

## Meet Our 2005 Undergraduate Researchers!

Future Plans		Years of Research Experience	
36%	Graduate School	37%	1-2 years
34%	Medical School	32%	2-3 years
15%	Graduate and/or Medical School	16%	3-4 years
9%	Other Professional School	8%	4-5 years
3%	Other Combination	2%	<5 years

### Research Focus

20%	Cardiovascular
17%	Cell & Molecular
11%	Central Nervous System
4%	Comparative & Evolutionary
8%	Endocrinology & Metabolism
8%	Environmental & Exercise
3%	Gastrointestinal & Liver
9%	Neural Control & Autonomic Regulation
5%	Renal
6%	Respiration
2%	Water & Electrolyte Homeostasis
8%	Other

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## 2005 APS Undergraduate Poster Session and David S. Bruce Award for Excellence in Undergraduate Research Reception



*Bringing recognition to the  
undergraduate researcher*

## 35th International Union of Physiological Sciences Meeting

Saturday, April 2, 2005  
San Diego Convention Center  
Room 20 Lobby



## David S. Bruce

David S. Bruce (1939 - 2000) served as Chair of the APS Teaching Section and as a professor of physiology at Wheaton College from 1978-2000. Dr. Bruce was a dedicated physiology educator who played active roles in both the APS and the Society for Integrative & Comparative Biology. As an undergraduate educator at Wheaton College, Dr. Bruce had a particular interest in engaging undergraduate students in scientific research. Dr. Bruce not only encouraged and supported his students in participating in research, but he also regularly brought undergraduate students to the Experimental Biology meeting, often to present their research findings. In 2000, Dr. Bruce died at the age of 61 of complications following a kidney transplant. This award honors Dr. Bruce's commitment to promoting undergraduate involvement in research, in the APS annual meeting, and, ultimately, in research careers.

### APS Congratulates the 2005 Bruce Award Finalists

**Curt R. Canine**, University of Missouri-Columbia  
**Laura Duling**, University of New Mexico  
**Harmon Fong**, McMaster University  
**Eric Gee**, York University  
**Elizabeth F. Gluck**, Williams College  
**Crystal D. Little**, Tuskegee Univ./Henry Ford Hospital  
**Trevor Luke**, New Mexico St. Univ./Johns Hopkins Univ.  
**Jessica P. Otis**, Bates College  
**Heidi N. Petersen**, University of California, San Diego  
**Ross O. Smith**, Williams College  
**Ryan Y.S. Suda**, University of California, San Diego  
**Carmen M. Troncoso**, University of New Mexico  
**Sophie E. Yeo**, University of Birmingham, UK

## 2005 Undergraduate Presenters

Ahn, Changjoon  
 KyungHee University  
 5956 The effect of Cori Graminei Rhiz on the recovery of the cardiac muscle activity and pro-teome analysis.

Alderson, Kory L.  
 California Polytechnic State University  
 8965 Equine peripheral blood mononuclear cells differ in their inflammatory response when incubated with plasma from male versus female horses.

Aunan, Elizabeth Suzanne  
 University of Iowa  
 1125 Reduced tolerance to heat stress with age: are cytokines and endotoxin involved?

Aytac, Erman  
 Cerrahpasa Medical Faculty, Istanbul  
 9399 The effects of iloprost on visual-evoked potentials in bilateral carotid occluded rats.

Babcock, Sara A.  
 University of Wyoming  
 5770 Gene transcription of steroidogenic enzymes across mid-gestation in the ovine fetal adrenal.

Benavidez, Kimberly M.  
 New Mexico State University  
 9316 Effects of hemorrhage in hypoxically preconditioned pigeons, *Columba livia*.

Bills, Meghan Lee  
 University of Delaware  
 1138 Spontaneous ovarian contraction in several fish species.

Bremseth, Derik  
 Naval Medical Center San Diego  
 10371 Decreased vascular reactivity in genetically hypertensive rats carrying a segment of chromosome 4 from normotensive Brown Norway rats.

Brown, Patrick J.  
 Brigham and Women's Hospital  
 1329 C5a versus C5b-9 in myocardial injury and gene expression following ischemia and reperfusion.

Bryant, Jessica M.  
 University of New Mexico  
 8438 Reduced vasodilatory influence of nitric oxide after chronic hypoxia in female rats.

Buzza, Colin David  
 Wartburg College  
 9668 The metabolic and cardiovascular effects of a low carbohydrate diet.

Canine, Curt R.  
 University of Missouri  
 1113 Capillary hydraulic conductivity and infection in August Rana pipiens.

Caron, Andrew  
 Winona State University  
 3205 Cholesterol lowering effects of low calorie cranberry juice in humans.

Chang, Marisol  
 University of Texas at Arlington  
 4763 The role of pH sensing receptor in mast cells migration and adhesion to ECM proteins.

Chotiwat, Christina M.  
 University of Georgia  
 3518 Inhibition of corticotropin-releasing factor receptors during repeated restraint reduces hyperresponsiveness to a subsequent stressor.

Christensen, Julia P. H.  
 Simon Fraser University  
 413 Cold shock response during sudden face only immersion at lower water temperatures.

Clarke, Damian P.  
 University of South Florida  
 2473 Regulation of cholesterol synthesis in the central nervous system.

Darborg, Barbara Vasek  
 University of Copenhagen  
 4204 Causal relationship between NHE1, NKCC1, MAPKs and ERM proteins after osmotic shrinkage in Ehrlich Lettre mouse ascites tumor cells.

Demling, Nina  
 Technical University of Dresden  
 4602 RAGE a marker for human alveolar type I epithelial cells promotes cell adhesion.

Doobay, Marc F.  
 University of Iowa  
 3623 Differential expression of neuronal ACE2 in transgenic mice with overexpression of the brain renin-angiotensin system.

Duling, Laura  
 University of New Mexico  
 8515 Loss of  $\alpha$ 2B-adrenoceptors increases magnitude of NOS-inhibition hypertension.

## 2005 Undergraduate Presenters

Dunn, Laurel K.  
Medical College of Wisconsin  
4262 Epoxyeicosatrienoic acid-dependent dilation in developing capillaries involved in gas exchange in the chick chorioallantoic membrane.

Farren, Matthew  
Ohio University  
4511 Inhibition of insect epithelial ion transport by an ecdysteroid agonist.

Ferreira, Daniele Nunes  
University of Sao Paulo  
935 Tamoxifen prevents cardiac fibrosis in an experimental model of hypertension.

Finley, Lydia  
John B. Pierce Laboratory  
8347 Transient increase in PDH phosphorylation during recovery from exercise in skeletal muscle of rats.

Fong, Harmon  
McMaster University  
9734 MIP-2 expression in vivo: visualizing chemokine expression in the hepatic microcirculation.

Fukuhara, Shinji  
University of Tsukuba  
2967 Changes in coronary resistance related to NO dependency in the stages of the female life cycle.

Gee, Eric  
York University  
8433 Mitogen-activated protein kinase inhibition modulates endothelial cell network formation.

Giuliano, Patrick G.  
University of California, San Diego  
8873 Fifteen generations of selective breeding for endurance running capacity in rats is associated with enhanced lung structure and function not seen at generation 7.

Gluck, Elizabeth Francesca  
Williams College  
4598 Ghrelin acts through the arcuate nucleus to modulate torpor in mice.

Goss, Erin J.  
Indiana University  
770 Arterial reactivity to vasoactive oxidants appears to play a role in development of hypertension associated with the metabolic syndrome in the ZS rat.

Green, John J.  
University of Michigan  
9527 1,25 Dihydroxyvitamin D3 (Calcitriol) modulation of cardiac myocyte performance via protein kinase C.

Hance, John  
University of Florida  
10481 Hydrogen sulfide induces cell death both in vitro and in vivo in coelomocytes from a mudflat polychaete worm.

Hanes, Michael C.  
University of Michigan  
7836 Contractile properties of single permeabilized fibers from the levator veli palatini muscles of congenitally clefted and normal palates of Spanish goats.

Hemauer, Sarah J.  
University of Wisconsin  
9709 Exaggerated expiratory pressure production compromises cardiac function in health and CHF during exercise.

Hesker, Pamela Rose  
Bradley University  
7229 Mitochondrial oxygen consumption in Fischer rats following cocaine/hypoxic exposure.

Johnson, Alyssa E.  
Hope College  
8766 VACM-1, a *cul-5* gene, regulates estrogen-dependent growth of T47D cancer cell line.

Johnson, Micah S.  
University of Colorado  
8524 Short-term exercise decreases infarct size in a sex-dependent manner and correlates with increased myocardial KATP channel protein.

Katwa, Pranita  
University of Missouri  
5227 Testosterone inhibits migration of porcine coronary smooth muscle cells via PKC.

Kautza, Ben C.  
Winona State University  
4265 Student physiological adaptations to high altitude in the Himalayas.

Kent, William  
University of Liverpool  
7588 H-89 decreases transient outward and inwardly rectifying potassium currents independently of PKA-mediated phosphorylation.

Kheradia, Priya M.  
Indiana Univ.-Purdue Univ. at Indianapolis  
5499 The role of PI3-kinase in ADH-mediated ion transport in a mouse cortical collecting duct cell line.

## 2005 Undergraduate Presenters

Krueger, Jennifer A.  
Marquette University  
9057 Abnormal renal function and salt sensitivity in a *Drosophila* bestrophin mutant.

Laurinec, Jennifer E.  
Texas A&M University  
10028 Heat increases microlymphatic pumping activity in vivo.

Lemieux, Andrew M.  
University of Arizona  
1690 Voluntary exercise training increases insulin action on glucose transport but not on upstream insulin signaling in skeletal muscle of hypertensive TG(mREN2)27 rats.

Li, Candice Yen  
Williams College  
4546 Cold-induced tachycardia in mice is not dependent on sympathetic nervous system activation.

Little, Crystal D.  
Henry Ford Hospital  
5172 Neuronal nitric oxide synthase partially mediates renal compensatory hypertrophy in response to unilateral nephrectomy.

Long, Justin M.  
Indiana University  
681 Non-adrenergic, non-cholinergic contractions in rat and human urinary bladder.

Luke, Trevor  
Johns Hopkins  
7640 Protein kinase C and Rho kinase mediate ET-1-induced increases in intracellular Ca<sup>2+</sup> concentration in pulmonary arterial smooth muscle cells from rats exposed to chronic hypoxia.

Majid, D.S. Adnan  
Tulane University  
4856 Hemorrhagic loss induces heme oxygenase-mediated endothelial dysfunction in rat arterioles.

McCabe, Brittany  
University of Washington  
Acetazolamide does not inhibit thrombosis in vivo

McCabe, Everlee H.  
University of Kansas  
5076 Association of ACE gene I/D polymorphism with body mass index.

McClure, Joseph M.  
Wayne State University  
2564 Adrenal modulation of hindlimb vascular responses to stimulation of adenosine A1 receptors in the nucleus of the solitary tract.

Meisner, Joshua K.  
Texas A&M University  
8287 Lymphatic myogenic response decreases pumping.

Miller, Kimberly A.  
University of Delaware  
7441 A role for Hyalp1 in murine fertilization.

Miller, Lance  
West Texas A&M University  
302.14 Correlation between the Biothesiometer and Von Frey monofilaments.

Neece, James David  
Texas State University-San Marcos  
7648 Isolation and sequencing of fugu muscarinic acetylcholine receptor genes.

Nguyen, Tammy Tran  
National Heart, Lung, Blood Institute - NIH  
2397 Correlation between reactive oxygen species and iron levels in NYHA class I hereditary hemochromatosis patients.

Ogden, Kevin  
Michigan State University  
The cytochrome P450A4 inhibitor ketoconazole does not reveal 5-HT-stimulated superoxide in rat aorta.

Oropeza, Melinda  
California State U Fullerton  
10484 Effects of hypoxia on the dorsal blood vessel of the California blackworm, *Lumbriculus variegatus*.

Otis, Jessica P.  
Bates College  
3153 Respiratory plasticity after perinatal hypercapnic hyperoxia in rats.

Parish, Lauren  
Texas Tech University  
6730 Differential regulation of the Na,K-ATPase in human metastatic prostate cell lines.

Parker, Shari  
West Texas A&M University  
593 Evaluation of the accuracy of selected clinical thermometers.

Pedersen, Lene Roerholm  
University of Copenhagen  
6131 Increased  $\beta$ -adrenoceptor stimulated alveolar fluid clearance is associated with increased protein abundance of ENaC subunits and Na/K/ATPase.

## 2005 Undergraduate Presenters

Petersen, Heidi Nicole  
University of California, San Diego  
4729 Expression and distribution of caveolin-1, -2, and -3 in adult rat and mouse cardiac myocytes.

Ponnappa, Kavita M.  
University of North Carolina at Charlotte  
5580 Cadmium exposure affects mitochondrial bioenergetics and expression of key mitochondrial genes in the eastern oyster *Crassostrea virginica*.

Ramírez, Victoria  
UNAM/ Instituto Nacional de Ciencias Médicas  
6498 Kidney injury molecule (Kim-1) as sensitive biomarker of acute renal failure.

Reese, Kristen Lee  
University of Delaware  
3594 The characterization of Hyal3 in murine testicular cells.

Roberts, Jordan E.  
University of Kansas  
6994 Association of the 5HT2A and 5HT2C promoter polymorphisms with body mass index.

Roberts, Lindsay  
University of Mississippi  
3407 TNF alpha-induced endothelin production by endothelial cells: influence of estrogen and progesterone.

Rullo, Jacob  
McMaster University  
2571 Recurrent DSS colitis induces hepatic inflammation similar to sclerosing cholangitis.

Sadacca, Brian F.  
University of Pittsburgh  
3798 Vestibular inputs to premotor respiratory interneurons in the feline C1 spinal cord.

Sanzo, Antonio  
Mayo Clinic  
1675 Effects of estrogen treatment on PPAR $\gamma$ , CD40 and CD40L expression in platelets.

Scanland, Nicole L.  
Western Michigan University  
2052 Glial cell line-derived neurotrophic factor is found in cholinergic neurons in rat heart.

Schulte, Crystal Lynn  
Bradley University  
7104 The influence of pyrene on muscle metabolism and contractile ability in *Rana pipiens*.

Shafer, Geoffrey  
Case Western Reserve University  
9086 D-Serine facilitates inspiratory drive in the in vitro rat medullary slice preparation.

Shen, Fang  
Zhejiang University  
8885 Intracerebral administration of NS1619 diminishes ischemia and reperfusion-induced brain injury.

Shivashankar, Raina  
UMDNJ-Robert Wood Johnson Medical School  
3508 Co-localization of heme oxygenase-2 and TASK-1 potassium channel in pre-Bötzing complex.

Smith, Marissa Leanne  
Radford University  
5357 Behavioral effects following intracerebroventricular administration of neuropeptide Y in juvenile *Gallus gallus*.

Smith, Ross Osborne  
Williams College  
3339 Torpor in mice is regulated by peripheral sympathetic nervous system activity.

Solis-Ávila, Clarissa P.  
National Autonomous University of Mexico  
7216 Systemic blockade of NMDA receptors impairs odor but not flavor aversion learning in rats.

Suda, Ryan Y.S.  
University of California, San Diego  
4844 Increased phosphodiesterase expression in human pulmonary artery smooth muscle cells from patients with secondary pulmonary hypertension.

Sullivan, James  
Texas Tech University  
5057 Perchlorate inhibition of iodide transport in skin and intestine from the African clawed frog *Xenopus laevis*.

Torres, Samantha Nicole  
University of New Mexico  
9212 Differential effects of chronic and intermittent hypoxia on pulmonary arterial eNOS expression.

Troncoso, Carmen M.  
University of New Mexico  
10163 Reactive oxygen species contribute to sleep apnea-induced hypertension in rats.

## 2005 Undergraduate Presenters

Vincent, Sandra G.  
Queen's University  
4911 Loss of the transient receptor potential vanilloid 1 receptor abolishes the pulmonary chemoreflex response to anandamide in the mouse.

Wang, Huan  
New York Medical College  
5902 Alteration of the phosphorylation of endothelial nitric oxide synthase in canine coronary microvessels during heart failure.

Wells, Erika  
California State University, San Bernardino  
10443 Acclimation in an unstirred environment: effects on sodium uptake across the skin of *Rana pipiens*.

Wells, Rance  
West Texas A&M University  
309 Accuracy determinations of three digital/electronic blood pressure monitors.

Wright, Elizabeth C.  
University of New Mexico  
8549 Neither CO nor EETs independently elicit EDHF-mediated dilation in mesenteric arteries from chronically hypoxic rats.

Yeo, Sophie Elizabeth  
University of Birmingham, UK  
2151 Caffeine increases exogenous carbohydrate oxidation during prolonged exercise.

## Meet Our 2005 Undergraduate Researchers!

Majors	Graduation year (Anticipated)
57% Biology (Includes cell biology/human biology/life sciences/microbiology/neuroscience/physiology)	2004: 5%
8% Exercise Sci./Kinesiology/Health Sci.	2005: 55%
7% Medicine	2006: 26%
6% Biochemistry	2007: 10%
6% Chemistry	2008: 2%
5% Biomedical Engineering	2010: 1%
8% Other (Psychology/Animal Science/Social Sciences)	

### Type of Institution

43%	Doctoral/Research Universities-Extensive
5%	Doctoral/Research Universities-Intensive
17%	Medical Schools/Medical Centers
15%	Master's Colleges & Universities
6%	Baccalaureate Colleges-Liberal Arts
1%	Baccalaureate Colleges-General
14%	International Universities