

Faculty Publications continued from page 4

Kusakabe M, Nakamura I, Evans J, Swanson P, Young G. 2006. Changes in mRNAs encoding steroidogenic acute regulatory protein, steroidogenic enzymes and receptors for gonadotropins during spermatogenesis in rainbow trout testes. *J Endocrinol* 189:541-54.

Samper JC, Tibary A. 2006. Disease transmission in horses. *Theriogenology*. 66:551-9.

Davis LA, Roalson EH, Cornell KL, McClanahan KD, Webster MS. 2006. Genetic divergence and migration patterns in a North American passerine bird: implications for evolution and conservation. *Mol Ecol* 15:2141-52.

Individual Faculty Grant and Contract Awards (last 5 months)

John Brown, Entomology, WA AG, 10,772
Ken Cain, Fish & Wildlife Resources, NWFSC, \$4,219
Doug Call, Veterinary Microbiology & Pathology, NIH-FWD-IRN, \$300,000
Doug Call, Veterinary Microbiology & Pathology, NIH-FWD-IRN, \$390,000
Doug Call, Veterinary Microbiology & Pathology, USDA-NRI, \$399,714
Doug Call, Veterinary Microbiology & Pathology, and Ken Cain, Fish & Wildlife Resources, WSU & UI Initiative, \$100,000
Joe Cloud, Biological Sciences, DHHS-NIH, \$19,544
Doug Cole, MMBB, DHHS-NIH, \$64,203
Laura Corley, Entomology, WSU, \$3,000
Laura Corley, Entomology, WSU, \$1,000
Rebecca Craft, Psychology, DHHS-NIH, \$5,528
Michael Griswold, School of Molecular Biosciences, DHHS-NIH, \$273,023
Michael Griswold, School of Molecular Biosciences, DHHS-NIH, \$251,580
Ron Hardy, Biological Sciences, Dow AgroSciences LLC, \$4,651
Ron Hardy, Biological Sciences, University of Alaska-Fairbanks, \$18,429
Terry Hassold, School of Molecular Biosciences, DHHS-NIH, \$392,518
Terry Hassold, School of Molecular Biosciences, DHHS-NIH, \$396,271
Zonglie Hong, MMBB, NSF, \$47,471
Zonglie Hong, MMBB, NSF, \$450,000
Zonglie Hong, MMBB, NSF, \$390,000
Zonglie Hong, MMBB, UI, \$10,000
Patricia Hunt, School of Molecular Biosciences, DHHS-NIH, \$271,718
Patricia Hunt, Lisa Shaffer, and Terry Hassold, School of Molecular Biosciences, WSU, \$18,000
Mary Hunzicker-Dunn, School of Molecular Biosciences, NWU, \$160,028
Rolf Ingermann, Biological Sciences, Columbia River Inter-Tribal, \$4,040
Heiko Jansen, VCAPP & Mustaq Memon, Veterinary Clinical Sciences, WSU, \$16,246
Zhihua Jiang, Animal Sciences, NON FED RESEARCH, \$85,560
Suzanne J. Lindsey, Pharmaceutical Sciences, WSU, \$34,010
Suzanne J. Lindsey, Pharmaceutical Sciences, Am. Cancer Soc., \$15,000

Jessica Lynch-Alfaro, Anthropology, WSU, \$750
Mark McGuire, Animal Sciences, USDA-CSREES, \$43,154
Derek McLean, Animal Sciences, DHHS-NIH, \$70,145
James Nagler, Biological Sciences, DHHS-NIH, \$19,540
James Nagler, Biological Sciences, NSF, \$345,041
James Nagler, Biological Sciences, NIH/INBRE, \$31,308
James Nagler, Biological Sciences, Dept. of Ag., \$35,000
Tobin Peever, Plant Pathology, USDA-ARS, \$53,698
Ruth Phillips, WSU Vancouver, Simon Fraser Univ, \$15,000
Ruth Phillips, WSU Vancouver, Simon Fraser Univ, \$30,000
Ruth Phillips, WSU Vancouver, DOC-NOAA, \$40,000
BW Poovaiah, Horticulture & Landscape Architecture, NSF, \$12,000
BW Poovaiah, Horticulture & Landscape Architecture, NSF, \$198,746
Raymond Reeves, School of Molecular Biosciences, DHHS-NIH, \$364,908
Hubertus Schwabl, School of Biological Sciences, WSU, \$5,000
Lisa Shipley, Natural Resource Sciences, DOI-BLM, \$25,000
Michael Skinner, School of Molecular Sciences, DHHS-NIH, \$240,967
Deborah Stenkamp, Biological Sciences, DHHS-NIH, \$5,613
Mechthild Tegeder, School of Biological Sciences, NSF, \$159,416
Gary Thorgaard, School of Biological Sciences, University of Idaho, \$58,139
Gary Thorgaard, School of Biological Sciences, USDA-CSREES, \$340,989
Gary Thorgaard, School of Biological Sciences, MT F/W, \$37,500
Dietrich Vonwettstein, Crop & Soil Sciences, WTC, \$10,700
Dietrich Vonwettstein, Crop & Soil Sciences, ARCADIA, \$8,000
Michael Webster, School of Biological Sciences, US Interior-US, \$14,354
Michael Webster, School of Biological Sciences, Cornell University, \$17,626
Michael Webster, School of Biological Sciences, DOI-BLM, \$7,000
Michael Webster, School of Biological Sciences, Bat Consvr Int, \$4,000
Michael Webster, School of Biological Sciences, NSF, \$16,655

Center For Reproductive Biology Calendar

- 8/3/06 "Signaling Pathways that drive cell fate decisions in spermatogenesis: activin and regulated nuclear transport," Dr. Kate Loveland, Monash Institute of Reproduction & Development, CUE 318, 12:00-1:00 p.m.
- 8/9/06 "Sex differences in pain and opioid analgesia," Dr. Rebecca Craft, WSU, CUE 202, 4:10-5:00 p.m.
- 8/23/06 "Cattle Reproduction," Dr. Mark McGuire, UI, CUE 419, 4:10-5:00 p.m.
- 9/13/06 "Ovarian Biology & Endocrinology," Dr. Janice Bahr, University of Illinois, CUE 419, 4:10-5:00 p.m.
- 9/27/06 "Fish Reproduction," Dr. William Davidson, Simon Fraser University, CUE 419, 4:10-5:00 p.m.
- 10/11/06 "Signaling Pathways & Ovarian Biology," Dr. Mary Hunzicker-Dunn, WSU, CUE 419, 4:10-5:00 p.m.
- 10/25/06 "Nutritional regulation of reproduction in the sow and cow: new information from genomics, proteomics and metabolomic studies," Dr. John McNamara, WSU, CUE 419, 4:10-5:00 p.m.
- 11/8/06 "Reproductive Homeostasis," Dr. Sue Ritter, WSU, CUE 419 4:10-5:00 p.m.

* The CRB seminar workshop program is designed to host one guest speaker per month. Please send your recommendations for presenters to crb@wsu.edu.

Center Faculty

Amin Ahmadzadeh, UI
Gustavo Arrizabalaga, UI
John Brown, WSU
John Browse, WSU
Ken Cain, UI
Doug Call, WSU
Allan Caplan, UI
Ricardo Chebel, UI
Joe Cloud, UI
Doug Cole, UI
Laura Corley, WSU
Rebecca Craft, WSU
Joe Dalton, UI
Chris Davies, WSU
Andy Dittman, NMFS
Joanna Ellington, WSU Spokane
Victor Eroschenko, UI
Lee Fortunato, UI
Michael Griswold, WSU
Ron Hardy, UI
Terry Hassold, WSU

Chengtao Her, WSU
Donna Holmes, UI
Zonglie Hong, UI
Howard Hosick, WSU
Patricia Hunt, WSU
Mary Hunzicker-Dunn, WSU
Rolf Ingermann, UI
Heiko Jansen, WSU
Zhihua Jiang, WSU
Jill Johnson, UI
Kwan Hee Kim, WSU
R. Wes Leid, WSU
Suzanne Lindsey, WSU
Jessica Lynch-Alfaro, WSU
Andrew McCubbin, WSU
Mark McGuire, UI
Shelley McGuire, WSU
Derek McLean, WSU
John McNamara, WSU
Rodney Mead, UI
Kathryn Meier, WSU
Mushtaq Memon, WSU
Bruce Miller, UI
James Nagler, UI
John Nilson, WSU
Tobin Peever, WSU
Ruth Phillips, WSU Vancouver
Joe Poovaiah, WSU
Jerry Reeves, WSU
Ray Reeves, WSU
Sandra Ristow, WSU
Sue Ritter, WSU
Andy Roberts, USDA-ARS

Barrie Robison, UI
Dan Rodgers, WSU
R. Garth Sasser, UI
Ed Schmidt, MSU
Chris Scheinder, UI
Paul Schroeder, WSU
Hubert Schwabl, WSU
Philip Senger, WSU
Lisa Shaffer, WSU Spokane
Eric Shelden, WSU
Steven Sheppard, WSU
Milan Shipka, University of Alaska
Lisa Shipley, WSU
Michael Skinner, WSU
Kevin, Snekvik, WSU
John Stellflug, USDA
Deborah Stenkamp, UI
Mark Strom, NMFS
Penny Swanson, NMFS
Steven Sylvester, WSU Vancouver
Loverine Taylor, WSU
Mechthild Tegeder, WSU
Gary Thorgaard, WSU
Ahmed Tibary, WSU
Dirk Vanderwall, UI
Paul Verrell, WSU
Diter von Wettstein, WSU
Mike Webster, WSU
Gordon Woods, UI
Ray Wright, WSU
Bill Young, UI
Graham Young, UW

Contact Information

Center for Reproductive Biology
Phone: 509-335-2473
Fax: 509-335-2176
E-mail: crb@wsu.edu
Web: www.reproduction.wsu.edu

CENTER REPORT

Summer
2006

Director's Message

The "Center Report" is used to inform the University community and interested individuals of the recent activities and accomplishments of the Center for Reproductive Biology. The Center for Reproductive Biology is an organized research unit between Washington State University and the University of Idaho. The Center is internationally recognized as a center of excellence in the area of reproductive biology research. The primary goals of the Center are to foster the highest quality research, promote research collaborations, enhance multi-investigator grants, and enhance the training and education programs in the area of reproductive biology.

The Center now has 84 faculty and over 250 trainees and staff. The Center integrates 7 Colleges and 18 Departments between the two Universities and is one of the largest Centers in the area of reproductive biology in the country. Our bi-weekly Workshop and Seminar program continues to include a wide range of outside speakers involved in reproductive biology. Several of the research programs of the Center are making progress as discussed in the Report. Outlined in this report are some of the accomplishments of the faculty over the past eight months.

We are excited to announce that this year we will be celebrating our 10th anniversary. In honor of this occasion we will be preparing a 10-year anniversary document highlighting the accomplishments of the Center over the past decade. Look for this and other celebratory events coming your way.

For more information on the Center, please visit www.reproduction.wsu.edu.

Michael K. Skinner, Director
Center for Reproductive Biology

WASHINGTON STATE
UNIVERSITY
World Class. Face to Face.

University of Idaho

Worthy of Note:

Dr. Mushtaq Memon will be leaving this August for Oman on a Fulbright Fellowship combined with a 6 month sabbatical from WSU. He will be teaching at Sultan Qabbos University this fall semester and teach in Pakistan during the first part of 2007. Congratulations and best wishes to Dr. Memon during his travels!

Dr. Chris Schneider recently added to his family. He and his family welcomed Katherine Schneider on June 1. She weighed in at 7 lbs. 12 oz. and was 21 inches in length. Congratulations Dr. Schneider!

Dr. Michael Griswold has received the 2006 Research Award from the Society for the Study of Reproduction for outstanding research published in the last six years. Our compliments to Dr. Griswold!

Dr. Chris Davies was recently awarded with the Christian Herr Award. This award is given annually to a member of the American Society of Reproductive Immunology or ISIR who has made outstanding achievements in basic or applied research in reproductive immunology, particularly for investigators involved in technology transfer. Great work Dr. Davies!

Dr. Andrea Cupp from the University of Nebraska, and a CRB alumna who was a postdoctoral fellow in the **Skinner Lab**, has been honored with the 2006 Society for the Study of Reproduction New Investigator Award. This award recognizes an active, regular member of the Society for outstanding research completed and published within 10 years after receiving the Ph.D. or other equivalent professional degree. Congratulations Dr. Cupp!

Dr. Joe Cloud, University of Idaho, has received the Distinguished Scientist award for 2006 from the Idaho Academy of Science. Among the qualifications to be considered for this award are evidence of leadership, pioneering discoveries, and major innovations. Please join us in congratulating Dr. Cloud on this outstanding achievement!

Patents

Zhihua Jiang, WSU, "A Novel Nuclear-Encoded Mitochondrial Poly(a) Polymerase PAPD1 is a Potential Candidate Gene for the Extreme Obesity Related Phenotypes in Mammals."

Suzanne J. Lindsey, WSU, "Mig. 7 as a Specific Anticancer Target."

John Browse, WSU, "Ricinus communis Diacylglycerol Acyltransferase 2."

News

The Cloned Mules Run Their Races

In recent sports news the first ever cloned mule, "Idaho Gem," developed by **Dr. Dirk Vanderwall** and **Dr. Gordon Woods** in collaboration with Ken White at Utah State University, covered his 350-yard sprint in 21.246 seconds, only 2 1/2 lengths behind the winner, proving that a cloned mule can compete on the race-track. The fact that the cloned mules are racing at the track provides the setting for the larger debate about the role of genetics and environmental influences in creating racetrack winners. Vanderwall commented that, "the cloned mule racing has been exciting and enjoyable for all of us. It has been a great opportunity for us to make the clones available to the general public, and the response from the public has been overwhelmingly positive. The animals are healthy and vibrant, and they are competing successfully. It also gives us an opportunity to inform the public about the science of animal cloning, and our continuing work to use mules and horses as a research model for understanding some of the causes and potential cures for human cancer. Our cancer work is focused on comparing differences in the regulation of intracellular calcium between horses and humans, which may help to explain why cancer mortality is only 8% in horses compared to 24% in humans. Those studies are on-going."

Ken Cain – "Stalked"

An exciting new article by our own Dr. Ken Cain, University of Idaho, was recently published in *Bowhunter Magazine*. Many years after being stalked by a cougar, Ken was "reunited" with the animal. The entire article can be found on Cain's Center for Reproductive Biology Web page at www.reproduction.wsu.edu/3FacultyPages/Cain.html

Thank you for sharing this exciting experience with us, Ken!

Faculty Spotlight:

Dr. Penny Swanson

Dr. Penny Swanson is a Physiology/Endocrinology Team Leader for the Northwest Fisheries Science Center (NWFS), NOAA in Seattle, Washington, and an Adjunct Professor in the Center for Reproductive Biology. Dr. Swanson received her doctorate in 1986 from the University of Washington, where she also received her bachelor's degree in zoology and master's degree in endocrinology and reproductive physiology. Dr. Swanson's dissertation focused on the isolation and characterization of thyroid stimulating hormone from salmon. During her education she worked with scientists at the NWFS who were studying smoltification in salmon. Penny continued her research on the biochemistry and physiology of salmon pituitary hormones during her postdoctoral studies at Kitasato University in Japan and subsequently as a postdoctoral fellow at the School of Fisheries back at the University of Washington. Penny joined the faculty members of the Center for Reproductive Biology in 2002. She has provided significant insights into the endocrine control of reproduction in fish (i.e. salmonids).

Dr. Swanson leads the physiology team through both basic and applied aspects of the growth and reproductive physiology of fish, particularly salmon. Basic research is focused on understanding how the growth and reproductive endocrine axes are regulated by environmental and nutritional factors. Applied work is directed toward understanding how growth influences smoltification, survival in the early ocean environment, initiation of sexual maturation, age of maturity, fecundity, egg size, and gamete quality. Research results have significant implications for understanding the impacts of hatchery practices, habitat quality, and global warming on the fitness of salmon, whether they are wild or hatchery fish.

Dr. Swanson is actively involved in the Salmon Reproduction Program facilitated by the Center for Reproductive Biology and helped lead the way for the development of the Salmon Institute, which provided an agreement for collaborative efforts to begin between the Northwest Fisheries Science Center scientists and the Center for Reproductive Biology faculty.

We commend Penny on all of her accomplishments and look forward to future interactions!

Items of Interest

New Center Faculty

Please welcome new faculty member Dr. Rebecca Craft.

Dr. Craft is an Associate Professor in the Department of Psychology at Washington State University. She joined the faculty at WSU in 1993 and then the Center in the spring of 2006. Dr. Craft's research interest focuses on sex differences in the effects of psychoactive drugs, primarily opioids (morphine-like drugs). Her research endeavors will be presented to the CRB faculty and trainees at a Center workshop on August 9. Welcome to the Center for Reproductive Biology, Rebecca; we are excited to have you join us and look forward to collaborative efforts with you!

ARCS

The Achievement Rewards for College Scientists (ARCS) Foundation is a nation-wide organization that provides scholarships to academically outstanding graduate students studying to complete their degrees in science, medicine, and engineering, thereby contributing to the worldwide advancement of science and technology. The ARCS Awards are \$5,000 per year top-off fellowships the students can add to their stipends and are granted for three-year intervals. Students are nominated by a faculty member in the Center for Reproductive Biology and are rated by the Center Steering Committee. The annual luncheon is held in Seattle, Washington, each November. Recently we were able to add to our list of accomplished ARCS fellows by selecting Jane Stewart to be awarded one of the ARCS fellowships to begin in the 2006-2007 academic year. Jane will join Dr. Tobin Peever's laboratory in the Department of Plant Pathology this fall. She has substantial research experience already, including time spent as an entomology and forestry technician. Jane's doctoral research will be in the general area of fungal reproductive biology and focus on the role of host specificity in the speciation of plant-pathogenic fungi. Congratulations to Jane, our new ARCS Fellow and to all of our previous recipients!

Retreat and 10th Anniversary of the Center!

The 10th annual Center for Reproductive Biology Retreat was held on June 1-2, 2006, at Camp Three Meadows at Dworshak Reservoir. We were excited to have Dr. David Paige as our keynote speaker. Dr. Paige is the Whitehead Institute Director and has conducted fundamental studies of mammalian sex chromosomes and their roles in germ cell development, with special attention to the function, structure, and evolution of the Y chromosome. The retreat provides Center members and trainees an opportunity to share their research and collaborate on future endeavors. Please mark your calendars and plan on attending the retreat. For more information and to register please view the meetings section of the Center's Web site at www.reproduction.wsu.edu.

Faculty Publications (last 5 months)

Brown JJ, Kittelson NT, Hannon ER, Walsh DB. 2006. An endemic population of western poplar clearwing moths (Lepidoptera: Sesiidae) invades a monoculture of hybrid poplar. *J Econ Entomol* 99:771-9.

Song MY, **Brown JJ**. 2006. Influence of fluctuating salinity on insecticide tolerance of two euryhaline arthropods. *J Econ Entomol* 99:745-51.

Barkan L, Vijayan P, Carlsson AS, Mekhedov S, **Browse J**. 2006. A Suppressor of fab1 Challenges Hypotheses on the Role of Thylakoid Unsaturation in Photosynthetic Function. *Plant Physiol* 141:1012-20.

Brock TJ, **Browse J**, Watts JL. 2006. Genetic regulation of unsaturated fatty acid composition in *C. elegans*. *PLoS Genet* 2:e108.

Ma X, **Browse J**. 2006. Altered rates of protein transport in Arabidopsis mutants deficient in chloroplast membrane unsaturation. *Phytochemistry*.

Mandaokar A, Thines B, Shin B, Markus Lange B, Choi G, Koo YJ, Yoo YJ, Choi YD, Choi G, **Browse J**. 2006. Transcriptional regulators of stamen development in Arabidopsis identified by transcriptional profiling. *Plant J* 46:984-1008.

Rosenke K, Samuel MA, McDowell ET, Toerne MA, **Fortunato EA**. 2006. An intact sequence-specific DNA binding domain is required for human cytomegalovirus-mediated sequestration of p53 and may promote in vivo binding to the viral genome during infection. *Virology* 348(1): 19-34.

Hall H, **Hunt P**, **Hassold T**. 2006. Meiosis and sex chromosome aneuploidy: how meiotic errors cause aneuploidy; how aneuploidy causes meiotic errors. *Curr Opin Genet Dev* 16:323-9.

Ingermann RL. 2006. Do sperm contribute to the buffering capacity of steelhead trout (*Oncorhynchus mykiss*) semen? *Comp Biochem Physiol A Mol Integr Physiol* 144:410-5.

Gaasch JA, Bolwahnn AB, **Lindsey JS**. 2006. Hepatocyte growth factor-regulated genes in differentiated RAW 264.7 osteoclast and undifferentiated cells. *Gene* 369:142-152.

Ryan-Borchers TA, Park JS, Chew BP, **McGuire MK**, Fournier LR, Beerman KA. 2006. Soy isoflavones modulate immune function in healthy postmenopausal women. *Am J Clin Nutr* 83:1118-25

Zhang Z, **Meier KE**. 2006. New assignments for multitasking signal transduction inhibitors. *Mol. Pharm.* 29, 1510-1512.

Xiao Q, Wu XL, Michal JJ, **Reeves JJ**, Busboom JR, **Thorgaard GH**, **Jiang Z**. 2006. A novel nuclear-encoded mitochondrial poly(A) polymerase PAPD1 is a potential candidate gene for the extreme obesity related phenotypes in mammals. *Int J Biol Sci* 2:171-8.

Garcia MD, Michal JJ, Gaskins CT, **Reeves JJ**, Ott TL, Liu Y, **Jiang Z**. 2006. Significant association of the calpastatin gene with fertility and longevity in dairy cattle. *Anim Genet* 37:304-5.

Li AJ, Wang Q, **Ritter S**. 2006. Differential responsiveness of dopamine-beta-hydroxylase gene expression to glucoprivation in different catecholamine cell groups. *Endocrinology* 147:3428-34.

MacNeil MD, Geary TW, Perry GA, **Roberts AJ**, Alexander LJ. 2006. Genetic partitioning of variation in ovulatory follicle size and probability of pregnancy in beef cattle. *J Anim Sci* 84:1646-50.

Anway MD, **Skinner MK**. 2006. Epigenetic transgenerational actions of endocrine disruptors. *Endocrinology* 147:543-5.

Nilsson EE, Detzel C, **Skinner MK**. 2006. Platelet-derived growth factor modulates the primordial to primary follicle transition. *Reproduction* 131:1007-15.

Stellflug JN. 2006. Comparison of cortisol, luteinizing hormone, and testosterone responses to a defined stressor in sexually inactive rams and sexually active female-oriented and male-oriented rams. *J Anim Sci* 84:1520-5.

Fairgrieve WT, Masada CL, Peterson ME, McAuley WC, McDowell GC, **Strom MS**. 2006. Concentrations of erythromycin and azithromycin in mature Chinook salmon *Oncorhynchus tshawytscha* after intraperitoneal injection, and in their progeny. *Dis Aquat Organ* 68:227-34.

Faculty Publications continued on page 5