4th Illinois Symposium on Reproductive Sciences

by Kristen Meldi, PhD

The 2012 Illinois Symposium on Reproductive Science (ISRS), hosted by the Northwestern University Center for Reproductive Science (CRS) this year, brought together trainee and senior scientists from 13 institutions across five states for a day of presentations highlighting research in reproductive biology. Selection of trainee talks and planning for this regional meeting was done by the committee of trainees pictured to the right. Unique this year, the keynote lecture was jointly hosted by ISRS and the Great Lakes Nuclear Receptor Conference (GLNRC). This lecture was named for Neena B. Schwartz, founder of CRS, and given by Dr. Kenneth Korach from the National Institute of Environmental Health Sciences. Dr. Korach’s talk, entitled “Analyzing the Functional Domains of the Estrogen Receptor in Estrogen Biology,” was a terrific, insightful commentary on his own and others’ findings on the estrogen receptor and its signaling mechanisms. The lecture drew an audience of over 250 attendees and was followed by a reception co-hosted by the ISRS and GLNRC.

CRS and the Woodruff Lab Host the “Cancer Smashers”

On December 15, 2012 they visited the Lurie Children’s Hospital of Chicago with holiday gifts for patients. CRS and the Woodruff lab invited the children to also visit the Lurie Medical Research Center, to learn more about cancer research, and perform their own experiments.

CRS and Woodruff members working with the Cancer Smashers included Julie Kim, Teresa Woodruff, Tom O’Halloran, Dallas Vanorny, Amanda Bayer, Shannon Gallagher, So-youn Kim, Yuanming Xu, Meghan Hogdal-Mayer, Fern Murdoch, Nadia Johnson, and Cathryn Smeyer.

They call themselves the Cancer Smashers. They are a group of children, and their parents, whose families have been affected by cancer. The group raises funds for the Robert H. Lurie Comprehensive Cancer Center at Northwestern University.

You can view a gallery of photos on our new CRS website at crs.mccormick.northwestern.edu/events/photo_gallery.html.
A Letter from the Director

I hope this late winter edition of Reproduction Matters finds you all well as we look forward to spring. There is much good news to share in this issue regarding the accomplishments and recognition of our students and faculty, and I hope you find it informative. It has been a busy time for CRS, as we hosted both the 32nd Minisymposium on Reproductive Biology and the 4th Illinois Symposium on Reproductive Science over the past year. These were terrific opportunities to showcase the breadth of activities in reproductive sciences at Northwestern, and our trainees gained wonderful experience both in presenting their research and organizing the conferences. Collaborative team-based research has always been a hallmark of the Center, and we are very pleased that two major NIH grants that involve CRS faculty have been successfully renewed. The Specialized Center on Research (SCOR) grant “Genes, Androgens and Intrauterine Environment in PCOS” led by Dr. Andrea Dunaif and the Specialized Cooperative Centers Program in Reproduction and Infertility Research (SCCPIR) grant “Center for Reproductive Research at Northwestern University” led by Dr. Teresa Woodruff are compelling examples of team-based science, and they complement the robust and focused research that occurs within two Program Projects grants led by Dr. Serdar Bulun and myself. I hope you enjoy the re-organized format and style of this newsletter, as well as our new CRS website: http://crs.mccormick.northwestern.edu. As always, we value your feedback and ideas for stories to share about advances in the reproductive sciences.

Finally, remember- with growing concern about an increasing world population and a deteriorating environment- reproduction matters!

KEMayo

CRS Office News

Please join us in thanking Ingrid Miller for nine years of dedicated service to the Center for Reproductive Science. The CRS community would like to wish her all the best in her future endeavors. Please also join us in welcoming our new administrative assistant, Sarah Stein, and workstudy student, Melissa Haniff.

Bookmark the new CRS website!!
http://crs.mccormick.northwestern.edu/
CRS Welcomes New Faculty Members

Dr. Wignall was an undergraduate at University of North Carolina where she worked in the laboratories of E. D. Salmon and Oliver Smithies. She spent a year at University of Cambridge studying cytoplasmic dynein with Linda Amos. California lured her for her doctoral work on spindle assembly in Xenopus egg under the mentorship of Rebecca Heald at UC-Berkeley. Her post-doctoral work was performed in the lab of Anne Villeneuve on oocyte meiosis in C. elegans at Stanford University. The Department of Molecular Biosciences at Northwestern University recruited her to an assistant professorship in February 2011. The Wignall lab studies the molecular mechanisms that promote proper chromosome partitioning during oocyte meiosis. They are interested in understanding how oocyte spindles form, how they are organized, and how chromosomes segregate.

Dr. Fritsch joined the Department of Pathology and Laboratory Medicine, Lurie Children’s Hospital of Chicago in December of 2010. He came from the University of Wisconsin-Madison (UW) where he split his time between autopsy pathology and directing a basic research lab studying the role of chromatin remodeling in early cell fate decisions during embryonic stem cell differentiation. Dr. Fritsch completed his undergraduate, medical, and graduate degrees at UW with Jack Gorski as his thesis advisor. His postdoctoral training was with V. Craig Jordan at UW and Carl Wu at NIH. He completed a pathology residency at NIH and a pediatric pathology fellowship at Johns Hopkins University. His current clinical and research interests include all aspects of perinatal pathology including placental pathology, germ cell tumors, and anatomic anomalies affecting male and female reproductive tracts.

ISRS and GLNRC story continued....

The GLNRC, co-sponsored by CRS, continued the next day with talks, a poster session, and a keynote lecture by Dr. Geoffrey Greene from the University of Chicago entitled “Targeting Nuclear Receptors in Human Health and Disease: When Discrimination is Good”.

The Alumni Speaker for ISRS was Dr. Teresa Woodruff, who began her scientific career as a graduate student at Northwestern. She gave a heartfelt, passionate talk detailing the pathway of her career, her long-standing interest in female reproductive health, and the importance of her mentors in the field, including Dr. Kelly Mayo and Dr. Neena Schwartz.

Trainees gave all remaining oral and poster presentations for the ISRS meeting and the full programs for both the ISRS and GLNRC meetings can be found on the new CRS website.
The Story Behind the Constance Campbell Research Awards

Constance Campbell received her Ph.D. in Psychology from University of Illinois at Chicago where she also trained as a postdoctoral fellow in Dr. Neena Schwartz’s laboratory. There, her research focused on the relationship of sexual and other behaviors to environmental cues. When Dr. Schwartz came to Northwestern University, she asked Connie to give a seminar. The Biological Sciences department at Northwestern had no behavioral scientist, and soon after the seminar, Connie was hired as an assistant professor in the Department of Biological Sciences at Northwestern in 1974 to begin doing research in the field. She contributed years of great research and teaching, and administered the undergraduate honors program. Connie also served as a preceptor in the Program for Reproductive Biology that was organized by Dr. Schwartz about the time she first joined the department. The Program launched the first Minisymposium in Reproductive Biology in 1980 with Connie’s enthusiastic participation. She was promoted to associate professor in the Department of Neurobiology and Physiology and was granted tenure in 1980. However, only a year later, she passed away.

In the interview for this article, Dr. Schwartz described Connie as warm and a pleasure to have in the lab at University of Illinois. She also remarked that Connie cared about her students noting that she was in the lab assisting her graduate students with their work even as she began to fall ill. Her husband, Dr. Jack Davis, family, friends, and colleagues raised money in remembrance of her, and because Connie was so deeply passionate about student research, this fund is used to support the Constance Campbell Research Awards. These awards are presented to trainees with the best oral and poster presentations at symposia sponsored by the Center for Reproductive Science, including the Minisymposium on Reproductive Biology that Connie helped found in 1980 and the Illinois Symposium on Reproductive Sciences that grew out of the Minisymposium. The first awards were presented at the tenth Minisymposium in 1989 and the 25th presentation of Constance Campbell Research Awards will be at the next Minisymposium in the spring of 2014. Although her time at Northwestern University was too short, her legacy continues with over 100 trainees benefiting from these awards to date. The memorial fund is now endowed and will continue to support the student research that Connie so valued, far into the future.

by Melissa Haniff

2012 Minisymposium on Reproductive Biology

In the Spring of 2012, we held our 32nd annual Minisymposium on Reproductive Biology. This event is the highlight of our training year. A committee of trainees plans and organizes the entire event. This year’s committee members were Irene Lee (graduate student, Kim lab), Sherwin Zargaroff (andrology fellow, Brannigan, faculty advisor), Marilia Cordeiro (graduate student, Bulun lab), and Pamela Monahan (postdoctoral fellow, Mayo lab). Professor Susan J. Fisher, UCSF, was the recipient of the Neena B. Schwartz Lectureship in the Reproductive Sciences and gave a talk entitled “Pre-eclampsia: The Trophoblast Twist”. Pamela Kreeger, a former trainee in the Shea lab and now an assistant professor at the University of Wisconsin, gave the Alumni talk. Trainees gave all remaining oral and poster presentations. The full program can be found on the new CRS website.
Presentations and Awards

Priya Vellanki (Dunaif, advisor) received a 2012 Endocrine Trainee Day Travel Award from the Endocrine Society.

Irene Lee (Kim, advisor) was awarded the Malkin Scholar Award.

Monica Laronda (Kurita, advisor) received a Lalor Foundation Merit Award for her abstract at the Society for the Study of Reproduction annual meeting.

Dallas Vanorny (Mayo, advisor) received an Outstanding Abstract Award at ENDO 2012.

Mario Pineda (Kim, advisor) received a Friends of Prentice Award.

Congratulations to the following trainees on the successful defense of their dissertation and completion of the PhD degree.

Anaar Eastoak-Siletz from the Shea lab: “A Dynamic Transcription Factor Activity Array for Elucidating Dysfunctional Organogenesis in Breast Cancer”.

Kristen Meldi from the Mayo Lab: “Mechanisms of Inhibin Alpha Subunit Gene Regulation in the Rat and Human Ovary”.

David (Chris) Brooks from the Bulun Lab: “The Role of Brain Aromatase in Regulating Reproductive Function”.

Betty Kong from the Woodruff Lab: “Metaling in Meiosis: The Role of Zinc Regulation during Mammalian Oocyte Maturation and Embryo Development”.

Moving on

Ariella Shikanov (Shea) is now an assistant professor in the Department of Biomedical Engineering at University of Michigan.

Beth Villavicencio (Iannaccone) is an assistant professor and leads the section of Hematology/Oncology-BMT Hospital at Seattle Children’s Hospital.

Miranda Bernhardt (Woodruff) is an IRTA Fellow in the Reproductive Medicine Group at the National Institute of Environmental Health Sciences.

Lee Gettler (Kuzawa, McDade) is now an Assistant Research Professor in the Department of Anthropology at the University of Notre Dame.
Sadie Wignall received the Distinguished Research Award from the American Society for Reproductive Medicine. He was also named chair of the Department of Obstetrics and Gynecology at Northwestern University Feinberg School of Medicine and obstetrician-gynecologist-in-chief at Prentice Women’s Hospital.

The Northwestern University Feinberg School of Medicine Women Faculty Organization honored Andrea Dunaif as the 2013 Distinguished Woman in Medicine and Science. Her NICHD Specialized Center of Research (P50) “Genes, Androgens and Intrauterine Environment in PCOS” received 5 years of renewed funding as did the Building Interdisciplinary Research Careers in Women’s Health program.

Erwin Goldberg served as Vice-President for the American Society of Andrology in 2012.

Julie Kim was promoted to associate professor with tenure and appointed to the Susy Y. Hung Associate Professorship at Northwestern University. Her research was highlighted on the Feinberg School of Medicine news at http://www.feinberg.northwestern.edu/news/2012/12/kim_cancer.html.

Kelly Mayo was elected a Fellow of the American Association for the Advancement of Science.

Lonnie Shea was the recipient, with Vadim Backman, of a NIH Director’s Transformative Research Award that provides funding for exceptionally innovative research.

Sadie Wignall was the recipient of the “Damon Runyon-Rachleff Innovation Award” from the Damon Runyon Cancer Research Foundation and also received the “V Scholar Award” from the V Foundation for Cancer Research to support her research.

Teresa Woodruff accepted the Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring, on behalf of the Women’s Health Science Program from President Obama in the Oval Office. She also received the 2012 “Visionary Award” from Fertile Action, an organization supporting fertility preservation for women touched by cancer.
In the face of a cancer diagnosis and the multitude of conversations and treatment decisions that follow, the conversation about preserving the ability to have children as a cancer survivor could easily get missed. **Kunj Sheth** (pictured) was the lead author on a study led by Bob Brannigan and including CRS associate director Teresa Woodruff establishing the value of a formal institutional fertility preservation program for male patients with cancer. Sheth KR, Sharma V, Helfand BT, Cashy J, Smith K, Hedges, JC, Köhler TS, Woodruff TK, Brannigan RE (2012) J Urol 187:979.

Faculty members **J. Julie Kim**, **Takeshi Kurita**, and **Serdar E. Bulun** collaborated on a comprehensive review on the role of progesterone in diseases of female reproductive tissues including endometrial cancer, endometriosis, uterine fibroids, and breast cancer. The figure shows the morphological changes between normal and hyperplastic endometrium. Endocrine Reviews (2013) 34(1):130.

In addition to classical effects in the female reproductive tract, estrogen plays a role in a diversity of functions in the brain from neuroprotection to learning. **Nino Tabatadze** (pictured) was the lead author on a study showing extranuclear estrogen receptor α (ERα) associated with glutamate- and γ-aminobutyric acid-containing neurotransmitter vesicles prepared from female rat hippocampus. Also observed were phosphorylation and palmitoylation of ERα, which may function in the regulation of ERα localization and rapid estrogen signaling. Tabatadze N, Smejkalova T, Woolley CS (2013) Endocrinology 154(2):819.

This breathtaking image taken by **Betty Kong** of the pre-implantation mouse embryo undergoing cleavage from the 4- to the 8-cell stage was chosen for the VISIONS: the art of science feature. Multiple phases of the cell cycle are evident as chromosomes are stained blue and microtubules are stained green. Kong BY & Woodruff TK (2013) Mol Reprod Dev 80(1):1.

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**Jessica Hornick** and **Francesca Duncan** (pictured) served as co-first authors on a study extending the success of in vitro secondary follicle culture to primary follicles, in the ongoing collaboration between CRS faculty members Lonnie Shea and Teresa Woodruff. Secreted factors from neighboring follicles support the growth and survival of primary follicles. This has important implications for fertility preservation for young cancer patients. Hornick JE, Duncan FE, Shea LD, Woodruff, TK (2013) Reproduction 145:19.
Upcoming Seminars and Events

March 20th, 2013 - Gerald R. Cunha, PhD,
Professor, Department of Urology,
School of Medicine,
University of California,
San Francisco

April 17th, 2013 - Mario Ascoli, PhD,
Professor of Pharmacology and
Obstetrics and Gynecology,
Research Director,
Carver College of Medicine,
The University of Iowa

April 18th, 2013 - Abby Dernburg, PhD,
Howard Hughes Investigator and
Professor of Cell and Developmental
Biology, University of California, Berkeley

ISRS 2013
October 13-14, 2013
Southern Illinois University
Touch of Nature Environmental Center - Makanda, IL.

Northwestern Homecoming
October 4-6, 2013
Evanston Campus