


Research Notes



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James A. Shannon Director's Award

The new Director of NIH, Bernadine Healy, has announced the JAMES A. SHANNON DIRECTOR'S AWARDS. These awards will provide limited support to scientists whose research applications fall short of the institute/center funding cut off but are at the margin of funding in which high quality grants are not awarded due to lack of funds. Institutes and centers will recommend pending RO1 (traditional research grant), R29 (FIRST Award), and, to a limited extent, RO3 (small grant) applications to the Director for NIH consideration.

Approximately \$30 million is available for these awards, with funds derived from two sources — the NIH Director's Discretionary funds and the NIH Director's transfer authority established in P.L. 101-517. Each award will consist of up to \$80,000 direct costs and up to \$20,000 indirect costs (20 percent of total costs) for a total of up to \$100,000 for a twenty-four month grant period.

Investigators may not apply for the Shannon Award. Competing applications, prepared and submitted in accordance with NIH procedures, will have been peer reviewed and provided a percentile rating. Nominees will be from among applications pending for FY 1991 funding and reviewed by the September/October, 1990, January/February, 1991, May/June, 1991 Advisory Boards and Councils. Nominees for the award must be in the top half of the percentile range. Previously approved, but inactivated, applications from this time period may be considered and, if awarded, will be converted to a Shannon Award (R55).

Certification Requirements for Federal Grants and Contracts

New certifications and a statement on program income must be included with competing (Form PHS 398) as well as noncompeting (Form PHS 2590) grant proposals submitted to the Department of Health and Human Services with its constituent agencies such as the National Institutes of Health, Alcohol, Drug Abuse, and Mental Health Administration, Communicable Disease Center, Food and Drug Administration, and Health Resources and Services Administration.

The certification forms are entitled: **Certification Regarding Drug-Free Workplace Requirements, Certification Regarding Lobbying, and Statement of Non-Delinquency on Federal Debt.**

In addition, a statement on Program

Income is required on the OTHER SUPPORT PAGE (either yes or no) indicating whether program income is anticipated during the period for which grant support is requested. If the answer is yes, the amount and source of such income (by budget period) also must be included. Principal investigators have experienced delays in receiving their award notices because these forms were not received by the awarding agency. Please note that the Research Office now requires the Transmittal Sheet (color coded blue), the face page with signatures, budget pages, the other support page with program income statement, and the three certification forms before the grant proposal is signed and submitted to an external sponsor.

ADAMHA Small Grant Program

The Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA) Small Grant Program provides research support of up to \$50,000 per year for up to two years (direct costs). ADAMHA accepts grant applications that fall within the program interests of the National Institute of Mental Health (NIMH), the National Institute on Drug Abuse (NIDA), and the National Institute on Alcohol Abuse and Alcoholism (NIAAA). Each institute makes awards for small grants relevant to its mission. Priority is given to applications in any of the following four categories: 1. newer, less experienced investigators; 2. investigators at institutions without well-developed research tradition and resources; 3. more experienced investigators for exploratory studies which represent a significant change in research

direction for them; 4. more experienced investigators for testing new methods or techniques. The complete program announcement is available in the Research Office that has the names of program officers and their telephone numbers.

Deadlines follow the regular receipt dates of June 1, October 1, and February 1.

Recent Publications

Wise, G. E. and W. Fan. 1991. Immunolocalization of Transforming Growth Factor Beta in Rat Molars. *J. Oral Path and Med.* 20: 74-80.

Wise, G. E. and W. Fan. 1991. Transfer of Silver Stained Proteins from Polyacrylamide Gels to Polyvinylidene Difluoride Membranes. *J. Biochem. and Biophysical Methods.* 22: 223-231.

RECENT TCOM AWARDS

Barbara A. Barron, Ph.D., (Department of Physiology), "Opioids in Cardiac Myocytes", American Heart Association, Texas Affiliate, Inc., 07/01/91 - 06/30/92, \$33,000.

William W. Barrow, Ph.D., (Department of Microbiology and Immunology), "Processing of AIDS Related Mycobacterial Antigens", National Institute of Allergy and Infectious Diseases, 04/01/91 - 03/31/92, \$110,100.

Marilyn Brandt, Ph.D., (Department of Physiology), "Hypertension, Angiotensin and Alpha Coronary Constriction", American Heart Association, Texas Affiliate, 07/01/91 - 06/30/92, \$29,000.

Patrick R. Cammarata, Ph.D., (Department of Anatomy and Cell Biology), "Mechanism of Sugar Cataract Formation in Lens Cells", National Eye Institute, 07/01/91 - 06/30/92, \$140,651.

Paul F. Cook, Ph.D., (Department of Microbiology and Immunology), "Small Instrumentation Grant", NIH/National Heart Lung and Blood Institute, 09/01/91 - 08/31/92, \$16,472.

Dan Dimitrijevic, Ph.D., (Department of Biochemistry and Molecular Biology), "Human Corneal Epithelial Cells", Alcon Laboratories, Inc., 05/01/91 - 04/30/92, \$1,000.

Michael W. Emmett-Oglesby, Ph.D., (Department of Pharmacology), "Abecarnil Dependence", SCHERING AG, Berlin, Germany, 07/01/91 - 10/31/91, \$15,098.

Patricia A. Gwartz, Ph.D., (Department of Physiology), "Adrenergic Limitation of Coronary Flow During Exercise", National Heart Lung and Blood Institute, 07/01/91 - 06/30/92, \$138,914.

Janice A. Knebl, D.O., (Department of Medicine), "Improving Functional Ability in the Elderly by Osteopathic Manipulative Treatment", Bureau of Research/American Osteopathic Association, 09/01/91 - 08/31/92, \$12,960.

Andras G. Lacko, Ph.D., (Department of Biochemistry and Molecular Biology), "Carbohydrate Component of LCAT", American Heart Association, National Center, 07/01/91 - 06/30/92, \$37,950.

Harbans Lal, Ph.D., (Department of Pharmacology), "Ralgro Analysis", Texas Vet Lab, Inc., 06/01/91 - 12/31/91, \$500.

Harbans Lal, Ph.D., (Department of Pharmacology), "Neurobehavioral and Immunological Markers on Aging", National Institute on Aging, 04/01/91 - 03/31/92, \$122,805.

Peter B. Raven, Ph.D., (Department of Physiology), "Validation of the Portable Cosmed K2 Oxygen System", National Aeronautics and Space Administration, 04/01/91 - 03/31/92, \$51,000.

Bernard R. Rubin, D.O., (Department of Medicine), "Treatment of Fibromyalgia with Osteopathic Manipulation and Self-learned

Techniques", Bureau of Research/American Osteopathic Association, 09/01/91 - 08/31/92, \$15,176.

Konrad W. Scheel, Ph.D., (Department of Physiology), "Regulation of Coronary Blood Flow by the Venous System", American Heart Association, Texas Affiliate, 07/01/91 - 06/30/92, \$32,542.

Xiangrong Shi, Ph.D., (Department of Physiology), "Interactions of the Cardiopulmonary and Carotid Baroreflexes: Effect of Fitness", American Heart Association, Texas Affiliate, 07/01/91 - 06/30/92, \$33,000.

Richard J. Sinclair, Ph.D., (Department of Physiology), "Health Careers Opportunity Program", Department of Health and Human Services/ Division of Disadvantaged Assistance, 09/01/91 - 08/31/92, \$129,585.

Gary E. Wise, Ph.D., (Department of Anatomy and Cell Biology), "Cellular Basis of Tooth Eruption", National Institute of Dental Research, 07/01/91 - 06/30/92, \$108,345.

Total Funding Awarded: \$962,000

ARP/ATP EXTERNAL GRANT PROPOSALS SUBMITTED

The Texas College of Osteopathic Medicine submitted 42 letters of intent (25 ARP - 17 ATP) and 35 final proposals (22 ARP - 13 ATP) to the Texas Higher Education Coordinating Board, Division of Research Programs, Advanced Research Program (ARP) and Advanced Technology Program (ATP). The list of ARP/ATP proposals submitted are given alphabetically by Principal Investigator (PI) with the PI's Department, Title of Research Project, Research Program (ARP/ATP), Targeted Research Area, and Total Budget Requested.

Most of the research projects selected for funding will fall within a two-year time frame beginning about January 1, 1992.

Rafael Alvarez-Gonzalez, Ph.D., (Department of Microbiology and Immunology), "Identification and Characterization of G-Proteins in the Nucleus of Eukaryotic Cells," ARP, Biological Sciences, \$105,113.

Rafael Alvarez-Gonzalez, Ph.D., (Department of Microbiology and Immunology) "A Simple Laboratory Test to Identify Individuals with a Higher Risk of Cancer as a Result of Exposure to Cigarette Smoke," ATP, Biomedicine, \$153,245.

William W. Barrow, Ph.D., (Department of Microbiology and Immunology), "Improved Therapy for *Mycobacterium avium* Infections," ARP, Biological Sciences, \$171,840.

James L. Caffrey, Ph.D., (Department of Physiology), "Secretion of Endogenous Opioids from the Heart," ARP, Biological Sciences, \$195,248.

Patrick R. Cammarata, Ph.D., (Department of Anatomy and Cell Biology), "Isolation and Characterization of the Myo-inositol Transporter in Cultured Bovine Lens Epithelial Cells," ATP, Biomedicine, \$368,027.

Paul F. Cook, Ph.D., (Department of Microbiology and Immunology), "Anatomy of a Multienzyme Complex Cysteine Synthetase," ARP, Biological Sciences, \$197,720.

H. Fred Downey, Ph.D., (Department of Physiology), "Intrinsic Regulation of Myocardial Oxygen Demand," ARP, Biological Sciences, \$273,060.

James K. Dzandu, Ph.D., (Department of Anatomy and Cell Biology), "Reducing the Incidence of Sickle Hemoglobinopathies in at-risk Texans," ATP, Biomedicine, \$282,794.

Michael J. Forster, Ph.D., (Department of Pharmacology), "Discovery of Drugs to Retard Age-Related Loss of Memory," ATP, Biomedicine, \$154,123.

Robert W. Gracy, Ph.D., (Department of Biochemistry and Molecular Biology), "How Do Enzymes Wear Out?," ARP, Chemistry, \$181,560.

Robert W. Gracy, Ph.D., (Department of Biochemistry and Molecular Biology), "Human Skin and Corneal Equivalents: An Alternative to Animal Testing," ATP, Biomedicine, \$218,965.

Stephen Grant, Ph.D., (Department of Biochemistry and Molecular Biology), "An Oncogenic Phosphorylation Lesion with Cellular Control of Human B Cell Proliferation," ARP, Biological Sciences, \$95,512.

Patricia A. Gwartz, Ph.D., (Department of Physiology), "Effects of Physical Training on the Coronary Circulation in Dogs," ARP, Biological Sciences, \$211,498.

Ben G. Harris, Ph.D., (Department of Biochemistry and Molecular Biology), "Molecular Biology of Parasitic Helminths," ATP, Biotechnology, \$138,680.

Elizabeth F. Harris, Ph.D., (Department of Microbiology and Immunology), "Evaluation of Propane Oxidizing Soil and Water Microorganisms for Degradation of Chlorinated Aliphatic Solvents," ARP, Biological Sciences, \$72,716.

Elizabeth F. Harris, Ph.D., (Department of Microbiology and Immunology), "Factors Influencing Development and Measurement of Biofilm on Heat Pump Aluminum Heat Transfer Surfaces," ATP, Environmental Science and Engineering, \$144,846.

Elaine L. Jacobson, Ph.D., (Department of Medicine), "Assessment of Human Niacin Nutriture," ARP, Biological Sciences, \$132,596.

Myron K. Jacobson, Ph.D., (Department of Anatomy and Cell Biology), "Cyclic-ADP-ribose: A New Second Messenger," ARP, Biological Sciences, \$130,691.

Carl E. Jones, Ph.D., (Department of Physiology), "Metabolism of the Chronically Denervated Heart: Implications for the Transplanted Heart," ARP, Biological Sciences, \$250,678.

Andras G. Lacko, Ph.D., (Department of Biochemistry and Molecular Biology), "Structure/Function Studies on Recombinant Human Lecithin: Cholesterol Acyltransferase (LCAT)," ARP, Chemistry, \$182,403.

Andras G. Lacko, Ph.D., (Department of Biochemistry and Molecular Biology), "Industrial Scale Isolation of Lipoproteins and Apolipoproteins," ATP, Biotechnology, \$193,190.

John D. Lane, Ph.D., (Department of Pharmacology), "Neurobiology of Tolerance and Reinforcement of Drugs of Abuse - Novel Techniques," ATP, Biomedicine, \$298,355.

Robert R. Luedtke, Ph.D., (Department of Pharmacology), "Genetically Engineered Cell Lines for the Development of Selective Anti-Psychotic Drugs," ATP, Biotechnology, \$114,050.

Robert Mallet, Ph.D., (Department of Physiology), "Pyruvate-Enhanced Post-Ischemic Cardiac Recovery," ARP, Biological Sciences, \$234,643.

Wayne L. Nicholson, Ph.D., (Department of Microbiology and Immunology), "Detection and Quantitation of Unique Ultraviolet Radiation-Induced DNA Damage," ARP, Biological Sciences, \$92,866.

Frank J. Papa, D.O., (Department of Medical Education), "The Use of Artificial Intelligence Technologies as an Adjunct to Clinical Instruction," ARP, Computer and Information Sciences, \$198,520.

Eugene Quist, Ph.D., (Department of Pharmacology), "G-Protein Regulation in Heart," ATP, Biomedicine, \$200,408.

Tony Romeo, Ph.D., (Department of Microbiology and Immunology), "Isolation and Analysis of Genes that Regulate Stationary Phase Metabolism," ARP, Biological Sciences, \$92,866.

Victoria L. Rudick, Ph.D., (Department of Anatomy and Cell Biology), "Mutational Analysis of Secretory Pathways in Polarized Epithelial Cells," ARP, Biological Sciences, \$74,914.

Konrad W. Scheel, Ph.D., (Department of Physiology), "The Role of the Coronary Venous System in Heart Failure," ARP, Biological Sciences, \$188,538.

Patrick N. Shaklee, Ph.D., (Department of Biochemistry and Molecular Biology), "Conversion of Q β RNA Replicase into a Reverse Transcriptase," ARP, Biological Sciences, \$128,480.

Paula Sundstrom, Ph.D., (Department of Microbiology and Immunology), "Role of Disulfide Bonding in the Cell Wall Structure of *Candida albicans*," ARP, Biological Sciences, \$76,720.

Robert J. Wordinger, Ph.D., (Department of Anatomy and Cell Biology), "Endometrial Localization of Basic FGF and FGF-Related Oncogene mRNAs During Implantation and Embryogenesis," ARP, Biological Sciences, \$113,500.

Thomas Yorio, Ph.D., (Department of Pharmacology), "Intracellular pH Regulation in Cultured Renal Epithelial Cells," ARP, Biological Sciences, \$242,469.

Thomas Yorio, Ph.D., (Department of Pharmacology), "In vitro Ocular Models for the Study of Anterior Segment Pathology: Implications for Drug Development," ATP, Biomedicine, \$391,962.

Umit K. Yüksel, Ph.D., (Department of Biochemistry and Molecular Biology), "Corticosteroid Induced Cataracts: Discovery of Mechanism Leading to Design of Better Therapeutic Agents," ATP, Biomedicine, \$115,795.

Total Amount Requested: \$6,418,591

High School Science Teacher's Research in Physiology Program

The American Physiological Society has supported Travis Barnes, teacher of anatomy and physiology courses at Granbury High School, to do research during the summers of 1990 and 1991 as part of a collaborative program between Granbury High School and TCOM. Professor H. Fred Downey, Ph.D. in the TCOM Department of Physiology, serves as a mentor for this program.

Throughout the year a number of interested students from Mr. Barnes classes have participated in tours of the research laboratories in the TCOM Physiology Department, observed experiments and attended physiology lectures. In turn, Dr. Downey has lectured to anatomy and physiology students at Granbury High School, advised high school teachers on laboratory exercises and participated in an essay contest to further motivate students to consider physiology in their career plans.

NASA Predoctoral Fellowship

Craig G. Crandall, a Ph.D. student in the Department of Physiology, has been awarded a ten week summer stipend for work on acceleration physiology at the Brooks School of Aerospace Medicine in San Antonio. The National Aeronautics and Space Administration has awarded Craig Crandall a \$22,000/year Predoctoral Fellowship with Peter B. Raven, Ph.D. as mentor. This award includes support for a stipend, for travel, and for supplies to carry work out at TCOM and at NASA-Kennedy in Florida and NASA-Ames in California.



Biomedical Research Support Grant Awards

The single awarding agency in the Department of Health and Human Services for the BRSG Awards is the National Institutes of Health. Awards are computed by NIH according to a formula as applied to the allowable Public Health Service research grants awarded to each applicant institution during the latest completed Federal Fiscal Year and adjusted by a uniform factor to the funds available for the program. TCOM received less funding for FY 1991 because the funding formula was greatly reduced. These awards are used to complement and enhance the effectiveness of biomedical research grants. The special feature of these awards allows the grantee institutions to exercise on-site judgement regarding the specific direction and content of the activities supported. This enables the institution to respond quickly to emerging opportunities, enhance creativity, encourage innovation, provide for pilot studies, and improve research resources, both physical and human. According to BRSG guidelines, the following are examples that will be given priority: pilot research studies, support of new investigators, unexpected research requirements and emergencies, continuation of research support during temporary interruption of grant support, emerging research opportunities, setting up new laboratories, improvement of investigator's research skills, investigations in new fields and in fields new to the investigator, and central shared research resources. TCOM faculty recipients of the FY 1991 BRSG Awards were:

Rafael Alvarez-Gonzalez, Ph.D., (Department of Microbiology and Immunology), "Characterization of the Poly(ADP-ribose) polymerase Automodification Reaction with 3'-dNAD," BRSG/NIH, 04/01/91 - 03/31/92, \$1,500.

Stephen R. Grant, Ph.D., (Department of Biochemistry and Molecular Biology), "The Chemistry of IL-8 Driven Neutrophil Chemotaxis," BRSG/NIH, 04/01/91 - 03/31/92, \$1,500.

Robert T. Mallet, Ph.D., (Department of Physiology), "Reversal of Cardiac Stunning by Preconditioning and Pyruvate," BRSG/NIH, 04/01/91 - 03/31/92, \$4,995.

Wayne L. Nicholson, Ph.D., (Department of Microbiology and Immunology), "Repair of Ultraviolet Light Damage in Bacterial Spores," BRSG/NIH, 04/01/91 - 03/31/92, \$3,000.

Tony Romeo, Ph.D., (Department of Microbiology and Immunology), "Genetic Regulation of Bacterial Glycogen Biosynthesis," BRSG/NIH, 04/01/91 - 03/31/92, \$2,000.

Patrick N. Shaklee, Ph.D., (Department of Biochemistry and Molecular Biology), "A Translational Frameshift in the Synthetase Gene of Phage MS2," BRSG/NIH, 04/01/91 - 03/31/92, \$2,000.

Paula Sundstrom, Ph.D., (Department of Microbiology and Immunology), "Virulence Genes of *Candida albicans*, an AIDS Opportunist," BRSG/NIH, 04/01/91 - 03/31/92, \$2,000.

Total Funding Awarded: \$16,995

• POSTER AND PAPER PRESENTATIONS •

Paul F. Cook, Ph.D., Professor and Chairman, Department of Microbiology and Immunology, attended the Gordon Conference on Enzymes, Coenzymes, and Metabolic Pathways in Meriden, New Hampshire, July 1-5, 1991, and presented a poster entitled, "Evidence for a Slow pH-Dependent conformation Change in E:NAD:Mg for the NAD-Malic Enzyme Reaction." Dr. Cook was elected Co-Vice Chairman of the 1991 Gordon Conference.

Rafael Alvarez-Gonzalez, Ph.D., Department of Microbiology and Immunology, was awarded a \$1,100 travel grant by the American Society for Biochemistry and Molecular Biology to participate in the 15th International Congress of Biochemistry held in Jerusalem, Israel, in August.

H. Fred Downey, Ph.D., Department of Physiology, attended the 1991 Annual Meeting of the Federation of America Society for Experimental Biology, April 21-25, 1991 in Atlanta, Georgia accompanied by Dr. Yukitaka Shizukuda, Research Scientist, Mr. Larry Lee, Graduate Student, Mr. Arthur Williams, Research Associate, Mr. Travis Barnes and Ms. Kathlyn Huckabee, teachers at Granbury High School. Presentations were given entitled:

"Enhancement of a High School Physiology Teaching Program Through the Involvement of a Medical School," by T. Barnes, K. Huckabee, H. F. Downey;

"Canine Coronary Vasodepressor Responses to Hypoxia Are Not Abolished by 8-Phenyltheophylline," by S. C. Lee, Y. Shizukuda, A. G. Williams, R. T. Mallet, and H.F. Downey;

"Effects of Oral Tobacco on Blood Flow to Tissues of the Mouth of the Anesthetized Dog," by A.G. Williams, T. Barnes, S. C. Lee, Y. Shizukuda, and H. F. Downey.

Elizabeth F. Harris, Ph.D., Department of Microbiology and Immunology, attended the Annual Meeting of the American Society of Microbiology in Dallas, the week of May 7th and presented posters entitled:

New Publications in the Research Office

AIDS Funding, A Guide to Giving by Foundations & Charitable Organizations, 1988, Editor, John Clinton, The Foundation Center.

NIH Advisory Committees, Authority-Structure-Function-Members, April 1991.

NIOSH Grants—Research and Demonstration Projects, Annual Report 1990, Centers for Disease Control.

The International Foundation Directory 1991, 5th Edition, Consultant Editor, H. V. Hodson, Europa Publications Limited.

"Biofilm Formation on Heat Pump Equipment" and "Comparison of the Degradative Spectra of Methanotrophs, Propane, and Toluene Degrading Bacteria from a Waste Water Stream."

Harvey G. Micklin, D.O., James R. Hall, Ph.D., Andrew W. Houtz, Ph.D., Department of Psychiatry and Human Behavior and **Robin A. Hall, D.O.**, Department of Family Practice, attended the American Psychiatric Association Conference, May, 1991, in New Orleans and presented a paper entitled "Analysis of Attentional Processing in SDAT."

Peter B. Raven, Ph.D., Department of Physiology, attended the Annual Meeting of the American Societies of Experimental Biology (FASEB) held in Atlanta, Georgia, April 21-25, and presented six papers in collaboration with graduate students, post-doctoral fellows and colleagues from the Departments of Anesthesiology and Medicine.

These paper presentations were entitled:

Crandall, C. G., J. W. Williamson, X. R. Shi, W. G. Squires, L. P. Krock, P. B. Raven. 1991. Hormonal Interaction During 4 Hours of Head-down Rest. *The FASEB J.* 4(5): A1129, Abst. #4400.

Foresman, B. H., G.H.J. Stevens, P. B. Raven. 1991. An Increased Rate of Muscarinic Blockade is Seen in Humans Following Endurance Training. *The FASEB J.* 5(5): A1403, Abst. #5989.

Potts, J. T., X. R. Shi, J. W. Williamson, C. G. Crandall, J. J. Chen, W. G. Squires and P. B. Raven. 1991. Responses of Volume Regulating Hormones to Orthostatic Stress Before and After 4 Hours of Head-down Rest, *The FASEB J.* 5(5): A1130, Abst. #4401.

Shi, X. R., J. Andresen, J. T. Potts, B. H. Foresman, P. B. Raven. 1991. Diminished Sensitivity of Aortic Baroreceptor Heart Rate Reflex in Aerobically Fit Young Men. *The FASEB J.* 5(4): A382, Abst. #70.

Stevens, G.H.J., B. H. Foresman, L. L. Cowell, P. B. Raven. 1991. Sequential B₁ and Muscarinic Blockade in Humans Suggests That Endurance Training Does Not Alter Accentuated Antagonism. *The FASEB J.* 5(5): A1403, Abst. #5988.

Williamson, J.W., X. R. Shi, J.J. Chen, C. G. Crandall, P. B. Raven, L. P. Krock and W. G. Squires. 1991. Hemodynamic Responses to Orthostatic Stress Before and After 4 Hours of Head-down Rest. *The FASEB J.* 5(5): A1129, Abst. #4399.

Peter B. Raven, Ph.D., Department of Physiology, gave an invited lecture to the International Congress on Sports Medicine and Human Performance at Vancouver, British Columbia, April 16-20, 1991. His talk entitled "The Role of the Heart and Circulation at Maximal O₂ and CO₂ Fluxes" was part of a special symposium on "Controlling the Steps of Maximum O₂ Flux," focusing on the Congress theme entitled "New Frontiers in Exercise Science."

Peter B. Raven, Ph.D., Department of Physiology, participated in the Annual Meeting of the American College of Sports Medicine (ACSM) held at Orlando, Florida, May 29 to June 1, 1991. Nine papers were presented in collaboration with graduate students, post-doctoral fellows, and colleagues from the Departments of Anesthesiology and Medicine.

Andresen, J. M., X. R. Shi, S. Stern, B. Foresman, C. Crandall, and P. B. Raven. 1991. Aortic Baroreceptor Reflex Control of Forearm Vascular Resistance: Effect of Fitness. *Med. Sci in Sports Exerc.* 23(4): S144, Abst. #864.

Crandall, C. G., J. J. Chen, J. W. Williamson, X. R. Shi, W. G. Squires, L. P. Krock, P. B. Raven. 1991. Hormonal and Plasma Volume Changes During Head-down Rest in Endurance Trained and Untrained Subjects. *Med. Sci. in Sports Exerc.* 23(4): S164, Abst. #981.

Foresman, B. H., G. H. J. Stevens, and P. B. Raven. 1991. A Three-Factor Model of Heart Rate Decrement During Selective B₁-Blockade in Humans Correlates With Endurance Capacity. *Med. Sci. in Sports Exerc.* 23(4): S163, Abst. #973.

Hargis, J. L., J. W. Williamson and P. B. Raven. 1991. EMG Mean Power Frequency Decay as an Index of Strength to Lean Body Mass Ratio. *Med. Sci. in Sports Exerc.* 23(4): S94, Abst. #563.

Potts, J. T., X. R. Shi, J. Andresen, J. W. Williamson, C. G. Crandall and P. B. Raven. 1991. Fitness-Induced Differences in Vascular Responsiveness to Phenylephrine Hydrochloride (PE). *Med. Sci. in Sports Exerc.* 23(4): S5, Abst. #29.

Raven, P. B., H.F. Shelton, X. R. Shi, J. T. Potts, C. G. Crandall, J. W. Williamson, S. A. Stern. 1991. Cardiovascular Regulation During Lower Body Negative Pressure: Effect of Fitness. *Med. Sci. in Sports Exerc.* 23(4): S162, Abst. #968.

Shi, X. R., C. G. Crandall, J. W. Williamson, S. A. Stern, and P. B. Raven. 1991. Differential Hemodynamic Responses to Carotid Sinus Hypotension in Average Fit and High Fit Men. *Med. Sci. in Sports Exerc.* 23(4): S162, Abst. #971.

VanDuser, B. and P. B. Raven. 1991. Effects of Smokeless Tobacco on Cardiovascular and Metabolic Responses During Exercise. *Med. Sci. in Sports Exerc.* 23(4): S161, Abst. #963.

Williamson, J. W., X. R. Shi, J.J. Chen, C. G. Crandall, W. G. Squires, L. P. Krock, and P. B. Raven. 1991. Changes in Peak Exercise Capacity and Orthostatic Tolerance Following 4 Hours of Head-down Rest. *Med. Sci. in Sports Exerc.* 23(4): S164, Abst. #979.

General Dynamics Donates Equipment

Elizabeth F. Harris, Ph.D., Department of Microbiology and Immunology, has received equipment and supplies valued at \$73,000 from General Dynamics to support a project entitled "Evaluation of Microorganisms for Bioremediation of Chlorinated Aliphatic Contaminants."