the path to excellence

2005-2006 Academic Year Report

Yale University School of Medicine
Obstetrics, Gynecology & Reproductive Sciences
From the Chair,

It gives me great pleasure to introduce you to this annual report of the Department of Obstetrics, Gynecology & Reproductive Sciences. During this past academic year, the Department continued its rapid expansion of both clinical and research programs. We again matched an excellent cadre of incoming residents and recruited top-flight subspecialty fellows. And, we have made substantial progress with our customer service as reflected in our patient satisfaction ratings.

As you will see on the following pages, our clinical sections have grown and expanded both in volume and scope of services. In partnership with the Yale-New Haven Hospital, we have created Obstetric and Gynecologic Councils in the past year which bring together community and full-time faculty physicians, nurse midwives, nurses, and administrators to enhance patient safety, patient and employee satisfaction, teaching and research. Our obstetric patient safety initiatives, which included team training, an expanded Labor and Birth hospitalist program, certification in electronic fetal monitoring, and new patient care protocols have resulted in unprecedented improvements in diverse indices of obstetrical patient outcomes, while garnering the highest hospital patient satisfaction scores ever recorded.

Through hard work and a dedicated team effort, our faculty clinical practices have succeeded in impressing our patients with our dedication to customer service. Patient satisfaction scores have exceeded 90% for the Yale Fertility Center for the first time, while our other sections continue to hover around a 90% overall satisfaction score. Our clinical programs are among the top-rated practices in the Yale Medical Group and we continue to have the largest relative percentage of faculty named to the New York and Connecticut Best Doctors lists. Our patients comment not only about the superior quality of medical care that they receive, but also they note the caring and helpful attitude of the reception, medical assistant, and nursing staff.

We’ve had good success in acquiring research grants in what has become an exceedingly challenging funding environment. The clinical sections have also developed a significant clinical research component to their activities, and have partnered successfully with our research scientists on numerous translational and

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Charles J. Lockwood, MD – Chair
basic reproductive biology projects. On the basic research front, we have added a number of new faculty with research interests that complement our long-standing strengths across all fields of reproductive science. Our overall grant portfolio has grown during this period as well, a significant accomplishment, particularly in light of the drastically reduced pay lines for the National Institutes of Health this fiscal year.

Our NIH-funded Yale Women’s Reproductive Health Research (WRHR) Scholars Training Program is now entering its third year. Our three Scholars have been quite productive, garnering awards for presentations of their mentored research projects at national meetings. Among them, they have one NIH-funded R03 grant and three submitted research proposals currently under review. We now have five junior faculty being trained with the support of NICHD K12 awards and two with K08 awards.

Our residency program continues to attract the very best medical school graduates. We have a truly remarkable incoming year of interns. In an era marked by declining numbers of U.S. medical graduates entering the field, we were able to attract our top choices to train at Yale. We have implemented a rigorous new academic curriculum and, in partnership with the Department of Surgery, have begun training using advanced laparoscopic simulators. Workshops in ultrasound and basic surgical skills have also been implemented. Similarly, the clinical sections were able to recruit their top choices for fellowship slots, which are now among the most competitive in the United States.

It has been a busy year, and this upcoming year is shaping up to be just as busy. All of us in the Department will be working hard to ensure that the Department continues to pursue excellence in training, clinical care, and research.
Obstetrics Service

Labor Floor Expansion

As the management of antepartum problems has increasingly focused on outpatient care, the number of triage visits to Labor and Delivery has nearly doubled over the past four years, to almost 6000 patient encounters annually. This area, which functions essentially as an Obstetric Emergency Department, will undergo a $950,000 renovation to more than triple the space and provide state-of-the-art fetal monitoring and five private rooms. Jointly planned with Yale-New Haven Hospital, this space will meet the needs of both high-acuity referrals and the low-risk mother who is unsure if labor has commenced.

Departmental Quality & Safety

The Obstetrics Service has essentially rebuilt its safety and quality process from the ground up. Overall, patient safety has become the first priority of each physician, nurse, resident, and fellow. To foster a radical change in culture, the following initiatives have been undertaken:

• Mandatory Team Training for every obstetric provider, based on the airline “crew resource management model.” This four-hour curriculum teaches basic communication skills, delineates chain of command, and empowers all members of the care team, regardless of rank or seniority, to speak up when they are uncomfortable with a clinical scenario.

• Mandatory Electronic Fetal Heart Rate Monitoring certification, based on a nationally recognized nomenclature. Fetal heart rate tracing interpretation has long been fraught with ambiguity and lack of reproducibility. This step was also undertaken to establish clear communication among members of the care team.

• A full-time Patient Safety Nurse has been hired. This senior staff member’s sole responsibility is to review “near misses” and adverse outcomes, teach effective communication, perform root cause analyses and brief event reviews, and scrutinize existing policy to ensure that routine care is evidence-based and reproducible.

• A Patient Safety Committee, comprised of University and community physicians, as well as midwives, residents, and nurses, has been empaneled and empowered. Its duties include:

  I. Review and evaluation of narrative reports of adverse outcomes
II. Review of adverse event data and evaluation for trends

III. Identification of areas where patient safety may be improved, and provision of draft policies to the Obstetrics Operations Committee for comment and action

IV. Notification of the Chair of any concerns regarding individual practice patterns, with recommendations for action

Gynecology Service
Inpatient Gynecologic Care At Yale-New Haven Hospital

The operating room nurses who routinely assist in Gynecologic Oncology surgeries are now participating in a program where they become familiar with our patients and the services that we offer by attending our ambulatory practices and selected rounds. This allows the operating room staff to be more integrated into the overall care of the patients and it is expected that it will lead to more efficient care of the patients in the operating room. It is anticipated that this team approach, started on the Gynecologic Oncology Service, will be successful and will be replicated in many of the other operating surgical services at Yale-New Haven Hospital.

In an effort to reduce the length of stay without compromising patient care on the Gynecology and Gynecologic Oncology Services, the Human Investigation Committee has now approved a prospective randomized trial where patients are randomized to receive milk of magnesia three times per day beginning on the first postoperative day. The participating patients will not have undergone bowel surgery. The goal of this study will be to reduce length of stay by one-half day on average on the Gynecology Floor.

The Gynecologic Practice Council continues to develop new interest in improving the safety and efficacy of the services provided for women with gynecologic problems at Yale-New Haven Hospital. There is now a room set aside where completion D&Cs can be performed in a more appropriate setting in the Emergency Department.

A project has been initiated to determine which patients on the Gynecologic Oncology Service are developing deep vein thrombophlebitis and/or pulmonary emboli in order to subsequently develop a standardized practice for the use of anticoagulation and pneumatic compression devices. A three-year review is about to commence to identify those patients who are at high risk for thromboembolic events.

Another project well underway seeks to identify women on the Gynecology and Gynecologic Oncology Services at risk for postoperative delirium. Over 90 patients, all over 60 years of age, are currently participating in this project. We have already confirmed that 15 of the 90 participants have experienced clinical delirium. It is anticipated that the results of this study will be used to help avoid this unpleasant postoperative event while at Yale-New Haven Hospital.

Finally, Dr. Schwartz, our Vice Chair for Gynecology, has recently attended a safety program at Yale-New Haven Hospital focusing in on root cause analysis (RCA) as a way of reducing untoward events and enhancing safety. Dr. Schwartz has also been in communication with administrators at other institutions with excellent programs on patient safety already in place, with the objective of implementing a similar program for the Department.
Maternal - Fetal Medicine

**Edmund Funai, MD, Director of Obstetrics, Section Co-Chief, Associate Professor**
Interests: Long-term health consequences of preeclampsia, premature birth, perinatal patient safety

**Charles J. Lockwood, MD, Anita O’Keefe Young Professor of Women’s Health and Chair**
Interests: Premature birth, thrombosis, pregnancy loss

**Joshua Copel, MD, Vice Chair of Obstetrics, Professor**
Interests: Prenatal diagnosis, fetal echocardiography, fetal therapy

**Men-Jean Lee, MD, Director of Ob/Gyn Residency and Medical School Clerkship Programs, Associate Professor**
Interests: Regulation of placental gene expression

**Urania Magriples, MD, Associate Professor**
Interests: HIV, models of prenatal care delivery

**France Galemmeau, MD, Associate Professor**
Interests: Prenatal diagnosis

**Errol Norwitz, MD, PhD, Fellowship Program Director, Section Co-Chief, Associate Professor**
Interests: Premature birth, genomics of prematurity

**Michael Paidas, MD, Associate Professor**
Interests: Thrombosis and hemostasis in pregnancy, premature birth

**Catalin Buhimschi, MD, Assistant Professor**
Interests: Proteomic profiling of markers of prematurity and preeclampsia, myometrial physiology

**Stephen Thung, MD, Assistant Professor**
Interests: Diabetes, decision support for clinical care

**Mert Bahtiyar, MD, Assistant Professor**
Interests: Prenatal diagnosis, fetal echocardiography, fetal surgery, perinatal epidemiology

**Anna Sfakianaki, MD, Assistant Professor**
Interests: Premature birth, the role of progesterone in treating symptomatic preterm labor, perinatal epidemiology
Our Philosophy and Mission
The primary mission of the Section of Maternal-Fetal Medicine (MFM) is to provide specialized care for women with high-risk pregnancies. In addition, our Section strongly emphasizes resident and fellow education, and promotes innovative research to improve patient care.

Clinical Services
We endeavor to provide the best possible care for our patients in an environment of respect, compassion, and sympathetic concern. We are physicians, specialized staff, and scientists who have dedicated our life’s work to improving our patients’ likelihood of having a safe and healthy pregnancy. We use the best medical science to both minimize the number of procedures our patients experience and to increase their chance of a healthy pregnancy. When our research offers a new treatment option, our patients are the first to benefit. Best care also means that our patients are fully informed about all of their treatment options, including their advantages and disadvantages, and are actively involved in management decisions. Services include:

- High-risk pregnancy management: referral center for more than two-thirds of Connecticut, with approximately five hospital transfers per week and many outpatient transfers to our high-risk practice
- Genetic testing and counseling
- CVS, amniocentesis, cordocentesis, and other fetal procedures

Education and Training
An equally important mission of our Section is to educate and train Ob/Gyn residents and MFM fellows. During their rotations, Ob/Gyn residents learn to evaluate and manage women with pregnancy-related complications and receive additional training in perinatal ultrasound. Residents participate actively in the Section’s surgical cases and outpatient services, and MFM faculty are responsible for a comprehensive series of didactic sessions on pregnancy complications.

The Section is accredited by ABOG for the training of two MFM fellows per year. The three-year MFM Fellowship is designed to train Ob/Gyns in the management of high-risk pregnancies with specific emphasis on perinatal consultation, genetics, advanced obstetric ultrasound, and fetal procedures. A significant amount of time is set aside specifically for research with a view toward training future academic leaders in the field of MFM.
Research
The Section facilitates and coordinates basic science, clinical, epidemiologic, and translational research in the field of perinatal medicine, and encourages and supports intra- and interdepartmental research initiatives. A further responsibility of the Section is to ensure a safe research environment for both researchers and patients.

Accomplishments 2005-2006
The Section of Maternal-Fetal Medicine enjoyed unprecedented academic and clinical growth during the past year. Among the highlights:

1. Recruitment of three additional MFM faculty members.
2. Continued research excellence. The Section is actively involved in expanding our investigative impact. Research from the Section was presented at numerous national and international clinical and scientific conferences. Yale MFM led all U.S. medical schools in presentations at the 2006 Society for Maternal-Fetal Medicine Annual Meeting. In total, the Section had seven oral presentations, 22 poster presentations, and members of the Section won the 2006 March of Dimes Award for the Best Research in Prematurity. A similarly impressive performance was evident at the 2006 Society for Gynecologic Investigation meeting (three oral presentations and 31 poster presentations).
3. Improved financial support for research initiatives. Seventy-five percent of all MFM faculty members received ongoing financial support for their research, and 50% garnered new extramural grant support during the past year.
4. The clinical service continues to grow robustly:
   a. Ultrasound volume increased 100% since 2002, with over 28,000 scans performed annually. Our new initiative, the First Trimester Down Syndrome Screening Program, now totals 300 visits per month.
   b. MFM hospital discharges increased 10% in the past year, and 50% since 2002.
   c. Total clinical revenue has increased 132% over the past four years.

Goals 2006-2007
1. Continue to provide the highest-quality clinical care to our region, by either applying or developing the best evidence for therapy.
2. Continue to lead national and international perinatal research, with continuing focus on prematurity and preeclampsia. Measures of success include NIH funding ranking, volume and quality of national presentations, and impact factor of publications.
3. Continue to grow both clinical volume and revenue.
Selected Key Publications
(of 56 for the academic year):


Reproductive Endocrinology and Infertility

**Hugh Taylor, MD, Section Chief, Director of REI Fellowship Program, Associate Professor**
Interests: Infertility, reproductive surgery, congenital anomalies, DES exposure, implantation/endometrial receptivity, endometriosis, IVF, recurrent pregnancy loss (first trimester)

**Pasquale Patrizio, MD, Associate Section Chief for Clinical Services, Director of Yale Fertility Center, Professor**
Interests: Infertility (female and male), assisted reproductive techniques (IVF, ICSI, PESA, TESE), reproductive surgery, genetics of infertility, PGD, egg donation and surrogacy, reproductive options for women and men with cancer

**Aydin Arici, MD, Professor**
Interests: Infertility, egg donation, recurrent pregnancy loss (first trimester), congenital anomalies, endometriosis

**Antoni Duleba, MD, Associate Professor**
Interests: Polycystic ovarian syndrome, pelvic pain, endometriosis, infertility, hyperandrogenism, reproductive surgery

**Emre Seli, MD, Assistant Professor**
Interests: Infertility, reproductive surgery, polycystic ovarian syndrome, reproductive options for women with cancer, endometriosis, IVF

**Gabor Huszar, MD, Director, Male Fertility and Sperm Physiology Laboratory, Senior Research Scientist**
Interests: Sperm function tests, sperm structure, donor insemination, sperm cryopreservation prior to vasectomy, IVF, or oncological treatment

**Denny Sakkas, PhD, Director, IVF Lab, Associate Professor**
Interests: PGD, IVF, ICSI, embryo and blastocyst cryopreservation

**Dorothy Greenfeld, LCSW, Associate Professor**
Interests: Patient education, emotional counseling and support
Our Philosophy and Mission
The mission of the Section of Reproductive Endocrinology and Infertility is to provide specialized care for women and men with a variety of reproductive endocrine disorders and infertility, to accomplish cutting-edge research in reproductive biology, and to educate future physicians and specialists. Our Section is committed to improving patient care through conducting innovative clinical and translational research and education. Reproductive endocrinologists at Yale are committed to providing excellent and innovative patient care, while advancing the field and training its future leaders.

Clinical Services
Our greatest assets are our patients and our staff. Our caregivers select treatments with the highest long-term cure rate with low associated morbidity based on evidence-based therapeutics and in an environment of respect, compassion, and sympathetic concern.

Education and Training
Our Section provides a well-rounded program of teaching and clinical activities to enable residents to become well versed in the basic and clinical aspects of Reproductive Medicine. During their six-week rotation, residents are taught how to evaluate women with reproductive problems, and to implement appropriate non-surgical and surgical treatments. Residents participate in the Section’s surgical cases, postoperative care, and didactic sessions, and are encouraged to complete suggested readings. Residents serve as first assistant in all of the Section’s surgical cases. The knowledge and surgical skills gained from these activities will allow our residents to evaluate and manage reproductive endocrinology and infertility cases.

The Yale Fellowship Program in Reproductive Endocrinology and Infertility is a three-year educational program designed to provide advanced training to obstetrician-gynecologists. The Fellowship is approved by the American Board of Obstetrics and Gynecology.

The three-year fellowship consists of both research and clinical components. The first year is devoted to office-based practice and surgical training. The fellow gains experience in the full range of clinical reproductive endocrine and infertility disorders. The second-year curriculum provides an opportunity for mentored research; the fellows conduct laboratory and/or clinical research and enhance their understanding of the latest scientific principles. This training provides comprehensive research opportunities as well as extensive interaction with other scientists. The third year is spent learning the full spectrum of assisted reproductive technologies. Upon completion of the fellowship program, our physicians are prepared to become leaders in the practice and advancement of the specialty.
Accomplishments 2005-2006
1. Sustained our IVF cycle success rates, with a donor oocyte cycle live birth rate of over 70%.
2. Experienced a growth of 10% in \textit{in vitro} fertilization, egg donation and gestational surrogacy cycles. Frozen embryo transfers increased 50% compared with last fiscal year.
3. Grew the volume of our Male Fertility Program by 33%, performing 19 male surgeries (both testicular biopsies for sperm retrieval and epididymal sperm aspiration).
4. Established Pre-implantation Genetic Diagnosis for single gene disorders (such as cystic fibrosis).
5. Established an Egg Freezing Program (under IRB approval) for:
   a. Oncological patients wishing to preserve fertility before undergoing chemo/radiotherapy.
   b. Patients who for personal reasons do not wish to freeze embryos when undergoing \textit{in vitro} fertilization treatment.
   c. Women who do not have a partner and wish to preserve their future reproductive potential.

Goals 2006-2007
1. Increase the number of IVF cycles, egg donation and gestational surrogacy cycles by 15%.
2. Grow the the volume of the Egg Freezing Program by 50%.
3. Create a new Egg Donor Bank service.
4. Increase the number of PGD cases (both for aneuploidy screening and single gene screening) by 50%.
5. Implement a new service of Ovarian Tissue Cryopreservation for oncological patients. This new addition will complete the range of services available to any cancer patients wishing to preserve future fertility.
6. Continue to increase the volume of male infertility visits and surgeries.
Selected Key Publications
(of 63 for the academic year):


Gynecologic Oncology

**Thomas J. Rutherford, PhD, MD**  
*Section Chief, Associate Professor*  
Interests: Ovarian, uterine, vaginal, cervical and vulvar cancer; difficult gynecologic surgery; unknown primary cancer; brachytherapy; gestational trophoblastic neoplasia

**Peter E. Schwartz, MD**  
*Vice Chair for Gynecology, Professor*  
Interests: Ovarian, uterine, vaginal, cervical and vulvar cancer; difficult gynecologic surgery; screening for ovarian cancer; gestational trophoblastic neoplasia; brachytherapy

**Masoud Azodi, MD Associate Professor**  
Interests: Pre-malignant and malignant gynecologic disorders involving the vulva, cervix, vagina, uterus, ovaries, and placenta, with emphasis on minimally invasive approaches for gynecologic cancer, including laparoscopic staging, radical vaginal surgeries, and radical trachelectomy

**Our Philosophy and Mission**

The Section of Gynecologic Oncology provides specialized care for women with gynecologic malignancies. Our mission is to provide education, perform effective research, increase awareness and expand the treatment options for women with gynecologic cancers.

**Clinical/Research Services**

We endeavor to provide the best possible care for our patients and their families in an environment of respect, compassion, and sympathetic concern. The patient is informed about all treatment options, including their advantages and disadvantages.

The Section focuses on clinical care and translational research in the areas of endometrial, cervical, and ovarian cancer. We are searching for specific markers that can improve the diagnosis of endometrial cancer, we continue investigating the molecular pathways responsible for chemoresistance in ovarian cancer, and we continue to develop new markers to predict chemoresponsiveness.

**Education and Training**

An important mission of our Section is to educate residents about our subspecialty. They are taught to evaluate and counsel women and their families.
regarding the malignancies, including treatment options, complications and success of treatment. Residents participate in the operating room and manage pre- and postoperative care. Our three-year intensive fellowship program teaches the fellow to manage independently the diverse treatment options and complications of women with gynecologic cancers.

**Accomplishments 2005-2006**

The Section produced five publications in such high-impact journals as *PNAS*, *Cancer Research*, and *Cancer* in FY 05-06, and four abstracts presented at NEAGO and SGO by the faculty, fellows and residents.

Clinical volume increased 17% over the prior year. We currently have outreach programs in 10 hospitals throughout the state of Connecticut.

We conduct clinical trials for cervical, vulvar, vaginal, endometrial, ovarian, fallopian tube and peritoneal cancers. Many of these are conducted under the oversight of a national consortium of the Gynecologic Oncology Group (GOG), of which the Section is a full member.

**Goals 2006-2007**

We are recruiting new faculty members to develop new research thrusts that are compatible with our current successful ovarian program focusing on apoptosis, chemosensitivity modulation, and immunologic responses.

**Selected Key Publications:**


Urogynecology and Reconstructive Pelvic Surgery

Richard Bercik, MD, Section Chief  
*Director of the Yale-New Haven Hospital Women’s Center, Assistant Professor*  
Interests: Diagnostic and treatment modalities for problems of urinary and fecal incontinence, pelvic organ prolapse, pelvic floor disorders, interstitial cystitis, single and multi-channel urodynamic testing, anal manometry, office cystoscopy, biofeedback for urinary and fecal incontinence, advanced laparoscopic surgery, abdominal and pelvic floor reconstruction, vaginal hysterectomy for the enlarged uterus, vaginal fistulae, minimally invasive surgery for prolapse and incontinence

Kathleen Connell, MD  
*Director of Research, Assistant Professor*  
Interests: Diagnostic and treatment modalities for problems of urinary and fecal incontinence, pelvic organ prolapse, pelvic floor disorders, interstitial cystitis, single and multi-channel urodynamic testing, anal manometry, office cystoscopy, pelvic floor muscle rehabilitation and biofeedback for urinary and fecal incontinence, advanced laparoscopic surgery, abdominal and vaginal pelvic floor reconstruction, incontinence procedures, vaginal fistulae

Marsha K. Guess, MD  
*Assistant Professor*  
Interests: Vaginal and abdominal pelvic reconstructive surgery, advanced laparoscopic (minimally invasive) surgery, transurethral collagen injections for pelvic floor disorders, pelvic organ prolapse, sexual dysfunction

Cherrilyn Richmond, MS, APRN, WHNP  
*Urogynecology Nurse Practitioner*  
Interests: Pelvic muscle floor rehabilitation, electrical stimulation, behavioral modification, frequent urinary tract infection, urinary frequency and urgency, pessary fitting, urodynamic study, cystoscopy, rectocele, cystocele, sexual dysfunction
**Our Philosophy and Mission**

We endeavor to provide the best possible care for our patients in an environment of respect, compassion, and sympathetic concern. Best care in our Section means choosing a treatment with the highest long-term cure rate with low associated morbidity. Best care also means that the patient is accurately informed about, and participates in, all of her treatment options.

Furthermore, our Section strongly emphasizes resident education, community outreach, and innovative research to improve the care of those patients with Pelvic Floor Disorders (PFDs).

**Education and Training**

Residents learn how to evaluate women with urinary and fecal incontinence, uterovaginal prolapse, and other PFDs. They also are introduced to appropriate non-surgical and surgical treatments. Future plans include starting a program for fellowship training in Female Pelvic Medicine and Surgery.

**Clinical Services**

The Section offers consultation, office-based procedures, inpatient and outpatient surgery, and pelvic floor muscle rehabilitation for the management of PFDs.

**Research**

There are active clinical trials evaluating the latest urogynecologic surgical procedures. Basic science research includes the evaluation of gene expression and cellular differences in tissues from women experiencing pelvic floor dysfunction.

**Accomplishments 2005-2006**

1. 40% increase in both patient visits and major surgical repairs compared with last year, and over 100% compared with two years ago.
2. Increase in clinical revenue of 37%, despite declining reimbursements.
3. Addition of a new Postpartum Pelvic Rejuvenation Program.
4. New treatment modalities added, including Sacral Neuromodulation for Overactive Bladder and Total Vaginal Mesh Repair for recurrent and/or advanced pelvic organ prolapse.
5. Doubling of the clinical space and addition of new equipment in renovated practice space to facilitate sustained growth.

**Goals 2006-2007**

1. Continue research into the genetic causes of pelvic organ prolapse in young women.
2. Increase NIH funding.
3. Increase volume by 25% over next 12 months.
4. Apply for a three-year fellowship in Female Pelvic Medicine and Surgery.

**Selected Key Publications:**

Family Planning

Susan Richman, MD, Section Chief, Assistant Professor
Interests: Family planning, vulvodynia, sexuality

The Section of Family Planning provides specialized care for women with reproductive planning needs. In addition, our Section strongly emphasizes resident education and innovative research to improve patient care in all aspects of family planning services.

We endeavor to provide the best possible care for our patients in an environment of respect, compassion, and sympathetic concern. Best care also means that the patient is accurately informed about all of her treatment options, including their advantages and disadvantages.

An important mission of our Section is to educate residents about our subspecialty. The second year residents have a Family Planning rotation for seven weeks, during which time they are taught how to evaluate and counsel women regarding the complete spectrum of contraceptive and sterilization options, and to implement appropriate non-surgical and surgical treatments for undesired or abnormal pregnancy. Residents participate in the Section’s surgical cases, pre- and postoperative care, ambulatory procedures in the Yale-New Haven Hospital Women’s Center, and in didactic sessions, and they are encouraged to complete suggested readings. Residents serve as first assistant in all of the Section’s surgical cases. We believe that the knowledge and surgical skills gained from these activities will allow our residents to evaluate and manage a wide range of ambulatory gynecologic issues such as threatened or incomplete miscarriage, menorrhagia, and dysfunctional uterine bleeding.

Another mission of our Section is to increase our understanding of women’s reproductive health issues, and to formulate new or improve existing treatments. At present, the focus of the Section’s research includes the development of new contraceptive methods, and the study of pathophysiologic mechanisms of currently available modalities such as the IUD and long-term progestin-only methods. Residents are encouraged to participate in the Section’s ongoing research projects.
Accomplishments 2005-2006
The Section of Family Planning achieved academic and programmatic growth during FY 05-06 as demonstrated by the following:
1. Acquisition of Kenneth J. Ryan Grant in Abortion & Family Planning.
2. Creation of collaborative clinical rotation for PGY2 residents at the New Haven Planned Parenthood site.
3. Creation of curriculum/lecture series in family planning/abortion services.

Goals 2006-2007
1. Attract additional faculty to division.
2. Continue growth of clinical practice.
3. Open additional clinical research protocols, with eventual entry into the NICHD Contraceptive Clinical Network.

Yale Obstetrical and Gynecological Society
This year, the Department inaugurated the Yale Obstetrical and Gynecological Society (YOGS) as a means to foster communication with its “family.”

The Society is comprised of former residents and clinical fellows who completed their training here in the Department of Obstetrics, Gynecology & Reproductive Sciences, in addition to past faculty members.

We have assembled a comprehensive eligible membership list dating back to approximately 1945. We currently have 71 members and are continuing our membership drive.

One of the primary purposes of the Society is dissemination of information regarding new developments within the Department. We plan to publish our first issue of an annual YOGS Journal this year. In addition to dissemination of information regarding new developments, noteworthy achievements by our graduates, highlights from presentations such as Grand Rounds and symposia, we will also publish original articles from active, former, and visiting faculty.

Activities of the Society will also include one or two meetings per year scheduled in conjunction with local or national society meetings.

Yale Obstetrical and Gynecological Society
YOGS
Research Laboratories

Reproductive Neurosciences Group

The Reproductive Neurosciences Group is involved with research that aims to understand the mechanisms of action of peripheral hormones, including gonadal steroids, metabolic and stress hormones, on the activity of the brain. Several projects focus on better understanding how gonadal steroids affect cellular functions in the hypothalamus and hippocampus. Studies are also conducted to reveal brain signaling modalities of metabolic hormones, including the adipose hormone leptin and the gut hormone ghrelin. Particular emphasis is given to determining the interaction between gonadal and metabolic hormones with the goal of better understanding malfunctions of the hypothalamus that lead to reproductive failure, obesity and type 2 diabetes. Efforts also are underway to illuminate the role of these peripheral signals in the regulation of higher brain functions and neurodegeneration.

Last year, studies from our group were published in several high-impact journals, including various Nature and Cell family journals as well as the highest-impact specialty journals, such as Endocrinology and the Journal of Neuroscience.

Our research was frequently featured in national and international media.

Tamás Horváth, PhD, DVM, Professor and Director, Reproductive Neurosciences Chair, Section of Comparative Medicine
tamas.horvath@yale.edu

Sabrina Diano, PhD, Associate Professor
sabrina.diano@yale.edu

Qian Gao, MD, PhD, Assistant Professor
qian.gao@yale.edu

Xiao-Bing Gao, PhD, Assistant Professor
xiao-bing.gao@yale.edu

Tibor Hajszan, PhD, Associate Research Scientist
tibor.hajszan@yale.edu

Csaba Leranth, MD, PhD, Professor
csaba.leranth@yale.edu

Reproductive Neurosciences Selected Key Publications (of 28 for the academic year):


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Gamete Biology Group

The Gamete Biology Group is comprised of six internationally recognized researchers with interests in the following categories:

Female reproduction: 1) Role of DNA repair in the mammalian oocyte, 2) Role of FSH receptor variants in infertility, 3) Translational control of gene expression in the mammalian oocyte.

Male reproduction: 1) Sperm quality in the aging man, 2) Paternal effects on reproductive outcome, 3) Mammalian sperm DNA and the infertile male, 4) Apoptosis during spermatogenesis and in the mature spermatozoa.

Preimplantation embryo development: 1) Improving in vitro fertilization outcome by identifying the most viable embryo, 2) Preimplantation Genetic Diagnosis and investigation of novel techniques of screening for aneuploidy in single blastomeres, 3) Characterizing the gene expression profiles of human embryos and gametes.

Gonadal development: 1) Gonad development in the fetus, 2) Investigations into the developmental establishment of stem cell "niches," or compartments, that support the developing and adult ovary.

Gabor Huszar, MD, Senior Research Scientist, Director, Sperm Physiology Laboratory
gabor.huszar@yale.edu

Joshua Johnson, PhD, Assistant Professor
josh.johnson@yale.edu

Maria Lalioti, PhD, Assistant Professor
maria.lalioti@yale.edu

Denny Sakkas, PhD, Associate Professor, Director of Assisted Reproduction Laboratories
Denny.sakkas@yale.edu

Emre Seli, MD, Assistant Professor
emre.seli@yale.edu

Dagan Wells, PhD, Assistant Professor
dagan.wells@yale.edu
Gamete Biology Selected Key Publications (of 23 for the academic year):


Reproductive Physiology Group

Faculty in the Reproductive Physiology Group investigate the physiological processes that regulate reproductive tract function. These studies range from the cellular and molecular level to clinical and translational research. The Group strives to better understand the etiology and regulation of diseases of the reproductive tract with the objective of developing novel treatments and interventions. Interests include elucidation of aberrant signaling pathways in polycystic ovarian syndrome, the etiology and regulation of endometriosis, biochemical regulation of ovarian and corpus luteum function, the mechanism of embryo implantation, the development of the urogenital tract and the endocrine regulation of reproductive tract gene expression. In particular we investigate the regulatory control of sex hormones in male and female reproduction, with special emphasis on the reproductive tract during the estrous/menstrual cycle and during pregnancy. Another area of active investigation focuses on the adverse effects of environmental contaminants in a variety of human and animal models. Basic questions regarding the underlying regulation of gonadal function, such as steroidogenesis, cell proliferation and apoptosis, are also under investigation. Working with whole animals as well as at the cellular and molecular level, studies utilize human and rodent tissues to elucidate how hormones interact with receptors and how these interactions affect differentiation, growth, and cell-cell communication in the reproductive tract. The etiology of endometriosis, adenomyosis, leiomyomata, pelvic organ prolapse, implantation failure and pregnancy loss are all studied at the molecular, cellular, and clinical levels. Novel treatments including gene therapy and stem cell therapy are currently studied. Clinical trials in the area of menopause and pregnancy loss are also currently in progress.

Aydin Arici, MD, Professor
aydin.arici@yale.edu

Hal Behrman, PhD, Professor
harold.behrman@yale.edu

Kathleen Connell, MD, Assistant Professor
kathleen.connell@yale.edu

Antoni Duleba, MD, Associate Professor
antoni.duleba@yale.edu

Umit Kayisli, PhD, Associate Research Scientist
umit.kayisli@yale.edu

Carlos Stocco, PhD, Assistant Professor
carlos.stocco@yale.edu

Hugh S. Taylor, MD, Associate Professor,
Section Chief, Reproductive Endocrinology & Infertility
hugh.taylor@yale.edu
Reproductive Physiology Selected Key Publications (of 51 for the academic year):


Cancer Biology Group
The Cancer Biology Group is concerned with various aspects of cell signaling that cause or support carcinogenesis.

In the field of nuclear receptors, the Hochberg lab is designing and synthesizing analogs of steroid hormones for diagnostic and therapeutic purposes and for investigations of hormone action. These radio-labeled compounds allow the detection and localization of cancers by hormone receptor mediated uptake. Studies in the Mor laboratory on the communication between cancer cells and immune cells are focused on the control of apoptosis to develop new therapeutic approaches that may reverse chemoresistance in cancer cells. A new test from this lab for early detection of ovarian cancer is based on serum proteins associated with cancer biology. Yingqun Huang is developing a novel method for the targeted delivery of therapeutic nucleic acids including small interfering RNAs to chemoresistant ovarian cancer cells through receptor-mediated endocytosis. Using this method, the lab is specifically down-regulating genes involved in the inhibition of apoptosis to restore chemosensitivity to cancer cells.

Oncogenic signaling pathways that arise as a result of mutations in the EGF receptor are being investigated in the Maihle laboratory. These alternate transcripts of EGFR arise from several ErbB/EGFR genes that appear to have potent regulatory activity with respect to receptor-mediated processes such as cell survival. They are being studied as potential serum biomarkers in both breast and ovarian cancer patients. Additionally, the EGFR system is being investigated (J Reiter) to gain a better understanding of the mechanisms that regulate the normal developmental processes and how these mechanisms are overcome during tumorigenesis.

Richard Hochberg, PhD, Professor richard.hochberg@yale.edu

Yingqun Huang, MD, PhD, Assistant Professor yingqun.huang@yale.edu

John Liao, MD, Associate Research Scientist john.liao@yale.edu

Nita Maihle, PhD, Professor nita.maihle@yale.edu

Gil Mor, MD, PhD, Associate Professor gil.mor@yale.edu

Jill Reiter, PhD, Assistant Professor jill.reiter@yale.edu
Cancer Biology Selected Key Publications:


Maternal-Fetal Sciences Group

The Maternal-Fetal Sciences Group seeks to develop therapeutic interventions for major complications of pregnancy through an integration of clinical, translational, and basic science research approaches. Studies focus on preterm delivery (PTD), preeclampsia (PE), intrauterine growth restriction (IUGR), and recurrent pregnancy loss, leading causes of maternal, fetal, and neonatal morbidity and mortality. Research on preterm delivery specifically seeks to dissect the mechanism through which progesterone supplementation can prevent preterm birth. Proteomic methodologies are being developed to identify novel markers of PTD and PE, which will facilitate the development of new diagnostic and therapeutic strategies. Studies aimed at understanding the role of extracellular matrix remodeling in the placenta and myometrium will enable implementation of procedures that limit fibrosis at the uterine-placental interface that is associated with IUGR.

A major focus of this group is the analysis of the interaction of uterine, placental and immune cells in the etiology and pathophysiology of PTD, PE and IUGR. Studies include the evaluation of separate and interactive effects of ovarian steroids and pro-inflammatory cytokines on the expression of members of the IL-6 family of cytokines. The role of Toll-like receptors, mediators of the innate immune response, in first trimester trophoblast-macrophage interactions is also being explored using co-culture and molecular methodologies. Studies using gene array methods have established patterns of decidual chemokine response to inflammatory stimuli, prompting investigation of the role of dendritic cells (specialized antigen presenting immune cells), in the etiology and pathophysiology of PE. The differential roles of placental and renal synthesis of the angiogenic factors VEGF and PLGF, and their antagonist sflt-1, in pregnancy-induced hypertension and proteinuria, are under study using animal models and placental and kidney cell cultures. The specific role of plasminogen activator inhibitors, major regulators of fibrinolysis and cell invasion, in the pathophysiology of IUGR and PE is under investigation using primary cultures of human placenta and a dual perfusion model.
Charles J. Lockwood, MD, The Anita O’Keefe Young Professor of Women’s Health and Chair
charles.j.lockwood@yale.edu

Vikki Abrahams, PhD, Assistant Professor
vikki.abrahams@yale.edu

Catalin Buhimschi, MD, Assistant Professor
catalin.buhimschi@yale.edu

Irina Buhimschi, MD, Assistant Professor
irina.buhimschi@yale.edu

Seth Guller, PhD, Associate Professor
seth.guller@yale.edu

Se-Te-Joseph Huang, MD, PhD, Associate Research Scientist
joseph.huang@yale.edu

Graciela Krikun, PhD, Research Scientist
graciela.krikun@yale.edu

Men-Jean Lee, MD, Associate Professor
men-jean.lee@yale.edu

Michael J. Paidas, MD, Associate Professor
michael.paidas@yale.edu

Errol Norwitz, MD, PhD, Associate Professor
errol.norwitz@yale.edu

Frederick Schatz, PhD, Research Scientist
frederick.schatz@yale.edu

Maternal-Fetal Sciences Selected Key Publications (of 34 for the academic year):


Medical Student Education

The Department teaches obstetrics and gynecology to Yale School of Medicine students. Our goal is to provide a strong and stimulating foundation in women’s health for all students, so that these future physicians will enter their areas of specialization with a keen and accurate sense of the issues that their female patients will present to them.

The first-year curriculum focuses on normal reproductive physiology including embryology, puberty, the menstrual cycle, human sexual response, and maternal-fetal physiology. In the second year, students are introduced to pathophysiology and disease processes across the lifespan, starting from birth and puberty, through the reproductive years, followed by menopause and aging.

In the third year, students enter the clinical setting during a six-week core rotation in Obstetrics and Gynecology. In the outpatient setting, they participate in the care of women seeking routine gynecologic screening and prenatal care, contraceptive counseling, and evaluation for common gynecologic problems. In the hospital, students participate in the care of women requiring gynecologic surgery or hospitalization. They also assist in the care of women in labor and participate in vaginal births and cesarean sections, as well as in the care of antepartum and postpartum patients. In addition, we offer a well-received series of didactic, interactive lectures and case-based sessions.

In the fourth year, we provide subspecialty electives for students interested in more focused and in-depth experiences. These include four-week rotations in Maternal-Fetal Medicine, Reproductive Endocrinology and Infertility, Gynecologic Oncology, Ambulatory Obstetrics and Gynecology, and an offsite elective at a health
services clinic on an American Indian reservation in Gallup, New Mexico.

We host an annual Medical Student and Faculty Ob/Gyn Research Hour to introduce students to research in reproductive sciences and an ACOG-sponsored Ob/Gyn Student Interest Group in which we invite obstetrician-gynecologists in the community to discuss practice and lifestyle issues. Our Clerkship Director personally meets with all students expressing interest in applying to Ob/Gyn residencies and provides comprehensive mentoring regarding career development. During the past year, all of our students matched at their first choice programs.

**Yale-New Haven Hospital Ob/Gyn Residency Program**

The Department offers a four-year postgraduate program based at Yale-New Haven Hospital, currently consisting of 26 residents. There were six categorical first-year residents and one preliminary first-year resident recruited last fall who began their internships in June 2006. During the 2005-2006 residency recruitment season, we received over 600 applications and interviewed 90 candidates from U.S. medical schools with a track record for academic excellence, public service, and a passion for women's healthcare. We have recruited some of the top graduating medical students from schools around the country.

In Spring 2005, we consolidated the residency program so that all of our residents are fully based at Yale-New Haven Hospital to improve the clinical training experience. We reorganized Morning Reports so that the Gynecology Morning Report is now led by a team of dedicated University and community faculty who review patient cases, including radiological imaging studies, laboratory data, and fetal heart rate tracings, in a state-of-the-art computerized setting.

To fulfill the educational goals of the ACGME Outcomes Project, our Resident Lecture Series has been revamped to include core lectures in Ob/Gyn, ambulatory care issues, practice management, pathology slide reviews, CREOG reviews, professionalism seminars, a cadaver lab to teach surgical techniques, and meetings with the Chair and Program Director. We have introduced a new, interactive Debate Club forum to replace the traditional Journal Club as a method to teach literature review and evidence-based medicine. We also held a mini-seminar to familiarize the residents with medical malpractice insurance, litigation, risk management, and effective communication with patients.

We have just implemented two laparoscopic training modules. These modules consist of a hands-on laparoscopic simulator model and a “virtual reality” computer-simulated trainer.

We continually update our Resident Library with new textbooks and electronic resources, and have introduced the Residency Website, on which we provide web-links to electronic resources, reading lists, and announcements.

Our residents were invited to present their research at national Ob/Gyn meetings: two at the American Society of Reproductive Medicine, one at the Society of Gynecologic Oncologists, two at the Society for Gynecologic Investigation, and one at the Society for Maternal-Fetal Medicine. We continue to introduce our intern class to reproductive health research by sending them to the annual Society for Gynecologic Investigation conference.
Yale Maternal-Fetal Medicine
150 Sargent Drive, Second Floor
New Haven, CT 06511-6110
203-785-5682
http://yalehighriskpregnancies.org

Yale Fertility Center
150 Sargent Drive, Second Floor
New Haven, CT 06511-6110
203-785-4708
1-877-Yale-IVF
http://yalefertilitycenter.org

Yale Reproductive Endocrinology
150 Sargent Drive, Second Floor
New Haven, CT 06511-6110
Tel: 203-785-4708
http:// yalereproductivemedicine.org

Yale Gynecologic Oncology
Yale Physicians’ Building
800 Howard Avenue, Third Floor
New Haven, CT 06519
203-785-4176
http://www.yaleobgyn.org/oncology

Yale Urogynecology and Reconstructive Pelvic Surgery
Yale Physicians’ Building
800 Howard Avenue, Third Floor
New Haven, CT 06519
203-785-6927
http://www.yaleobgyn.org/urogyn

Yale Family Planning
Yale Physicians’ Building
800 Howard Avenue, Third Floor
New Haven, CT 06519
203-737-2816
http://www.yalefamilyplanning.org