HIGHLIGHTS FROM THE DIRECTOR

Summer 2016 has been nothing short of energetic for the Center for Reproductive Medicine (CRM). From a torrential downpour that many of you braved on the evening of our Quarterly CRM Membership Meeting and Reception celebrating the beginning of summer, to bidding a fond farewell to our 2016 SMART Program Interns, and the many annual meetings, awards, and achievements in between—this summer just further proves the dedication our members bring to the center and to the College.

In this issue of the newsletter, we turn our focus to women's health. Drs. Michael Belfort and Ignatia Van den Veyver, along with Samantha Stover, provide a multi-perspective view highlighting the fetal intervention, prenatal diagnosis and reproductive genetics, and genetic counseling efforts, over at Texas Children’s Hospital. This Q&A provides a fascinating take on the unique programs offered and how they collaborate in bringing the best science and medicine together to create healthy moms, babies, and families.

Along with the many research achievements highlighted within our center, a good friend and colleague of mine, Dr. Mark Sigman, joins our Baylor College of Medicine Distinguished Alumni Series. Here he provides an insightful overview of his fellowship days at Baylor, and his clinical and research efforts as director of the Men’s Health Clinic at Brown University.

I am also excited to announce that our third annual Reproductive Health Research Day is October 5, 2016!

Throughout the day, you will hear from leading researchers in the reproductive medicine field on hot topics such as Zika, congenital cytomegalovirus (CMV), prostate cancer, amyloids, new developments in imaging, and much more—it’s a day you will not want to miss! Find out more.

“It’s been a really stimulating day. It’s been a densely packed day with a lot of great talks. I’ve been really impressed—almost overwhelmed—by the number of investigators here who have programs that concern different aspects of reproductive biology. It’s fantastic.”

Martin Cohn, Ph.D.
Keynote Speaker, 2015 Reproductive Health Research Day
Professor of Evolutionary Biology, Howard Hughes Medical School
University of Florida School of Medicine

With a new academic year upon us and new additions to the College, I also encourage you to reach out to fellows, trainees, students, and colleagues to join the center. It’s a great opportunity to meet with top investigators and professionals, become more involved, and develop a stronger research and career focus in reproductive medicine. For more information about CRM membership, please visit: bcm.edu/reproductive-medicine/membership. I am looking forward to another wonderful fall season, and seeing you at Reproductive Health Research Day on October 5!

DORRIE
**CRM Quarterly Membership Meeting: June 2, 2016**

Dr. Dolores Lamb provided an overview of the new Faculty Performance Reviews set to roll-out in early FY 17, along with current research collaborations, awards, and communication efforts of the CRM. Translational Research Group Leader, Nancy Weigel, Ph.D., reviewed current efforts in research within the reproductive cancers group. Amy Schutt, M.D. and Jessica Rubin, M.D., presented an overview of 2015-2016 efforts and activities within the Reproductive and Endocrinology (REI) division. This included an explanation of the Family Fertility Center and current IVF cycles from April 2014 – April 2016; new clinical and research faculty additions; abstracts from the Society of Reproductive Investigation and American Society of Reproductive Medicine 2016 Annual Meetings; and expansions to their fellowship program.

**Visiting Scholar Lecture: Aug. 16, 2016**

**Blastocyst Hatching: Tracking Earliest Embryonic Differentiation**

Polani B. Seshagiri, Ph.D.
Professor of Molecular Reproduction, Development, and Genetics
Indian Institute of Science, Bangalore, India

Dr. Seshagiri discussed the cellular and molecular principles associated with the earliest embryonic differentiation. During earliest events of mammalian development, the sperm must undergo capacitation-hyperactivation for it to be able to fertilize the oocyte. Post-fertilization, the zygote undergoes a series of mitotic cleavage divisions to form the first differentiated embryonic entity i.e., the blastocyst. Dr. Seshagiri emphasized that for the blastocyst to successfully implant into the uterine endometrium, it must hatch out of its encasement viz. the zona pellucida. Blastocyst hatching and implantation are rate-limiting steps for the establishment of a viable pregnancy.

**CRM and MCB R&D Workshop Series**

**Thursday, October 20, 2016**

12 - 1 PM | DeBakey, M616

**BMP Signaling Pathways in the Uterus and During Pregnancy**

Diana Monsivais, Ph.D.
Postdoctoral Associate
Department of Pathology and Immunology

Mark your calendars for our remaining 2016 seminars: Nov. 3 and Dec. 8.
What encompasses fetal intervention?

Fetal intervention is the overall term that we use to describe any form of diagnostic or therapeutic action intended to evaluate or treat a congenitally abnormal or sick fetus. This may include actual surgery on the fetus. We tend to reserve the term fetal surgery for the more dramatic or the more invasive procedures. Fetal intervention may include putting a needle into the amniotic fluid to take a sample, or putting a needle into the umbilical cord to take some blood to do genetic testing. Fetal surgery conjures up the idea of actually operating on the fetus, inside the uterus.

For example, fetal surgery maybe where you either open the uterus with an incision, or place tiny telescopes (fetoscope) through the wall of the uterus without opening it, and then repair a defect in the baby’s spine (Spina Bifida). It can also be placing a fetoscope inside the uterus and directing it through the baby’s mouth, down the larynx, and into the trachea—in order to place a little balloon inside the trachea to help expand the baby’s lungs (congenital diaphragmatic hernia). Or it can be placing a needle through the mother’s abdomen and uterus, into the beating heart of the fetus, and guiding a wire across the aortic valve to allow a balloon dilatation of that valve in-utero (aortic valvuloplasty).

Laser surgery is another form of fetal surgery that is performed when you have twins (e.g. monochorionic or identical twins) that are sharing a placenta with some abnormal vascular connections on the placenta surface. We put a scope inside the uterus with a laser in it, we find these connections, and we use the laser to close them down. Since we are actually operating on the placenta, we call that a fetal surgery.

At what stage in pregnancy is fetal surgery performed and what leads up to that decision?

That very much depends on the procedure and the baby’s problem. Most all of these babies have some sort of congenital anomaly—be it on the placenta or be it in the baby itself. Usually if we are intervening, we are intervening for a life-threatening problem. Except in the case of Spina Bifida, which is usually a life-altering problem. Most fetal intervention procedures or surgeries will be performed after about 16 weeks of gestation simply because of the size of the baby or babies, and the difficulties with managing the risks of the interventions (such as rupture of the membranes, infection or bleeding). In general we avoid doing fetal surgeries beyond a gestational age when survival is guaranteed ex-utero. That is generally beyond 26 – 29 weeks.

There are a number of different aspects we have to look at with fetal intervention. One of the most important is an ethical issue. You have to balance the risk to the mother (bleeding, infection, and/or preterm delivery), with the benefits to the baby, which, in the case of spina bifida for example, may include being able to walk, to control bladder and bowel function, and not having hydrocephalus (“water on the brain”). You have to always be asking the question, “Does the benefit to the baby outweigh the risk to the mother?”
Additionally, we now know from a randomized controlled trial that there is an evidence-base that shows that fixing the spine of the baby in utero (Spina Bifida) leads to a tangible benefit post-delivery. With this surgery, we are able to reduce the number of babies who receive a shunt for hydrocephalus, from about 80% to about 40%.

When you can see that kind of tangible benefit from a randomized controlled trial, then you can move it into the arena of standard of care.

Q| What challenges or risks does fetal surgery have?  
A| Whenever you are placing a needle or some other device through the wall of the uterus, you run the risk of rupturing the membranes—this can lead to infection and early delivery. The big risks that we see are rupture of the membranes, membrane separation, infection in the baby or mother, preterm delivery, or bleeding.

Q| What are some current forms of fetal surgeries or efforts your team is working on?  
A| The more complex fetal surgeries have traditionally been done by gaining access to the fetus by opening the uterus (open fetal surgery).

This includes Spina Bifida, where we open the mother’s belly, elevate the mother’s uterus into the operative field with the baby inside, make an incision in the uterus large enough to allow access to the spinal defect, and then operate on the baby’s spine to cover the spinal cord with skin (thereby reducing the baby’s chance of ongoing nerve and brain damage). The big news here is that we are now taking a less invasive approach and doing the same surgery through two tiny ports in the uterus rather than through a large uterine incision.

Our team at TCH is the only one in the world currently doing 2 port fetoscopic spina bifida repairs, and we believe that this innovative experimental procedure is an indication of the future of fetal surgery.

When there is a diaphragmatic hernia, we perform a Fetal Endotracheal Occlusion. We put a scope in through the mother’s abdominal wall, into the uterus, find the baby’s mouth, guide the scope into the baby’s lungs, locate the correct spot in the trachea, and then leave a little balloon behind to block the trachea. This allows the lungs to fill up with fluid, expand, and grow better after the baby is delivered. We usually leave the balloon in place for about six weeks, then remove it and wait for the mom to deliver normally. This has made a big difference to the survival of babies with severe congenital diaphragmatic hernia.

Another form of fetal surgery is the removal of constricting bands in patients with Amniotic Band Syndrome. This is where some of the amniotic membrane that contains the amniotic fluid comes off the wall of the womb and wraps around the baby’s limb or umbilical cord, thereby cutting off circulation and leading to loss of the limb, and in some cases death of the baby. In selected cases we can go in there and cut these bands in order to try and save the life and/or limb.

An Ex-utero Intrapartum Treatment (EXIT) Procedure is one where the baby is partially delivered (usually the head or upper chest only) through a cesarean section incision and a procedure is performed on the baby while he/she is still being kept alive by the mother’s placenta. Most commonly this is done when there is a concern that the baby will not be able to breathe properly at birth because of an airway problem (neck tumor, tumor in the mouth). By delivering the baby’s head and neck, the pediatric surgeons have an opportunity to do a tracheostomy or to place a tube in the trachea to establish an assured airway before the baby is disconnected from the placenta. Once the airway is established the baby is ventilated and we can watch the oxygen saturation in the baby’s blood increase, until it is in the normal range and then deliver the rest of the baby’s body and cut the umbilical cord.

Q| Where would you like to see in the future of fetal intervention?  
A| We are now exploring a new surgical space—the CO2-filled intrauterine environment may now become a viable area for more complex and extensive lifesaving surgery.

In order to do this we will need to develop dedicated instrumentation and procedures that specifically address the technical needs of fetal surgeons.

We will need to focus on the problems, develop new ways of thinking about those problems, and then design and make innovative imaging devices and instruments to solve those problems. That’s what I’m excited about.
As Baylor and Texas Children’s prenatal and reproductive genetics clinics continue to see on average 6,500 – 7,000 patients per year, Dr. Ignatia Van den Veyver, as director of Prenatal Genetics, reflects upon the importance of informing prospective parents about their options for genetic screening and testing to determine their reproductive and prenatal genetic risks.

Ignatia Barbara Van den Veyver, M.D.
Professor, Department of Obstetrics and Gynecology
Professor and Director of Prenatal Genetics,
Department of Molecular and Human Genetics
Co-director, Graduate Program in Translational Biology and Molecular Medicine
Baylor College of Medicine and Texas Children’s Hospital

Q| What is prenatal and reproductive genetics?
A| Prenatal and reproductive genetics is an interdisciplinary service between obstetrics and gynecology and medical genetics. Our goal is to offer pregnant women and their partners, or those who are planning a pregnancy, genetic screening and testing options and address their risks of passing on a genetic disease.

Genetic counselors in the Baylor prenatal genetics clinics, in the Texas Children’s Hospital Maternal-Fetal Medicine clinics all around town, in the Fetal Center at the Pavilion for Women, and at Ben Taub Hospital provide genetic counseling and screenings for anything related to reproductive and prenatal genetic risks.

Women are seen because of a family history of a genetic condition, their age, or a problem with the pregnancy, such as fetal anomalies detected on an ultrasound, or simply because they want to learn about their options. The genetic counselors will review their history and risks, explain their testing options, and what the results of various tests and screens may mean.

Before pregnancy, a “preconception genetic consultation” focuses on reviewing genetic risks, family history, and carrier screening. When a patient is pregnant the genetic counselor also talks to them about their screening and testing options for fetal aneuploidy and other chromosomal abnormalities, including standard aneuploidy screening, but also newer methods, such as cell-free DNA screening. Patients are also informed about chorionic villus sampling (CVS) or amniocentesis and the genetic tests that can be done on those samples.

At the Pavilion for Women, the genetic counselors work closely with the Texas Children’s Fetal Center where they perform counseling about genetic screening and testing for some of the most complex patients we see. Samantha Stover, one of our TCH genetic counselors, will further expand on their role in the next section.

Q| What technologies or screenings are offered for prenatal genetic diagnosis and what is the process?
A| First, while it is important that we tell women about their options for genetic testing and screening, we also inform them that obtaining genetic information about their pregnancy is voluntary.

We always discuss carrier screening to everybody for recommended conditions, such as cystic fibrosis and conditions that are more prevalent in some populations, but we are at the forefront of offering new expanded carrier screening for more than 150 conditions at once.

For pregnant women who are interested in finding information about their risk for fetal chromosomal abnormalities, we always present amniocentesis or CVS as an option, but many prefer to avoid the small risk of these procedures and opt for screening. This can be done by standard maternal serum screening using a combination of markers, but more and more women opt to have a new non-invasive prenatal screening test (known as NIPS or NIPT) that is based on analyzing cell free DNA in the mother’s blood.

When a patient is counseled because of fetal anomalies, we always offer an amniocentesis first. The tests done on those cells typically include a standard karyotype combined with a chromosomal microarray analysis, which can look in more detail at the small segments of chromosomes. Until recently, if the results of those came back negative, the options for other testing were very limited. We recently began offering, as one of the first centers doing so, fetal whole exome sequencing to some of the higher-risk patients, which is a new test that is now available through the diagnostic Baylor Genetics Laboratories.
It allows us to look for point mutations and other smaller genetic changes in most of the genes in the DNA of the fetus. While this test is very new and we are still learning a lot about it, I believe that it has the chance to get a genetic diagnosis in maybe 20 to 30% of cases where the standard testing does not find a cause for fetal anomalies.

Q| Can you describe how you can test fetal DNA on a maternal blood sample?
A| There are two main ways that fetal DNA is in maternal blood. There are a very small number of intact fetal cells floating in the mother's blood that are mostly trophoblast cells (from the placenta). These are difficult to find, but we are collaborating on a project with Dr. Art Beaudet's team to develop better methods to isolate these cells and use them for prenatal diagnosis. This exciting research is in progress, but may lead to better non-invasive tests, in the future. Right now though, the tests that are available clinically analyze cell-free DNA that floats in the maternal plasma.

In pregnant women, about 10% of this DNA comes from the pregnancy, more precisely from the placenta, and is mixed in with a majority of maternal cell-free DNA. The NIPT /NIPS screening tests are based on sequencing all the cell-free DNA and then figuring out if there is more for some chromosomes or part of chromosomes than expected.

For example, if there is a little more DNA from chromosome 21 compared to other chromosomes, it may indicate that the fetus has Down syndrome (trisomy 21). Since it is a screen, we always recommend that such results are confirmed by an amniocentesis or CVS. These tests work better for some conditions than for others, so the genetic counselors spend time explaining the risks and benefits of all different tests to patients, to help them choose among the different options. This cell-free DNA can be used to look for single gene disorders as well, such as those caused by paternally inherited mutations or de novo mutations not present in mom or dad. This has already been done in other countries for a few conditions and the diagnostic lab is currently working on developing new such tests.

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**GENETIC COUNSELING**

*With an ever-present focus on patient education, TCH genetic counselor, Samantha Stover, describes the process of genetic counseling, and the integral role counselors play in guiding patients to make an informed decision.*

Samantha Stover, M.S., CGC
Clinical Instructor and Board Certified Genetic Counselor
Baylor College of Medicine and Texas Children's Fetal Center
Lead Genetic Counselor Texas Children's Pavilion for Women

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**Q| Can you describe what genetic counseling is?**
**A|** Genetic counseling is the process of helping patients and families understand their personalized genetic risks based on medical and family histories, while empowering individuals to make an informed decision that best suits their needs.

**Q| When and why is it conducted?**
**A|** An individual is typically referred to a genetic counselor if there is a family history, abnormal test result, or a personal history suspicious for a genetic predisposition or condition.

Based on the particular situation, genetic counseling may be offered before or during pregnancy, following a diagnosis of a specific medical condition (such as a rare type of cancer), or after a family member has been diagnosed with a genetic disorder.

**Q| Are there various types of counseling programs offered at TCH?**
**A|** Baylor College of Medicine and Texas Children's Hospital have an extensive list of genetic counseling specialties, including preconception/ prenatal, pediatric, adult, cancer, neurological, pediatric oncology, hematology, research, and laboratory. BCM and TCH have over 25 genetic counselors, making our group one of the largest in the city.

**Q| What are the challenges to genetic counseling?**
**A|** Genetic counseling is growing at such a rapid pace that there is a higher demand for genetic counselors than the amount currently working in the field.

Furthermore, genetics is an ever advancing field and genetic counselors must constantly stay abreast of the current technology, literature, and recommendations in order to best serve their patients.

**Q| Can you describe the connection between genetic counseling, and prenatal diagnosis and reproductive genetics?**
A| Genetic counselors have an integral role in prenatal diagnosis and reproductive genetics as the medical advancements have been particular suited to this specialty in recent years.

As the ability to assess the risks to an embryo or pregnancy have become more accessible by way of advanced genetic testing and fetal imaging, genetic counselors are better equipped more than ever before to provide more personalized genetic risk assessments to patients and their families.

In addition, the ability to prenatally diagnosis rare genetic conditions has become more attainable thanks to increased availability of advanced testing at lower costs.

Q| What are some next steps for genetic counseling or where would counselors like to see it go?
A| I believe genetic counselors will continue to be advocates for our patients and their families when it comes to informed decision making, while also navigating the ever changing landscape of reproductive genetics without losing sight of our values and ethical principles.

Patient education will continue to be of the utmost importance as our ability to determine genetic risks become more advanced.

FROM THE LAB OF DR. JOANNE RICHARDS

JoAnne Richards, Ph.D., Professor, Department of Molecular and Cellular Biology, provides current publications and presentations by members of her lab, along with brief explanations of their research.

PUBLICATIONS


    Dr. Yi Ren reports the first mouse model of mucinous ovarian cancer, as well as the role of mutant p53 R172H in ovarian cancer.

    In this paper, Dr. Yi Ren describes a novel role for GAS1 in the mouse ovary.

    Dr. Lisa Mullany documents the specific functions of p53 mutants and the response of cells to their depletion. We are now analyzing p53 mutants in relation to high grade ovarian cancer subtypes (mesenchymal, epithelial, and immune reactive).

    We show that depletion of FOXO1/3 and PTEN leads to granulosa cell tumors expressing FOXL2, pSMAD, GATA4, and several immune-related genes. Some granulosa cells also appear to acquire epithelial like fates with expression of SOX9 and KRT8.

PRESENTATION: SSR 2016 ANNUAL MEETING

Yi Ren, Ph.D., Instructor, Department of Molecular and Cellular Biology, was asked to present a 30-minute lecture in a special session at the Society for the Study of Reproduction (SSR) 49th Annual Meeting in July 2016, on “Conditional Depletion of the Hedgehog Pathway Regulator Patched1 by S100a4 Promoter-driven Cre Recombinase Impairs Ovarian and Pituitary Functions and Fertility in Female Mice.”

Dr. Ren described a novel mouse model in which Patched has been disrupted using an FSP (S100A4)-Cre that is expressed not only in fibroblasts, but also immune cells. Here the mice are infertile and do not ovulate—we think there is a defect in macrophage function.

To feature highlights and achievements from your lab, please send details to Dr. Dolores Lamb at dlambj@bcm.edu or Jyoti Patel at jyotip@bcm.edu.
CRM MEMBER ACTIVITIES IN THE REPRODUCTIVE FIELD

FRONTIERS IN REPRODUCTION
APRIL 30 - JUNE 12, 2016
WOODS HOLE, MA

Throughout summer 2016, CRM members returned to Frontiers in Reproduction (FIR) to lead lectures and labs in different tracks:

**Signal Transduction and Gene Regulation in the Hypothalamic-Pituitary-Gonadal Axis**
- Lecture: “Signaling in Ovarian Follicular Development”
  - JoAnne Richards, Ph.D.

**Gametogenesis, Fertilization, and Stem Cells**
- Lecture: “Genetics of Infertility”
  - Dolores J. Lamb, Ph.D., HCLD

**Implantation and Placentation, Development of the Reproductive Tract and Gonads, and Transgenesis**
- Lecture: “Reproductive Microbiome and Perinatal Outcomes” with accompanying Lab “Analysis of Microbiome Data”
  - Kjersti Aagaard, M.D., Ph.D. and Kristen Meyer, Teaching Assistant, Medical Scientist Training Program (M.D./Ph.D.)

AMERICAN UROLOGICAL ASSOCIATION 2016 ANNUAL MEETING
MAY 6 - 10, 2016 | SAN DIEGO, CA

The American Urological Association (AUA) Annual Meeting is one of the largest meetings encompassing the latest advancements in global urologic medicine. During AUA 2016, CRM members contributed their latest research and efforts and came away with four awards.

Dr. Larry Lipshultz (left) received the 2016 Distinguished Reproductive Urology Award; Drs. Rose Khavari and Alexander Pastuszak won third place in the 2016 Early Career Investigator Showcase Research Scholar Award and Dr. Amin Herati (right) received the 2016 Arnold Belker Traveling Fellow Award.

**American Urological Association 2016 Annual Meeting**

111th year
10,000+ participants

16 courses in which CRM members presented

**3** CRM members presented posters and lead discussions

**Testosterone: Diagnosis and Management of the Hypogonadal Male**
- Mohit Khera, M.D., M.B.A., M.P.H.

**Management of Ureteral Stricture Disease**
- Richard Link, M.D., Ph.D.

**Infertility Update 2016: A Comprehensive Approach to the Clinical Diagnosis and Treatment of the Infertile Male**
- Larry Lipshultz, M.D.

IFT140 is a Novel Candidate Gene for Impaired Spermatogenesis: Identification by Whole Exome Sequencing and Validation with Sanger Sequencing AND Litigation Involving Sperm Banking in the United States
- Amin Herati, M.D.

**Trends in Supraspinal Variation in Patients with Multiple Sclerosis and Detrusor Sphincter Dyssnergy**
- Rose Khavari, M.D.

**Crossfire: Controversies in Urology: Benign—Male Rejuvenation is Detrimental to Your Health**
- Mohit Khera, M.D., M.B.A., M.P.H.

**Advanced Testing for Male Infertility: Age-specific Guidelines**
- Dolores J. Lamb, Ph.D., HCLD

**Low Serum Testosterone is Associated with Elevations in High-Sensitivity Cardiovascular Disease Biomarkers AND Poor Sleep Quality Predicts Hypogonadal Symptoms and Sexual Dysfunction in Male Non-Standard Shift Workers AND Melanoma Antigen Protein MAGEC1 Mutation Identified in Familial Non-Obstructive Azoospermia AND Comparison of the Effects of Oral Enclomiphene Citrate and Topical Testosterone Gels Treatment on Serum Hormones, Erythrocytosis, Lipids, and Prostate Specific Antigen AND Lower Cognitive Function is Associated with Male Infertility**
- Alexander Pastuszak, M.D., Ph.D.
DR. IGNATIA VAN DEN VEYVER APPOINTED 2016-2018 PRESIDENT OF THE INTERNATIONAL SOCIETY FOR PRENATAL DIAGNOSIS

On September 1, 2016 Dr. Ignatia Van den Veyver will begin her term as President of the International Society for Prenatal Diagnosis (ISPD). Prior to this, she served on the ISPD’s board of directors for four years as treasurer, and two years ago was elected as President-Elect.

The mission of the ISPD is that evidence-based practice and culturally sensitive preconception and prenatal screening, diagnostics and therapy shall be available to all families. As a leading international society in this field, the ISPD is ideally situated to connect and collaborate with international leaders in the field towards its mission to promote the health of children, their mothers, and their families, by advancing the science and practice of genetics and fetal care worldwide. Over the last two years, the outgoing President and Dr. Van den Veyver have worked closely with the Board of Directors to develop strategic goals for the society to advance this mission.

As President, Dr. Van den Veyver aims to work with the board of directors and leaders of the society’s special interest groups to grow the membership, international status, and visibility of the ISPD, through educational programs. They will focus on growing its annual conferences, developing enhanced online educational content, increasing outreach to countries that are currently underrepresented in the field of prenatal diagnosis, and developing new strategies for communicating with public and stakeholders about prenatal diagnosis and screening related issues. Additionally, with the increase in development and marketing of newer technologies for prenatal testing and screening by non-academic entities, she would like to see the ISPD develop innovative strategies for interacting with this industry to the benefit of pregnant women and their families.
CONGRATULATIONS!

MICHAEL BELFORT, M.D., PH.D.
Obstetrician and Gynecologist-in-Chief, Texas Children’s Hospital
Chairman, Department of OB/GYN, Baylor College of Medicine
2016 Kathryn S. Stream Award for Excellence in Women’s Health
Presented by the Greater Houston Women’s Chamber of Commerce, this award recognizes a Houston-area researcher, educator, practitioner, or community leader with a record of achievement in advancing women’s health. Dr. Belfort was recognized for his contribution in April 2016.

LARRY LIPSHULTZ, M.D.
Professor, Department of Urology; Chief, Scott Dept. of Urology, Division of Male Reproductive Medicine and Surgery
2016 Distinguished Reproductive Urology Award
Through the Society for the Study of Male Reproduction (SSMR), Dr. Lipshultz was presented this award during the American Urological Association (AUA) 2016 Annual Meeting held May 6 – 10.

AMIN HERATI, M.D.
Postdoctoral Fellow, Department of Urology
2016 Arnold Belker Traveling Fellow Award
Dr. Herati received this award for his work on, “IFT140 is a Novel Candidate Gene for Impaired Spermatogenesis: Identification by Whole Exome Sequencing and Validation with Sanger Sequencing,” during the AUA annual meeting in May 2016.

ROSE KHAVARI, M.D.
Assistant Professor, Department of Urology, Methodist Hospital
ALEXANDER PASTUSZAK, M.D., PH.D.
Assistant Professor, Department of Urology
2016 Early Career Investigator Showcase Research Scholar – Third Place
During the AUA 2016 annual meeting in May, Dr. Khavari was recognized for her poster, “Increased Understanding of Central Nervous System Control of Micturition in Lower Urinary Tract Disorders,” and Dr. Pastuszak was recognized for his poster, “Low Serum Testosterone is Associated with Elevations in High-Sensitivity Cardiovascular Disease Biomarkers.”

DOLORES J. LAMB, PH.D., HCLD
Director, Center for Reproductive Medicine
Appointed 2016-2017 President of the American Association of Bioanalysts (AAB)
Dr. Lamb assumed office as President during the AAB 60th Annual Meeting and Educational Conference held May 12-14, 2016, in Las Vegas, Nevada.

CAROLINA JORGEZ, PH.D.
Assistant Professor, Department of Urology
2016 Caroline Wiess Law Fund for Research in Molecular Medicine
Received in June 2016, this award will further advance Dr. Jorgez’s laboratory focus on understanding how the genitourinary tract normally develops and functions, and how defects in these processes result in male infertility and common congenital defects that affect testicular descent.

DIANA MONSIVAIS, PH.D.
Postdoctoral Fellow, Department of Pathology and Immunology
2016 Burroughs Wellcome Fund Postdoctoral Enrichment Award
In July 2016, Dr. Monsivais received an award to further her research on infertility treatments by studying the signaling pathways that regulate implantation and post-implantation processes in the uterus.

IGNATIA BARBARA VAN DEN VEYVER, M.D.
Professor, Department of Obstetrics and Gynecology
Appointed 2016-2018 President of the International Society for Prenatal Diagnosis (ISPD)
On September 1, 2016 Dr. Ignatia Barbara Van den Veyver will assume office as President of the ISPD. For the full feature on Dr. Van den Veyver’s appointment, please see page 9.
Dr. Mark Sigman is a world-renowned expert in male infertility and sexual dysfunction. He has authored over 100 publications and lectured in the areas of male reproductive medicine and surgery. Dr. Sigman received his medical degree from the University of Connecticut, followed by a urology residency at the University of Virginia. He went on to complete his fellowship in male reproductive medicine and surgery at Baylor. Below Dr. Sigman describes his experience at Baylor, and research endeavors.

Q| How did Baylor set the foundation for success in your career?
A| In terms of fellowship, Baylor combines a very good research program with a large specialty clinical program, and that’s not that common in many places. My time was unique in that Baylor and the whole medical complex is a one of a kind thing—in the world. Dorrie has been able to collaborate with all sorts of people, not just in reproduction, but pediatrics, prostate cancer, and developed a world-renowned research program. It is an example that one can try and mimic over the years.

Q| Can you describe your research experience at Baylor?
A| At the time I started, it was the beginning of the explosion of molecular biology. The research was fascinating because it was something that as a resident you were not exposed to. I had done research for a year during residency, but this was a lot more intense than that, and for a longer period of time. At the beginning of what turned out to be a huge change in medicine and research, with the explosion of molecular biology techniques—it was certainly a fascinating time in the lab learning techniques that were just being developed.

Q| Can you describe some of these new techniques in molecular biology?
A| What we were trying to look at back then were genetic markers of human male infertility. A lot of the computerized ways of looking for changes in DNA didn’t exist and a lot of it was done by hand.

For example, one of the techniques we were doing was called restriction fragment length polymorphism (RFLP). This is where you would cut pieces of DNA and then try and compare them amongst people to see if there were changes in infertile people compared to fertile people.

When I compare looking at things manually, where we are looking at tens of thousands of DNA changes within these molecular arrays—which now are all computerized and generating huge amounts of data, was completely unthinkable back then. But having the training back then, and seeing how it changed over the years, it sets one up for that kind of understanding. I think that’s been one of the biggest changes over the years.

Q| What are a couple of fond memories you had from your time here at Baylor?
A| I think one of the interesting memories after having come out of pure clinical residency was showing up in a shirt and tie at the beginning every day, and realizing that most people in the lab don’t dress like that and there’s no need to. Someone quietly told me that I didn’t have to dress like that for the research part of the program, which was an interesting change of pace back then!

It also set up some friendships that have continued on for well over 20 years now. There were two clinical fellows not doing research, and once a week I would go over and do work for the clinical portion of the fellowship. The three of us became really close friends and would room together at meetings for many years after that. While we were fellows we did it because it was a cost-saving measure, but after we became faculty it had nothing to do with cost. It was just an enjoyable time to get together. We still do that to this day—that’s a friendship you rarely see. Similarly, on the research front, Dorrie and I have remained close friends as we’ve seen each other’s families grow over the years. It’s just started friendships that have lasted to this day that transcend the work we are involved in, jointly.

Q| What do you believe is your most significant contribution to reproductive medicine?
A| I think globally the biggest effort I’ve put in is trying to get a research program in reproduction going at Brown, involving a translational project.

Dr. Sigman continues to be a world-renowned expert in male infertility and sexual dysfunction. He has authored over 100 publications and lectured in the areas of male reproductive medicine and surgery. Dr. Sigman describes his experience at Baylor, and research endeavors.
COMMUNITY & OUTREACH

Saturday Morning Science 2 Fall 2016

Saturday Morning Science 2 (SMS 2) returns this fall with a new group of high school students ready to advance their biology and science knowledge. Morning lectures will be held in Alkek, Room N315. Dates for fall 2016 are 8:30 a.m. - Noon on Saturday:

- Sept. 24: “A Day in the Life of an OB/GYN Researcher” with Melissa Suter, Ph.D.
- Oct. 22: “Why Pediatric Urology?” with Abhishek Seth, M.D.
- Nov. 19: “Anabolic Steroids: Bane or Balm?” with Alexander Pastuszak, M.D, Ph.D.
- Dec. 3: “Science in the Clinic: How Doctors Help Patients with Assisted Reproduction?” with William Gibbons, M.D.

Baylor Teen Health Clinic Conference: Transforming Communities for Youth

Friday, October 28, 2016
8 AM - 4 PM | Hess Club (5430 Westheimer)

The Teen Health Clinic presents an all-day conference focusing on advancing teen health and development. For more information and to pre-register.

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I had started a clinical reproductive program, but there was no research at the time. Here there was a great opportunity to link up with researchers that have reproductive interests (maybe not human) to develop this kind of translational program.

Now we have a combined research program with the Department of Pathology and Laboratory Medicine that involves MD/PhDs, post-docs, faculty, and so on. Everyone adds something to the mix. They bring up ideas that might be useful for another investigation that might not have come up in our own silos.

Our research involves looking at biomarkers of male infertility, which from a translational point of view can be useful for the clinician looking for both markers for infertility and evidence of causality (e.g. toxins). It has implications for the pharmaceutical industry looking for adverse effects of pharmaceutical drugs on infertility and for the study of environmental toxicity.

Q: Where do you see your work going in the future?
A: I’d like to see the younger faculty be successful in continuing research support so that it transcends my stay here—that there would be an ongoing reproductive research program that involves both Brown and the hospital system. Ideally, I’d like to see the biomarkers move from pure research to some aspect of being useful clinically, which is not the case currently. That would be ultimate goal. Whether it be for sensitive markers of infertility or identifying the cause of infertility—I think time will tell. But that’s sort of the direction I would like to see it go.

SUMMER MEDICAL & RESEARCH TRAINING PROGRAM 2016

During summer 2016, three undergraduate students joined the CRM to pursue paid internships through the Summer Medical and Research Training Program (SMART). Over a nine-week period, interns were given reproductive medicine research experience and participated in science lectures given by top Baylor scientists. Our SMART 2016 interns included:

- Jason Zhang, Senior at The University of Texas at Austin, Austin, TX, major in Biomedical Engineering;
- Williamson Turner, Junior at Xavier University of Louisiana, New Orleans, LA, major in Biology; and
- Kathryn Prescott, Senior at Grove City College, Pittsburgh, PA, major in Biochemistry.

See highlights from their experience within the labs of Drs. Dolores Lamb and Carolina Jorgez: bcm.edu/reproductive-medicine/outreach/SMART.

“I really wanted to get into a lab and find out what the day-to-day is like, what do these people experience, what is the possibility of what I could experience someday.”

Kathryn Prescott, 2016 SMART Intern