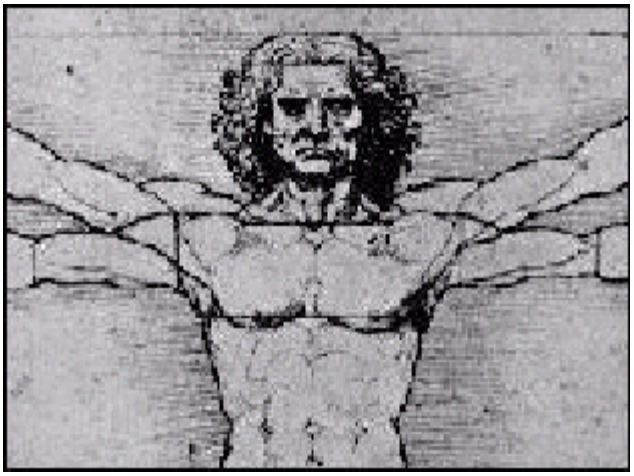
DEPARTMENT OF BIOMEDICAL SCIENCES

COLORADO STATE UNIVERSITY

ANNUAL REPORT 2008



April 2, 2009

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DEPARTMENT OF BIOMEDICAL SCIENCES
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I. Summary

The Department of Biomedical Sciences makes major contributions to the academic and scientific environment in the College of Veterinary Medicine and Biomedical Sciences and Colorado State University. It maintains a reputation for skilled and innovative teaching at the professional veterinary, graduate and undergraduate levels. The Department trained 22 PhD, 19 MS and 110 MS-B students and graduated 4 PhD, 4 MS-A and 45 MS-B students in 2008. The Department currently sponsors one DVM/PhD student. Departmental faculty members have visible, active research programs. Research expenditures exceeded $6,810,000 in FY 2008. A number of faculty members received national and local awards for their activities in teaching and research during the year. Biomedical Sciences faculty also contributed significantly to service activities at the College, University, national and international levels.

II. Mission

The mission of the Department is to foster an environment conducive to the achievement of excellence in teaching and advising, research and scholarly activity, and service and outreach by its faculty, staff and students. This will be accomplished by discovery, dissemination and application of knowledge in the biomedical sciences, and by educating and training undergraduate, graduate, professional veterinary medical, and post-graduate students.

III. Department Organization

The Department Head is Dr. Barbara Sanborn. The Department is organized into two divisions: the Neuroscience Division (Dr. Ray Whalen, Division Director) and the Physiology Division (Dr. Thomas Hansen, Division Director). Dr. C.W. Miller serves as Assistant to the Head for Educational Activities. Ms. Melissa Hein serves as the Department Administrator. The BMS Advisory Committee, comprised of the Division Directors and elected representatives from the Divisions, provides advice to the Head on departmental affairs.

The Department faculty consisted of 30 regular, 9 special, 18 affiliate, 8 joint, 2 transitional and 5 emeritus faculty members in 2008 (Table 1). Among the faculty, Richard Bowen, Elaine Carnevale, Mark Frasier, Charles Miller, George Seidel, Edward Squires, John Walrond and Ray Whalen received special recognition in the form of awards for teaching and research excellence in 2008 (Table 11).

Other Departmental members included 19 office staff, 15 postdoctoral fellows, 46 research associates and technicians, 2 administrative professional program coordinators and 5 research scientists (Tables 2 and 3). The Department hosted 18 visiting faculty/scientists in 2008 (Table 1).

Faculty members are housed in four facilities: the Anatomy/Zoology and Physiology buildings on the Main Campus and the Animal Reproduction and Biotechnology Laboratory and Equine Reproduction Laboratory buildings on the Foothills Campus. Departmental faculty members

participate in and support three University Programs of Research and Scholarly Excellence: the Animal Reproduction and Biotechnology Laboratory, the Molecular, Cellular and Integrative Neurosciences Program, and the Cell and Molecular Biology Program.

IV. Strategic Plan and Self-Evaluation

The Department Code was revised and adopted in 2005 and updated in 2008. A Departmental Five Year Strategic Plan was developed in 2005 and a Departmental Evaluative Self-Study was initiated in 2008 and completed in 2009. Part of the self-study involved additional strategic planning. Some of the findings of the self-study include the following:

- The Department has a significant impact on its own educational mission and the wider CSU mission in the areas of undergraduate, graduate and professional veterinary medicine teaching. In fact, in the CSU Student FTE summary for Fall 2008, Biomedical Sciences ranked 8th in the entire University and first among departments in the College in overall FTE production.
- Biomedical Sciences has the largest number of enrolled graduate students among the departments in the College. Biomedical Sciences faculty members have had a significant impact on the careers of the students and fellows they have trained and mentored. All respondents to a recent alumni survey thought that their degree program (MS-B, MS-A, PhD) had prepared them adequately for their current career and would recommend their program to others.
- Traditional research strengths in reproductive biology and anatomy/neuroscience have remained the central foci of the Department. In addition, Biomedical Sciences is building a focus in cardiovascular physiology. There is a great deal of collaboration between investigators in the department, which increases national visibility and enhances research productivity. Research strengths have coalesced around faculty expertise and result in collaborative research, national and international collaborations, and ties to industry.
- Biomedical Sciences faculty members have excelled in service and outreach to practicing veterinarians, private clients, professional organizations and the lay community.

V. Education

The Department of Biomedical Sciences fulfills its educational mission in a number of important ways. The Department contributed a total of 18,115 student credit and 23,815 contact hours in Academic Year 2007/2008. All faculty members are engaged in didactic teaching at one or more levels.

BMS Faculty Teaching Contribution Summary 2007/2008

	Student Credit Hours	**Contact Hours**
PVM	2,699	4,848
Graduate	2,181	3,342
Undergraduate	13,235	15,625
TOTAL	18,115	23,815

Professional Veterinary Medicine:

In the Professional Veterinary Medicine curriculum, departmental faculty members are responsible for general anatomy, neuroanatomy, theriogenology, image interpretation and

significant portions of pharmacology and physiology (Table 7), contributing 2,699 student credit and 4,848 contact hours. In all of these areas, faculty are constantly upgrading lectures, modifying and developing new course material and evaluating effectiveness. The innovative computer-assisted anatomy programs and curricula developed by L. Ray Whalen and colleagues have gained national and international recognition and are used widely at other institutions.

Graduate Education:
Biomedical Sciences faculty members are active in teaching graduate courses, planning and implementing curriculum opportunities for training graduate students, and mentoring MS and PhD students in career development, research design and execution, and development of oral and written communication skills. Table 7 summarizes graduate level teaching activities (classes numbered 500 or higher). The Department contributed 2,181 student credit and 3,342 contact hours in didactic courses and laboratories. Faculty members also sponsor a number of journal clubs, mentored research and independent study opportunities.

The Department sponsors a PhD degree in Biomedical Sciences that enrolled 22 and graduated 4 students this year (Tables 4 and 5). Students entered this program either by direct application to the department or by selection after rotation through the Molecular, Cellular and Integrative Neurosciences (MCIN) Program. Of the 22 PhD students enrolled in 2008, 4 (18%) were supported by training grants and 3 (14%) were supported by individual NRSAs or comparable fellowships (Tables 4 and 6). Biomedical Sciences faculty also sponsored 30 students through other graduate programs and departments. One DVM/PhD student is currently being mentored by a Departmental faculty member.

The Department sponsors two types of MS degrees. The research MS-A program enrolled 19 and graduated 4 students in 2008 (Tables 4 and 5). These students have formal course requirements, write a thesis and formally present and defend their research. Four MS-A students (26%) were supported by individual fellowships (Tables 4 and 6). The MS-B program is a one-year, coursework-only degree program aimed at providing students aspiring to enter professional veterinary or medical schools or the biomedical industry with specific biomedical training. The department enrolled 110 and graduated 45 students in 2008 (Table 4).

With guidance from Erin Bisenius, Coordinator of Graduate Activities, the Graduate Student Association and its representatives contributed substantially to several Departmental and College activities, included planning the Fall Research Retreat and contributing to the planning of the Frontiers in Biomedical Sciences seminar series and the CVMBS Research Day. A number of students were active in the Brain Awareness Week outreach program to K-12. The Department sponsored a number of other activities aimed at building cohesiveness, including a fall barbeque and a spring reception for graduates and their families, faculty and colleagues.

In addition to existing seminar programs attended by the graduate students, the Department co-sponsors the Frontiers in Biomedical Science seminar series (with the Cell and Molecular Biology and the Molecular, Cellular and Integrative Programs). This series brings exceptional speakers of general interest to the campus. Speakers in 2008 included Dr. Robert Singer from Albert Einstein College of Medicine in New York and Dr. Michael Marletta from University of California Berkeley. The Department also sponsored a number of career speakers for graduate students and contributed financial support for the Front Range Neuroscience Regional Meeting

and the Rocky Mountain Reproductive Sciences Symposium, both organized by Departmental faculty members and students.

Undergraduate Education:
The Department contributed 13,235 student credit and 23,815 contract hours in teaching at the undergraduate level (Table 7). The Biomedical Sciences Undergraduate Major admitted its 4th class in 2008 and reached its cap enrollment target, with a total of 320 students enrolled by Fall 2008. The Department also has about 250 students declared in the BMS minor. In 2008, 15 students graduated with a BS in Biomedical Sciences and 115 students graduated with the BMS minor.

The Undergraduate Professional Advisor, Kelly Swetich, provided expert guidance for the BMS undergraduate students. The Undergraduate Major Steering Committee provided oversight for implementation and operations of the undergraduate major on issues such as recruitment criteria and activities, development of criteria for undergraduate scholarships, curriculum review and development, experiential learning opportunities, and preparation for graduation. New courses developed and offered for the first time in Spring 2008 included the Capstone (BMS 460, Essentials of Pathophysiology) and related Senior Seminar course (BMS 492, Seminar-Pathophysiology of Disease) and an introductory 200-level course (BMS 260, Introduction to Biomedical Sciences). BMS 487 (Internship) and BMS 498 (Research) were also added to address the need for experiential learning experiences.

General statistics of the 320 currently enrolled BMS undergraduate students:

- 16% indicated ethnically diverse backgrounds
- 25% non-residents
- 74% female
- 36% in the Honors Program; 37 in the Hughes Undergraduate Research Scholars (HURS) Program
- 3.38 – average CSU cumulative GPA
- The Biomedical Student Association (BSA), a very active undergraduate organization, hosted regular guest speakers, community service activities, and social events throughout the academic year.
- Daniel Woldtvedt, a BMS undergraduate student, received the national Barry M. Goldwater Scholarship. Ashley Denney, another BMS student, received Honorable Mention. The Barry M. Goldwater Scholarship and Excellence in Education Program was established by Congress in 1986 to honor Senator Barry M. Goldwater, who served his country for 56 years as a soldier and statesman, including 30 years of service in the U.S. Senate. The program awarded 321 scholarships for 2008-2009. The Goldwater Scholars were selected on the basis of academic merit from a field of 1,035 mathematics, science and engineering students who were nominated by the faculties of colleges and universities nationwide. This award has not been received by a CSU student since 2003.
- 10 students studied abroad at institutions located in Wales, Australia, Belize, South Africa, Italy, Argentina, and Czech Republic.
- 17 HURS students are being mentored by BMS faculty (7 are BMS majors).

Participation in Interdisciplinary Programs:
The NIH Training Grant in Mammalian Reproductive Biology is supported by faculty members in the Animal Reproduction and Biotechnology Laboratory, a designated Program in Research

and Scholarly Excellence (PRSE) and other areas in the Department (Table 8). In addition, faculty members in the Department form an important nucleus in the Molecular, Cellular and Integrative Neuroscience Program PRSE. Departmental faculty members also participated in the Merck/Merial Summer Research Program for PVM Students, the NIH Short-Term Training for Minority Students Program and the Hughes Undergraduate Research Scholars Program.

Postgraduate Education:
The Department is actively involved in providing postdoctoral students with advanced training. There are currently 10 post-PhD and 7 post-DVM graduates working in laboratories. In addition, departmental faculty trained 1 visiting student and 17 visiting faculty/clinicians during 2008.

Thornburg Awards:
The Department gives several research awards annually, sponsored by the Thornburg Endowment. In 2008, these included the following (Table 11):

Departmental Research Excellence Awards (retreat)
- Jill Guttormsen (Best Talk – Session 1)
- Katie Torley (Best Talk – Session 2)
- Aida Ulloa (Best Graduate Student Poster)
- Daesuk Chung (Best Postdoctoral Fellow Poster)

O.E. Thornburg Undergraduate Research Excellence Awards:
- Hamid Gari and Daniel Woldtvedt

O.E. Thornburg Graduate Research Excellence Awards:
- Albert Gonzales and Scott Purcell

VI. Research

Traditional strengths in the BMS Department include world-recognized programs in reproductive biology and anatomy/neuroscience. The reproductive biology focus includes faculty working in the broad areas of (1) pregnancy, reproductive development and stem cell biology (Anthony, Bouma, Hansen, Niswender, Sanborn, Seidel, Veeramachaneni, Winger); (2) fertility, sterility and contraception (Carnevale, Graham, Nett, Roess); (3) environmental reproductive toxicology (Bouma, Veeramachaneni); (4) assisted reproductive technologies and cryopreservation of animal germ plasm (Carnevale, Clay, Graham, Nett, Seidel, Woods); (4) reproductive cancers (Clay, Woods); and (5) clinical and infectious disease (Bowen, Hansen, Smeraski).

The neuroscience focus encompasses BMS faculty with research interests in a number of areas: (1) neurotransmission and circuitry (Hentges, Madl, Partin, Rash, Reist, Vigh); (2) neuroendocrinology and developmental biology (Clay, Hentges, Ishii, Nett, Tobet); and (3) ion channel structure and function (Amberg, Earley, Partin, Sanborn, Tamkun). Faculty positions awarded in 2008 will fill out strength in neuroendocrinology, sensory neurobiology and integrative neuroscience.

The developing cardiovascular focus includes faculty with broad interests in this area from several points of view: Amberg (changes in ion channel behavior in pathophysiological conditions; Anthony (placental insufficiency and predisposition for adult onset of diabetes, hypertension, stroke and coronary heart disease); Earley (regulation of arterial smooth muscle activity by ion channels); Frye (cardiovascular and pulmonary physiology and pathophysiology; clinical cardiovascular disease); and Tamkun (ion channel trafficking in relation to control of electrical excitability in the cardiovascular system).

The research enterprise is very strong (Table 9). Department research expenditures exceeded $6,810,000 in 2008. Funding sources included peer-reviewed extramural funding, Agricultural Experiment Station funding, contracts and gifts. Activity in research also is evidenced by the high productivity of the faculty in producing peer-reviewed papers and other scientific publications (Table 11) and by receipt of one patent and applications for two more (Table 10).

Faculty members also have participated in international organizations, organized international symposia and collaborated widely around the world, thus enhancing the outreach and extending the reputation of the University.

VII. Service

Departmental faculty members have been engaged in important service activities for the University. This includes significant committee service at the Department, College and University levels and a very visible Short Course educational activity in Equine Reproduction, as well as an internationally respected commercial program in equine reproduction. The commercial program generated more than $2.2 million in total revenues in 2008 and served 413 clients and 241 short course attendees. Faculty members also have been highly sought after as members on editorial boards and grant review panels, as consultants and as reviewers of manuscripts.

VIII. New Faculty

Dr. Quinton Winger joined the Biomedical Sciences faculty as an Assistant Professor in July 2008.

IX. Goals for 2009

- The Department will continue to evaluate its educational activities and course offerings, their effectiveness and their role in the educational mission.

- The Department is seeking a new Department Head in 2009 and is conducting 3 searches for new faculty members in the area of neuroscience.

- The Department will continue to sponsor activities that will enhance the research and academic programs of faculty and students and seek additional sources of support for scholarships and endowed lectureships.

- The Department will continue service and commercial activities and will encourage technology transfer.

Table 1: BIOMEDICAL SCIENCES FACULTY — 2008

Regular Faculty

Gregory C. Amberg, PhD, PharmD — Assistant Professor
Specialty: Membrane biophysiology

Russell V. Anthony, PhD — Hill Professor of Biotechnology (part-time)
Specialty: Molecular endocrinology

Gerrit J. Bouma, PhD — Assistant Professor
Specialty: Reproductive biology

Richard A. Bowen, DVM, PhD — Professor
Specialty: Infectious disease and reproductive physiology

Elaine M. Carnevale, DVM, PhD — Assistant Professor
Specialty: Equine assisted reproduction

Colin M. Clay, PhD — Professor
Specialty: Molecular endocrinology

Scott Earley, PhD — Assistant Professor
Specialty: Cardiovascular physiology

Melinda Frye, DVM, PhD — Assistant Professor
Specialty: Cardiovascular physiology

James K. Graham, PhD — Professor
Specialty: Male reproductive physiology

Robert J. Handa, PhD [terminated 05/08] — Professor
Specialty: Reproductive biology, early pregnancy, fetal development

Thomas R. Hansen, PhD — Traubert Professor and Director, ARBL
Specialty: Establishment and maintenance of pregnancy; Effects of maternal undernutrition

Shane T. Hentges, PhD — Assistant Professor
Specialty: Pharmacology

Douglas N. Ishii, PhD — Professor
Specialty: Molecular neurobiology

Sue C. Kinnamon, PhD — Professor
Specialty: Molecular mechanisms of taste transduction

James E. Madl, DVM, PhD — Associate Professor
Specialty: Neurotransmitter release in central nervous system disease

Charles W. Miller, PhD — Professor
Specialty: Cardiovascular physiology

Terry M. Nett, PhD — Professor
Specialty: Reproductive endocrinology

Kathryn M. Partin, PhD — Associate Professor
Specialty: Structural and functional analysis of glutamate receptors

John E. Rash, PhD — Professor
Specialty: Identifying and mapping connexins, aquaporins, and neurotransmitter receptors

Noreen E. Reist, PhD — Associate Professor
Specialty: Molecular dissection of neurotransmitter release

Deborah A. Roess, PhD — Professor
Specialty: Cellular endocrinology

Barbara M. Sanborn, PhD — Professor and Head
Specialty: Hormonal signal transduction

Michael M. Tamkun, PhD — Professor
Specialty: Molecular physiology, ion channels

Stuart Tobet, PhD — Professor
Specialty: Developmental neurobiology

D.N. Rao Veeramachaneni, BVSc, MscVet, PhD — Professor
Specialty: Andrology and reproductive toxicology

Jozsef Vigh, PhD — Assistant Professor
Specialty: Neurobiology

John P. Walrond, PhD — Associate Professor
Specialty: Structure and function of central and peripheral nicotinic cholinergic synapses

L. Ray Whalen, DVM, PhD — University Distinguished Teaching Scholar
Specialty: Design, development, and evaluation of interactive multimedia educational programs

Quinton A. Winger, PhD — Assistant Professor
Specialty: Gentic regulation of mammalian reproduction

Gordon L. Woods, DVM, PhD — Professor and Alexander Chair in Equine Reproduction
Specialty: Equine reproduction

Transitional Faculty

Gordon D. Niswender, PhD — University Distinguished Professor
Specialty: Reproductive endocrinology

George E. Seidel, Jr., PhD — University Distinguished Professor
Specialty: Reproductive physiology

Special Faculty

Anna D. Fails, DVM, PhD — Assistant Professor
Specialty: Teaching

Mark B. Frasier, MS — Associate Professor
Specialty: Teaching

Chun-Ying Ku, PhD — Assistant Professor
Specialty: Molecular signal transduction

Lawrence Olsen, DVM — Assistant Professor
Specialty: Research

Gary E. Pickard, PhD — Professor
Specialty: Biological rhythms

Sandra Pitcaithley, PhD — Assistant Professor
Specialty: Teaching

Cynthia Smeraski, PhD — Assistant Professor
Specialty: Neurobiology, neuroimmunology and infectious diseases

Patricia J. Sollars, PhD [terminated 11/08] — Assistant Professor
Specialty: Chronobiology and sleep

Connie Vader-Lindholm, PhD — Assistant Professor
Specialty: Teaching

Joint Faculty

Kenneth Allen, PhD — Professor, Food Science and Nutrition
Specialization: Nutrition

Jason Bruemmer, PhD — Associate Professor, Animal Sciences
Specialty: Equine reproduction

Robert W. Gotshall, PhD — Professor, Health and Exercise Science
Specialization: Cardiovascular and exercise physiology

Matthew Hickey, PhD — Associate Professor, Health and Exercise Science
Specialization: Cardiovascular, nutrition and exercise physiology

Patrick McCue, DVM, PhD — Associate Professor, Clinical Sciences
Specialization: Equine reproduction and assisted reproductive technologies

Christopher Orton, DVM, PhD — Professor, Clinical Sciences
Specialization: Cardiopulmonary physiology / surgery

Narda Robinson, DO, DVM, MS, DABMA, FAAMA — Assistant Professor, Clinical Sciences
Specialization: Complementary medicine

Bernard Rollin, PhD — University Distinguished Professor, Philosophy
Specialization: Animal ethics

Affiliate Faculty

Dan Baker, PhD
Colorado Division of Wildlife

Bruce W. Banfield, PhD
Department of Microbiology, University of Colorado School of Medicine, Denver, CO

James Barry, MD
The Children's Hospital, Denver, CO

Frederick Battaglia, MD
Perinatal Research Center, University of Colorado Health Sciences Center, Denver, CO

Kurt Beam, PhD
University of Colorado Health Sciences Center, Denver, CO

F. Edward Dudek, PhD
Department of Physiology, University of Utah, Salt Lake City, UT

David Gardner, PhD
Colorado Center for Reproductive Medicine, Denver, CO

Rayna Gonzales, PhD
University of Arizona, Phoenix, AZ

Robert J. Handa, PhD
University of Arizona, Tucson, AZ

William Horne, DVM, PhD
Cornell University, Ithaca, NY

Richard Martin, MD
Department of Medicine, Pulmonary Division, National Jewish Research and Medical Center, Denver, CO

Lowell Miller, PhD
National Wildlife Research Center, Fort Collins, CO

Gary Pickard, PhD
University of Nebraska, Lincoln, NE

William Sather, PhD
University of Colorado Health Sciences Center, Denver, CO

Patty Sollars, PhD
University of Nebraska, Lincoln, NE

Edward L. Squires, PhD
Gluck Equine Research Center, University of Kentucky, Lexington, KY

Martha Tissot Van Patot, PhD
Department of Anesthesiology, University of Colorado Health Sciences Center, Denver, CO

Randall Wilkening, MD
Department of Pediatrics, University of Colorado Health Sciences Center, Denver, CO

Emeritus Faculty

Rupert P. Amann, tenure 1983–1995
Specialization: Male reproductive physiology
Howard O. Nornes, tenure 1972–2002
Specialization: Development and regeneration of the central nervous system
Robert Phillips, tenure 1964–1997
Specialization: General physiology
Bill W. Pickett, tenure 1967-2000
Specialization: Equine reproductive physiology; assisted reproductive technology
W. Lee Wilke, tenure 1978-2006
Specialty: Cardiovascular and renal physiology

Joint Faculty Appointments in Other Departments

Russell Anthony	Department of Pediatrics, UCHSC
Richard Bowen	Department of Microbiology, CSU
Douglas Ishii	Department of Biochemistry, CSU
Sue Kinnamon	Department of Cellular and Structural Biology, UCHSC
Noreen Reist	Special Appointment Faculty, UCHSC
Michael Tamkun	Department of Biochemistry, CSU
Ray Whalen	Department of Clinical Sciences, CSU
Gordon Woods	Department of Clinical Sciences, CSU

Visiting Faculty / Scientists

Dr. Mahmood Amiry-Moghaddam, University of Oslo, Oslo, Norway
Host: J. Rash

Alfredo Antoniazzi, Brazil
Host: T. Hansen

Juliano da Silveira, graduate student from Brazil
Host: J. Bouma

Dr. Christina Ferreira, Brazil
Host: G. Seidel

Dr. C. Sue Furman, University of Southern Illinois
Host: J. Rash

Thais Marques Granato, Brazil
Host: E. Carnevale

Prof. Ross Johnson, University of Minnesota
Host: J. Rash

Dr. Naomi Kamasawa, Japan
Host: J. Rash

Dr. Karima Mahmoud, Scientist, Egyptian Department of Agriculture
Host: G. Seidel

Dr. Ken McNatty, Victoria University of Wellington
Host: R. Veeramachaneni

Jimena Mugica, Mexico
Host: E. Carnevale

Dr. Yong-Soo Park, Scientific Director, Federal Research Institute, Korea
Host: G. Seidel

Prof. Edwardo Rosa-Molinar, University of Puerto Rico
Host: J. Rash

Renata Cristina Uliani, Brazil
Host: E. Carnevale

Dr. Oleksandr Selverstov, University of Wyoming
Host: R. Veeramachaneni

Dr. Cobus van Dyk, University of Pretoria, South Africa
Host: R. Veeramachaneni

Shaorui Xi, China
Host: D. Roess

Leila Zekkour, Mexico
Host: E. Carnevale

Table 2: POSTDOCTORAL FELLOWS — 2008

	Advisor	Start Date	End Date
Ryan Ashley	Hansen	12/01/06	
Ann Baker	Roess	04/01/06	
Jennifer Barfield ‡	Seidel	05/07/07	
Peter Dobelis	Hentges	04/01/08	07/02/08
Chad Foradori	Handa	09/01/03	08/31/08
Andy Hartwick ‡	Pickard / Sollars	11/14/05	08/31/08
Kristin Jones	Bowen	05/14/07	07/15/08
Andrea Kudwa	Handa	08/07/05	08/31/08
Pankaj Kumar	Tobet	10/01/08	
JingJing Liu	Roess	10/01/05	09/30/08
Kristy McClellan	Tobet	11/15/08	
Eva Rozsa	Vigh	10/01/08	
Brian Searcy	Tobet	09/22/08	
Aurelie Vandenbeuch	Kinnamon	09/17/06	12/31/08
Qian Zhang	Tobet	11/01/08	

‡ NRSA, training grant or individual fellowship.

Table 3: BIOMEDICAL SCIENCES STAFF — 2008

Research Associates / Technicians

Employee	Supervisor	Location
Matthew Allen	Nett	ARBL
Catherine Anderson	Kinnamon	Anatomy/Zoology
Jesus Arreguin-Arevalo	Nett	ARBL
Laurie Biela	Reist	Anatomy/Zoology
Richard Brandes	Hansen	ARBL Annex
Zella Brink	Seidel	ARBL
Sheryl Cammarata	Clay/Hansen	ARBL
Jeremy Cantlon	Anthony	ARBL
Herschel Chadwick	Gallegos	ARBL
Kimberly Davidson	Rash	Anatomy/Zoology
Samuel Estrada Murillo	Gallegos	Equine Reproduction Lab
Mike Gallegos	Niswender	ARBL
John Gieser	Partin	Anatomy/Zoology
Jorge Gonzalez Martinez	Gallegos	Equine Reproduction Lab
Juan Gonzalez Rios	Gallegos	Equine Reproduction Lab
Alejandro Gonzalez-Sesana	McCue	Equine Reproduction Lab
Melissa Hudson	Woods	ARBL
Ruth Hurst	Carnevale	Equine Reproduction Lab
Connie King	Hentges	Anatomy/Zoology
J. Gabe Knoll	Tobet	Anatomy/Zoology
Jorge Leon Armando	McCue	Equine Reproduction Lab
Andrea Linton	Whalen	Anatomy/Zoology
Yizhen Liu	Frye	Physiology
Hans Mayan	Niswender	ARBL
Steve Mellin	Hansen	Equine Reproduction Lab
Mindy Meyers	Woods	ARBL
Carol Moeller	Veeramachaneni	ARBL
Paula Moffett	Bruemmer	Equine Reproduction Lab
Malcolm Ogilvie	Pickard	Anatomy/Zoology
Jennifer Palmer	Veeramachaneni	ARBL
Gina Parsons	Whalen	Anatomy/Zoology
Jennifer (Nikki) Phillips	Sanborn	ARBL
Jennifer Ryan	Kinnamon	Anatomy/Zoology
Miguel Sepulbeda	McCue	Equine Reproduction Lab
Juliano da Silveira	Bouma	ARBL
Anne Simpson	Smeraski	ARBL
Jennifer Skuggen	Gallegos	Equine Reproduction Lab
JoAnne Stokes	Carnevale / Seidel	Equine Reproduction Lab
Jennifer Whitesell	Clay	ARBL

Administrative Professional Coordinators / Instructors

Employee	Location
Tod Clapp	Anatomy/Zoology
Robert E. Lee	Anatomy/Zoology

Senior Research Associates

Employee	Supervisor	Location
Daesuk Chung	Sanborn	ARBL
Kimberly Davidson	Rash	Anatomy/Zoology
Paul Gordy	Bowen	ARBL
Jennifer (Nikki) Phillips	Sanborn	ARBL
Thomas Yasumura	Rash	Anatomy/Zoology

Research Scientists

Employee	Supervisor	Location
Luiz Henkes	Hansen	ARBL
Michio Morita	Rash	Anatomy/Zoology
Dilyara Murtazina	Sanborn	ARBL
Natalia Smirnova	Hansen	ARBL
Leslie Stone-Roy	Kinnamon	Anatomy/Zoology

Administrative Support

Employee	Title	Location
Louise Ansell	Administrative Assistant II	B.W. Pickett Equine Center
Erin Bisenius	Graduate Education Coordinator/Advisor	134 Physiology
Lisa Dell	Administrative Assistant II	Equine Reproduction Lab
Carol Dewbre	Administrative Assistant III	102 Physiology
Steven Foster	Accounting Technician III	W108C ARBL Building
Kay Gallatin	General Professional III	W108D ARBL Building
Melissa Hein	Department Administrator	102 Physiology
Sandra Hopper	Program Assistant I	B.W. Pickett Equine Center
Shamera Loose	Administrative Assistant III	W106 ARBL
Jan Marshall	Program Assistant II	W103 Anatomy/Zoology
Brenda Martin	Administrative Assistant III	W108 ARBL
Terrie Murphy	Administrative Assistant II	Equine Reproduction Lab
Karen Solomon	Administrative Assistant III	W103 Anatomy/Zoology
Lora Sonday	Accounting Technician III	102 Physiology
Kelly Swetich	Undergraduate Major Advisor	110 Physiology
Kathy Thomas	Program Assistant I	W117 ARBL Building
Shazette Tucker	Administrative Assistant II	W103 Anatomy/Zoology
Brenda Usher	Administrative Assistant II	102 Physiology
Sallie Varner	Program Assistant I	W108B ARBL Building

Table 4: GRADUATE STUDENTS — 2008

Ph.D. Students

	Prior Degrees	Advisor	Specialty	Start / Finish Dates
Al-Yahya, Khaleel	MS	Madl	Neuro	FA 02
Alqatati, Abeer	MS	Roess	Physio	SP 07
Baver, Scott	MS / MCIN	Sollars / Pickard	Neuro	FA 07
Bott, Rebecca *	MS	Bruemmer / Niswender	Physio	FA 05
Campos-Chillon, Fernando	DVM / MS	Carnevale	Repro	FA 04
DeLille, Alexandra	DVM / MS	Seidel	Repro	SM 96
Fawley, Jessica ‡	BS / MCIN	Dudek	Neuro	SM 02 / SP 08
Gates, Katherine	MS	Anthony/Hansen	DVM/ PhD	SM 04
Gonzales, Albert ‡	MS / MCIN	Earley	Neuro	FA 07
Guttormsen, Jillian ‡	BS	Winger	Repro	FA 08
Kohler, Dennis	BS	Bowen	Physio	SP 04
Koste, Jessica	BS	Whalen	Physio	FA 08
Magee, Christianne *	DVM, MS	Clay	Repro	FA 07
Maresh, Ryan	MS	Anthony	Repro	FA 04 / SM 08
Moffett, Paula	BS	Bruemmer	Repro	SM 01/SM 08
Osterlund, Kristen		Handa	Neuro	FA 08
Powers, Jenny	DVM	Nett	Repro	SP 05
Purcell, Scott *	MS	Anthony / Seidel	Repro	FA 04 / SM 08
Spizziri, Beth	MS	Graham	Repro	SP 08
Striegel, Amelia	MS / MCIN	Reist	Neuro	FA 06
Walker, David Josh	MS	Seidel	Repro	FA 04
Weiser, Michael	MS	Handa	Neuro	FA 04 / FA 08
Wolf-Ringwall, Amber *	BS	Roess	Physio	SM 05

* Training grant trainee

‡ National Research Service Award or other individual fellowship recipient

M.S.-A Students

	Prior Degrees	Advisor	Specialty	Start / Finish Dates
Altermatt, Joy	DVM	Carnevale	Repro	SM 05
Anema, Jennifer ‡	BS	Seidel	Repro	FA 08
Coulter, Ernest (Chip)	BS	Tucker / Tissot	Cardio	FA 01 / SM 08
Cox, Timothy	BS	Carnevale	Repro	FA 04 / SM 08
Cullingford, Erika	BS	Seidel	Repro	SM 08
Daigneault, Brad	BS	Carnevale	Repro	SP 08
Donner, Nina	Diplom.	Handa	Neuro	SP 05 / FA 08
Fromme, Brittany	BS	Winger / Bouma	Repro	FA 08
Hartshorn, Cheryl	BS	Tobet	Neuro	FA 07
Hudson, Melissa	BS	Seidel / Graham	Repro	FA 06 / SP 08
Kemp, Jeffrey	BS	Graham	Repro	FA 07
Lund, Gretchen	BS	Carnevale	Repro	SM 07
Meyers, Melinda	BS	Graham	Repro	SM 06 / SM 08
Rasmussen, Sara	BS	Seidel	Repro	FA 07
Rodrigues, Bernardo ‡	BS	Carnevale	Repro	FA 08
Schoeberl, Samantha	BS	Roess	Physio	FA 07
Shoemaker, Megan	BS	Hansen	Repro	FA 06 / SM 08
Torley, Katie	BS	Bouma	Repro	FA 07
Yourey, Rebecca	BS	Carnevale	Repro	FA 07

* Training grant trainee

‡ National Research Service Award or other individual fellowship recipient

M.S.-B Students

	Prior Degrees	Advisor	Start / Finish Dates
Altamero, Joy	BS	Frasier	FA 07 / SM 08
Baird, Kenneth	BS	Frasier	FA 07 / SM 08
Berkbigler, Jennifer	BS	Frasier	FA 07 / SM 08
Bishop, Matthew	BS	Frasier	FA 08
Bohlen, Elizabeth	BS	Frasier	SP 08
Bolinger, Christopher	BS	Frasier	FA 07 / SM 08
Bourland, Steven	BS	Frasier	FA 07
Carr, Katherine	BS	Frasier	FA 07 / SM 08
Carter, Kasey J.	BS	Frasier	FA 08

	Prior Degrees	Advisor	Start / Finish Dates
Chapman, Brandon	BS	Frasier	FA 07 / SM 08
Cheyney, Rebecca	BS	Frasier	FA 08
Christy, Jason	BS	Frasier	FA 08
Cole, Michael	BS	Frasier	FA 07 / SM 08
Cooper, Casey	BS	Frasier	FA 08
Copeman, Jaret	BS	Frasier	FA 07 / SM 08
Corbin, Christine	BS	Frasier	FA 07 / FA 08
Critz, Catherine	MS	Frasier	FA 07 / SM 08
Crystal, Sarah	BS	Frasier	FA 08
Cunz, Heidi	BS	Frasier	FA 07
Do, Phuong	BS	Frasier	FA 08
Dolan, James	BS	Frasier	FA 08
Dooher, Elizabeth	BS	Frasier	FA 07 / SM 08
Dunne, Catherine	BS	Frasier	FA 08
Early, Morganne	BS	Frasier	SU 08 / SP 08
Eaves-Egenes, Julialea	BS	Frasier	FA 08
Emanuel, Catherine	BS	Frasier	FA 08
English, Kizzy	BS	Frasier	FA 08
Fentiman, Katelyn	BS	Frasier	FA 08
Ferguson, Lindsay	BS	Frasier	FA 08
Fox, Kimberly	BS	Frasier	FA 07 / SM 08
Fox, Laura	BS	Frasier	FA 08
Frazee, Kolsie	BS	Frasier	FA 07 / SM 08
Gaebler, Teresa	BS	Frasier	FA 08
Galen, Ashley	BS	Frasier	FA 08
Gallagher, Shannon	BS	Frasier	FA 07
Garbino, Nina	BS	Frasier	FA 08
Gardner, Ryan	BS	Frasier	FA 07 / SM 08
Gottlieb, Chelsea	BS	Frasier	FA 08
Green, Jeffrey	BS	Frasier	FA 08
Gregorich, Scott	BS	Frasier	FA 07 / SM 08
Gronsten, Cody	BS	Frasier	FA 08
Haji, Farnaz	BS	Frasier	FA 07 / SM 08
Hartman, Gavin	BS	Frasier	FA 06 / SP 08
Hau, Heather	BS	Frasier	FA 08
Havrilla, Jennifer	BS	Frasier	FA 07 / SM 08
Henderson, Ryan	BS	Frasier	FA 07 / SM 08

	Prior Degrees	Advisor	Start / Finish Dates
Hickey, Erin	BS	Frasier	FA 07
Hines, Sarah Meagan	BS	Frasier	FA 07 / FA 08
Hochevar, Dayna	BS	Frasier	FA 07 / SM 08
Holder, Adiena	BS	Frasier	FA 08
Howell, Jeffrey	BS	Frasier	FA 08
Innes, Jenna	BS	Frasier	FA 08
Isch, Cassidy	BS	Frasier	FA 08
Jarrett, Michael	BS	Frasier	FA 07 / SM 08
Jostes, Eric	BS	Frasier	FA 08
Kanda, Megan	BS	Frasier	FA 08
Keeler, Alexandra	BS	Frasier	FA 07 / SM 08
Kent Krouse, Stephanie	BS	Frasier	FA 08
Keyser, Andrew	BS	Frasier	FA 08
Klostermann, Isaac	BS	Frasier	FA 08
Knoblock, Ryan	BS	Frasier	FA 08
Korb, Danielle	BS	Frasier	FA 07 / SM 08
Krunic, Marija	BS	Frasier	FA 08
Lancaster, Brian	BS	Frasier	FA 07 / SM 08
Lehman, May	BS	Frasier	FA 08
Leonard, Michelle	BS	Frasier	FA 06 / SP 08
Leppien, Anna	BS	Frasier	FA 06 / SP 08
Levy, Jonathan	BS	Frasier	FA 07 / SM 08
Lewis, Whitney	BS	Frasier	FA 07 / SM 08
Lipfert, Tracey	BS	Frasier	FA 08
Loftus, Robert	BS	Frasier	FA 07
Lossing, Rebecca	BS	Frasier	FA 08
Martinuzzi, Aaron	BS	Frasier	FA 08
Mathre, Stephanie	BS	Frasier	FA 07 / SM 08
McCracken, Kathryn	BS	Frasier	FA 08
McDonald, Christopher	BS	Frasier	FA 07 / FA 08
Mensch, Kenneth	BS	Frasier	FA 08
Milnes, Casey	BS	Frasier	FA 07 / SM 08
Moerlein, Janelle	BS	Frasier	FA 08
Moritis, Karina	BS	Frasier	FA 07 / SM 08
Murphy, Brittany	BS	Frasier	FA 08
Muther, Nicole	BS	Frasier	FA 07 / SM 08
Nagle, Bebhinn	BS	Frasier	FA 08

	Prior Degrees	Advisor	Start / Finish Dates
Nelson, Shana	BS	Frasier	FA 08
Nguyen, Tan	BS	Frasier	FA 07
O'Driscoll, Cari	BS	Frasier	FA 07
Olson, Adam	BS	Frasier	FA 08
Page, Marshall	BS	Frasier	FA 08
Reid, Katherine	BS	Frasier	FA 07
Rice, Dahlia	BS	Frasier	FA 07 / SM 08
Riggle, Lindsay	BS	Frasier	SU 08 / SP 08
Rowe, Valerie	BS	Frasier	FA 07 / FA 08
Schuneman, Keely	BS	Frasier	FA 07 / SM 08
Slaght, Kiersten	BS	Frasier	SP 08
Snyder Elizabeth	BS	Frasier	SP 08 / SM 08
Sprunger, David	BS	Frasier	FA 07 / SM 08
Talmich, Emily	BS	Frasier	SP 08 / SM 08
Tumlinson, Meghan	BS	Frasier	FA 07 / SM 08
Usel, Matthew	BS	Frasier	FA 07 / SM 08
Vanwy, Shirley	BS	Frasier	FA 08
Viboolsittiseri, Sawannee	BS	Frasier	FA 08
Walker, Caleb	BS	Frasier	FA 07 / SM 08
Walsh, Jamison	BS	Frasier	FA 08
Walton, James	BS	Frasier	FA 08
Williams, Benjamin	BS	Frasier	FA 08
Wilson, Brittany	BS	Frasier	FA 07 / SM 08
Wingfield, Heidi	BS	Frasier	FA 07 / SM 08
Woodard, Susan	BS	Frasier	FA 07 / SM 08
Yoshida, Aya	BS	Frasier	FA 08
Zubricky, Katherine	BS	Frasier	FA 08

Graduate Students in Other Departments Advised by Biomedical Sciences Faculty

Name	Department	Advisor	Program	Status
Achenbach, Jenna	MIP	Bowen	PhD	Active
Ammon, Jeret	MIP	Bowen	MS	Active
Bosco-Lauth, Angela	MIP	Bowen	PhD	Active
Crenshaw, Shirley	Chemistry	Roess (co-advisor)	PhD	Active
Damle, Alpana	CMB	Roess (co-advisor)	PhD	Active
Delano, Theresa	Ed Human Res	Frye (co-advisor)	PhD	Active
Enriquez, Vanessa	CMB	Tobet (rotational advisor)	PhD	Active
Frahm, Krystle	MCIN	Tobet (rotational advisor)	PhD	Active
Funk, Janel	Biochemistry	Reist (co-advisor)	PhD	Active
Herrera, Carlos	BMB	Earley	MS	Active
Huang, Xin	CMB	Roess	PhD	Active
Kristensen, Camilla	CMB	Tamkun	MS	Active
McClellan, Kristy *	CMB	Tobet	PhD	Graduated
McSweeney, Kevin	Clinical Sciences	Seidel (co-advisor)	MS	Active
Muth, Jack	MIP	Bowen	PhD	Active
Ndaluka, Christina	MIP	Bowen	PhD	Active
Nemeth, Nicole	MIP	Bowen	PhD	Graduated
Partyka, Katie	Animal Sciences	Anthony	MS	Active
Roan, Chelsea	Biochemistry	Roess	MS	Active
Serbedzija, Predrag	Biochemistry	Ishii	PhD	Active
Soffler, Carl	MIP	Bowen	PhD	Active
Stratton, Matthew	CMB	Tobet	PhD	Active
Ulloa, Aida ‡	CMB	Sanborn	PhD	Active
Wadas, Brandon	Biochemistry	Tobet (co-advisor)	MS	Graduated
Weiner, Christina	MIP	Hansen (co-advisor)	MS	Active
Winter, Peter	CMB	Roess (co-advisor)	PhD	Active
Zirofsky, Dara	Clinical Sciences	Madl (co-advisor)	MS	Active
Zhang, Dongmei	Chemistry	Roess (co-advisor)	PhD	Active
Zhou, Jun	CMB	Roess (co-advisor)	MS	Active

* Training grant trainee

‡ National Research Service Award or other individual fellowship recipient

Table 5: DEGREES AWARDED — 2008

Ph.D. Degree

Student	Advisor	Thesis/Dissertation Title
Jessica Fawley	Dudek	Status Epilepticus, Epilepsy and the Estrous Cycle in an Animal Model of Temporal Lobe Epilepsy
Ryan Maresh	Anthony	Characterization of Mediators of Cardiac and Renal Development in Response to Increased Prenatal Testosterone
Scott Purcell	Anthony/Seidel	Characterization of Periattachment Factor
Michael Weiser	Handa	Estrogen Receptors Alpha and Beta: Opposing Roles in Hypothalamic-Pituitary-Adrenal Axis Function and Stress-Related Behaviors

M.S.-A Degree

Student	Advisor	Thesis/Dissertation Title
Nina Donner	Handa	Behavioral Effects of Estrogen Receptor Beta Acting Locally to Regulate the Expression of Tryptophan Hydroxylase 2 (TPH2) in Serotonergic Neurons of the Dorsal Raphe Nuclei
Melissa Hudson	Seidel / Graham	In Vitro Capacitation of Stallion Spermatozoa as Assayed by Fertilization of Bovine Oocytes
Paula Moffett	Bruemmer / McCue	Comparison of Dimethyl Formamide and Glycerol for Cryopreservation and Fertility of Equine Sperm
Megan Shoemaker	Hansen	Infection with Noncytopathic Bovine Viral Diarrhea Virus Results in Differential Expression of Immune Pathways, Including Type-I Interferon

Degrees Awarded in Other Departments to Students Advised by BMS Faculty

Student	Advisor	Degree	Thesis/Dissertation Title
Kristy McClellan	Tobet	Ph.D.	Role of GABA in Hypothalamic Nuclear Development
Brandon Wadas	Tobet (co-advisor)	M.S.	Development of the Gonadotropin-Releasing Hormone Neuronal Network in Normal and Endocrine-Disrupted Models

Table 6: FELLOWSHIP AND SCHOLARSHIP RECIPIENTS — 2008

Abney Foundation Scholarship
Fernando Campos-Chillon
Melissa Hudson
Gretchen Lund

Biomedical Sciences Undergraduate Scholarship
Megan Faucett
Brooke Jarvie
Matthew Vonloh

E.J. Carroll Memorial Scholarship
Sara-Lesley Rasmussen

Lisa Marie Craft Scholarship
Cari O'Driscoll

James N. Dupree Scholarship
Gretchen Lund

Ed H. Honnen Award
Gretchen Lund

Imagine The Possibilities . . . 100-Year Anniversary CVMBS Scholarship
Kyle Carter

Dr. Dean Pavillard Scholarship
Catie DeLuca

Delano F. Scott Scholarship
Kyle Miller
Andrew Stahly

France Stone Scholarship
Catie DeLuca

Thornburg Graduate Research Excellence Award
Albert Gonzales
Scott Purcell

Thornburg Undergraduate Research Excellence Award
Hamid Gari
Daniel Woldtvedt

Barry M. Goldwater Scholarship
Daniel Woldtvedt

Dr. Alan Tucker Memorial Scholarship
Nhung Nguyen

Office of International Programs Study Grant
Sarah Hindman

National Research Service Award or Individual Fellowship Recipients
Jennifer Anema (PRSE Fellowship)*
Dr. Jennifer Barfield
Jessica Fawley
Albert Gonzalez (NIH-NRSA Fellowship)
Jillian Guttormsen (PRSE Fellowship)*
Cheryl Hartshorn*
Dr. Andrew Hartwick
Bernardo Rodrigues (PRSE Fellowship)*
Samantha Schoeberl (PRSE Fellowship)*
Katie Torley (PRSE Fellowship)*
Rebecca Yourey (PRSE Fellowship)*

Training Grant Recipients
Rebecca Bott
Christianne Magee
Kristy McClellan
Scott Purcell
Amber Wolf-Ringwall

* Colorado State Graduate Fellowship

Table 7: COURSES TAUGHT — 2008

Spring

Course #	Title	Instructors
	PVM Courses	
VM 619	Veterinary Neurobiology	Fails, Lee, Pitcaithley, Whalen
VM 621	Exotic Animal Anatomy and Husbandry	Madl, Pitcaithley
VM 640	Biology of Disease I	Bowen
VM 744	Theriogenology	Bowen, Graham, Woods
VM 786A	Junior Practicum	Carnevale
VM 786B	Senior Practicum	Carnevale
	Graduate Courses	
BC 698	Research	Roess
BC 798	Research	Ishii
BMS 501	Mammalian Physiology II	Anthony, Bowen, Seidel, Vader
BMS 531	Domestic Animal Dissection	Frasier
BMS 545	Neuroanatomy	Clapp, Fails, Hartman
BMS 633	Domestic Animal Anatomy: Case Discussion	Fails, Frasier
BMS 642	Research Techniques – Gametes & Embryos	Bowen, Carnevale, Graham, Niswender, Seidel, Veeramachaneni
BMS 684	Supervised College Teaching	Vader
BMS 695E	Independent Study – Surgical Anatomy	Frye
BMS 695F	Independent Study – Gross Anatomy	Frasier
BMS 699	Thesis	Hansen, Seidel
BMS 784	Supervised College Teaching	Carnevale, Fails, Frasier, Reist, Walrond, Woods
BMS 792A	Seminar – Biomedical Sciences	Bouma, Carnevale, Graham, Sollars
BMS 795A	Independent Study – Endocrinology	Anthony, Handa, Roess
BMS 795B	Independent Study – Neurophysiology	Earley, Reist, Sollars
BMS 795E	Independent Study – Reproductive Physiology	Bouma, Carnevale, Graham, Roess
BMS 796C	Group Study – Reproductive Physiology	Graham
BMS 799	Dissertation	Anthony, Bruemmer, Carnevale, Handa, Sollars
ERHS 602	Toxicological Mechanisms	Bouma, Earley
MGT 450	Biomedical Entrepreneurship I	Tobet
NB 503	Developmental Neurobiology	Handa, Ishii, Tobet
NB 505	Neuronal Circuits – Systems, Behavior	Handa, Hentges, Kinnamon, Reist, Tamkun, Vigh

Course #	Title	Instructors
NB 793	Neuroscience Seminar	Earley
NB 795	Independent Study	Earley
NB 796A	Group Study -- Ion Channels	Tamkun
NB 796C	Group Study – Topics in Neuroscience	Reist
NB 796E	Group Study – Neuroendocrine Mechanisms	Clay, Handa, Tobet

Undergraduate Courses

ANEQ 487	Internship	Hansen
BC 475	Mentored Research	Ishii, Tamkun
BC 499A	Thesis – Lab Research Based	Ishii, Tamkun
BMS 122	Drugs and the Human Body	Roess
BMS 124	Sexuality and Health	Nett
BMS 200	Concepts in Human Anatomy and Physiology	Cole, Early, Walrond
BMS 260	Biomedical Sciences	Clay
BMS 300	Human Anatomy and Physiology	Bouma, Bowen, Miller, Walrond
BMS 302	Laboratory in Principles of Physiology	Shoemaker, Vader
BMS 305	Domestic Animal Gross Anatomy	Frasier, Madl
BMS 330	Microscopic Anatomy	Madl
BMS 345	Functional Neuroanatomy	Clapp, Foradori, Hartman, Kinnamon, Reist
BMS 360	Fundamentals of Physiology	Ishii, Miller, Veeramachaneni
BMS 365	Nerve & Muscle – Toxins, Trauma and Disease	Kinnamon, Rash, Smeraski, Whalen
BMS 384	Supervised College Teaching	Frasier, Walrond
BMS 450	Human Pharmacology	Ishii, Jones, Nett, Wilke
BMS 460	Essentials of Pathophysiology	Miller, Roess, Smeraski, Veeramachaneni
BMS 492	Seminar – Pathophysiology/Disease	Miller, Roess, Smeraski, Veeramachaneni
BMS 498	Research	Sanborn

Summer

PVM Courses

VM 786B	Senior Practicum	Carnevale

Graduate Courses

BC 698	Research	Tobet
BC 699	Thesis	Tobet
BMS 684	Supervised College Teaching	Frasier
BMS 695C	Independent Study – Neuroanatomy	Madl
BMS 795C	Independent Study – Cell Physiology	Roess

Undergraduate Courses

BMS 300	Human Anatomy and Physiology	Clay, Miller, Walrond
BMS 301	Human Gross Anatomy	Frasier, Hartman
BMS 495	Independent Study	Frasier

Fall

PVM Courses

VM 616	Functional Anatomy	Fails, Lee, Madl, Pitcaithley, Whalen
VM 618	Organ Systems – Anatomy and Physiology	Bowen, Fails, Frye, Pitcaithley, Walrond
VM 722	Veterinary Pharmacology	Amberg, Ishii, Madl
VM 749	Clinical Sciences III	Fails
VS 333	Domestic Animal Anatomy	Madl

Graduate Courses

BC 698	Research	Roess
BC 798	Research	Ishii
BMS 500	Mammalian Physiology I	Earley, Hentges, Kinnamon, Tamkun
BMS 575	Human Anatomy Dissection	Clapp, Frasier
BMS 610A	Managing a Career in Science	Clapp, Fails, Frasier, Kogan, Madden, Partin, Tobet, Vigh
BMS 610B	Managing a Career in Research	Failr, Partin, Sanborn, Tamkun, Vigh
BMS 619	Advanced Human Gross Anatomy	Clapp, Frasier
BMS 640	Reproductive Physiology and Endocrinology	Anthony, Bouma, Clay, Hansen, Sanborn, Seidel, Veeramachaneni
BMS 684	Supervised College Teaching	Clapp, Frasier, Vader
BMS 695A	Independent Study – Developmental Anatomy	Madl
BMS 695C	Independent Study – Neuroanatomy	Ishii, Frasier, Madl
BMS 695E	Independent Study – Surgical Anatomy	McIlwraith
BMS 699	Thesis	Tobet, Seidel
BMS 784	Supervised College Teaching	Clapp, Fails, Frasier, Walrond, Whalen
BMS 792A	Seminar – Biomedical Sciences	Partin
BMS 792C	Seminar – Reproductive Physiology	Anthony, Frye
BMS 795A	Independent Study – Endocrinology	Anthony, Tobet
BMS 795B	Independent Study – Neurophysiology	Earley
BMS 795C	Independent Study – Cell Physiology	Roess, Vigh
BMS 795D	Independent Study – Cardiopulmonary Physiology	Earley, Frye
BMS 795E	Independent Study – Reproductive Physiology	Bouma, Carnevale, Graham Roess, Seidel, Woods

BMS 796A	Group Study – Neurophysiology	Clay
BMS 796C	Group Study – Reproductive Physiology	McCue
BMS 799	Dissertation	Niswender, Roess, Tobet, Winger
CM 795	Independent Study	Roess
CM 799	Dissertation	Roess, Sanborn
ERHS 502	Fundamentals of Toxicology	Bouma
MIP 651	Immunobiology	Smeraski
MIP 698	Research	Bowen
MIP 798	Research	Bowen
MIP 799	Dissertation	Bowen
NB 500	Readings in Molecular & Cellular Neuroscience	Tamkun
NB 501	Cell and Molecular Neurophysiology	Tamkun
NB 771	Grant Writing	Kinnamon, Reist, Tobet
NB 796A	Group Study – Ion Channels	Tamkun
NB 796C	Topics in Neuroscience	Reist
NB 796E	Group study – Neuroendocrine Mechanisms	Tobet

Undergraduate Courses

BC 475	Mentored Research	Ishii
BC 499A	Thesis – Lab Based Research	Ishii
BMS 192	Freshman Seminar in Biomedical Sciences	Vader
BMS 200	Concepts in Human Anatomy and Physiology	Bourland, Hickey, Walrond
BMS 300	Human Anatomy and Physiology	Clay, Miller, Walrond
BMS 301	Human Gross Anatomy	Clapp, Frasier
BMS 302	Laboratory in Principles of Physiology	Hines, Vader
BMS 325	Introduction to Cellular Neurobiology	Hentges, Kinnamon, Stone-Roy, Tobet, Vigh, Volbrecht, Walrond, Whalen
BMS 384	Supervised College Teaching	Clapp, Frasier, Walrond
BMS 420	Cardiopulmonary Physiology	Miller
BMS 430	Endocrinology	Graham
BMS 487	Internship	Miller
BMS 495	Independent Study	Earley, Frasier, Miller, Reist
BMS 496	Group Study	Clapp, Frasier
BMS 498	Research	Bouma, Clay, Rash
ERHS 446	Environmental Toxicology	Veeramachaneni
LIFE 102	Attributes of Living Systems	Roess
MGT 450	Biomedical Entrepreneurship I	Tobet

Table 8: TRAINING GRANTS — 2008

	Sponsor	Grant Title	Dates	Total $
G. Florant, PI	NIH	Short-term Training Program for Minority Students in Biomedical Sciences	7/04–6/09	211,754
T. Nett, PI	NIH	Training in Mammalian Reproductive Biology	5/05-4/10	789,900

Table 9: RESEARCH FUNDING — 2008

PI Name	Sponsor	Title	Dates	Total Expenditures
Amberg	American Heart Assoc	Calcium sparklets during hypertension	7/1/06–6/30/10	53,038.95
	CRC	Regulation of calcium sparklets by reactive oxygen species	7/1/08–6/30/09	1,068.93
Anthony	NIH-NICHD	Regulation of placental metabolism by glucose supply (W.W. Hay, Jr., PI; R. Anthony, Co-I)	2/22/02–1/31/08	CU
	NIH-NICHD	Fetoplacental amino acid metabolism in IUGR pregnancies (R.B. Wilkening, PI; R. Anthony, Co-I)	7/1/02–6/30/08	CU
	NIH-NICHD	Fetal and neonatal hemodynamics in IUGR	9/1/03–8/31/08	CU
	NIH	Prenatal hypoxia and development of insulin resistance	7/1/05–6/30/07	0
	NIH-NICHD	Early placental development in IUGR pregnancies	7/29/05–5/30/10	CU
	USDA	Characterization of periattachment factor (Co-PI; Seidel Co-PI)	9/1/05–8/31/08	30,969.27
	CRC	Placental-fetal hormonal interactions (W112 project)	7/1/07–6/30/08	11,724.54
	CRC	Placental-fetal hormonal interactions (W112 project)	7/1/08–6/30/09	12,208.24
Bouma	CRC	MicroRNAs in sheep reproduction and development	7/1/07–6/30/08	16,386.18
	CRC	Environmental regulation of sheep fetal gonadal programming through microRNAs and DNA methyltransferases	7/1/08–6/30/09	12,264.46
Bowen	NIH	United States based collaboration in emerging infectious disease (Co-PI; B. Beaty, PI)	9/29/02–9/29/08	122,866.16
	NIH-NIAID	RCE: Animal models scientific facilities core (Core Scientist)	6/1/05–4/30/09	MIP
	NIH-NIAID	New OPS funds (Co-PI)	6/1/05–4/30/09	MIP
	NIH-NIAID	Program income for RCE	6/1/05–4/30/09	MIP
	Lawrence-Livermore Labs	Evaluation of a synthetic vaccine to protect mice from West Nile virus	4/24/06–9/30/08	2,063.12
	CDC	Zoonotic avian influenza: The human-animal interface in the US and Asia	9/30/06–9/29/09	637,400.92
	Merial, Ltd.	Evaluation of efficacy of a multivalent West Nile vaccine	11/10/06–10/31/09	9,220.95
	Merial, Ltd.	Eastern Equine Encephalitis (EEE): A dose/response study in horses on the Sindbis EEEV South American . . .	3/19/07–6/30/07	8,986.52

PI Name	Sponsor	Title	Dates	Total Expenditures
	Merial, Ltd.	Evaluation of the efficacy of a WNV vaccine against an experimental WNV-intrathecal challenge in horses	5/7/07–3/31/08	89,888.00
	USDA-APHIS	Evaluations of wild bird AI surveillance sampling and testing protocols	9/20/07–9/19/08	55,614.68
	Hennessy Research	Efficacy of a West Nile virus vaccine in horses	10/1/07–12/31/07	5,196.29
	Intervet	Immunogenicity of equine West Nile vaccine in horses	2/18/08–5/16/08	82,111.26
	GlobeImmune, Inc.	Ferret study for GI-8004 with seasonal influenza virus challenge	4/1/08–6/30/08	52,545.64
	NIH	Neurological sequelae in survivors of West Nile virus (Investigator)	4/15/08–3/31/10	57,279.64
	Hennessy Research	Evaluation of West Nile virus vaccines in horses (Phase 1)	6/1/08–12/31/08	47,828.82
	Hennessy Research	Evaluation of West Nile virus vaccines in horses	7/1/08–1/31/09	36,226.76
	USDA-APHIS	Indonesian HPIA Testing Cooperative Agreement	9/16/08–9/15/09	0
	Intervet	Duration of immunity testing in horses	12/26/08–3/23/09	0
Carnevale	Hylton Foundation	Development of assisted reproductive techniques for mares and stallions (Co-PI; E. Squires, Co-PI)	7/1/05–6/30/11	27,055.84
	PEG	Differences in arrest and resumption of oocyte maturation in young versus old mares (Co-PI; E. Squires, Co-PI)	4/1/07–10/1/08	40,572.44
	XY, Inc.	Use of sexed semen to produce embryos in vitro (Co-PI; E. Squires, Co-PI)	9/6/07–9/5/08	5,978.54
	CRC	Advanced age alters meiotic and fertilization competency of oocytes in mares	7/1/07–6/30/08	21,000.00
	PEG	Age associated alterations in fertilization and blood flow	7/1/07–6/30/08	40,572.43
Clay	Syngenta	Effects of atrazine on reproductive neuroendocrine function (Co-I; R. Handa, PI)	10/19/05–8/31/08	126,864.49
	AQHA	Evaluation of Kisspeptin and its role in the hypothalamic-pituitary-gonadal axis in the mare	10/1/07–9/30/08	26,635.72
	PEG	Role of Kisspeptin in the hypothalamic-pituitary axis of the horse		132,276.18
	CRC	Plasma membrane actions of estrogen in the ovine pituitary gland	7/1/08–6/30/09	5,554.27
Earley	American Heart Assoc	Functional significance of TRP channels in endothelium-dependent cerebral artery dilation	7/1/05–6/30/09	81,084.50
	NIH	Regulation of cerebral artery dilation (Collaborator; M.T. Nelson, PI)	1/1/07–12/31/11	University of Vermont
	CRC	Regulation of cerebral artery tone by TRPM4	7/1/07–6/30/08	6,109.09

PI Name	Sponsor	Title	Dates	Total Expenditures
	NIH, NHLBI	Role of TRP channels and calcium signaling	8/15/08–8/14/13	12,740.96
Fails	USDA-CSREES	Compliance and training for specified risk material removal in beef meat products (Collaborator; M.D. Salman, PI)	8/1/05–8/11/07	Clinical Sciences
Frye	CRC	Dietary omega-3 polyunsaturated fatty acids in obesity-related cardiac lipotoxicity: exploring the role of protectins and resolvins in myocardial apoptosis, inflammation and contractility	7/1/07–6/30/08	15,223.08
	Res Cons Ag Metabolic Dis	Characterization of endothelial and myocardial DHA-derived eicosanoids under conditions of increased free fatty acids and ascorbate treatment	7/1/07–6/30/09	14,012.85
	CRC	A comparison of rat coronary microvascular endothelial cell proliferation and phenotype under conventional (12% O_2 / 5% CO_2) and coronary microvascular (5% O_2 / 6.7% CO_2) environmental gas tensions	7/1/08–6/30/09	6,466.08
Graham	XY, Inc.	Cryopreservation of sex-sorted stallion sperm	9/1/05–8/31/07	216.27
	PEG	Improving stallion sperm capacitation to enhance in vitro fertilization II	7/1/07–6/30/08	8,504.29
	Anim Reprod Systems	Development of new cryodiluents for stallion sperm	9/1/07–8/31/08	0
	USDA-APHIS	Development of oral contraceptives for the purpose of reducing reproduction in the wild pig	9/15/07–9/14/08	37,728.40
	CRC	Regulating gonadotropin releasing hormone in pigs	7/1/08–6/30/09	7,349.02
	USDA-APHIS	Development of oral contraceptives for the purpose of reducing reproduction in the wild pig	9/15/08–9/14/09	13,539.38
Handa	NINDS	Sex differences in the hypothalamo-pituitary-adrenal axis	2/15/04–1/31/08	<18,212.30>
	NIH	Fetal alcohol exposure and biological rhythms	1/1/05–12/31/09	118,984.80
	Syngenta, Inc.	Atrazine and reproductive function	10/1/05–9/30/08	126,864.49
	Ligand Pharmaceuticals	Androgen receptors regulation of social behaviors	8/8/07–8/8/08	33,435.61
	Brigham & Women's Hosp	Sex specific fetal programming of the HPA axis by glucocorticoids (PI; Jill Goldstein, Program Project PI)	9/15/07–7/15/12	114,534.98
Hansen	USDA-CSREES	Maternal and fetal genetic response to bovine viral diarrhea virus infection	2/1/06–1/31/09	77,724.72
	USDA-CSREES	Gene expression in the blood and uterus during early pregnancy in the cow	9/1/06–8/31/09	154,925.07
	CRC	Milk-based diagnosis of pregnancy in dairy cows	7/1/08–6/30/09	4,787.09

PI Name	Sponsor	Title	Dates	Total Expenditures
	Inf Dis Supercluster ERA	Development of a maternal blood diagnostic for fetal persistent infection with BVDV	7/1/08–6/30/09	14,092.74
	USDA-CSREES	Maternal and fetal response to fetal persistent infection with BVDV	9/1/08–8/31/11	28,425.08
Hentges	NIH	Hypothalamic circuits regulating energy balance and obesity: Synaptic physiology	7/1/08–5/31/13	161,485.85
Ishii	Aurogen, Inc.	Development of a therapeutic treatment for dementia	7/1/07–6/30/09	96,490.19
	CRC	Prevention of brain degeneration in T2D, a pilot study	7/1/08–6/30/09	16,668.17
Kinnamon	NIH	Multiple mechanisms of nasal chemoreception	4/1/03–2/29/08	42,564.96
	NIH	Electrophysiology of taste transduction	4/1/04–3/31/09	446,609.79
	UCHSC	Transmission of taste signals in taste buds	12/16/05–11/30/08	93,118.78
	Univ Miami	Mechanisms of sweet transduction in mammalian taste buds	7/1/07–6/30/09	158,309.93
	Ajinomoto Amino Acid Res	Glutamate: Umami taste stimulus and peripheral taste modulator	4/1/08–12/31/08	69,501.83
Ku	CRC	Protein kinase A expression increase on myometrium plasma membrane during early pregnancy in sheep	7/1/07–6/30/08	9,861.86
Madl	ACVO	Inflammation and vessel obliteration in the retinas of dogs with primary glaucoma (Mentor; Zerofski, PI)	1/1/07–10/31/07	Clinical Sciences
	CRC	Mechanisms of retinal damage in equine recurrent uveitis (Co-PI; J.R. Gionfriddo, PI)	7/1/07–6/30/08	Clinical Sciences
Magee	Grayson-Jockey Club Res Fdn	Evaluation of kisspeptin in the equine (Dr. Magee is a Ph.D. student of Dr. Colin Clay)		14,241.38
Nett	USDA	Role of estrogen receptors (alpha and beta) in the preovulatory LH surge	1/1/05–12/31/08	89,829.49
	NIH	Training in mammalian reproductive biology	1/1/08–4/30/08	46,365.38
	NIH	Training in mammalian reproductive biology	5/1/08–12/31/08	89,674.90
	Morris Animal Foundation	Effect of GnRH immunization on reproduction and behavior in female Rocky Mountain elk	9/1/05–2/28/08	9,496.37
	Barrier Therapeutics	Validation of radioimmunoassays to quantify FSH and progesterone in rat serum	12/1/06–11/30/08	8,184.54
	Barrier Therapeutics	Analysis of FSH, LH, progesterone, estradiol and testosterone in rat serum	2/1/07–1/31/09	105,959.00
	Morris Animal Foundation	Development of new, more efficacious technology to biochemically castrate male and female dogs	4/1/07–3/31/09	24,922.57

PI Name	Sponsor	Title	Dates	Total Expenditures
	Thorn Bioscience LLC	Validation of hormone assays in pig serum	8/15/07–8/14/09	1,400.25
	National Park Service	Technical support to evaluate fertility control in female elk	9/15/07–12/31/09	27,641.68
	Morris Animal Foundation	Effects of maternal GnRH antibody transfer on reproductive development in elk calves	11/1/07–10/31/09	28,018.57
	CRC	Role of membrane and nuclear estrogen receptors in regulation of gonadotropin secretion	7/1/08–6/30/09	2.00
Niswender	Ag Exp Station	Reproductive performance in beef cattle and sheep (W112)	7/1/07–6/30/08	1,719.00
	Ag Exp Station	Reproductive performance in beef cattle and sheep (W112)	7/1/07–6/30/08	3,849.00
	Ag Exp Station	Reproductive performance in beef cattle and sheep (W112)	7/1/08–6/30/09	4,387.00
	USDA-CSREES	Fellowships in Integrated Resource Management	1/1/08–12/31/12	22,968.00
Partin	CRC	Membrane trafficking of AMPA receptors (2)	7/1/07–9/30/08	5,822.63
Pickard	NIH-NEI	Retinal neurons afferent to the circadian system	7/1/00–6/30/11	389,028.39
	NIH	5HT presynaptic inhibition of retinal input to the SCN (Co-PI; P. Sollars, Co-PI)	9/1/05–8/31/09	76,715.59
	Lundveck Research USA	Melanopsin antagonists	3/1/08–8/31/09	39,690.00
Rash	NIH	Connexins in neuronal and glial gap junctions in CNS	7/1/02–5/31/08	170,121.47
	NIH	Connexins in neuronal and glial gap junctions in central nervous system	7/1/02–6/30/13	235,477.07
	Einstein College of Medicine	Plasticity of mammalian electrical synapses	7/1/07–3/31/08	24,813.16
Reist	NIH	Mutational analysis of synaptotagmin function	7/1/03–6/30/09	139,618.26
Roess	American Heart Assoc	Biophysical evaluation of compounds with insulin-like actions on membranes and downstream signaling events	1/1/06–12/31/08	57,985.97
	NSF	Motion of biologically relevant molecules in restricted environments (Co-I; N. Levinger and D.C. Crans, Co-PI)	10/1/06–9/30/11	Chemistry
	NIH	Imaging cell signaling events during luteinizing hormone pulses	4/1/07–3/31/09	58,997.08
	AEP	CSU Lipidomics Project (Co-I; Crans, Frye, Henry)	7/1/07–6/30/09	Chemistry
	CRC	Do high-amplitude LH pulses desensitize LH receptors on ovine luteal cells and reduce levels of secreted progesterone needed to maintain pregnancy?	7/1/08–6/30/09	2,388.04

PI Name	Sponsor	Title	Dates	Total Expenditures
Sanborn	NIH	Uterine relaxing factors: Molecular aspects of action	5/1/79–7/31/09	165,180.54
	NIH	The role of Trp proteins in myometrial calcium dynamics	6/1/00–8/31/09	163,380.94
	NIH Minority NSRA	Contributions of specific TrpCs to myometrial Ca^{2+} entry (Mentor; A. Ulloa, PI)	8/15/05–8/14/08	14,712.67
	March of Dimes	Signal-regulated calcium entry in human myometrium in pregnancy	6/1/05–5/31/08	37,696.11
Seidel	USDA-NRI	Characterization of periattachment factor (Co-PI; R. Anthony, Co-PI)	9/1/05–8/31/08	30,969.26
	USDA-NRI	Integrating in vitro embryo technologies into the dairy industry	9/15/06–8/31/09	81,194.43
	CRC	dsRNA knockdown of genes regulating mRNA in bovine oocytes	7/1/07–6/30/08	40,572.43
	CRC	MicroRNA regulation of genes in bovine oocytes and embryos	01/1/08-06/30/08	5,837.17
	CRC	MicroRNA regulation of genes in bovine oocytes and embryos	7/1/08–12/31/08	8,396.64
	CRC	MicroRNA regulation of genes in bovine oocytes and embryos	7/1//08-6/30/09	2,485.56
	CRC	MicroRNA regulation of genes in bovine oocytes and embryos	7/1//08-6/30/09	239.05
Smeraski	VPRIT Inf Dis Initiative	Infectious disease initiative	7/1/04–6/30/08	27.38
	NIH-NINDS	Neurological sequelae in survivors of West Nile virus infection: A hamster model	4/15/08–3/31/10	57,279.64
Sollars	NIH	Fetal alcohol exposure and biological rhythms (Co-PI; R. Handa, PI)	1/15/05–12/31/09	118,984.79
	NIH	5HT presynaptic inhibition of retinal input to the SCN (Co-PI; G. Pickard, Co-PI)	9/1/05–8/31/09	76,715.59
Squires	Hylton Foundation	Development of assisted reproductive techniques for mares and stallions (Co-PI; E. Carnevale, Co-PI)	7/1/05–7/31/08	27,055.83
	Hylton Foundation	Development of assisted reproductive techniques for mares and stallions (Co-PI; E. Carnevale, Co-PI)	8/1/08–7/31/11	5,978.54
Tamkun	NIH	Regulatory mechanisms of cardiac repolarization	3/6/02–12/31/07	13,393.92
	NIH	Cardiac Kv channel cell biology (Mentor; K. O'Connell, PI)	12/1/06–11/30/08	67,185.53
	CRC	Relationship between Kv2.1 channel localization and function	7/1/07–6/30/08	12,979.67
	NIH	Kv2.1 membrane corrals: Regulators of K+ channel function and trafficking	12/1/08-11/30/12	8,183.39
Tobet	NIEHS	Fetal basis of sexual dysfunction: Brain differentiation (Co-PI; R. Veeramachaneni, Co-PI)	1/1/06–12/31/08	67,621.09

PI Name	Sponsor	Title	Dates	Total Expenditures
	NIMH	Cellular differentiation in the developing preoptic area	5/1/03–3/31/12	223,696.42
	NIMH	Animal models of sex-specific HPA axis development	9/19/07–7/31/12	179,146.42
	NIH-NIDCD	Migration of early olfactory neuronal progenitors (Co-PI; G. Schwarting, PI)	7/9/07–5/31/09	101,503.43
	Society for Neuroscience	Grass Foundation Traveling Lectureship	12/31/08	FRNG
Veeramachaneni	NIEHS	Fetal basis of sexual dysfunction: Brain differentiation (revised) (Co-PI; S. Tobet, Co-PI)	1/1/06–12/31/08	67,621.09
	NIEHS	Mechanisms causing cryptorchidism and fetal transformation of testicular cells (revised)	9/26/06–8/31/08	130,158.38
Vigh	CRC	Light-induced output dynamics of retinal bipolar cells	7/1/08–6/30/09	5,680.78
Whalen	AEP CSU	Virtual canine anatomy: Increasing the effectiveness of anatomical instruction	7/1/06–6/30/08	38,456.75
Woods	Jess Jackson and Barbara Banke	Cancer comparative medicine	2/1/08	562,666.61

Table 11: AWARDS — 2008

Richard A. Bowen

Provost's N. Preston Davis Award for Instructional Innovation, Colorado State University

Elaine M. Carnevale

Pfizer Animal Health Award for Research Excellence

Mark Frasier

2008 Honors Professor of the Year, Colorado State University
Award for Innovative Instructional Methodology in Undergraduate Education, Colorado State University

Charles Miller

Outstanding Faculty Member, Biomedical Sciences Students, Colorado State University

George E. Seidel, Jr.

Pioneer Award, International Embryo Transfer Society
Researcher of the Year Award, Colorado State University Research Foundation
Animal Physiology and Endocrinology Award, American Society of Animal Science

Edward L. Squires

Distinguished Alumni Award, West Virginia University College of Agriculture, Forestry and Consumer Sciences

John Walrond

Best Teacher Award, Colorado State University Student Alumni Connection and Alumni Association

L. Ray Whalen

Award for Innovative Instructional Methodology in Professional Veterinary Medicine Education

Student Awards

O.E. Thornburg Graduate Research Excellence Award
Albert Gonzales (Earley lab), Scott Purcell (Anthony/Seidel labs)

O.E. Thornburg Undergraduate Research Excellence Award
Hamid Gari, Daniel Woldtvedt

Student Award, Experimental Biology, Molecular Physiology Section of American Physiological Society
Rachael Crnich (undergraduate student in Earley lab)

Highest Honors, Colorado State University Undergraduate Research and Creativity Poster Session
Rachael Crnich (undergraduate student in Earley lab)

Best Talk, Session 1 BMS Graduate Research Retreat
Jill Guttormsen (Winger lab)

Best Talk, Session 2 BMS Graduate Research Retreat
Katie Torley (Bouma lab)

Best Grad Student Poster, BMS Graduate Research Retreat
Aida Ulloa (Sanborn lab)

Best Post-Doc Poster, BMS Graduate Research Retreat
Daesuk Chung (Sanborn lab)

Table 10: PATENTS — 2008

T.R. Hansen

Patent application — *Surrogate maternal markers for fetal viral infection and other inflammatory responses*. Patent ref: CSURF Technology ID 08-031, PCT/US 61014172, filed 12-17-07, continuation 12-17-08, Thomas R. Hansen and Natalia Smirnova..

Patent issued — *Methods and compositions for the detection of pregnancy in ruminants*. Patent ref: 43,047; 3309-WYO.05-091, licensed to AspenBio, Inc., Thomas R. Hansen and Kathleen J. Austin

Patent application — *Pregnancy detection*. Patent ref:PCT/US2003/0224452A1, Mark Colgin, Diane Newman, Cathy Landmann, J.W. Roth and Roger Hurst, co-inventors Thomas R. Hansen and Kathleen Austin.

Table 12: PUBLICATIONS — 2008

Gregory Amberg

Refereed Journal Articles

Navedo MF, Nieves-Cintrón M, Amberg GC, Yuan C, Votaw VS, Lederer WJ, McKnight GS, Santana LF. 2008. AKAP150 is required for stuttering persistent Ca^{2+} sparklets and angiotensin II induced hypertension. Circ Res 102(2):e1-e11.

Nieves-Cintrón M, Amberg GC, Navedo MF, Molkentin JD, Santana LF. 2008. The control of Ca^{2+} influx and NFATc3 signaling in arterial smooth muscle during hypertension. Proc Natl Acad Sci 105:15623-15628.

Santana LF, Navedo MF, Amberg GC, Nieves-Cintrón M, Votaw VS, Ufret-Vincenty CA. 2008. Calcium sparklets in arterial smooth muscle. Clin Exp Pharmacol Physiol 35:1121-1126.

Russell Anthony

Refereed Journal Articles

Arroyo JA, Anthony RV, Galan HL. 2008. Decreased placental X-linked inhibitor of apoptosis protein in an ovine model of intrauterine growth restriction. Am J Ob Gyn 199:80.e1-80.e8.

Barry JS, Anthony RV. 2008. The pregnant sheep as a model for human pregnancy. Theriogenology 69:55-67.

Barry JS, Rozance PJ, Anthony RV. 2008. An animal model of placental insufficiency-induced intrauterine growth restriction. Sem Perinatol 3:225-230.

Oliveira JR, Henkes LE, Purcell SH, Smirnova NP, Ashley RL, Anthony RV, Hansen TR. 2008. Expression of interferon (IFN)-stimulated genes in extrauterine tissues during early pregnancy in sheep is the consequence of endocrine IFN-tau release from the uterine vein. Endocrinology 149:1252-1259.

Wright CD, Orbus RJ, Regnault TRH, Anthony RV. 2008. Effects of early gestation GH administration on placental and fetal development in sheep. J Endocrinol 198:91-99.

Gerrit Bouma

Chapters and Textbooks

Bouma GJ. 2008. Chimeras: In: World Book Advanced, http://www.worldbookonline.com/advanced/article?id=ar752504.

Richard Bowen

Refereed Journal Articles

Bowen RA. 2008. Male contraceptive technology for nonhuman male mammals. Anim Reprod Sci 105:139-143.

Nemeth N, Oesterle P, Bowen R. 2008. Passive immunity to West Nile virus provides limited protection in a common passerine species. Am J Trop Med Hyg 79:283-290.

Elaine Carnevale

Refereed Journal Articles

Carnevale EM. 2008. The mare as a model for follicular maturation and reproductive aging in the woman. Theriogenology 69:23-30.

Carnevale EM. 2008. Clinical considerations regarding assisted reproductive procedures in horses. J Equine Vet Sci 28:686-690.

Lindbloom SM, Farmerie TA, Clay CM, Seidel GE Jr, Carnevale EM. 2008. Potential involvement of EGF-like growth factors and phosphodiesterases in initiation of equine oocyte maturation. Anim Reprod Sci 103:187-192.

Paccamonti D, Carnevale E. 2008. Pregnancy loss during the embryonic period. Pferdeheilkunde 14:92-94.

Colin Clay

Refereed Journal Articles

Bedoukian MA, Whitesell JD, Peterson EJ, Clay CM, Partin KM. 2008. The stargazin C terminus encodes an intrinsic and transferable membrane sorting signal. J Biol Chem 283:1597-1600.

Lindbloom SM, Farmerie TA, Clay CM, Seidel GE Jr, Carnevale EM. 2008. Potential involvement of EGF-like growth factors and phosphodiesterases in initiation of equine oocyte maturation. Anim Reprod Sci 103:187-192.

Scott Earley

Refereed Journal Articles

Brayden JE, Earley S, Nelson MT, Reading S. 2008. Transient receptor potential (TRP) channels, vascular tone, and autoregulation of cerebral blood flow. Clin Exp Physiol Pharmacol 35:1116-1120.

Melinda Frye

Refereed Journal Articles

Lawler JB, Frye MA, Bera MM, Ehrhart EJ, Bright JM. 2008. Third-degree atrioventricular block in a horse secondary to rattlesnake envenomation. J Vet Int Med 22:486-490.

James Graham

Refereed Journal Articles

Loomis PR, Graham JK. 2008. Commercial semen freezing: Individual male variation in cryosurvival and response of stallion sperm to customized freezing protocols. Anim Reprod Sci 105:119-128.

Mocé E, Graham JK. 2008. In vitro evaluation of sperm quality. Anim Reprod Sci 105:104-118.

Robert Handa

Refereed Journal Articles

Foradori CD, Weiser MJ, Handa RJ. 2008. Non-genomic actions of androgens. Front Neuroendocrinol 29:169-181.

Handa RJ, Pak TR, Kudwa AE, Lund TD, Hinds L. 2008. An alternate pathway for androgen regulation of brain function: Activation of estrogen receptor beta by the metabolite of dihydrotestosterone, 5α-androstane, 3β,17β-diol. Horm Behav 53:741-752.

Perez DS, Handa RJ, Yang RSH, Campain JA. 2008. Gene expression changes associated with altered growth and differentiation in benzo[a]pyrene or arsenic exposed normal human epidermal keratinocytes. J Appl Toxicol 28:491-508.

Wegorszweska IN, Walters K, Weiser MJ, Cruthirds D, Ewell E, Larco DO, Handa RJ, Wu TJ. 2008. Postovariectomy weight gain in female rats is reversed by estrogen receptor alpha agonist, propylpyrazoletriol. Am J Ob Gyn 199:67.e1-67.e5.

Weiser MJ, Foradori CD, Handa RJ. 2008. Estrogen receptor beta in brain: From form to function. Brain Res Rev 57:309-320.

Thomas Hansen

Refereed Journal Articles

Bielefeldt-Ohmann H, Tolnay A-E, Reisenhauer CE, Hansen TR, Smirnova N, Van Campen H. 2008. Transplacental infection with non-cytopathic bovine viral diarrhea virus type I and II: Viral spread and molecular neuropathology. J Comp Pathol 138:72-85.

Han H, Hansen TR, Berg B, Hess BW, Ford SP. Maternal undernutrition induces differential cardiac gene expression in pulmonary hypertensive steers at high elevation. Am J Physiol: Heart Circ Physiol 295:H382-H389.

Hou X, Arvisais EW, Jiang C, Chen DB, Roy SK, Pate JL, Hansen TR, Rueda BR, Davis JS. 2008. Prostaglandin F2alpha stimulates the expression and secretion of transforming growth factor B1 via induction of the early growth response 1 gene (EGR1) in the bovine corpus luteum. Molec Endocrinol 22:403-414.

Montgomery DL, Van Olphen AL, Van Campen H, Hansen TR. 2008. The fetal brain in bovine viral diarrhea virus infected calves: Lesions, distribution, and cellular heterogeneity of viral antigen at 190 days of gestation. Vet Pathol 45:288-296.

Oliveira JR, Henkes LE, Purcell SH, Smirnova NP, Ashley RL, Anthony RV, Hansen TR. 2008. Expression of interferon (IFN)-stimulated genes in extrauterine tissues during early pregnancy in sheep is the consequence of endocrine IFN-tau release from the uterine vein. Endocrinology 149:1252-1259.

Smirnova NP, Bielefeldt-Ohmann H, Van Campen J, Austin KJ, Han H, Montgomery DL, Shoemaker ML, van Olphen AL, Hansen TR. 2008. Acute non-cytopathic bovine viral diarrhea virus infection induces pronounced type I interferon response in pregnant cows and fetuses. Virus Res 132:49-58.

Sue Kinnamon

Referred Journal Articles

Clapp T, Trubey K, Vandenbeuch A, Stone LM, Margolskee RF, Chaudhari N, Kinnamon SC. 2008. Tonic activity of alpha-gustducin regulates taste cell responsivity. FEBS Lett 582:3783-3787.

Gulbransen B, Clapp T, Finger TE, Kinnamon SC. 2008. Nasal solitary chemoreceptor cell responses to bitter and trigeminal stimulants in vitro. J Neurophysiol 99:2929-2937.

Vandenbeuch A, Clapp T, Kinnamon SC. 2008. Amiloride-sensitive channels in type I fungiform taste cells in mouse. BMC Neurosci 2;9:1.

Chapters and Textbooks

Kinnamon SC, Margolskee RF. 2008. Taste transduction. In: The Senses: A Comprehensive Reference, Vol. 1, Firestein S, Smith DV, Shepherd G (eds). pp 1-17.

Chun-Ying Ku

Referred Journal Articles

Zhong M, Murtazina DA, Phillips J, Ku C-Y, Sanborn BM. 2008. Multiple signals regulate phospholipase CBeta3 in human myometrial cells. Biol Reprod 78:1007-1017.

James Madl

Refereed Journal Articles

Chen C-T, Alyahya K, Gionfriddo JR, Dubielzig RR, Madl JE. 2008. Loss of glutamine synthetase immunoreactivity from the retina in canine primary glaucoma. Vet Ophthalmol 11:150-157.

Terry Nett

Refereed Journal Articles

Breen KM, Davis TL, Doro LC, Nett TM, Oakley AE, Padmanabhan V, Rispoli LA, Wagenmaker ER, Karsch FJ. 2008. Insight into the neuroenodocrine site and cellular mechanism by which cortisol suppresses pituitary responsiveness to gonadotropin-releasing hormone. Endocrinology 149:767-773.

Kathryn Partin

Refereed Journal Articles

Bedoukian MA, Whitesell JD, Peterson EJ, Clay CM, Partin KM. 2008. The stargazin C terminus encodes an intrinsic and transferable membrane sorting signal. J Biol Chem 283:1597-1600.

John Rash

Refereed Journal Articles

Li X, Kamasawa N, Ciolofan C, Olson CO, Lu S, Davidson KGV, Yasumura T, Shigemoto R, Rash JE, Nagy JI. 2008. Connexin45-containing neuronal gap junctions in rodent retina also contain connexin36 in both apposing hemiplaques, forming bihomotypic gap junctions, with scaffolding contributed by zonula occludens-1. J Neurosci 28:9769-9789.

Chapters and Textbooks

Abrams CK, Rash JE. 2009. Connexins in the nervous system. In: Connexin Biology: The Role of Gap Junctions in Disease, Harris WA, Locke D (eds). Humana Press, Totowa, NJ, pp. 323-357.

Noreen Reist

Refereed Journal Articles

Bao H, Reist NE, Fischer JA, Zhang B. 2008. The drosophila epsin 1 is required for ubiquitin-dependent synaptic growth and function, but not for synaptic vesicle recycling. Traffic (published online; doi: 10.1111/j.1600-0854.2008.00832.x).

Paddock BE, Striegel A, Hui E, Chapman ER, Reist NE. 2008. Ca^{2+}-dependent, phospholipid-binding residues of synaptotagmin are critical for excitation-secretion coupling. J Neurosci 28:7458-7466.

Deborah Roess

Refereed Journal Articles

Roess DA, Smith SM, Winter P, Xhou J, Dou P, Baruah B, Trujillo AM, Levinger NE, Yang X, Barisas BG, Crans DC. 2008. Effects of vanadium-containing compounds on membrane lipids and on microdomains used in receptor-mediated signaling. Chem Biodivers 5:1558-1570.

Barbara Sanborn

Refereed Journal Articles

Zhong M, Murtazina DA, Phillips J, Ku C-Y, Sanborn BM. 2008. Multiple signals regulate phospholipase CBeta3 in human myometrial cells. Biol Reprod 78:1007-1017.

George Seidel

Refereed Journal Articles

Chapman PL, Seidel GE Jr. 2008. Experimental design, power, and sample size for animal reproduction experiments. Reprod Fertil Dev 20:33-44.

Garner DL, Seidel GE Jr. 2008. History of commercializing sexed semen for cattle. Theriogenology 69:886-895.

Horvath G, Seidel GE Jr. 2008. Use of fetuin before and during vitrification of bovine oocytes. Reprod Dom Anim 43:333-338.

Hyland A, Whittier JC, Seidel GE Jr, Enns RM, Peel RJ. 2008. Variations in interval between GnRH and prostaglandin $F_2\alpha$ injections and CIDR insertion for 5 or 7 days on pregnancy rate and follicular response. Proc West Sect Am Soc Anim Sci 59:277-280.

Lindbloom SM, Farmerie TA, Clay CM, Seidel GE Jr, Carnevale EM. 2008. Potential involvement of EGF-like growth factors and phosphodiesterases in initiation of equine oocyte maturation. Anim Reprod Sci 103:187-192.

Mazur P, Leibo SP, Seidel GE Jr. 2008. Cryopreservation of the germplasm of animals used in biological and medical research: Importance, impact, status, and future directions. Biol Reprod 72:2-12.

Seidel GE Jr, Schenk JL. 2008. Pregnancy rates in cattle with cryopreserved sexed sperm: Effects of sperm numbers per inseminate and site of sperm deposition. Anim Reprod Sci 105:129-138.

Chapters and Textbooks

Barfield JP, McCue PM, Seidel GE Jr, Squires EL. 2008. The effect of dehydrating large equine embryos with galactose prior to cryopreservation. Proc 77th Int Symp Equine Embryo Transfer, pp 65-66.

Wall RJ, Labile G, Maga E, Seidel GE Jr, Whitelaw B. 2008. Animal productivity and genetic diversity: Transgenic and cloned animals. In: Animal Agriculture's Future through Biotechnology, Issue paper #1, Council for Agricultural Service and Technology, Ames, IA, 41 pp.

Patricia Sollars

Refereed Journal Articles

Hartwick ATE, Bramley JR, Yu J, Stevens KT, Allen CN, Baldridge WH, Sollars PJ, Pickard GE. 2007. Light-evoked calcium response of isolated melanopsin-expressing retinal ganglion cells. J Neurosci 27:13468-13480.

Edward Squires

Refereed Journal Articles

McCue PM, Patten M, Denniston DJ, Bruemmer JE, Squires EL. 2008. Strategies for using eFSH for superovulating mares. J Equine Vet Sci 28:91-96.

Squires EL. 2008. Hormonal manipulation of the mare: A review. J Equine Vet Sci 28:627-634.

Michael Tamkun

Refereed Journal Articles

Martinez-Mármol R, Villalonga N, Solé L, Vicente R, Tamkun MM, Soler C, Felipe A. 2008. Multiple Kv1.5 targeting to membrane surface microdomains. J Cell Physiol 217:667-673.

O'Connell KM, Whitesell JD, Tamkun MM. 2008. Localization and mobility of the delayed rectifier K+ channel Kv2.1 in adult cardiomyocytes. Am J Physiol: Heart Circ Physiol 294:H229-H237.

Sarmiere PD, Weigle CM, Tamkun MM. 2008. The Kv2.1 K+ channel targets to the axon initial segment of hippocampal and cortical neurons in culture and in situ. BMS Neurosci 9:112.

Vicente R, Villalonga N, Calvo M, Escalada A, Solsona C, Soler X, Tamkun MM, Felipe A. 2008. Kv1.5 association modifies Kv1.3 traffic and membrane localization. J Biol Chem 283:8756-8764.

Stuart Tobet

Refereed Journal Articles

Büdefeld T, Grgruevic N, Tobet SA, Majdic G. 2008. Sex differences in brain developing in the presence or absence of gonads. Dev Neurobiol 68:981-995.

Gill JC, Wadas B, Chen P, Portillo W, Reyna A, Jorgensen E, Mani S, Schwarting GA, Moenter SM, Tobet S, Kaiser UB. 2008. The gonadotropin-releasing hormone (GnRH) neuronal population is normal in size and distribution in GnRH-deficient and GnRH receptor-mutant hypogonadal mice. Endocrinology 149:4596-4604.

Grgurevic N, Büdefeld T, Rissman EF, Tobet SA, Majdic G. 2008. Aggressive behaviors in adult SF-1 knockout mice that are not exposed to gonadal steroids during development. Behav Neurosci 122:876-884.

McClellan KM, Calver AR, Tobet SA. 2008. $GABA_B$ receptors role in cell migration and positioning within the ventromedial nucleus of the hypothalamus. Neuroscience 151:1119-1131.

Pierce A, Bliesner B, Xu M, Nielsen-Preiss S, Lemke G, Tobet S, Wierman ME. 2008. Axl and Tyro3 modulate female reproduction by influencing gonadotropin-releasing hormone neuron survival and migration. Mol Endocrinol 22:2481-2495.

Zhao L, Kim KW, Ikeda Y, Anderson KK, Beck L, Chase S, Tobet SA, Parker KL. 2008. Central nervous system-specific knockout of steroidogenic factor 1 results in increased anxiety-like behavior. Mol Endocrinol 22:1403-1415.

Rao Veeramachaneni

Refereed Journal Articles

Bera MM, Veeramachaneni DNR, Pandher KP. 2008. Characterization of a biphasic neoplasm in a Madagascar tree boa (*Sanzinia madagascariensis*). Vet Pathol 45:259-263.

Ljungvall K, Veeramachaneni DNR, Hou M, Hultén F, Magnusson U. 2008. Morphology and morphometry of the reproductive organs in prepubertal and postpubertal male pigs exposed to di(2-ethylhexyl) phthalate before puberty: Precocious development of bulbourethral glands. Theriogenology 70:984-991.

Veeramachaneni DNR. 2008. Impact of environmental pollutants on the male: Effects on germ cell differentiation. Anim Reprod Sci 105:144-157.

Jozsef Vigh

Refereed Journal Articles

Abreu BJ, Guimarães M, Uliana LC, Vigh J, von Gersdorff H, Prado MA, Guatimosim C. 2008. Protein kinase C modulates synaptic vesicle acidification in a ribbon type nerve terminal in the retina. Neurochem Int 53:155-164.

Quinton Winger

Refereed Journal Articles

Guttormsen J, Koster MI, Stevens JR, Roop DR, Williams T, Winger QA. 2008. Disruption of epidermal specific gene expression and delayed skin development in AP-2 gamma mutant mice. Dev Biol 317:187-195.

BUDGET — 2007/2008

Biomedical Sciences – Main Accounts	Allocation 7/07-6/08	Expenses 7/07-6/08	Indirect Cost Return Allocation	ICR Expenses
Faculty Salaries	2,908,244	2,589,226		
Admin Pro Salaries	316,861	266,493		3,538
State Classified Salaries	298,512	286,100		33,882
GTA Salaries	70,470	75,984		
Operating/Supplies/ Travel, etc.	204,245	38,388	114,000	5,271
Equipment Reimbursement		<2,144>		
Other Direct		2,353		15,150
Balance Forward	16,861		859	
BCR's	<148,952>		<50,500>	
MOU's	<63,400>			
Dean's Adjustment				
Subtotal	**3,602,841**	**3,256,400**	**64,359**	**57,841**
Neuroscience Division Accounts	**Allocation**	**Expenses**	**Indirect Cost Return Allocation**	**ICR xpenses**
Salaries		26,138		4,285
Operating/Supplies/ Travel, etc.	104,606	39,482	98,534	97,583
BCR's	<5,426>		19,500	
Balance Forward	5,183		<1,713>	
MOU's	<27,000>			
Subtotal	**77,363**	**65,620**	**116,321**	**101,868**
Physiology Division Accounts	**Allocation**	**Expenses**	**Indirect Cost Return Allocation**	**ICR Expenses**
Salaries		29,680		1,710
Operating/Supplies	70,057	45,891	24,528	49,273
BCR's	15,379		26,281	
Balance Forward	39		25	
MOU's	<5,000>			
Subtotal	**80,475**	**75,571**	**50,834**	**50,983**
	State Allocation	**Expenses**	**Budgeted**	**ICR Expenses**
Summer Teaching	**48,603**	**42,718**		
Recruiting Expenses			**38,126**	**45,058**
Seminar Expenses			**770**	**1,937**
Total Biomedical Sciences	**3,809,282**	**3,440,309**	**270,410**	**257,687**