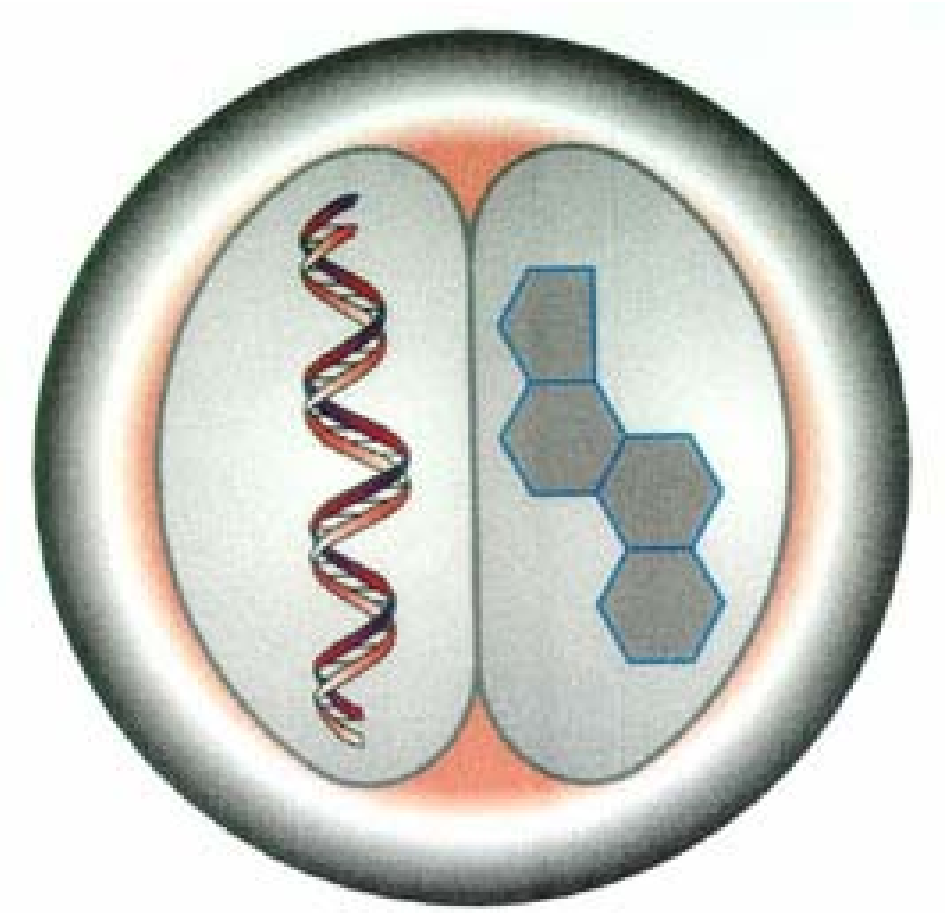
Endocrinology-Reproductive Physiology Program



Graduate Student Handbook

Revised 2/13/03

Updated 9/20/2006

Table of Contents

Faculty Members Endocrinology-Reproductive Physiology Program				
Name	**Department**	**Address**	**Phone #**	**E-Mail and Fax #**
Abbott, David Professor	Primate Center; Obstetrics & Gynecology	203 Primate Center 1220 Capitol Court	263-3583	abbott@primate.wisc.edu Fax: 3-4031
Alarid, Elaine Associate Professor	Physiology	120 Service Memorial Institute 1300 University Avenue	265-9319	alarid@physiology.wisc.edu Fax: 5-5512
Atwood, Craig Assistant Professor	Medicine	D4219 VA Hospital 2500 Overlook Terrace	256-1901	csa@medicine.wisc.edu Fax:
Barry, Terence Scientist	Animal Sciences; Aquaculture Program	656 Animal Sciences 1675 Observatory Dr.	263-2087	tpbarry@wisc.edu Fax: 2-5157
Bertics, Paul Professor	Biomolecular Chemistry	571A Medical Sciences Center 1215 Linden Drive	262-8667	pbertics@wisc.edu Fax: 2-5253
Bird, Ian Professor	Obstetrics & Gynecology	7E Meriter Hospital/Park 202 South Park Street	267-6314 **267-6240**	imbird@wisc.edu Fax: 257-1304
Bosu, William Professor	Animal Health & Biomedical Science; Sch. Of Vet. Med	2031 Veterinary Medicine Building 2015 Linden Drive	263-7752	bosuw@svm.vetmed.wisc.edu Fax: 5-8020
Downs, Karen Associate Professor	Anatomy	263 Bardeen Medical Labs 1300 University Avenue	265-5411	kdowns@wisc.edu Fax: 2-7306
Drezner, Marc Professor	Medicine	Box 5148 CSC-H4 600 Highland Ave	263-9221	mkd@medicine.wisc.edu Fax:
Duello, Theresa Associate Professor	Obstetrics & Gynecology	5240 Medical Sciences Center 1300 University Avenue	262-7456	tmduello@wisc.edu Fax: 2-7454
Cezar, Gabriela Assistant Professor	Animal Sciences	752 Animal Sciences 1675 Observatory Dr.	263-4307	ggcezar@wisc.edu Fax: 2-5157
Ginther, Oliver Professor	Animal Health & Biomedical Sciences	B1 Animal Health & Biomedical Sc. 1656 Linden Drive	262-1037	ojg@ahabs.wisc.edu Fax: 2-7420
Golos, Thaddeus Professor	Obstetrics & Gynecology; Primate Center	115 Primate Center 1220 Capitol Court	263-3567	golos@primate.wisc.edu Fax: 3-3524
Jefcoate, Colin Professor	Pharmacology	Medical Science Center 1300 University Avenue	263-3975	jefcoate@wisc.edu Fax: 2-5245
Kling, Pamela Assistant Professor	Pediatrics	6 C Meriter Hospital 202 South Park St.	262-6561	plking@wisc.edu

Magness, Ronald Professor	Obstetrics & Gynecology	7E Meriter Hospital/Park 202 South Park Street	267-6314 **267-6498**	rmagness@wisc.edu Fax: 257-1304
Martin, Thomas Professor	Biochemistry	5519 Biochemistry 420 Henry Mall	263-2427	tfmartin@wisc.edu Fax: 2-3453
Ntambi, James Professor	Biochemistry & Nutritional Sciences	180A Biochemistry Bldg. 420 Henry Mall	265-3700	ntambi@biochem.wisc.edu Fax 2-3453
Odorico, Jon Associate Professor	Surgery	H4/756 Clinical Science Center 600 Highland Ave	265-6471	jon@surgery.wisc.edu Fax: 3-7652
Olive, David Professor	Obstetrics and Gynecology	Box 6188 CSC, Module H4, 600 Highland Ave.	263- 1217	dolive@wisc.edu Fax: 3-0191
Parrish, John Professor	Animal Science	714 Animal Sciences Building 1675 Observatory Drive	263-4324	parrish@calshp.cals.wisc.edu Fax: 2-5157
Patankar, Manish Assistant Professor	Obstetrics and Gynecology	Box 6188 CSC-H4 600 Highland Ave Madison, WI 53792	262-8871	patankar@wisc.edu Fax:
Peterson, Richard Professor	Pharmacology	5109 Rennebohm Hall 777 Highland Ave.	263-5453	rep@pharmacy.wisc.edu Fax: 5-3316
Rutledge, Jack Professor	Animal Sciences	472 Animal Sciences 1675 Observatory Dr.	263-6993	rutledge@calshp.cals.wisc.edu Fax: 2-5157
Schuler, Linda Professor	Comparative Biosciences; Sch. of Vet. Med.	4354/B Veterinary Medicine Bldg. 2015 Linden Drive	263-9825	schulerl@svm.vetmed.wisc.edu Fax: 3-3926
Shah, Dinesh Professor	Obstetrics and Gynecology	6 Center, Meriter Hospital 202 South Park Street	267-6618	dmshah@wisc.edu Fax:
Sheffield, Lewis Professor	Dairy Science	864 Animal Sciences Building 1675 Observatory Drive	263-9867	lgsheffi@wisc.edu Fax: 3-9412
Smith, Susan Professor	Nutritional Sciences	340A Nutritional Sciences 1415 Linden Drive	263-4316	suesmith@nutrisci.wisc.edu Fax: 2-5860
Terasawa, Ei Professor	Dept. of Pediatrics; Primate Center	217 Primate Center 1223 Capitol Court	263-3579	terasawa@primate.wisc.edu Fax: 3-3524

Thomson, James Professor	Department of Anatomy: Primate Center	Primate Center 1220 Capitol Court	263-3585	thomson@primate.wisc.edu Fax: 3-3517
Watters, Jyoti Assistant Professor	Comparative Biosciences; Sch. Of Vet. Med.	4470 Veterinary Medicine 2015 Linden Drive	262-1016	jjwatters@wisc.edu Fax: 3-3926
Wiltbank, Milo Professor	Dairy Science	856 Animal Sciences Building 1675 Observatory Drive	263-9413	wiltbank@calshp.cals.wisc.edu Fax: 3-9412
Yu, Ziming Assistant Professor	Obstetrics and Gynecology	7 E Meriter Hospital 202 South Park Street	267-6314	zyu1@wisc.edu Fax: 257-1304
Zheng, Jing Assistant Professor	Obstetrics & Gynecology	7 E. Meriter Hospital 202 S. Park St. Madison, WI 53715	267-6226	jzheng@wisc.edu Fax: 257-1304

Graduate Student Directory

Student	**Degree Objective** **Major Professor**	**Department**	**Campus Address**	**Phone**	**E-mail**
Jennifer Arens	Ph.D. M. Patankar	OB—Gyn	Box 699 CSC, Module H4, 600 Highland Ave.	263-9755	arens@wisc.edu
Justin Bushkofsky	Ph.D. Rotation				bushkofsky@wisc.edu
Tien-cheng (Arthur) Chang	Ph.D. T. Golos	OB-Gyn	1223 Capitol Court	263-3534	tchang2@wisc.edu
Celina Checura	Ph.D. M. Wiltbank	Dairy Science	B2 AHABS, 1656 Linden Dr.	262-1202	cmchecura@wisc.edu
Jessica Drenzek	MS T. Golos	OB-Gyn; Primate Center	1223 Capitol Court	263-3534	jdrenzek@primate.wisc.edu
David Engle	M.S. (MD Fellow) Patankar	OB-Gyn	Box 6188 Clinical Science Center-H4 600 Highland Ave	263-6606	dengle@wisc.edu
Lefric Enwall	Ph.D. J. Parrish	Animal Sciences	770 Animal Sciences,1675 Observatory Dr.	263-7698	leenwall@wisc.edu

Miguel Gallego	Ph.D. Atwood	Medicine	4th Floor, 2500 Overlook Dr	2561901	mg3@medicine.wisc.edu
Jennifer Gavinski	Ph.D. L. Sheffield	Dairy Science	856 Animal Sciences, 1675 Observatory Dr	263-5147	jjgavins@wisc.edu
Behzad Gerami-Naini	Ph.D. T. Golos	OB-Gyn; Primate Center	1223 Capitol Court	263-3534	bgeraminaini@wisc.edu
Maria Giakmoupoulous	Ph.D. T. Golos	OB-Gyn; Primate Center	1223 Capitol Court	263-3534	giakoumopoul@wisc.edu
Kevin Huls	M.S. (MD Fellow) R. Magness	Ob-Gyn	6 Center Meriter Hospital, 202 South Park Street	267-6618	huls@wisc.edu
Beverly Hutcherson	M.S. D. Abbott	OB-Gyn; Primate Center	1220 Capitol Court	265-4150	research_doc@hotmail.com
Lynn Jacobson	Ph.D. Rotation				lmjacobson2@wisc.edu
Yizhou Jiang	Ph.D. Zheng	OB-Gyn	1 PAB. Meriter Hospital, 202 S. Park St.	267-6314	jiang5@wisc.edu
Nichole Korpi	Ph.D. (minor) P. Bertics	Biomolecular Chemistry	587 Medical Sciences Center 1300 University Ave	262-1347	nlkorpi@wisc.edu
Jinwoo Lee	Ph.D. C. Jefcoate	Molecular and Cellular Pharmacology	2683, 2683 Medical Sciences Center 1300 University Ave	263-3128	jwlee7@wisc.edu
Paul Lentz	M.S. L. Sheffield	Dairy Science	856 Animal Sciences 1675 Observatory Dr.		plentz@wisc.edu
Sekoni Noel	Ph.D. Rotation	Pediatrics	1223 Capitol Ct.	263-3543	sekoni_n@hotmail.com
Amy Reeder	Ph.D. J. Rutledge	Animal Sciences	470 Animal Sciences 1675 Observatory Dr.	265-6422	alreeder@wisc.edu
Christina Pattison	Ph.D. I. Bird	OB-Gyn	7 E. Meriter Hospital, 202 S. Park St.	267-6314	jcpattison@wisc.edu
Carla Piccinato	Ph.D. M.Wiltbank	Dairy Science	852 Animal Sciences, 1675 Observatory Dr.	263-8802	cpiccinato@wisc.edu
Prashob Poyarette	M.S. Atwood	Medicine	4th Floor, 2500 Overlook Dr	2561901	porayette@wisc.edu

Yang Song	Ph.D. J. Zheng	OB-Gyn	1 PAB Meriter Hospital, 202 S. Park St.	267-6314	yangsong@wisc.edu
Jeremy Sullivan	Ph.D. I. Bird	OB-Gyn	7 E. Meriter Hospital, 202 S. Park St.	267-6314	jasullivan@wisc.edu
Jessica Quam	Ph.D. G. Cezar	Animal Sciences	754 Animal Sciences 1675 Observatory Dr.	263-4308	jaquam@wisc.edu
Cara Raphael	M.S. M. Patankar	OB-Gyn	Box 699 CSC, Module H4, 600 Highland Ave.	263-9755	caraphael@wisc.edu
Rao Zhou	Ph.D. D. Abbott	OB-Gyn; Primate Center	1220 Capitol Court	265-4150	raozhou@primate.wisc.edu

A History of the Endocrinology-Reproductive Physiology Program

The ERP Program at the University of Wisconsin-Madison was formally organized in 1959. In 1963 Drs. L.E. Casida, Professor, Department of Genetics; W.H. McShan, Professor, Zoochemistry, Department of Zoology; R. K. Meyer, Chairman and Marshall Professor of Zoology; B. M. Peckham, Chairman and Professor of Obstetrics and Gynecology; and R.C. Wolf, Associate Professor, Department of Physiology, submitted an application to the Ford Foundation and received $1,500,000 to support the program for five years, which was then further extended to 1970. In addition to the Ford Foundation award, this group prepared a successful training grant application to the National Institute of Child Health and Human Development for $1,000,185. Funds from both grants enabled the ERP Program to increase the number of trainees in the program. In 1968 the program staff also expanded to include: Drs. A.E. Colás, Professor of Obstetrics and Gynecology and Physiological Chemistry; N.L. First, Professor of Meat and Animal Science; O. J. Ginther, Assistant Professor of Veterinary Science; H. J. Karavolas, Assistant Professor of Physiological Chemistry; and K.W. Thompson, Professor of Obstetrics and Gynecology. The original group from 1963 and new faculty from 1968 proceeded with a renewal application of the National Institute of Child Health and Human Development training grant (above). This successful renewal no longer stipulated a specific number of trainees from developing countries be enrolled in the ERP Program. The ERP Program then continued along these lines and over the following decades developed a worldwide reputation as a program of excellence. In 1972 additional faculty were added to the ERP Program including Dr. J. Gorkski, Professor of Biochemistry and Dr. D. Dierschke, Assistant Professor of Meat and Animal Sciences. Of note, during the next three decades, the program was awarded further support both alone (NIH Training Grants 1970-1972, 1978-1982, AGRICCSRS 1987-1992, US Army 1996-2001) and in conjunction with other notable programs (Cell and Molecular Biology Program, Developmental Biology, and University departments under the umbrella of a Gamete and Embryo Biology training grant through NICHD (1989-1993). Also by this time, the longstanding existence of the program was now shown by the prominent achievements of its early trainees, many of which have gone on to meritorious achievements.

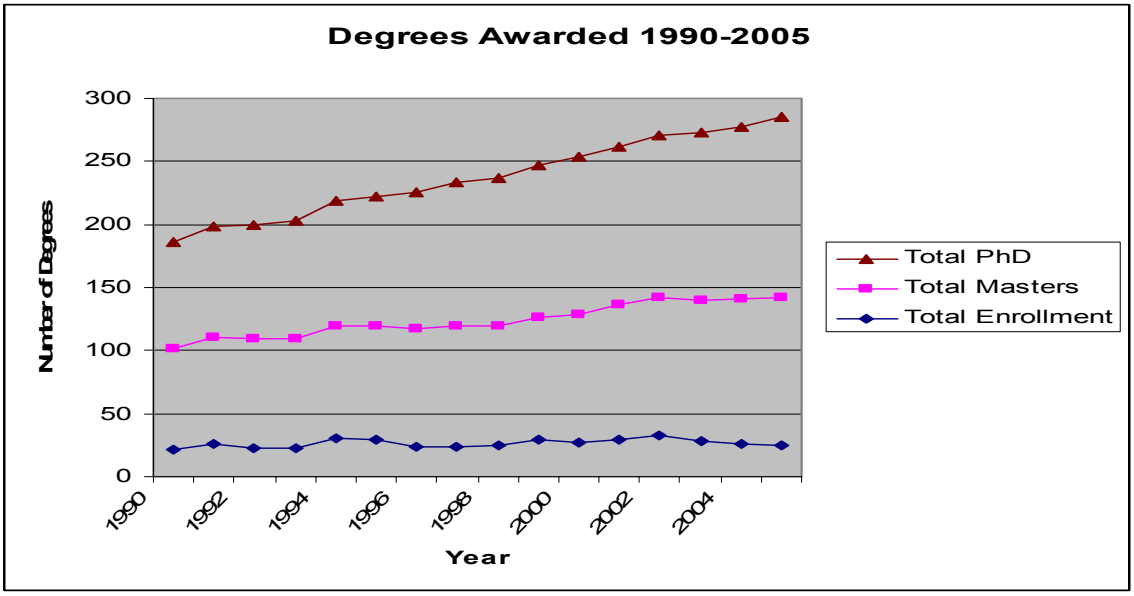
As the program passed into the 1990's many of the original faculty had moved or retired but new faculty were added, increasing the diversity and breadth of research opportunities. Greater involvement was seen in particular from the Wisconsin Regional Primate Center as well as the recently developed Perinatal Research Division of the Dept OB/Gyn. The outcome is an enhanced and broadened program with continued strength derived from studies in the traditional reproductive science/animal science/dairy science areas but with further emphasis on studies aimed directly at human/nonhuman primate reproduction. To date the program has produced 102 M.S. and 125 Ph.D. graduates since 1963.

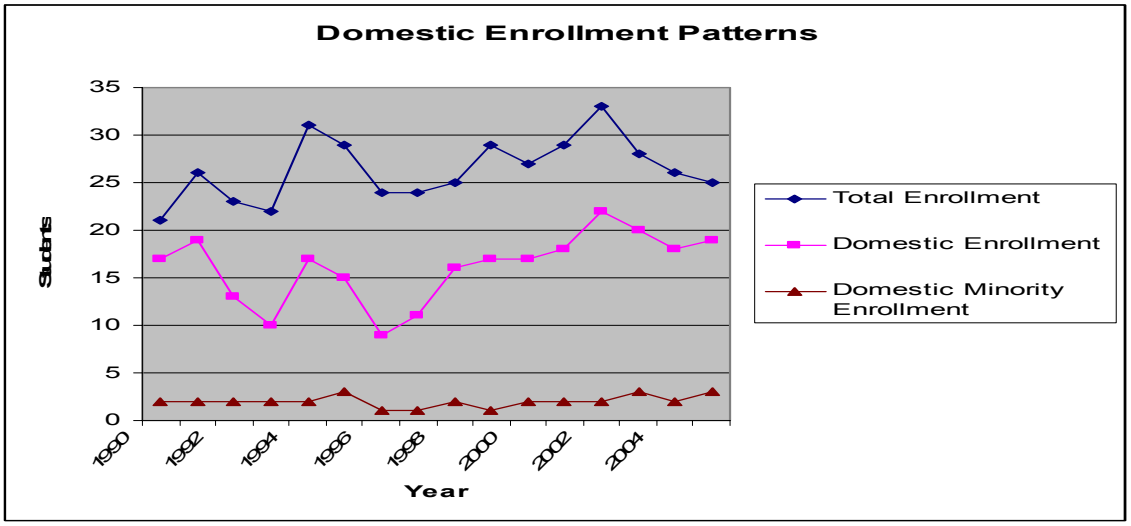
Since 2000, the ERP Program has continued to greater involvement with faculty from the Medical School and in particular, the Department of Obstetrics and Gynecology. In 2005 conversations with the Dean's of the Graduate School and Medical School were conducted and approval was sought to realign the ERP Program with the Medical School. Final approval and transfer was complete in April 2006. Administrative offices were moved to take advantage of the administrative structure offered by the Department of Obstetrics and Gynecology as well as to develop new post-doctoral training opportunities for MD's seeking basic science training. A new post doctoral training grant application (T32) was submitted and is under review (summer 2006).

In the last six years in particular, the changes in faculty have resulted in a shift in program direction as described, but the program has maintained its productivity and this is reflected in a steady increase in grant funds awarded to the now 31 individual faculty (currently in excess of $30,000,000). During the past ten years ERP has maintained 23-30 predoctoral students at any one time.

The ERP Program anticipates continued growth in the area of translational research that bridges basic laboratory research to patient care and vice versa. The enrollment of MD's participating in the new Material Fetal Medicine Fellowship will be a positive growth area for the ERP Program faculty and students.

Additional Enrollment/Graduation Data 1990-2005.





Organizational Structure of the ERP Program

Director: Ian M. Bird, Ph.D., Associate Professor
Department of Obstetrics and Gynecology

Assistant Director: Ronald Magness, Ph.D., Professor
Department of Obstetrics and Gynecology; Director- Perinatal Research Laboratories

Program Administrator: Tiffany Bachmann

Committees:

Steering Committee:
I. Bird, Chair
D. Abbott
E. Alarid
T. Golos
J. Parrish
L. Sheffield
E. Terasawa
C. Pattison, Student Representative
T. Bachmann, Ex-Officio Member

Admissions & External Affairs:
R. Magness
D. Olive
E. Terasawa
M. Wiltbank
J. Zheng
M. Patankar
T. Bachmann

Diversity:
P. Kling, Chair
W. Bosu
D. Peterson
J. Watters
T. Bachmann

Student Affairs:
I. Bird, Chair
P. Bertics
J. Odorico
J. Parrish
C. Jefcoate
Student Representative: open
T. Bachmann, Ex-Officio Member

Faculty Research Descriptions

David Abbott, Ph.D. The multidisciplinary and collaborative research program in mammalian reproductive biology comprises two major recurrent themes that have been present since the days of my Ph.D. thesis work. One involves social regulation of reproductive neuroendocrinology and its implications for understanding the neuroendocrine basis of infertility in women. The second involves the development of androgen excess during early life and its consequences for fetal programming of ovarian and metabolic dysfunction in adulthood (prevalent health problems in women today). Both themes focus on proximate mechanisms constraining female reproductive success and the use of experimental manipulation to determine physiological cause. Recent research developments in my laboratory have placed us in a position to (1) directly determine the specific neuroendocrine mechanisms mediating social rank-related hypogonadotropic anovulation in marmosets, and (2) experimentally determine the physiological bases of hyperandrogenic anovulation caused by prenatal androgen excess in female rhesus monkeys. Both initiatives address common causes of infertility in women, namely (1) hypothalamic (psychogenic) amenorrhea and (2) polycystic ovarian syndrome (PCOS).

Our nonhuman primate research models are also providing opportunities to study the consequences for metabolic function of both steroid hormone deficiency and excess. Our work with hypoestrogenic, anovulatory subordinate female marmosets is providing novel insight into estrogen-depletion bone loss and metabolic bone disease, while our work with hyperandrogenic, prenatally androgenized female rhesus monkeys is unveiling permanent endocrine reprogramming resulting in pancreatic impairment, abdominal adiposity, hyperlipidemia and increased bone mineralization. Such studies not only allow us to obtain new understanding of the causes of human pathology, but they also serve to improve our understanding of nonhuman primate physiology and reproductive success which can have significant impact on the management of remaining populations in captivity and the wild.

Elaine Alarid, Ph.D. The endocrine system is a complex network of hormonal signals that functions to maintain homeostatic balance under varying physiological conditions. A central component in orchestrating control of endocrine function is the anterior pituitary. The anterior pituitary integrates information from the central nervous system and peripheral organs, and produces regulatory hormones that control hormone production at secondary endocrine sites. How does the pituitary interpret multiple and sometimes conflicting signals? Its response is in part, controlled by cellular concentration of hormone receptors. Our current focus is to understand the control of estrogen receptor (ER) content. We have discovered that estrogen induces rapid loss of ER by invoking proteasome-mediated proteolysis. This pathway represents a non-genomic action of estrogen that differs from its classical transcriptional activation function. Furthermore, it adds an additional level of complexity to the control of estrogen responsiveness which has been previously unappreciated.

Craig Atwood, Ph.D. Research in my laboratory draws together our interests and expertise in reproductive endocrinology and neuroscience in order to examine experimentally the hormonal regulation of aging and Alzheimer's disease. The basic premise behind our research is that hormones that regulate reproduction in mammals act in an antagonistic pleiotrophic manner to control aging via cell cycle signaling; promoting growth and development early in life in order to achieve reproduction, but later in life, in a futile attempt to maintain reproduction, become dysregulated and drive senescence (Bowen and Atwood, 2004). In essence, we believe that reproductive hormones regulate our aging by modulating the life cycle of cells. My laboratory examines two major research themes. The first research theme examines the role of HPG hormones in modulating healthy aging and lifespan, with an emphasis on gene expression, utilizing pituitary hormone lowering drugs to dissect hormonal pathways that promote longevity and their mechanism of action, and developing strategies to reverse or halt these hormonal declines. The second theme examines the role of the hypothalamic-pituitary-gonadal axis in neurodegeneration associated with Alzheimer's disease (i.e. in synaptic and neuronal loss, amyloid deposition and neurofibrillary tangle formation). This research has been instrumental in the implementation of an anti-gonadotropin drug into Phase 3 clinical trials for the treatment of AD (Voyager Pharmaceutical Corp., Raleigh , NC).

Paul Bertics, Ph.D. The major goal of the Bertics research program is to characterize the processes whereby cellular proliferation and differentiation are variably and coordinately modulated by growth factors, cytokines (interleukin-5 (IL-5)) and toxins (i.e., bacterial lipopolysaccharide or endotoxin). Principally, the laboratory is focused on the study of epidermal growth factor (EGF) and growth hormone (GH), and there exists considerable evidence that EGF and GH play major roles in the control of cellular proliferation and development. The receptors for these two agents have been co-localized to a variety of different tissues/cell types including mammary epithelia, fibroblasts, liver, ovary, and other

reproductive tissues. Substantial information is available on EGF receptor structure and its properties, particularly as they pertain to its intrinsic, ligand-stimulated protein-tyrosine kinase activity. Nonetheless, comparatively little is known about its regulation and role in differentiation and reproduction. In terms of reproductive function, EGF has been found to be critical for stimulating the meiotic phase of spermatogenesis, and for stimulating the mammary gland growth required during pregnancy and lactation. EGF receptor action has also been linked to embryogenesis, and work from the Bertics group has demonstrated the binding of EGF and transforming growth factor-a in mammalian preimplantation embryos. In addition, other studies from the Bertics group have examined the ontogeny of the EGF receptor during development of the fetal bovine mesonephros and the urogenital tract.

Ian Bird, Ph.D. Studies in the Bird research program include: Control of pregnancy-induced changes in Nitric Oxide and prostacyslin production in uterine artery endothelium in order to regulate uterine blood flow, with particular emphasis on associated pregnancy-induced changes in uterine artery endothelial cell signaling pathways; Control of pregnancy-induced cell expression and function of/signaling by Angiotensin II-Type1 and –Type 2 receptors in uterine artery endothelium. Control of adrenal zonation and function by Angiotensin II and integration of adrenal and gonadal steroidogenesis in higher mammals/humans. Gestational development of zonation and function of fetal adrenal gland in sheep and primate; Role of nitric oxide in control of lyase versus hydroxylase activities of cytochrome P450 17-alpha hydroxylase and so cortisol vs androgen production.

William Bosu, Ph.D. Primary research emphasis is on the physiological processes involved in the reestablishment of ovarian activity in postpartum cows, with special reference to pathophysiological mechanisms involved in intrauterine infection induced Cystic Ovarian Disease. Specifically our present research includes projects aimed at pinpointing the site of action of lipopolysaccharide on the hypothalamic-hypophyseal-axis in the induction of abnormalities in folliculogenesis and ovulation.

Gabriela Cezar, Ph.D. Stem Cell research.

Karen Downs, Ph.D. Developmental and genetic control of fetal extraembryonic lineage formation during mouse gastrulation, use of mammalian stem cells in gene therapy.

Theresa Duello, Ph.D. Regulation of pituitary receptors for gonadotropin-releasing hormone; regulatory mechanisms resposible for the differential secretion of two hormones from the same cell of syncytium; paracrine regulatory mechanism in the placenta.

Marc Drezner, M.D. My research emphasis focuses on the integrated regulation of phosphorous and vitamin D metabolism and the coordinated modulation of bone mineralization. Recent success in the laboratory includes cloning the gene for X linked hypophosphatemia and have discovered a new class of hormones, phosphatonins.

Oliver Ginther, Ph.D. Studies in the Ginther research program include: Reproductive physiology of the mare including most aspects of anestrus, estrus, dietrus and pregnancy; physical interactions between the embryo and uterus in horses and cattle; basic and applied aspects of regression of the corpus luteum by prostaglandins and the uterus.

Thaddeus (Ted) Golos, Ph.D. The Golos laboratory examines questions of placental biology relevant to human health and disease. We use both nonhuman primate models as well as

human clinical materials in our studies. Under this broad focus, research areas include the transcriptional control of the specification of the trophoblast lineage (of particular interest are basic helix-loop-helix and homeobox transcription factors); maternal-fetal immune tolerance (nonpolymorphic MHC class I molecules on a subset of placental cells and their interactions with the maternal immune system), placental development and function in the clinical setting of maternal diabetes, particularly the influences of glucose and oxygen on placental vascular development, and gene therapy and gene transfer at the primate maternal-fetal interface to develop experimental and therapeutic models of utero-placental function and dysfunction.

Pamela Kling, MD Current research projects are focused in the following areas: 1) Roles of Enteral Hematopoietic Growth factors in Early Development; 2) Vaculogenic Effects of Erythropoietin in the Immature Gastrointestinal Tract; 3) The Effects of Chronic Hypoxia on Erythropoiesis and Iron Metabolism in the Fetus; 4) Anemia and Iron Metabolism in the Fetus and Premature Newborn; and 5) Role of Pancrine Production of Erythropoietin in Placental Angiogenesis.

Colin Jefcoate, Ph.D. P450 cytochromes catalyze reactions involving transfer of oxygen atoms, usually from molecular oxygen, to a substrate. They participate in a non-specific manner in xenobiotic metabolism, including drug clearance, but also bioactive carcinogens. Other family members catalyze specific biosynthetic reactions in pathways, such as steroid synthesis.

This laboratory has recently cloned P450 (CYP1B1), which is present in steroid-regulated tissues, steroid-synthesizing tissues, and embryos. It is postulated that this gene participates in developmental regulations, confirmed by recent linkage of BYP1B1 to congenital glaucoma. This laboratory has characterized the gene and 5'-flanking sequence and study gene regulation and function in mammary and fetal cells, notably by processes in involving the Ah receptor. The laboratory studies regulation of cholesterol conversion to pregnenolone, which takes place in specialized mitochondria and initiates all steroid synthesis. The project examines how the peripheral benzodiazepine receptor and StAR protein may act to regulate this process.

Ronald Magness, Ph.D. Major projects in the Magness Program include: 1) Endothelial-derived vasodilators in pregnancy: expression and endocrine signaling mechanisms; 2) Estrogen and progesterone regulation of endothelial nitric oxide and prostacyclin production as it affects uterine and systemic blood flow; 3) Uterine and placental angiogenesis, and how angiogenic factors affect uterine and placental blood flow; 4) the regulation of endothelial nitric oxide production in uterine and placental vasculature at the maternal fetal interface in both the human and ovine models; 5) the role of shear stress in modulating uterine and placental endothelial vasodilator production.

Thomas Martin, Ph.D. Peptide hormones and neurotransmitters mediate intercellular communication in the endocrine and nervous systems. These signaling molecules are secreted by the fusion of secretory vesicles with the plasma membrane in exocytosis, a process that is highly regulated. Two distinct secretory pathways, one involving synaptic vesicles (SVs) and the other employing dense-core vesicles (DCVs), mediate the release of fast-acting synaptic transmitters or peptide hormone and modulatory transmitters, respectively. Exocytosis of both DCVs and SVs is dependent upon and activated by increases in cytoplasmic Ca^{2+}. Our current research is directed at elucidating the molecular machinery responsible for Ca^{2+}-dependent DCV exocytosis. These studies are of potential relevance for understanding the molecular basis for peptide hormone, neuropeptide and modulatory transmitter secretion.

James Ntambi, Ph.D. Cellular differentiation and hormonal and dietary regulation of gene expression.

David Olive, M.D. My research in reproductive endocrinology has covered a variety of areas, all tied together by the common thread of understanding disease processes that alter normal hypothalamic-pituitary-ovarian-uterine functions. The disorders of primary focus have been endometriosis and uterine fibroids, with some work also in polycystic ovarian syndrome. Methodology has ranged from basic bench research to clinical trials and, recently, epidemiologic investigation. The philosophical base is to not simply report phenomenology, but rather to carefully formulate hypotheses, design experiments to test those hypotheses, and finally refine the "big picture" based upon the results of the studies. This systematic, stepwise approach to investigation is one I believe is often neglected in practice, and to this end I have written frequently about the importance of quality research as a tool for understanding disease processes.

Jon Odorico, M.D. Our laboratory is interested in using embryonic stem (ES) cells to study pancreatic islet development. Despite advances in our understanding of islet ontogeny, there are still significant gaps in our knowledge. Specifically, we do not yet understand precisely how insulin secreting beta cells and other endocrine cell types within mammalian pancreatic Islets of Langerhans are specified from embryonic foregut endoderm, or what complement of transcription factors direct this fate choice. Furthermore, what is the exact phenotype of islet progenitor cells, and what are the critical epithelial – mesenchymal interactions that guide this developmental process, are important questions that have not been answered. We have recently described the derivation of islet progenitor cells and mature islet cell types expressing insulin, glucagon, somatostatin, and pancreatic polypeptide from murine ES cells induced to differentiate in culture. In this *in vitro* differentiation system many aspects of normal islet development are reproduced, thus offering a simple, controllable culture model in which to study islet ontogeny.

John Parrish, Ph.D. The goal of the Parrish lab is to understand why males differ in fertility. The experimental model used is the bovine as this is the only species with extensive quantitative fertility data available. Several approaches are being used to determine why bulls differ in fertility. One approach is to examine the mechanisms of sperm capacitation focusing on the regulation of intracellular calcium, pH and □amp within sperm. Another approach has been to examine how bovine sperm interact with oviduct cells in vitro to induce capacitation and maintain sperm viable for extended lengths of time. The third approach is to examine how sperm nuclear shape is related to fertility. In this approach novel methods have been developed to quantify sperm nuclear shape with Fourier Harmonic Analysis. The last approach is to examine how scrotal insulation affects in vitro fertility of sperm and its relationship with changes in sperm nuclear shape and the biochemical regulation of capacitation.

Manish Patankar, Ph.D. The primary focus of my research is to devise specific methods for early diagnosis of epithelial ovarian cancer (EOC) and to understand the effect of factors produced by ovarian tumors on the functional capacity of tumor infiltrating lymphocytes. This research involves extensive utilization of glycoproteomic analysis in conjunction with cellular immunology, molecular biology and glycobiology. These studies are supported by grants from the Department of Defense and the Elsa U. Pardee Foundation.

Richard Peterson, Ph.D. The goal is to determine consequences of perinatal TCDD exposure on prostate development in the C57BL/6 mouse and elucidate mechanisms involved. Specific aims. Are to identify aberrant effects of TCDD on development of ventral (VP), dorsolateral

(DLP), and anterior (AP) prostate, determine using AhR knockout (AhRKO) mice if these effects require AhR, determine critical periods for producing them, elucidate androgen dependent mechanisms for causing them, determine if TCDD acts directly on urogenital sinus (UGS) or prostate to inhibit development, determine if co-exposure to a natural AhR antagonist in human food, resveratrol, ameliorates TCDD disruption of prostate development, identify during the critical period TCDD responsive genes in UGS, determine using a dose response approach TCDD responsive genes in UGS that may be involved in TCDD inhibition of prostatic budding, and determine long-term consequences of perinatal TCDD exposure on prostate size, histology, and growth in senescence.

Jack Rutledge, Ph.D. Current research interests are in applications of *in vitro* bovine embryo production and allied technologies to animal breeding and animal production systems. I also have interests in improving the technologies; for example one of my current students (Men) has worked on vitrification of cattle oocytes. Another (Fischer-Brown) is working on dynamics of embryonic growth and development as it relates to culture medium.

Linda Schuler, Ph.D. The Schuler laboratory is interested in the interactions of prolactin and related hormones with other growth factors and hormones at fetal and maternal targets during pregnancy. They have extended studies on the actions of prolactin in mammary alveolar development during pregnancy to its role in the development and progression of mammary cancer. Using a variety of in vitro models, they examine control of receptor expression including receptor internalization and linkage to signal transduction, cell specific target genes, and signaling pathways employed. They have developed transgenic mouse models using a non-hormonally responsive, mammary specific promoter in order to examine interactions on preneoplastic processes in vivo.

Dinesh Shah, M.D. My area of research interest is mechanisms of preeclamptic hypertension, which obviously has broad relevanced to the physiology and patholphysiology of reproduction. We have investigated rennin secretion from chrorionic cells and steroid-mediated regulation of rennin secretion in stromal/decidual cells. We have contributed significantly to the concept that there is a complete rennin angiotensin system in the human uterus, and its regulation may have implications for preeclamptic hypertension. We are currently expanding into the area of cell-to-cell interaction in the deciduas specifically related to macrophages and endothelial cells.

Lewis Sheffield, Ph.D. Research is focused on understanding the growth and function of the mammary gland. Models used include laboratory animals (mice), domestic animals (cows) and cell cultures of human, mouse or bovine origin. We have shown that local expression of epidermal growth factor (EGF) in the mammary gland is under control of protein and glucocortioids. We are currently investigating the molecular mechanisms by which EGF expression is regulated and physiological roles of EGF in the mammary gland. In related studies, we have examined the interactions of EGF with other hormones under some conditions, protein can inhibit EGF action. We are investigating the mechanisms of this inhibition, with particular emphasis on the role of protein kinase C.

Susan Smith, Ph.D. This laboratory studies the molecular mechanisms by which dietary components affect prenatal development, adversely and beneficially. Work focuses on three agents which are linked at the molecular level: retinoids (vitamin A), ethanol, and dioxin (e.g. Agent Orange). Our long-term goal is to identify maternal intakes, which pose a risk to healthy fetal development.

Ei Terasawa, Ph.D. Research of my laboratory focuses on the study of the hypothalamic neuroendocrine system, the luteinizing hormone releasing hormone (LHRH) neurons. The aims of the current studies are: 1) to determine the regulation of the LHRH neurosecretory system in controlling the onset of puberty; 2) to determine the mechanism of oscillatory activity of LHRH neurons; 3) to study the differentiation, development, and migration of LHRH neurons; 4) to investigate ovarian steroid action on pulsatile LHRH release; and 5) the role of the hypothalamus in menopause.

James Thomson, Ph.D. The major focus of my lab is on understanding how primate embryonic stem (ES) cells choose between self-renewal, apoptosis, and differentiation into specific lineages. Species such as the rhesus monkey provide an extremely accurate model for understanding human development, but the limited availability of embryonic material has historically limited progress in primate experimental embryology. For this reason, my group has isolated primate ES cells to serve as an accurate tissue culture model for the differentiation of human tissues. We reported the first isolation of ES cell lines from a non-human primate in 1995, work that led us to the first successful isolation of human ES cell lines in 1998. Human ES cells are capable of unlimited undifferentiated proliferation, and yet maintain the ability to form many, and likely all, of the cells that make up the adult including gut and respiratory epithelium (endoderm); bone, cartilage, muscle, blood vessels, and hematopoietic cells (mesoderm); skin, astrocytes, oligodendrocytes, and neurons (ectoderm). We are currently studying the factors that promote human and rhesus monkey ES cell self-renewal and, in collaboration with other groups an the U. W., are studying the differentiation of these cells to hematopoietic, cardiac, pancreatic, and neural cells. We are examining shared mechanisms of self-renewal and pluripotency by comparing the gene expression patterns by human ES cells, hematopoietic stem cells, and neural stem cells. To identify genes that control self-renewal or that control specific differentiation events, we are developing powerful genetic screens based on phage display and lentiviral expression cloning. Ultimately, the differentiated derivatives of human ES cells could have important applications in transplantation medicine, and the rhesus monkey and rhesus ES cells will provide an essential model for developing novel ES cell-based therapies.

Jyoti Watters, Ph.D. - My research interests are thus centered around the molecular mechanisms employed by microglia that result in the gender-specific production of pro- and anti-inflammatory cytokines/agents that are ultimately involved inthe inflammation and neurotoxicity associated with diseases and disorders of the CNS. Because women often have a higher incidence or predisposition to certain immune and neurodegenerative disorders than men, I have particular interest in investigating the role of estrogens in microglial cell production of inflammatory mediators. The focus of my studies will thus revolve around investigating the effects that adenine nucleotides and estrogens exert on microglial cell MAPK activation (e.g. p38, JNKs, ERKs) which ultimately ntrolsmicroglial cell activity and their production of inflammatory mediators. My initial studies will utilize the microglial cell lines BV-2 and N9, to identify molecular targets of estrogen and nucleotide action. Subsequent studies will involve the use of primary microglial cells derived from estrogen receptor knockout mice as well as mice possessing genetic aberrations in nucleotide receptors important for microglial cell function (i.e P2X7).

Milo Wiltbank, Ph.D. Dr. Wiltbank is focused on three areas: Regulation of expression and action of the prostaglandin F2-alpha receptor, mechanisms involved in selection of the dominant follicle and development of effective reproductive management programs for dairy producers.

Ziming Yu, Ph.D. My research interests are the potential role for transcription factors, AP-1 and Ets-1 in particular, in the monocyte/macrophage-mediated regulation of biological functions of

human endometrial stromal cells and vascular endothelial cells in physiologic processes as well as pathologic conditions. More specifically my current research is primarily focusing on: 1) the decidual macrophage-mediated Ets-1 activation and placental angiogenesis in normal versus preeclamptic pregnancies; 2) the endometrial macrophage-mediated AP-1 activation and cell proliferation in endometrial stromal cells and the peritoneal fluid macrophage-mediated Ets-1 activation and angiogenesis in endometriosis.

Jing Zheng, Ph.D. My long-term goals are to determine cellular and molecular mechanisms that regulate angiogenesis and endothelial cell function, which ultimately control blood flow. My current research interests are to study effects of nitric oxide and angiotensin II on placental angiogenesis using human and ovine endothelial cell models, and signaling pathways. Specific research project include 1) determining whether in the fetoplacenta bFGF- & VEGF-induced angiogenesis is modulated in part via an increase in production of nitric oxide which in turn activates MAPK signal pathway and increases expression of bFGF & VEGF as well as their receptors; 2) determining whether newly identified VEGF receptor, neuropilin-1 and –2, are expressed in endothelial cells and their roles in placental angiogenesis and vasodilators; and 3) exploring roles of angiotensin II in regulation of angiogenesis and vasodilation. These studies, therefore, will glean important information on the mechanisms that regulate placental angiogenesis during late pregnancy and define the underlying molecular interactions of vasodilation and angiogenesis.

Graduate Student Handbook

Introduction

This handbook is intended for your use as a source of information throughout your graduate studies. This handbook contains most of the forms you will need during your graduate studies as well as checklists to monitor your degree progress. Copies of these forms are also available to download from the ERP Program web site at http://www.erp.wisc.edu.

Additional questions you may have concerning the Program that are not covered in the following pages should be directed to your major professor or one of the following:

Tiffany Bachmann, Program Administrator
1 South Park Street, Suite 555
Madison, WI 53706.
608.287-2322 (voice) 608.287-2426 (FAX)
Email: tabachmann@wisc.edu

Dr. Ian Bird, Program Director
7 E. Meriter Hospital
202 South Park Street, Madison, WI 53715.
608.267.6252 (voice)
608.257.1304 (FAX)
Email: imbird@wisc.edu

Committee Descriptions

Program Steering Committee: The purpose of this committee is to provide the Program Director with guidance on issues affecting the administrative function of the ERP Program. The immediate past Program Director will also serve on this committee. The Committee will also serve as the nucleus for the pre-doctoral training grant application. Members of this committee are: Dr. Ian Bird, Chair, Dr. David Abbott, Dr. Elaine Alarid, Dr. Ted Golos, Dr. John Parrish, Dr. Lewis Sheffield, and Dr. Ei Terasawa. Student Representative, Christina Pattison. Ex-Officio Member, Tiffany Bachmann.

Admissions and External Affairs: The purpose of the Admissions and External Affairs Committee is to set standards for acceptance into the ERP Program and screen applications during the admission periods in addition to recruitment and promoting the program to external organizations. Committee members are: Dr. Ron Magness, Dr. Manish Patankar, Dr. Ei Terasawa, Dr. David Olive, Dr. Milo Wiltbank, Dr. Jing Zheng, and Tiffany Bachmann.

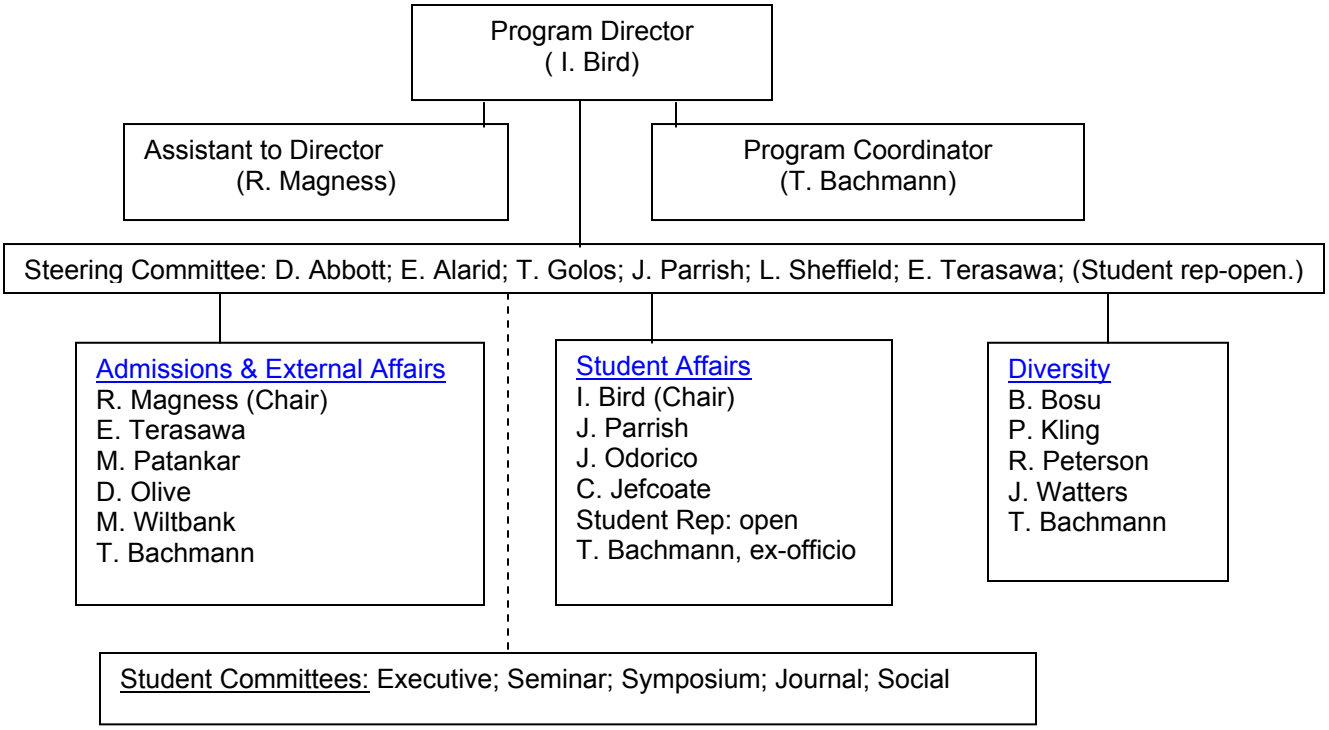
Student Affairs: This committee reviews the curriculum content of the Special Topics Courses, evaluates course requirements and makes policy as needed in addition to handling student issues. Members of this committee are: Dr. Ian Bird, Chair, Dr. Paul Bertics, , Dr. Colin Jefcoate, Dr. Jon Odorico, and Dr. John Parrish. Student Representative, open. Ex-Officio Member – Tiffany Bachmann

Diversity: This committee is responsible for enhancing the diversity of the ERP Program consistent with the University of Wisconsin policies. Faculty members are: Dr. William Bosu, Dr. Pam Kling, Dr. Dick Peterson, and Dr. Jyoti Watters. Tiffany Bachmann.

Seminar Committee: This committee's main purpose is to plan and conduct the ERP Seminar course (Animal Science 954/ Zoology 954). A student member will coordinate student presentations and guest speakers.

Symposium Committee: Each year graduate students of the ERP Program organize and host the annual symposium. Committee members are responsible for selecting a date, arranging keynote and invited guest speakers, hospitality and the preparation of symposium materials.

Program Administration



Graduate Curriculum In Endocrinology-Reproductive Physiology

The ERP Program will consider applications for a MS, MS/PhD or PhD. If a student enters for a MS program, please note that continuation to a PhD will require the student is in good academic standing and has the approval of the advisory/thesis committee to continue.

The following pages describe the degree requirements for the PhD and MS.

The Ph.D. Curriculum

This curriculum leads to the M.S. and Ph.D. degrees and has been designed for training prospective researchers and teachers in Endocrinology and Reproductive Physiology. Preparation for graduate training in Endocrinology-Reproductive Physiology normally should include undergraduate courses in physics, calculus, organic chemistry, genetics and physiology. Students coming into the Program vary widely in their background. Consequently, duration of the training period may vary.

A doctoral degree from the University of Wisconsin-Madison requires 32 graduate level credits (300 level or above) taken as a graduate student. Pass/fail courses do not count toward the degree.

The following courses are required for Ph.D. candidates and a grade of a B or better must be earned.

Core Course Requirements

A. Select one course from each of the three sections.
   - Statistics 571 (4 cr.) **or** Agronomy 771 (3 cr.) **or** Advanced Statistics
   - Animal Science 875- Endocrine Physiology (3 cr.) **or** Biochemistry 630 (3 cr.)
   - Biomolecular Chemistry 503 **or**[1] Biochemistry 501 (3 cr.)
     or Biochemistry 507 & 508 (6 cr.) **or** Biomolecular Chemistry 704 (6 cr.)

B. Seminar & Professional Development (AnSci or Zool. 954) each semester
   (See seminar policy below)

C. Neuroscience 700 – Professional Development

Additional Requirements –

Select one course each from items D, E, F

D. Advanced Biochemistry **or** Cell Biology
E. Advanced Endocrinology **or** Advanced Reproduction
F. Advanced Statistics
G. Advanced Topics Courses – Select two courses through Animal Science/ Dairy Sci or AHABS 875 (2 cr)
   - Gamete and Embryo Biology
   - Reproductive Patterns
   - Special Topics
   - Pregnancy, Parturition, and Lactation

H. Other - per Certification Committee

RECOMMENDED COURSES

The following is a list of recommended courses, however other courses may be appropriate on the advice of the Thesis Committee. As course numbers and level of difficulty vary by department and instructor, your Thesis Committee will determine what courses will be considered advanced given your background, research project and career goals. Consult the current Graduate Catalog and Timetable for availability. Courses may be cross-listed with multiple departments.

Department	**Course Number**	**Title**	**Semester Offered**
AHABS	528	Immunology	Fall
AHABS	529	Immunology Lab	Fall
Anatomy	660	Electron Microscopy: Theory and Practice	Summer: even yrs.
Animal Sciences	434	General Reproductive Physiology	Spring
Biochemistry	510	Biochemical Principles of Human and Animal Nutrition	Fall
Biochemistry	601	Protein and Enzyme Structure and Function	Fall
Biochemistry	620	Eukaryotic Molecular Biology	Spring
Biochemistry	651	General Biochemical Methods	Fall
Biochemistry	660	Biochemical Techniques	Fall

[1] Biomolecular Chemistry 503 is only recommended for students with a strong background in Biochemistry or related field.

Biochemistry	624	Mechanisms of Enzyme Action	Fall: even yrs.
Biochemistry	702	Biochemical Mechanisms of Regulation in the Cell	Spring
Biomolecular Chemistry	503	Human Biochemistry	Spring
Biomolecular Chemistry	504	Human Biochemistry Lab	Spring
Biomolecular Chemistry	704	Comprehensive Human Biochemistry	Fall
Dairy Science	305	Lactation	Fall
Genetics	466	General Genetics	Fall
Genetics	561	Introduction to Cytogenetics	Spring
Genetics	612	Prokaryotic Molecular Genetics	Fall
Genetics	677	Advanced Topics in Genetics	Fall
Molecular and Environmental Toxicology	625	Toxicology 1	Fall
Molecular and Environmental Toxicology	626	Toxicology 2	Spring
Molecular and Cellular Pharmacology	710	Cytostolic and Nuclear Signaling Mechanisms	Spring
Oncology	675	Protein Purification	Fall: odd years
Physiology	720	Principles of Human Physiology	Spring
Statistics	571	Statistical Methods for Biosciences 1	Fall
Statistics	572	Statistical Methods for Biosciences 2	Spring
Zoology	466	General Genetics	Fall
Zoology	570	Cell Biology	Fall

SEMINAR REQUIREMENT—see also Final Seminar Presentation

All students enrolled in the Program are required to participate in the Endocrine Seminar (Animal Sciences 954 or Zoology 954). Policies for registration are as follows: all students are required to give at least one 25 minute presentation each year (fall or spring semester) on their current research project. Sign up for dates will be coordinated through the Seminar Committee.

Students who will not make a presentation in a given semester must register for either 0 **OR** 1 credit and will receive a Satisfactory or Unsatisfactory (S or U) grade based on attendance and participation. No more than **three** absences will be allowed per semester to earn a Satisfactory grade.

These policies will continue to apply for students who have completed the requirements for dissertator status.

REGISTRATION REQUIREMENTS

Students with Research Assistantships (RA's) and who have not achieved dissertator status must register for 8-12 graduate level credits each fall and spring semester to remain eligible for tuition remission and health insurance. Students with summer RA's must register for at least

two graduate level credits. If you fall below full-time status, you are responsible for contacting your payroll and benefits coordinator.

Students who have achieved dissertator status must register for three credits (usually 990 Research Credits) each semester (fall, spring and summer) until their dissertation is on file at Memorial Library as well as register for the seminar series.

The same registration policy applies to international students. International students should consult the Office of International Student and Scholar Services at 262-2044 with questions regarding student status and their visa.

Registration requirements for summer vary by student status, however students are expected to register for the summer session if they are using campus facilities, staff time or intend to graduate. Consult the Graduate School Academic Guidelines for specific policies.

RESEARCH CREDITS

Students are expected to enroll for 990 Research Credits each semester until they have completed their degree. Students should contact their major professor or departmental timetable representative for authorization to register. Students receive a P grade (progress) each semester until the final semester when a letter grade will be given.

CERTIFICATION COMMITTEES

PhD Certification should be formed no later than the beginning of the second year. An advisor hold will be placed on the student's record and can be removed by the Program Coordinator when the Certification form is completed. All forms are available on the ERP Program website at http://www.erp.wisc.edu

The Certification Committee faculty should be from the student's primary area of research interest and represent potential graduate committee members. The student should work closely with his/her adviser and arrange a Certification/Advisory Committee during the first year of study for the purpose of recommending a specific plan of courses to study based upon the student's preparation and direction of proposed graduate research. The student should complete the "Certification for Ph.D. Candidates" form and distribute it during the certification meeting.

The conduct of original research resulting in a written thesis is required for graduate degrees in Endocrinology-Reproductive Physiology. Identification of an appropriate research topic and faculty mentor are critical steps in the development of a graduate program.

The Program offers tremendous flexibility to permit students to select courses best suited to their individual interests. In order to maintain this flexibility and yet preserve excellence in academics, students must work closely with their Committee members. Early certification and periodic progress updates with Committee members ensure continued success of the Program's format.

The Certification Committee is comprised of the following individuals:
A. Major professor
B. Two UW-Madison faculty named by student and major professor
C. Two UW-Madison faculty approved by Program Director
D. Additional members (optional)

PRELIMINARY EXAMINATION
The preliminary exam is scheduled when the candidate has completed the required course work and is ready to enter dissertator status.

Contact the Program office 3-4 weeks prior to examination date to obtain the appropriate examination application form for submission to the Graduate School and request that a warrant be obtained from the Graduate School office. Be prepared to provide the date of examination and members of your examining committee. Have available at time of examination:

(a) a complete transcript or record of undergraduate and graduate courses taken and grades received

(b) a copy of certification, and evidence of having completed
the requirements for the degree (for Preliminary and Final examinations)

Ideally the preliminary exam will be done in the third year unless there are extenuating circumstances. If exam hasn't been taken by the beginning of the 4th year, Program will enquire as to the student's plan or circumstances. The purpose is to identify problems at the prelim exam and this will then help determine if the student should re-evaluate the project, lab environment or continue in the program. The exam's aim is to see the thinking process of the project and clarify the plan for the thesis project by using a grant format; a significant amount of data is not required although many aim to at least show the project is technically achievable. Ideally all course work would be completed before the prelim is taken, however if there is a course requirement outstanding, the committee can sign the form, but withhold the date of completion. Student will not achieve dissertator status until that course is complete and the warrant is returned to the Graduate School.

Exam Format

First and most important note all written documents, questions, answers etc must be channeled through the appropriate personnel. Specifically, the initial proposal must be submitted to and approved for format by the program administrator before it is formally accepted and the clock begins. Note all written questions must be submitted by faculty for collation to the administrator in order be recorded and the administrator will communicate these directly to the faculty advisor for moderation before passing on to the student. Likewise students answers will be made to the administrator who will record them prior to forwarding to the committee members. Be aware deviation from this procedure can only mean unnecessary delays for all concerned.

a. Pre proposal preparation
    i. Before you begin to prepare your written document for the preliminary exam, you should discuss the following issues with your faculty advisor and your thesis committee:
        1. Major Grant Guidelines that you will follow (NSF, USDA, NIH)
        2. Scientific Content
        3. Availability of ALL concerned (candidate, advisor, committee) for the oral review. Keep in mind that the oral review cannot take place within 30 days of the submission of the written document.
b. Proposal development

i. The written portion of the exam must follow the specified guidelines of your selected grant agency. You are only responsible for the Scientific Proposal section. You do not need to include resource pages, biosketchs, budgets etc…Ask your advisor or committee members for sample proposals to review formatting and content style.
    1. Page formatting
        a. Use the font, text size, margin and spacing guidelines as required by the grant agency
        b. Number the pages consecutively
        c. Stay within the specified page limitations for the scientific proposal section; the proposal does not need to be maximum number of pages allowed.
    2. Content
        a. Your faculty member is responsible for reviewing the scientific content of each section
        b. Follow all heading requirements
        c. Follow all guidelines for the use of graphs, photos, tables and figures
        d. Review guidelines for inclusion of literature reviews and publication requests. If not generally included with a proposal to your agency, include this information following the main document.
    3. General Presentation
        a. Document must be word processed in a commonly available format (MS Word or Word Perfect)
        b. The completed document must be a single file with all images, tables, figures and graphs embedded into the document laid out in the style of the chosen national granting agency.
        c. Include a brief table of contents and cover page with your name, date submitted, and advisor's name.
        d. Follow all rules regarding the use of fonts and color. Do not rely only on color to convey your information as some will not have access to a color printer.

c. Proposal Submission
    i. Contact the Program Coordinator at least 24 hours prior to your expected date of distribution to check formatting and accessibility.
    ii. <u>The Program Coordinator will review your document to verify that it meets the formatting grant guidelines of your selected agency.</u> You and your advisor are responsible for reviewing the scientific content.
        1. Proposals that do not meet the proper formatting requirements will be returned to the student for corrections.
            a. The student may work in the program office to correct the formatting issues. PC computers are available.
        2. If the proposal passes the formatting check it will be converted to an Adobe Acrobat format.
    iii. The Program Coordinator will be responsible for sending out the final approved exam document to the committee members with a carbon copy of the message and document to the student. <u>This is the day at which the clock starts, not the day of submission by the student.</u>

d. Question Submission

i. Committee members are required to send their written questions to the Program Coordinator during the two week timeframe specified in the email.
ii. The Program Coordinator will compile the questions received into a single document and forward them to the student's advisor for review at the end of the two week period.
iii. The faculty advisor is responsible for reviewing the questions for clarity and repetitiveness and preparing a final copy to be given to the student and Program Coordinator.
iv. The student has two weeks from the date of receipt of the committees' questions to reply. The student must send the written replies to the Program Coordinator who will compile the written responses into a uniform document to be distributed to the committee members at the end of the two week period.

e. The Oral Exam
    i. Purpose
        1. The aim of the oral exam is to discuss the student's answers to the written questions and the scientific aims of the proposal as well as develop a sound timeframe for degree completion. By the end of the meeting the student and committee members should have a firm understanding of the remaining work to be completed, papers to be written and semester of completion.
    ii. Format
        1. The student may elect to give a brief presentation, not longer than 30 minutes to update the committee on new developments since the time the written document was sent.
        2. The student's faculty advisor is the chair of the committee and is responsible for keeping the meeting on track and completed in a reasonable amount of time.
        3. The discussion should be similar to grant review session.
    iii. After the exam
        1. If the student has passed the exam each committee member should sign the warrant.
        2. The student should return the signed warrant to the Program Coordinator to make a copy for the file and be returned to the Graduate School.
        3. The Graduate School will send the student a letter confirming dissertator status for the following semester.
        4. In cases where the student does not pass the preliminary exam, the committee can recommend two options:
            a. Retake the exam at a later date provided that the committee has given clear instructions for areas of improvement
            b. Recommend that the student terminate with an MS degree

ANNUAL PROGRESS REPORT

All ERP Program graduate students are required to complete an annual progress report by the last day of the ERP spring semester seminar. The progress report form is located at the end of this handbook and also on the ERP Program web site.

FINAL SEMINAR PRESENTATION

The student should contact the chair of the Seminar Committee to select a date for the final presentation. Students must register for 1 credit of Seminar and make a full length (55minute), lecture format presentation for that credit in the final year for each degree prior to the final defense. This presentation of original research at Animal Science/Zoology Seminar 954 will be graded by the course instructor and members of the audience. The student must earn at least a "B" grade for this presentation. If the minimum grade is not achieved the student must make a second presentation.

Although in the past the required ERP seminar and exit seminar have been one and the same thing; this need not be the case and indeed it may be easier for the PhD candidates if it were not. ERP candidates must have a graded seminar to fulfill requirement but this does not have to be the Exit seminar if it is not convenient.

The ERP seminar can be given any time during the final year if it is not the Exit seminar. The ERP seminar is graded by the audience. At the beginning of the presentation it must be made clear to the audience if this is or is not also an Exit seminar.

The Exit seminar format is to be approved by the committee. If the regular ERP seminar time is not convenient for the speaker, committee members or due to other scheduling conflicts, an outside (special time) seminar can be arranged by the student. **A departmental seminar is an acceptable forum, so long as it is announced to the entire ERP faculty body, the student's committee members and students in the Program.** The Exit seminar should be given close to the end of the final semester. It is desirable to have a gap between the Exit seminar and the thesis defense, although both can be given on the same date if circumstances dictate this. Ideally the Exit seminar should be given between one week (ideal) and three months maximum before the thesis defense exam. If all examiners were at the Exit seminar presentation students should skip repetition in the thesis defense and use the defense presentation for more detailed questions from the Committee.

DISSERTATION

The Graduate School will provide you with a copy of the "The 3 D's: Deadlines, Defending, and Depositing Your Ph.D. Dissertation." You will also receive " The Guide to Preparing Your Doctoral Dissertation." This booklet contains specific information about page margins, paper requirements, copyright policies, formatting and other resources.

FINAL EXAMINATION WARRANT

At least three weeks before the scheduled final oral exam, the student should contact the Program Coordinator to request the Final Oral Examination Warrant. At this time all progress grades should be removed using a grade change request form.

FINAL ORAL EXAMINATION

The student is responsible for scheduling the final oral examination with members of the Committee and providing them the dissertation at least four weeks in advance of the exam. The student will present his/her research to the panel as well as answer questions from them. Typically the exam is at least two hours in length.

Upon successful defense of the thesis, all members will sign the warrant. The original warrant should be taken to the Graduate School at the time of your final review of your thesis. Please provide the Office with a copy of the signed warrant for your student file.

AFTER THE FINAL ORAL EXAMINATION-GRAD SCHOOL FINAL REVIEW
After passing your oral defense, contact the Graduate School at 608-262-2433 to arrange an appointment for the final review. If you are defending near a semester deadline call immediately after your defense; appointment times fill rapidly during the two to three weeks before any deadline. Before you come for your final review make all corrections requested by your committee.

Dissertation review appointment times are 10:00-11:00 a.m. and 2:00-3:00 p.m. Monday through Friday. Reviews normally take about 15 minutes.

If you are requesting certification of your degree from the Registrar's Office, the grade(s) for the semester in which you are depositing your dissertation (and all other outstanding grades) must be reported to the Graduate School and to the Registrar before or by the time of your final review.

The following materials must be brought to 217 Bascom Hall for the final review:

- Warrant. Your Committee must be identical to the one approved on the Ph.D. Final Oral Committee Approval Form.
- Survey of Earned Doctorates.
- Bell and Howell Information and Learning formerly Microfilm Agreement Form. This form is found in "Publishing Your Dissertation", pp. A4 and A5.
- Three (3) extra copies of the Title Page. The title on one of the three copies is to have all equations, formulae, chemical symbols, and the like translated into words (for example, instead of "H2O", use "water").
- Committee's Page (do not hand write).
- Bell and Howell Information and Learning Abstract. This abstract must be signed by your adviser and is in addition to any abstract that may be in your dissertation.
- Completed unbound dissertation on high quality, white, 20 pound weight paper.

Depositing Your Dissertation
The copy of your dissertation will be retained by the Graduate School to be sent to Bell and Howell Information Learning for microfilming and binding.

After the Graduate School has approved your dissertation, you will be authorized to go to the Bursar's Window at 21 North Park Street to pay the microfilming & binding fee. You can pay with cash, checks, and money orders. ***Credit cards are not accepted.*** The Window hours are 8:00 a.m. - 4:00 p.m., Monday through Friday.

If you are registering and retaining copyright of your dissertation through Bell and Howell, you will also pay the copyright fee at the Bursars office. The copyright fee is now $45.00. Cash, personal checks and money orders are accepted.

GRADUATION
Information about graduation ceremonies is available from the Secretary of the Faculty web site at http://wiscinfo.doit.wisc.edu/secfac/commence/Commence.html . The Program Coordinator will announce deadlines concerning commencement participation. Ceremonies are held in December and May. Students who complete degree requirements during August may participate in either ceremony. Participation in the commencement ceremony does not indicate degree completion. Degree completion certification letters can be requested the Registrar's

Office. Diplomas are mailed to the student's permanent address approximately 12 weeks after the degree deadline.

Master's Degree Curriculum

Students who select the Master's Degree option must earn at least 16 graduate level credits (300 level or above) excluding pass/fail and audit courses. Twelve of these credits must be didactic course. A grade of a "B" or better must be earned in all courses.

CERTIFICATION

Due to the short time line for MS students, the First Thesis Committee meeting should be more than simply to just select course-work; time should also be devoted to discussing the project. Master's students are required to form their committee and meet within the first year otherwise an advisor hold will be placed on future registration. This hold can be removed by the Program Coordinator when the Advisory Committee form has been returned. All forms are available on the Program web site at http://www.erp.wisc.edu

The Committee will be comprised of three faculty: 1) Major Professor 2) faculty selected by both the student and major professor and 3) a faculty member approved by the Program Director.

COURSEWORK

Students must select one core course from each of the sections A, B, and C. The remaining degree requirements will be completed with courses selected from sections D-F. A grade of 'B' or better must be obtained in all courses.

Core Courses- Select one course from each section A-C

A) Animal Sciences 875 (3 cr.) Endocrine Physiology
or Biochemistry 630 (3 cr.) Cellular Signal Transduction Mechanisms

B) Statistics 571 (4 cr.) Statistical Methods for Bioscience I
or Agronomy 771(3 cr.) Experimental Design

C) Biomolecular Chemistry 503[2] (3 cr.) Human Biochemistry
or Biochemistry 501 (3 cr.) Introduction to Biochemistry
or Biochemistry 507 & 508 (6 cr.) Survey of Biochemistry
or Biomolecular Chemistry 704 (6 cr.) Comprehensive Human Biochemistry

Additional Course Requirements

D) Animal Science/ Zoology 954 Seminar (See also Seminar Policy)

E) Neuroscience 700 – Professional Development (incoming students entering Fall 2003 or later)

F) Additional courses selected in consultation with members of the Certification Committee
(See list of recommended courses)

G) One Advanced Topics course in Endocrinology-Reproductive Physiology

[2] Biomolecular Chemistry 503 is only recommended for students with a background in Biochemistry or related field.

- Gamete and Embryo Biology
- Reproductive Patterns
- Pregnancy, Parturition and Lactation
- Special Topics

RESEARCH AND THESIS

The conduct of original research resulting in a written thesis is required for graduate degrees in Endocrinology-Reproductive Physiology. Identification of an appropriate research topic and faculty mentor are critical steps in the development of a graduate program.

Students are expected to enroll for 990 Research Credits each semester until they have completed their degree. Students should contact their major professor for authorization to register. Students receive a P grade (progress) each semester until the final semester when a letter grade will be given.

MS students are required by to deposit their thesis in Memorial Library. Thesis guidelines are available from the Graduate School website at http://www.grad.wisc.edu.

ANNUAL PROGRESS REPORT

All ERP Program graduate students are required to complete an annual progress report by the last day of the ERP spring semester seminar. The progress report form is located at the end of this handbook and also on the ERP Program web site.

PRELIMINARY EXAM

While a prelim exam for Masters students is not traditionally required it would be remembered that the current Prelim format for PhD goes a long way to safeguarding the student against any unpleasant surprises at the final seminar or Thesis defense. By writing in the style of the grant the student is forced to consider the possible adverse outcomes and discuss alternate strategies that may well be necessary BEFORE they occur. In addition by having a detailed 'grant' proposal and study design the committee gets every opportunity to state BEFORE time runs out what problems they may have with the basic techniques, analysis, and design of the project in its closing stages. As such there is considerable merit in a Prelim for Masters students and on balance it should be seriously considered to be in the students best interests. If the exam is required by the committee, use the format on the following pages.

The written portion of the preliminary exam will be the submission of a short grant proposal formatted document of the student's thesis/dissertation topic to the committee members. **The specific agency format will be determined by the student and committee members.** The student will submit the written proposal to the committee members at least one month before the oral exam is scheduled. The committee has at least two weeks from the receipt of the proposal to respond to the student with questions in writing. Upon receipt of the questions, the student will then have two weeks to respond to the committee and schedule the oral exam.

The following is the adopted procedure for the preliminary exam (**see PHD format)**.

FINAL SEMINAR PRESENTATION

The student should contact the chair of the Seminar Committee to select a date for the final presentation. Students must register for 1 credit of Seminar and make a full length (55minute), lecture format presentation for that credit in the final year for each degree prior to the final defense. This presentation of original research at Animal Science/Zoology Seminar 954 will be

graded by the course instructor and members of the audience. The student must earn at least a "B" grade for this presentation. If the minimum grade is not achieved the student must make a second presentation.

THESIS

Your thesis is the culmination of your research work during your time at UW-Madison. The Graduate School has prepared the "Guide to Writing your Master's Thesis." This booklet contains information on page formats, paper quality, and information on depositing the thesis at Memorial Library. This guide is available on the Internet at http://www.wisc.edu/grad/gs/degrees/mguide.html.

You are required to deposit your thesis at Memorial Library. See the Graduate School guide to Preparing your Master's Thesis for additional information.

THESIS DEFENSE

Defense of the thesis is arranged by the student, major professor and committee after all degree requirements have been met (including final seminar). The student is responsible for providing the final thesis to Committee members at least four weeks before the final exam. A warrant must be requested from the Program office at least three weeks prior to the defense date. At this time all incompletes or progress grades must be changed using the grade change form available from the Program Coordinator. The signed warrant must be returned to the Program Coordinator. Additional information is available in the guide "Expecting your Master's Degree? Procedures to Help" which is available on the Internet at http://www.wisc.edu/grad/gs/degrees/mdegree.html

GRADUATION

Information about graduation ceremonies is available from the Secretary of the Faculty's web site at http://wiscinfo.doit.wisc.edu/secfac/commence/Commence.html. The Program Coordinator will announce deadlines concerning commencement participation. Ceremonies are held in December and May. Students who complete degree requirements during August may participate in either ceremony. Participation in the commencement ceremony does not indicate degree completion. Degree completion certification letters can be requested the Registrar's Office. Diplomas are mailed to the student's permanent address approximately 12 weeks after the degree deadline.

Grievances and Appeals

During your time as an ERP graduate student you may find that a situation or policy is objectionable and want to seek a remedy, either informal or formal. The action taken can vary on a case-by-case basis from an informal discussion with the party involved to a formal enquiry by the Student Affairs Committee or Graduate School. The Program will work with the parties involved to seek a solution with the minimal disruption to the student, faculty member or laboratory as possible. All students are welcome to contact the Program Coordinator or Program Director with any issues or concerns. If you are not comfortable with either of these people, you may contact any member of the Student Affairs Committee, the departmental representative in your primary area, your major professor, or members of your thesis committee among others.

Most issues are best resolved at the "local" level with the party involved. If the two parties cannot come to a satisfactory resolution, the issue can be reviewed by the Student Affairs

Committee. This committee will investigate the nature of the concern and recommend further action. Where the issue is beyond the scope of the Committee, it is recommended to seek counsel from resources within the university community. Additional information is available in the Graduate Student Handbook.

Appealing a failing preliminary exam determination: **See Prelim Exam**

Other Information and Resources

LABORATORY ROTATIONS

The ERP Program is able to offer laboratory rotations to select applicants if funding is available. The initial selection criteria is defined in item 4.

1) At least one laboratory director must express an interest in a single student and at least preliminarily be prepared to commit to offering a position pending the rotation evaluation be satisfactory. It is also understood that the faculty member either has funds in hand or has a very high likelihood that funds will be forthcoming. The student in turn must have made a commitment to the ERP and be prepared to undertake the full rotation. All parties should understand that occasionally a match will not result and, if that is the outcome, the student then goes back to the available pool of applicants in the application status.

2) The rotation is three months total through a maximum of three laboratories. Time is to be divided equally among the labs unless an appeal is successfully made to the Program Director justifying the extension or other change.

The goal is not for the student to accomplish an entire research project, but rather for the student and faculty member to both get a general sense of each other and what mutual experiences they would have upon a proper match.

3) The ERP Program will fund the student's salary and administer benefits during the rotation period using the 12 month appointment scale. The stipend for 2006- 2007 is $1540 per month.

4) In cases where there are a limited number of slots, students are usually picked by the recruitment committee but the members should consider possible conflicts of interest when voting on applications who are under consideration for a position in his/her lab. The Director's vote can be sought when abstention leads to a tie.

a) A strong GPA (>3.5) is preferred, but flexibility may be appropriate so that the funds can be used as necessary.

b) Rotations are only given to students pursuing the PhD degree. Preference is not automatically given to a student who already has a master's degree, but rather to the strongest overall candidate

c) The Program/University is an Affirmative Action/Equal Opportunity educator. Women and people of color are encouraged to apply.

5) Faculty Obligations during the lab rotation

a) The faculty member must ensure that student's time is utilized during the rotation.

b) The faculty member must be present to participate in the training sufficiently to allow accurate evaluation of the student during the rotation period.

c) The faculty member will conduct both an entrance and exit interview with student. The performance grade should be pass/fail only. Exit interview form.

d) At the end of the rotation, the 2-3 faculty must discuss the disposition of the student and coordinate an offer of acceptance, or return to the applicant pool.

6) Student Obligations during the lab rotation

a) The student will participate in an entrance and exit interview with each member during the rotation period.
Exit interview form (See following pages)

b) The student must be present and available for training during the rotation period.

c) The student must use his/her time efficiently in the lab during the rotation.

d) The student will be informed that if a major professor is not identified at the end of the rotation period, the student will go back to the pool of available applicants. The ERP Program makes no guarantee of a subsequent match, ie. the same applies for other available applicants.

SCHOLARSHIPS AND FELLOWSHIPS

The Academic Services Office within the Graduate School coordinates the many University and national fellowships. For additional information about available fellowships, visit their web site at http://info.gradsch.wisc.edu/fellows/index.html. Your advisor may also be aware of scholarships and fellowships within your area of study through professional associations and societies.

STUDENT TRAVEL FUNDS

The ERP Program has funds available to offset the cost of students traveling to present at national and international meetings. Students who are interested in a travel grant should review the guidelines and then contact the Program Office to coordinate the request.

1) The travel grant award is $300.

2) Funding is limited to students who have (or will have) abstracts accepted for a national or international meeting.

3) Funds will be released when the ERP Office receives a copy of the acceptance letter and 2) copy of the accepted abstract.

4) Funds must be used by June 30th, but requested for processing by June 1st

5) Only one stipend is available per student each fiscal year. Contact the Program Coordinator for specific details.

6) Spending must be coordinated through the ERP Office to ensure funds are spent in accordance with University travel policies.

HELPFUL WEB SITES

Division of Information Technology (DoIT)--http://www.doit.wisc.edu

Endocrinology-Reproductive Physiology Program--http://www.erp.wisc.edu

Graduate School Catalog—http://www.wisc.edu/grad/catalog

International Student and Scholar Services--http://wiscinfo.doit.wisc.edu/isss

New Student Information Handbook—http://www.wisc.edu/ces/res

The Graduate School—http://www.grad.wisc.edu

Timetable-- http://registrar.wisc.edu/registrar

University Health Services-- http://www.uhs.wisc.edu/

University Libraries—http://www.library.wisc.edu

University of Wisconsin- Madison Homepage--http://www.wisc.edu

Wisconsin Union—http://www.wisc.edu/union

Forms for Ph.D. and Master's Degree Students

1. Establishing your Ph.D. or Master's Certification Committee
2. Ph.D. and MS Proposal for Certification
3. Annual Student Progress Report
4. Faculty Evaluation for Laboratory Rotations
5. Student Evaluation for Laboratory Rotations

INSTRUCTIONS FOR FORMING A CERTIFICATION COMMITEE

Advisory Committee Appointment for Master's Degree Candidate. A three-member Certification Advisory Committee is appointed during the first year of study, as follows: (1) faculty adviser; (2) faculty chosen in consultation between the student and adviser; and (3) faculty appointed by the Endocrinology- Reproductive Physiology Program Director (not necessarily a member of the Program faculty). The majority of this Committee must consist of faculty members of the Program. Additional faculty may be added to this Committee if so desired. Any deviation from this Committee must be reported to and approved by the Program Director.

Advisory Committee Appointment for Ph.D. Degree Candidate. A five-member Advisory Committee is appointed during the first year of study, as follows: (1) faculty adviser; (2) two faculty chosen in consultation between the student and adviser; and (3) two faculty appointed or approved by the Endocrinology-Reproductive Physiology Program Director. Faculty appointed under (2) and (3) do not necessarily have to be members of the Program faculty. The majority of this Committee must consist of faculty members of the Program. Additional faculty may be added to this Committee if so desired. Any deviation from this Committee must be reported to and approved by the Program Director.

DISTRIBUTION

Three signed copies of this record should be prepared and distributed as follows: candidate, faculty advisor and Program Director.

ENDOCRINOLOGY-REPRODUCTIVE PHYSIOLOGY PROGRAM

ADVISORY COMMITTEE

(Appointed for M.S. or Ph.D. Candidate)

This is to certify that the following faculty members have been appointed to serve as an Advisory Committee for _____ on _____, 20___:

_____
Major Professor

_____

_____

Approved by Program Director:

_____

_____

CERTIFICATION FOR PHD or MASTER'S DEGREE CANDIDATES IN ENDOCRINOLOGY-REPRODUCTIVE PHYSIOLOGY

(Three copies of this form should be typed, signed and distributed as follows: candidate; major professor; and Director of the Endocrinology-Reproductive Physiology Program.)

Candidate:_____ Major Professor: _____

Certification Date: _____ Committee:_____

Previous Education:

Research Outline (limit to one page and attach separately):

Preparatory Courses (can include undergraduate courses):

Taken –

College	Qtr/Sem	Title	Cr	Grade

Certification page 2.

Required Courses:

Taken -

To be Taken -

Additional Supporting Courses:

Taken -

To be Taken or Audited -

Endocrinology-Reproductive Physiology Program
Student and Faculty Progress Report

To the Student:

The goal of the annual progress report is to ensure that all graduate students are making satisfactory progress in their research and towards their desired degree. Information provided will also be used to update student biosketches on the ERP web site.

Students are to complete the first page of the progress report and attach the requested items then provide a copy to their major professor who will then complete the faculty portion of the evaluation. When the student and faculty meet to discuss the progress report, both individuals should sign and date the form in the space provided.

To the Major Professor:

The purpose of the annual student progress report is to help faculty and students critically evaluate the student's academic progress in the ERP Program as well as to identify concerns early in the student's career. This is all the more important if there is any delay beyond one year in the formation of the Thesis Committee.

The student will provide you with a copy of his/her progress report which you will then complete the second page of the progress report. After you have completed the form, you will then meet with the student to discuss the progress reports and then each will sign in the space provided.

Distribution of the progress report will be as follows:

Major professor and student shall keep a copy of the progress report. If the Student Committee has been formed, the report should also be forwarded to the members of that Committee.

The original report (student and faculty evaluation) shall be delivered to the Program Coordinator for placement in the student's department file.

A copy of all progress reports will be sent to the Chair of the Curriculum and Student Affairs Committee for review.

Signed Progress Reports are due at the final Spring seminar date. Reports not received by this deadline will result in an incomplete in the Seminar.

Endocrinology Reproductive Physiology Program

Annual Graduate Student Progress Report

Name: _____ Date: _____

Information to be completed by student

Academic Progress

Date of Entrance: _____ Expected Date of Completion: _____

Date of Last Advisory Committee Meeting: _____

Current GPA: _____ Number of Credits below 3.0 _____

Remaining Courses Required (attach additional pages if needed):

Attach the Following Information:
1. List of all publications from the previous year (2006)
2. Honors and Awards Received (include fellowships, grants, travel awards and other academic honors)
3. Presentations at Societal Meetings or Conferences
4. One-page summary of your research project
5. Participation on Funded Grants (include PI name, project title and dates of participation)

Comment briefly on your goals for the upcoming year. If you feel you are not making satisfactory progress, please identify reasons.

Endocrinology-Reproductive Physiology Program

Faculty Evaluation

Faculty Name: _____

Name of Student: _____

To be Completed by Faculty Advisor.
Please make note of strengths <u>as well</u> as weaknesses.

1. Has the student made acceptable academic progress during the past year? Please comment.

2. Please comment the student's ability and performance in the laboratory. If deficiencies are noted, please address remedial action to be taken.

3. Will the student continue in your laboratory? If no, please explain.

By signing below, both student and major professor indicate that they have discussed the evaluation and both consider the report a fair and accurate assessment. In the event of a disagreement that cannot be resolved, the concerned party can refuse to sign but in so doing the Student Affairs Committee chair will begin informal inquiries to decide if the problem can be resolved or if further mediation or action is necessary.

Student Signature: _____Date: _____

Faculty Signature: _____Date: _____

Endocrinology and Reproductive Physiology Program
Rotation Evaluation-Faculty Sponsor

(All evaluations will be reviewed by the Admissions Committee, Program Director and Program Coordinator.)

Name: _____

Student's Name: _____

Description of Research Project: (Write a brief summary of the project you had the student work on during his/her rotation.)

Evaluation of Rotation

1. Did the student meet your expectations in the following areas?
   a. Time spent in laboratory:

   b. Laboratory technique:

   c. Scientific method:

2. Did the student ask thoughtful and interesting questions?

3. Was the student courteous and respectful to others working in laboratory?

4. In what areas did the student excel?

5. In what areas could the student use the most improvement?

Signature of Faculty Sponsor: _____

Signature of Student: _____

Please return evaluations to the Program Coordinator, 1 South Park Street, Suite 555 after the conclusion of the rotation.

Endocrinology and Reproductive Physiology Program

Rotation Evaluation—Student

(All evaluations will be reviewed by the Admissions Committee, Program Director and Program Coordinator.)

Name: _____

Rotation Sponsor: _____

Description of Research Project: (Write a brief summary of the project you worked on during your rotation including any techniques you learned.)

Evaluation of Rotation

1. Did you have enough interaction with the Rotation Sponsor?

2. Do you feel that you received enough instruction regarding new techniques and protocols?

3. Was the research project appropriate for a rotation? (length, type)

4. Did you like the laboratory environment?

5. Did the research style of the Rotation Sponsor match yours?

6. Were you satisfied with this rotation as a learning experience?

Signature of Faculty Sponsor: _____

Signature of Student: _____

Please return evaluations to the Program Coordinator, 1 South Park Street, Suite 555 after the conclusion of the rotation.