics and Gynecology, Kimberly S. Kenton, MD; Female Pelvic Medicine and Reconstructive Surgery, Margaret G. Mueller, MD; Milestones Committee and Appeals Committee, Kimberly S. Kenton, MD)
- American College of Obstetricians and Gynecologists (Kimberly S. Kenton, MD, member, Council on Resident Education in Obstetrics and Gynecology)
- American Board of Obstetrics and Gynecology (Qualifying and Certify Exam Committees: Kimberly S. Kenton, MD; Specialty: Kimberly S. Kenton, MD, and Margaret G. Mueller, MD; and Subspecialty: Kimberly S. Kenton, MD, and Christina E. Lewicky Gaupp, MD. Subject Matter Expert Group for Female Pelvic Medicine and Reconstructive Surgery: Margaret G. Mueller, MD; and DEI: Christina E. Lewicky Gaupp, MD)
- American Urogynecologic Society (Education Committee Chair, Christina E. Lewicky Gaupp, MD; Board of Directors, Margaret G. Mueller, MD)
- International Urogynecological Association (Education Committee, Kimberly S. Kenton, MD; Prolapse Guidelines Committee, Sarah A. Collins, MD)



## Key Faculty Awards and Honors

### **Oluwateniola (Teni) E. Brown, MD**

John E. Franklin Commitment to Diversity Award,  
Northwestern University

### **Kimberly S. Kenton, MD, MS**

Raymond A. Lee Award from the American Urogynecologic  
Society for surgical advancement of urogynecology and  
teaching gynecologic surgery



Left to right: Margaret G. Mueller, MD, Sarah A. Collins, MD, Oluwateniola (Teni) Brown, MD, Kimberly S. Kenton, MD (Division Chief), Carol Emi Bretschneider, MD, Julia Geynisman-Tan, MD, Christina E. Lewicky-Gaupp, MD

## Key division publications

Bold names denote Northwestern Medicine Department of Obstetrics and Gynecology faculty, trainees and staff at the time of publication.

**Brown O, Mou T, Kenton K, Sheyn D, Bretschneider CE.** Racial disparities in complications and costs after surgery for pelvic organ prolapse. *Int Urogynecol J*. Published online ahead of print: March 23, 2021.

**Lewicky-Gaupp C, Mueller MG, Collins SA, Tavathia M, Geynisman-Tan J, Kenton KS.** Early secondary repair of obstetric anal sphincter injury breakdown: contemporary surgical techniques and experiences from a peripartum subspecialty clinic. *Female Pelvic Med Reconstr Surg*. 2021;27(2):e333-335.

**Bretschneider CE, Geynisman-Tan J, Mueller MG, Collins SA, Lewicky-Gaupp C, Kenton K.** Rates of sling procedures and revisions – a national Surgical Quality Improvement Program Database study. *Female Pelvic Med Reconstr Surg*. 2021;27(6):e559-e562.

**Bretschneider CE, Kenton K, Geller EJ, Wu JM, Matthews CA.** Pain after permanent versus delayed absorbable monofilament suture for vaginal graft attachment during minimally invasive total hysterectomy and sacrocolpopexy. *International Urogynecology J*. 2020;31(10):2035-41.

**Geynisman-Tan J, Mueller MG, Kenton KS.** Satisfaction with a rechargeable sacral neuromodulation system – a secondary analysis of the ARTISAN-SNM study. *Neurourol Urodyn*. 2021;40(1):549-554.

**Geynisman-Tan J, Kenton K, Tavathia M, Yee A, Gilbert JA, Collins S, Lewicky-Gaupp C, Mueller M.** Bare versus hair: do pubic hair grooming preferences dictate the urogenital microbiome? *Female Pelvic Med Reconstr Surg*. 2021;27(9):532-537.

**Mueller MG, Collins SA, Lewicky-Gaupp C, Tavathia M, Kenton K.** Restricted convalescence following urogynecologic procedures: 1-year outcomes from a randomized controlled trial. *Female Pelvic Med & Reconstruc Surg*. 2021;27(2):e336-e341.

**Mueller MG, Andy U, Brennaman L, Dieter AA, Kirby AC, Shepherd J, Gregory WT, Amundsen CL;** Developed by the AUGS Junior Faculty Research Network. A blueprint for creating mentored, collaborative networks for early-career physician-scientists. *Female Pelvic Med Reconstr Surg*. 2021;27(1):5-8.

**Komar A, Bretschneider CE, Mueller MG, Lewicky-Gaupp C, Collins S, Geynisman-Tan J, Tavathia M, Kenton K.** Concurrent retropubic midurethral sling and onabotulinumtoxin A for mixed urinary incontinence: a randomized controlled trial. *Obstet Gynecol*. 2021;137(1):12-20.

**Collins SA, Mueller MG, Geynisman-Tan J, Lewicky-Gaupp C, Kenton K.** Impact of a web-based decisional aid on satisfaction in women undergoing prolapse surgery. *Female Pelvic Med & Reconstruc Surg*. 2021;27(2):e309-e314.

## Clinical Genetics

### Division summary

The [Division of Clinical Genetics](#) comprises three physicians board-certified in both clinical genetics and obstetrics and gynecology and 11 genetic counselors. The division provides two distinct clinical services: reproductive genetics and cancer genetics.

Members serve and have served in numerous national positions for years, and the division is closely integrated with the Graduate Program in Genetic Counseling at Northwestern University.

The team has created an ovarian cancer detection and surveillance clinical program for patients at increased risk secondary to genetic predisposition or family history.

### Faculty



**Jeffrey S. Dungan, MD**  
(Division Chief)

Lee P. Shulman, MD

Andrew F. Wagner, MD

### FY21 key achievements



#### Clinical

Successfully converted to telehealth consultations during the COVID-19 pandemic

Initiated EDGe clinic for patients of all genders with BRCA genetic mutations

### Innovation and highlights

- Created the EDGe program (funded by the Woman's Board of Northwestern Memorial Hospital), a multidisciplinary clinical program for surveillance of individuals with hereditary cancer predisposition syndromes
- Recruited a genetic counselor to serve the Reproductive Endocrinology and Infertility Division and oversee complex genetic consultation for infertility patients
- Expanded cancer genetic services across multiple departments and Northwestern Medicine care centers



#### Research

Manuscripts Published **12**

Book Chapters Published **6**

Reproductive decision-making among BRCA-positive patients

Impact of ovarian cancer detection and surveillance program

Initiation of multidisciplinary stillbirth programs



## Education

Trains all third-year residents for one month

Serves as a clinical training site for 16 to 20 genetic counseling graduate students per year

### Key Faculty Awards and Honors

#### **Brittany DeGreef, MS, CGC**

President, Illinois Society of Genetic Professionals

#### **Jeffrey S. Dungan, MD**

Chair, American College of Medical Genetics and Genomics Professional Practice and Guidelines Committee

#### **Andrew F. Wagner, MD**

President-Elect, Central Association of Obstetricians and Gynecologists

## Key division publications

Bold names denote Northwestern Medicine Department of Obstetrics and Gynecology faculty, trainees and staff at the time of publication.

Gregg AR, Aarabi M, Klugman S, Leach ST, Bashford MT, Goldwasser T, Chen E, Sparks TN, Reddi HV, Rajkovic A, **Dungan JS**, ACMG Professional Practice and Guidelines Committee. Screening for autosomal recessive and X-linked conditions during pregnancy and preconception: a practice resource of the American College of Medical Genetics and Genomics (ACMG). *Genet Med.* 2021;23(10):1793-1806.

**McQueen DB**, Warren CM, Xiao AH, Shulman LP, Jain T. Disparities among infertility patients regarding carrier screening, sex selection, and gene editing. *J Assist Reprod Genet.* 2021;38(9):2319-2325.

Kasaniit KE, Haque IS, Goldberg JD, **Shulman LP**, Muzzey D. Genetic ancestry analysis on >93,000 individuals undergoing expanded carrier screening reveals limitations of ethnicity-based medical guidelines. *Genet Med.* 2020;22(10):1694-1702.

## Minimally Invasive Gynecologic Surgery

### Division summary

The Minimally Invasive Gynecologic Surgery division anchors patient care in the Center for Complex Gynecology, a multidisciplinary center for collaborating specialists from:

- Minimally Invasive Gynecologic Surgery
- Reproductive Endocrinology and Infertility
- Physical Medicine and Rehabilitation
- Interventional Radiology
- Psychology
- Internal Medicine
- Sexual Medicine and Menopause

The center focuses on treatment for fibroids, endometriosis, pelvic pain, tubal disease, and vaginal and uterine anomalies in a space specifically designed to prioritize the patient experience.

To support patients, the space also provides access to:

- Three full-time physical therapists
- A physician assistant
- A nurse practitioner
- Sex therapists
- Ultrasound and laboratory services

Patient experience is carefully orchestrated to allow all information and tests required to be obtained prior to the initial visit so that a detailed care plan can be organized without multiple return visits. To complete the academic mission, the clinic:

- Has a full-time research coordinator on staff
- Has approximately 20 ongoing studies
- Offers an accredited AAGL fellowship with one fellow a year
- Hosts residents and students from Northwestern University's medical, physician assistant and nurse practitioner schools

### Faculty



**Magdy P. Milad, MD, MS**  
(Division Chief)

Angela Chaudhari, MD

Sarah K. Hwang, MD

Victor P. Trinkus, MD, MS

Susan Tsai, MD

Linda C. Yang, MD, MS

### Innovation and highlights

- Enhanced perioperative patient communication through instructional videos, booklet and Get Well Loop alert system
- Redesigned website with updated information, media and podcast formats
- Developed National Obstetric and Gynecologic Lecture Curriculum for Electrosurgery

### FY21 key achievements



#### Clinical

Susan Tsai, MD, Angela Chaudhari, MD, Linda Yang, MD, and Madgy Milad, MD, received Focused Practice Designation in Minimally Invasive Gynecologic Surgery from the American Board of Obstetrics and Gynecology

Added pain psychologist to multidisciplinary center

Consistently exceed Patient Likelihood to Recommend Provider goal with a score of 92 out of 100\*

\*Source: Medallia 2020





## Research

Total Grant Funding **\$347,989**

Active Grants **3**

Publications **10**

### Key studies underway:

- #EMPOWER study, the largest ever conducted to develop a noninvasive diagnostic test for endometriosis (Dot Laboratories, \$300,000; PI: Magdy P. Milad, MD)
- The Role of ICG in Detecting Endometriosis and Other Benign Complex Gynecologic Conditions (Storz, \$43,000; PI: Magdy P. Milad, MD)
- Understanding Endometriosis: Generation of Induced Pluripotent Stem Cells From Endometriosis Patients (Friends of Prentice, \$100,000; Co-PI: Magdy P. Milad, MD)



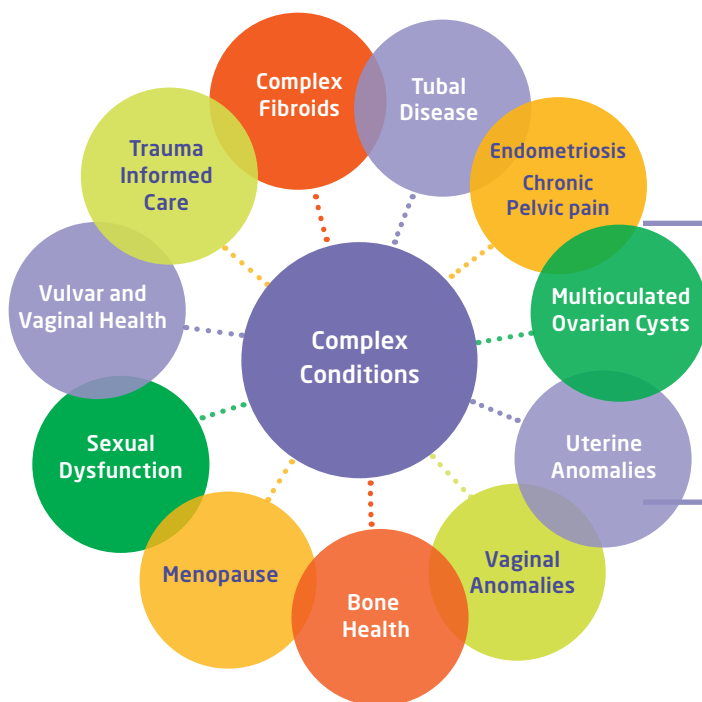
## Education

Consistently matches excellent Minimally Invasive Gynecologic Surgery fellow candidates

Offered MIGS Journal Club and Didactic series, including separate article discussion with outpatient clinical staff

Held fibroid conference and pre-operative planning conference in addition to development of weekly resident endoscopy rounds

Developed Fourth-Year Medical Student elective and hosted an undergraduate student summer intern



**The Center for Complex Gynecology is a unique center that has an on-site multidisciplinary team that includes board-certified specialists from a host of disciplines who provide care in a safe and comfortable clinical environment.**

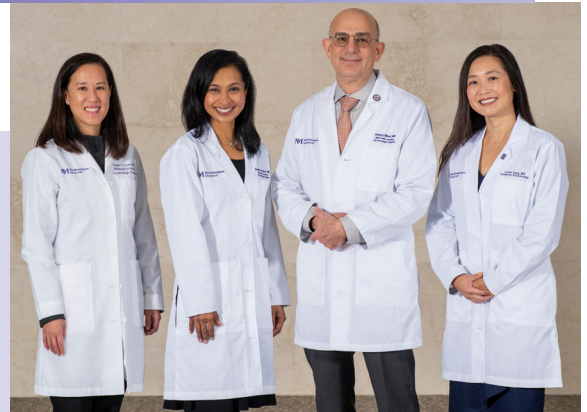
## Key Faculty Awards and Honors

### **Angela Chaudhari, MD**

Exemplary Professional Behavior in the Learning Environment, Northwestern University (2020)

### **Magdy P. Milad, MD, MS**

Recipient, Honor Your Mentor Recipient, Society of Gynecologic Surgeons (2020)



Left to right: Susan Tsai, MD; Angela Chaudhari, MD; Magdy P. Milad, MD, MS; Linda C. Yang, MD, MS

## Key division publications

Bold names denote Northwestern Medicine Department of Obstetrics and Gynecology faculty, trainees and staff at the time of publication.

Kho RM, Chang OH, Hare A, Schaffer J, Hamner J, Northington GM, Metcalfe ND, Iglesia CB, Zelivianskaia AS, Hur HC, Seaman S, **Mueller MG, Milad M**, Ascher-Walsh C, Kossl K, Rardin C, Siddique M, Murphy M, Heit M. Surgical outcomes in benign gynecologic surgery patients during the COVID-19 pandemic (SOCOVID study). *J Minim Invasive Gynecol.* 2021;S1553-4650(21)00390-3.

Leistico JR, **Saini P**, Futtner CR, Hejna M, Omura Y, **Soni PN, Sandlesh P, Milad M**, Wei JJ, **Bulun S, Parker JB**, Barish GD, Song JS, **Chakravarti D**. Epigenomic tensor predicts disease subtypes and reveals constrained tumor evolution. *Cell Rep.* 2021;34(13):108927.

**King NR, Lin E**, Yeh C, Wong JMK, Friedman J, **Traylor J, Tsai S, Chaudhari A, Milad MP**. Laparoscopic major vascular injuries in gynecologic surgery for benign indications: a systematic review. *Obstet Gynecol.* 2021;137(3):434-442.

Wu V, Mar W, **Milad MP**, Horowitz JM. Magnetic Resonance Imaging in the Evaluation of Female Infertility. *Curr Probl Diagn Radiol.* 2021;S0363-0188(21)00026-8.

**Butler S, Runge M, Milad MP**. A game show-based curriculum for teaching principles of reproductive infectious disease (GBS PRIDE Trial). *Southern Med J.* 2020;113(11):531-537.

**Guo XM, Runge M, Miller D**, Aaby D, **Milad MP**. A bundled intervention lowers surgical site infection in hysterectomy for benign and malignant indications. *IJGO.* 2020;150(3):392-397.

Morris SN, Fader AN, **Milad MP**, Dionisi HJ. Understanding the “scope” of the problem: Why laparoscopy is considered safe during the COVID-19 pandemic. *J Minim Invasive Gynecol.* 2020;27(4):789-791.

Munro MG, Advincula AP, Banks EH, Auguste TC, Chahine EB, Grace Chen CC, Curlin HL, Jorgensen EM, Kim JH, King CR, Lucas J, **Milad MP**, Mourad J, Siedhoff MT, Solnik MJ, Destephano CC, Thayn K; Essentials in Minimally Invasive Gynecology (EMIG) Steering Committee. Essentials in minimally invasive gynecology manual skills construct validation trial. *Obstet Gynecol.* 2020;136(1):83-96.

## Section of Sexual Medicine and Menopause

### Section summary

The Northwestern Medicine Center for Sexual Medicine and Menopause includes:

- Physicians
- Advanced practice clinicians
- Sex therapists certified by the American Association of Sexuality Educators, Counselors and Therapists
- Pelvic floor physical therapists

The multidisciplinary team works collaboratively in four distinct programs:

- **Program for Menopause.** Both hormonal and non-hormonal strategies are used to address vasomotor symptoms, genitourinary syndrome of menopause, and other repercussions of hypoestrogenemia. All clinicians are certified by the North American Menopause Society.
- **Program for Sexual Medicine.** While cultural norms, religious beliefs, trauma, social issues, general health and age all influence an individual's ability to have a normal sexual response, medical comorbidities such as endometriosis, diabetes and cancer often precipitate or complicate an existing problem. Dyspareunia, hypoactive sexual desire disorder and orgasmic disorders are among the conditions that are treated.
- **Program for Vulvar and Vaginal Health.** This unique program uses innovative medical and surgical approaches to treat common conditions, such as lichen sclerosus, vulvodynia and VIN, along with uncommon and complex vulvar conditions.
- **Women's Bone Program.** Bone health optimization starts prior to menopause. It includes identifying patients at high risk, addressing risk factors and providing recommendations to minimize progression to osteoporosis and fracture. If osteoporosis is present, the program offers comprehensive hormonal and non-hormonal treatment options.

### Faculty



**Lauren Streicher, MD**  
(Medical Director)

Traci A. Kurtzer, MD

Rajal C. Patel, MD

Kristi A. Tough DeSapri, MD

### Innovation and highlights

- Developed Women's Bone Program through regional collaborations, investment in TBS iNsight software, clinical staff trainings and system policy updates
- Revised clinical protocol and workflow for increased training and better efficiency for advanced practice providers and registered nurses who are certified by the North American Menopause Society

### FY21 key achievements



#### Clinical

Likelihood to Recommend Provider score of 95.5 out of 100\*

Addition of vulvar specialist, Rajal Patel, MD, in December 2020

\*Source: Medallia



## Research

Active Grants	2
Publications	1

One of three designated sites in the United States for fractional CO<sub>2</sub> laser therapy for survivors of gynecologic malignancies

Diabetic Retinopathy and Orgasmic Dysfunction (DROD) study underway with Northwestern Medicine Department of Ophthalmology



## Education

Led Family Medicine resident didactic: Social Determinants of Health Screening and Providing Trauma Informed Care

Led Emergency Medicine and Internal Medicine resident didactics: Neurobiology of Trauma and Providing Trauma Informed Care

Led discussions on sexual health with various student groups at Northwestern University, including the Medical Student Forum, Women's Business Association, Manbassadors and the Family Institute

## Key Faculty Awards and Honors

### **Kristi A. Tough DeSapri, MD**

Medical Student Teaching Award, Northwestern University Feinberg School of Medicine

### **Lauren Streicher, MD**

Castle Connolly Award for Outstanding Women in Medicine



Left to right, front row: Helen Strange, PT, DPT, OCS, Toshiko Odaira, PT, DPT, Rajal Patel, MD, Patricia Handler, MSN, FNP-C, Lauren Streicher, MD, Rachel Zar, MS, LMFT, CST, Jennifer Levy, MA, LCPC, CST  
Left to right, back row: Shantae Williams, PT, DPT., Kristi Tough DeSapri, MD, Audrey Fenwick, MS, PA-C, Traci Kurtzer, MD

## Key division publications

Bold names denote Northwestern Medicine Department of Obstetrics and Gynecology faculty, trainees and staff at the time of publication.

Quick AM, Dockter T, Le-Rademacher J, Salani R, Hudson C, Hundley A, Terstriep S, **Streicher L**, Faubion S, Loprinzi CL, Coleman JS, Wang KC, Lustberg M. Pilot study of fractional CO<sub>2</sub> laser therapy for genitourinary syndrome of menopause in gynecologic cancer survivors. *Maturitas*. 2021;144:37-44.

**Streicher L**. *Slip Sliding Away: Turning Back the Clock on Your Vaging*. WUDT Press; 2021.

**Streicher L**. *Hot Flash Hell: A Gynecologist's Guide to Turning Down the Heat*. WUDT Press; 2021.

**Tough DeSapri K**, Batur P. Contraception update: prevention of gynecologic malignancies and mood benefits. *J Womens Health (Larchmt)*. 2021;30(5):642-645.

**Tough DeSapri K**. Effect of abaloparatide on fracture incidence and bone mineral density in postmenopausal women with osteoporosis at highest risk for fracture. Presented at: North American Menopause Society Annual Symposium; 2021.

**Tough DeSapri K**. Unmet needs in OP: PCP perspective from a national advisory board. Abstract. Society of General Internal Medicine; 2021.

See SHC, Tan TL, **Kurtzer TA**, Gerami P, Guitart J, Yazdan P. Vulvar elastosis: a novel diagnostic entity. *Am J Dermatopathol*. 2021;43(6):418-422.



## Reproductive Science in Medicine

### Division summary

The mission of the [Reproductive Science in Medicine Division](#) is to grow and sustain a highly productive and well-funded research milieu where faculty discover, collaborate, thrive, train and mentor the next generation of reproductive scientists, while pushing the field forward. The division includes six tenure-track faculty, eight non-tenure-track faculty and two lecturers.

The division fosters much of the basic science efforts in the department and complements a high-volume clinical practice and parallel activities in clinical research, population science and community outreach. The main areas of scientific strength are:

- Nuclear receptor signaling (studied by Bulun, Chakravarti and Kim Labs)
- Epigenetic regulation of gene expression (studied by Bulun, Matei, Chakravarti and Adli Labs)
- Cancer biology and therapeutics (studied by Matei, Kim, Chakravarti and Adli Labs)
- Stroma and microenvironment (studied by Duncan, Bulun and Kim Labs)
- Reproductive Tract Micro-fluidics System Development (NIH-UH3, 2020 to 2022), Ji-Yong Julie Kim, PhD (PI)
- Chromatin Imaging in Ovarian Cancer Stem Cells (NCI-U01, 2021 to 2025), Daniela E. Matei, MD (MPI); Mazhar Adli, PhD (Co-investigator)
- Ovarian Biology Core Platform (Bill and Melinda Gates Foundation), Francesca E. Duncan, PhD (PI)

Division work focuses on common disorders of the reproductive tract, such as cancer, endometriosis, leiomyomas and ovarian failure. The division benefits from the collaborative relationship with Robert H. Lurie Comprehensive Cancer Center of Northwestern University.

The strengths of the division come from the depth and breadth of the science carried out by its investigators. Major projects include:

- Uterine Leiomyoma Research Center Program (NICHD-P50, 2019 to 2024), Serdar E. Bulun, MD (Contact PI)
- Disparities in Gynecologic Cancer (NCI-P20, Northwestern University Cancer Health Equity Research, 2020 to 2023), Melissa A. Simon, MD, MPH (Contact PI); Ji-Yong Julie Kim, PhD (Basic Co-lead, Co-investigator); Daniela E. Matei, MD (Core Co-lead)

### Faculty



**Daniela E. Matei, MD** (Division Chief)

Mazhar Adli, PhD

Serdar E. Bulun, MD (Chair)

Debabrata Chakravarti, PhD

Francesca E. Duncan, PhD

Ji-Yong Julie Kim, PhD

## FY21 key achievements



### Clinical

Division members actively collaborate with clinicians. For example:

- Serdar E. Bulun, MD, works with the Minimally Invasive Gynecologic Surgery and Reproductive Endocrinology and Infertility clinicians to use aromatase inhibitors innovatively in endometriosis, adenomyosis and infertility under research protocols
- Francesca E. Duncan, PhD, works with Kara N. Goldman, MD, and other Reproductive Endocrinology and Infertility clinicians to develop clinical research protocols to address ovarian aging and fertility preservation
- Daniela E. Matei, MD, translates her stem cell work in ovarian cancer together with her clinician colleagues in the Gynecologic Oncology Division



### Research

Total Grant Funding **\$6,846,155**

NIH Funding **\$3,975,405**

Highly impactful manuscripts published by division investigators are pushing the field forward

Collaborative science is highly valued and reflected in the existing funded collaborative grants and continued efforts to apply for P and U type program awards in uterine fibroids, endometriosis, ovarian cancer and fertility preservation



### Education

Graduate students (PhD or MD/PhD): 12; post-doctoral fellows: 12; clinical fellows: 2

Eunice Kennedy Shriver National Institute of Child Health and Human Development T32 grant for mentoring pre-doctoral students (two students per year)

The only master's program in Reproductive Sciences, led by Ji-Yong Julie Kim, MD, and Francesca E. Duncan, MD, trains five to 10 graduate students per year, who apply to PhD programs or proceed to work in research labs and clinical embryology labs

### Key Faculty Awards and Honors

#### Daniela E. Matei, MD

Chair, Clinical Oncology Study Section (CONC), National Institutes of Health

#### Francesca E. Duncan, PhD

Deputy editor-in-chief at *Molecular Human Reproduction*

## Key division publications

Bold names denote Northwestern Medicine Department of Obstetrics and Gynecology faculty, trainees and staff at the time of publication.

Leistico JR, **Saini P**, Futtner CR, Hejna M, Omura Y, Soni PN, **Sandlesh P**, **Milad M**, Wei JJ, **Bulun S**, **Parker JB**, Barish GD, Song JS, **Chakravarti D**. Epigenomic tensor predicts disease subtypes and reveals constrained tumor evolution. *Cell Rep*. 2021;34(13):108927.

**Wang Y**, **Zhao G**, Condello S, **Huang H**, **Cardenas H**, **Tanner EJ**, Wei JJ, Ji Y, Li J, Tan Y, Davuluri RV, Peter ME, Cheng JX, **Matei D**. Frizzled-7 identifies platinum-tolerant ovarian cancer cells susceptible to ferroptosis. *Cancer Res*. 2021;81(2):384-399.

**Sima LE**, Chen S, **Cardenas H**, **Zhao G**, **Wang Y**, Ivan C, **Huang H**, Zhang B, **Matei D**. Loss of host tissue transglutaminase boosts anti-tumor T cell immunity by altering STAT1/STAT3 phosphorylation. *Journal of Immunotherapy of Cancer*. 2021;9(9):e002682.

Lee O, Bosland MC, Wang M, Shidfar A, Hosseini O, Xuei X, Patel P, Schipma MJ, Helenowski I, **Kim JJ**, Clare SE, Khan SA. Selective progesterone receptor blockade prevents BRCA1 associated mammary tumors through modulation of epithelial and stromal genes. *Cancer Lett*. 2021;520:255-266.

**Liu S**, **Yin P**, Xu J, **Dotts AJ**, **Kujawa SA**, **Coon V JS**, **Zhao H**, Shilatfard A, Dai Y, **Bulun SE**. Targeting DNA methylation depletes uterine leiomyoma stem cell-enriched population by stimulating their differentiation. *Endocrinology*. 2020;161(10):bqaa143.

**Liu S**, **Yin P**, Xu J, **Dotts AJ**, **Kujawa SA**, **Coon V JS**, **Zhao H**, Dai Y, **Bulun SE**. Progesterone receptor-DNA methylation crosstalk regulates depletion of uterine leiomyoma stem cells. *Stem Cell Reports*. 2021;16(9):2099-2106.

Wei X, Yang J, Adair SJ, **Ozturk H**, Kuscü C, Lee KY, Kane WJ, O'Hara PE, Liu D, Demirlenk YM, Habieb AH, Yilmaz E, Dutta A, Bauer TW, **Adli M**. Targeted CRISPR screening identifies PRMT5 as synthetic combinatorial target with gemcitabine in pancreatic cancer. *Proc Natl Acad Sci U S A*. 2020;117(45):28068-28079.

**Amargant F**, **Manuel SL**, Tu Q, Parkes WS, Rivas F, **Zhou LT**, **Rowley JE**, Villanueva CE, Hornick JE, Shekhawat GS, Wei JJ, **Pavone ME**, Hall AR, Pritchard MT, **Duncan FE**. Ovarian stiffness increases with age in the mammalian ovary and depends on collagen and hyaluronan matrices. *Aging Cell*. 2020; 19(11):e13259.

Moyo MB, **Parker JB**, **Chakravarti D**. Altered chromatin landscape and enhancer engagement underlie transcriptional dysregulation in MED12 mutant uterine leiomyomas. *Nature Communications*. 2020;24;11(1):1019.

**Huang H**, **Wang Y**, Kandpal M, **Zhao G**, **Cardenas H**, Ji Y, **Chaparala A**, **Tanner EJ**, Chen J, Davuluri RV, **Matei D**. FTO-dependent N 6-methyladenosine modifications inhibit ovarian cancer stem cell self-renewal by blocking cAMP signaling. *Cancer Res*. 2020;80(16):3200-3214.