# Endocrinology & Reproductive Physiology Training Program

UNIVERSITY OF WISCONSIN
SCHOOL OF MEDICINE AND PUBLIC HEALTH

## *Celebrating: 62 Years of Training, 22 Years of Leadership*

**In research and in graduate training for reproductive sciences, The Endocrinology and Reproductive Physiology graduate training program is a national leader.** This top-ranked program has repeatedly pushed the boundaries of endocrinology and reproduction research, with students participating in seminal research works, from the earliest studies of the actions of estrogen and progesterone to the first application of MRI to human pregnancy. Likewise the program has been a national leader in shifting the culture in biomedical sciences graduate training. This remarkable program has just completed its 62nd year, and its contemporary longevity and seminal achievements over the last 22 years have been due to the **vision and leadership of Dr. Ian Bird**. Nonetheless, evolving a program's culture and approach to graduate education and training requires the buy-in from faculty trainers. As an interdisciplinary program, faculty approach the program for membership. This affirmative approach has led to full ranks of dedicated, interested, and committed faculty trainers conducting research across campus. The majority of our faculty trainers join as assistant professors, and grow with the program as their careers progress. Over the past 22 years, many faculty have contributed significant time outside of their home departments to ERP curriculum development, teaching, student training, and career and professional development, and faculty committees.

**After being at the helm for over a third of the program's existence, Dr. Bird is now passing the baton of program leadership** in order to focus his time and attention on the T32 funded aspects and other biomedical sciences training programs across the UW-Madison campus to recruit and train diverse students and create career pathways spanning from the baccalaureate to faculty. In point of fact, this practice of mentoring new faculty and providing opportunities for them to actively contribute to the program has perfectly positioned the program for its next milestone: the transition to a new program director. **We enthusiastically embrace Dr. Laura Hernandez, Professor of Animal & Dairy Sciences, as the next director of the ERP program.**

### *Dr. Bird's Achievements*

Dr. Bird joined ERP in 1996 and took over the leadership at the end of 1999, making him the longest serving director in program history as well as one of the longest-serving program directors among School of Medicine and Public Health graduate programs. This is all the more remarkable as he was appointed to the directorship with the understanding that he would oversee the sunsetting of the program. With some negotiation and a then the successful new NIH/NICHD T32 training grant, Dr. Bird started the push to reinvigorate the program and create an intentional, student-focused training environment run along, and often beyond, NIH expectations.

Under his leadership, the program developed its modern curriculum with a greater emphasis on human health; established new core courses; moved to rotation-based admissions; developed the grant-style preliminary exam that is now common at UW-Madison; and developed two research ethics courses to provide stage-appropriate professional and academic instruction to pre - and postdoc trainees alike. That initial predoctoral T32 training grant has been renewed upon the first submission three consecutive times, demonstrating that the program consistently trains to and exceeds NIH expectations. These efforts have taken a program on the brink of closure to one of the top 3 reproductive graduate training programs in the nation.

But aside from these important achievements, Dr. Bird's legacy has been to build important human capital in the biomedical sciences to help push research forward. He has done this by building and supporting collaborations that **recruit and train students of diverse backgrounds**, as a co-investigator of the NIH-funded IMSD TEAM-Science training program and of the Science and Medicine Graduate Research Scholars program. He was also a founding member of the **Integrated Program in Endocrinology**, a hub for faculty across campus to meet and collaborate on interdisciplinary research grants and projects. He developed a research Master's track in ERP for the **Maternal-Fetal Medicine Fellowship program** in the department of Obstetrics & Gynecology, to help build the ranks of fellows entering academic medicine. And, he has leveraged his success in all these areas to achieve a **new NIH/ NICHD T32 postdoctoral training program** for PhD, MD, and DVM graduate to promote translational research and break down barriers to cross-degree collaborations. Along the way, he was awarded the Doris Schlesinger award in 2018 for his mentorship of women faculty. He trained 9 PhD students, 3 MS students, and 9 additional MFM Fellow MS students, 5 of whom completed their research in his laboratory. These graduates are now faculty in academia and academic medicine, industry scientists, postdoctoral scholars, research program managers, and medical providers.

### *Dr. Laura Hernandez: Leading ERP into the Future*

Laura Hernandez, Professor of Animal and Dairy Sciences, joined the ERP program in the fall of 2011, shortly after starting her first tenure-track faculty position at UW-Madison. She had earned her Master's from New Mexico State University, and her PhD in Nutritional Sciences from the University of Arizona, and completed a postdoc in developmental biology at the University of Cincinnati. Her first training experience with ERP was through mentoring her student, Jimena Laporta, through a PhD minor in ERP.

## 1959 – 2022

We have provided interdisciplinary training in reproduction and endocrinology to

*171 PhD graduates*

*135 MS graduates, including 9 MFM Fellows*

Her first graduate student through ERP, Samantha Weaver, joined in 2014. It was at this time Dr. Bird also became one of her faculty mentors. Dr. Hernandez was promoted with tenure in 2017 and achieved full professorship in 2021. Up to date, Hernandez has graduated 6 PhD students and 5 Master's students, and is currently training 5 additional PhD students of which 3 are in the ERP program. One of Dr. Hernandez master's students was a Maternal Medicine Fellow in ERP. Meanwhile, Dr. Laporta achieved her own assistant professor position at the University of Florida and has since returned to UW-Madison as an assistant professor of Animal and Dairy Sciences and is training her first ERP PhD student. Dr. Weaver is now a postdoctoral fellow at the Mayo Clinic in Rochester, and was just awarded an NIH K99 to support her human-focused research in bone physiology.

Hernandez provides lectures on lactation physiology in our core course, participates in research ethics training, teaches relevant courses in her home department and in the Biocore curriculum, serves on thesis committees and as a mentor to junior faculty, and serves on our Student Affairs and Steering committees. Outside of ERP, Dr. Hernandez is an active leader in the Women in Science and Engineering (WISE) learning community, chair of the Animal and Dairy Sciences Climate and Diversity Committee, was a member of the CALS' Equity and Diversity and Climate Survey Advisory Committees, and is a trainer in several other interdisciplinary graduate training programs. Hernandez also is currently the Co-Director of the recently funded Post-Baccalaureate Preparatory Program (PREP) funded by the NIH. Hernandez' commitment to research and education training motivates her to keep pushing graduate training forward through individual, programmatic, and institutional efforts.

**Research-wise, it is difficult to think of another ERP faculty trainer that better captures the essence of the ERP program.** Her research has focused on how serotonin controls the mammary gland and various aspects of lactation. She pulls together endocrinology, metabolism, reproduction, development, and pharmacology as she works from cell to whole-animal models (dairy cows, mice). The outcomes of her novel research are aimed at demonstrating the presence of factors (specifically serotonin) produced within the mammary gland that can control the animal's physiology while lactating, particularly during the peripartal period when cows, and all mammals, are the most metabolically and physiologically challenged. She specifically focuses on the interaction of serotonin and calcium metabolism during the peripartal period. Her research has determined that serotonin is an important regulator of mammary gland, maternal calcium, and maternal energy homeostasis during lactation. Her lab is currently working on the effects of using selective serotonin reuptake inhibitors (SSRIs) during the peripartal period on long-term maternal bone health, as well as the health of the offspring. Her research on the coordination of maternal metabolism during lactation by the mammary gland has numerous applications to women that are breast-feeding and is focused on improving maternal health during this time frame and in later life. She is funded by both NIH and USDA for this research, is an affiliate professor of Obstetrics & Gynecology.

### *Goals for the Hernandez Era*

Some of Dr. Hernandez' initial goals are to continue building on our solid foundation of diversity and inclusion. She looks forward to establishing a regular presence at conferences such as SACNAS and ABRCMS, as well as create synergies between the program and the newly funded NIH/NIGMS Postbaccalaureate Research Education Program (PREP) (PI: Jorgensen, co-I: Hernandez). She is also interested in developing new partnerships with minority serving institutions; similar relationships had previously been successfully created and supported by Drs. Theresa Duello and Ian Bird.

Hernandez is also interested in continuing to build community within and across the students and faculty of ERP. As an interdisciplinary program with participants truly spread across and beyond the nearly 1,000 acre main campus, regular and intentional interactions and events are vital to program health and connectedness.

Her long-term goal is to increase the capacity of the program to train more students each year, which will depend on increasing access to a variety of funding mechanisms including growth of relevant NIH-T32 funded grants and discretionary funds. She also aims to provide greater training opportunities with our metabolism and endocrinology faculty, paralleling the growth and development of the reproductive physiology curriculum in recent years. She is also interested in supporting the development of a biochemistry course specifically geared for ERP and other interdisciplinary graduate training programs.

We are excited for this transition in leadership and to see how the program evolves next to meet the needs of training in an ever-evolving world of biological, and particularly reproductive science. Since Dr. Bird got his PhD in 1987, there has been the development of PCR, cloning, sequencing up the to the genome scale, new methods of vaccine development, the change from simple Western blots to multiplex assays, and biomolecular analysis down to the single cell. All that in just 35 years! Alongside that, the availability of large databases has allowed an explosion of pop health and public health research, some combined with biobank analysis. The future explosive advances in healthcare will only come faster as the pace picks up, and projects are increasingly going to need a merger of all the three areas. That in turn requires ERP to continue to do what it does so well. **The ability to think about research clearly and analytically will never change.**

**Endocrinology-Reproductive Physiology Training Grant**
T32HD041921 (PI: Bird) 2005-Present

**iPEnd Translational Postdoctoral Training Program**
T32HD101384 (PI: Bird, Levine) 2021-Present