

**PROGRESS REPORT FOR THE
SPINAL CORD AND BRAIN INJURY RESEARCH CENTER
(SCOBIRC)
UNIVERSITY OF KENTUCKY**

**SUBMITTED TO THE
KENTUCKY SPINAL CORD AND HEAD INJURY RESEARCH TRUST
(KSCHIRT)**

**DECEMBER 24, 2002
EDWARD D. HALL, PH.D.
SCOBIRC DIRECTOR**

This report describes our progress in achieving the goals outlined in the 2001 Progress Report and in the five-year plan to establish the Spinal Cord and Brain Injury Research Center (SCoBIRC). Also presented are related SCoBIRC activities including the Invited Lecture Series and the Kentucky Spinal Cord and Brain Injury Research Symposium, a listing of full publications and new grants for SCoBIRC Faculty and Faculty Associates. Finally, we present the main SCoBIRC goals for 2003.

SUMMARY

During the past year we recruited a new Director, two new tenure track assistant professors and three new post-doctoral fellows. The Invited Lecture Series featured ten invited speakers. SCoBIRC Faculty and Faculty Associates were responsible for 37 full publications (refereed, chapters and reviews) and were awarded 8 new extramural grants including 4 NIH-NINDS R01s.

1. GOALS OUTLINED IN 2000 SCoBIRC PROGRESS REPORT

- **SCoBIRC DIRECTOR SEARCH**

Dr. Edward D. Hall was successfully recruited to become the new SCoBIRC Director, joining the University of Kentucky on July 1, 2002.

Dr. Hall received his Ph.D. in neuropharmacology from the Cornell University Graduate School of Medical Sciences in 1976. After completing a post-doctoral fellowship at Cornell University Medical College, he joined the Northeastern Ohio Universities College of Medicine where he rose to the rank of Associate Professor of Pharmacology. In 1982, he moved to the CNS Diseases Research Unit of The Upjohn Company where he initiated and lead an effort over many years to discover and develop agents for the treatment of traumatic brain and spinal cord injury, stroke, Alzheimer's disease and Parkinson's disease. In 1997, Dr. Hall left Upjohn (by then Pharmacia & Upjohn) and joined Parke-Davis Pharmaceutical Research which is now part of Pfizer Global Research and Development (PGRD). In 2001, he was appointed Senior Director, CNS Pharmacology and directed the discovery of neuroprotective and neurorestorative compounds for acute and chronic neurodegenerative diseases in the Ann Arbor site of PGRD. In addition to being SCoBIRC Director, he is a SCoBIRC Endowed Professor and Professor of Anatomy and Neurobiology, Neurology and Neurosurgery.

Dr. Hall is an internationally recognized authority on the pathophysiology of acute and chronic neurodegenerative disease, particularly the role of reactive oxygen mechanisms and the design and development of antioxidant neuroprotective drugs. He played a leading role in the development of high dose methylprednisolone therapy for acute SCI which is the standard of treatment worldwide, and the uncovering of the fact that its neuroprotective action involves inhibition of post-traumatic lipid peroxidation. For this work, he received the Upjohn Achievement in Science and Medicine Award. In addition, he was co-discoverer of the 21-aminosteroids ("lazaroids") including tirilazad mesylate. He also was responsible for the first demonstration that kappa opioid agonists have efficacy in models of acute CNS injury. Moreover, he was involved in the successful development of the dopamine agonist pramipexole (Mirapex^R) for Parkinson's disease, and showed that it possessed neuroprotective activity.

Dr. Hall is currently Section Editor for the Journal of Neurotrauma, Chair of the Paralyzed Veterans of America Spinal Cord Research Foundation Scientific Advisory Board, he serves on the VA Merit Review Panel for spinal cord and brain injury and on the VA Regeneration Research Board. In addition, he is a member of the Society for Neuroscience, the American Society of Pharmacology and Experimental Therapeutics, the American Society for Neurochemistry, the National Neurotrauma Society (which he has served as a co-founder, Secretary/Treasurer, Vice President and Councillor), the International Neurotrauma Society and the International Society for Cerebral Blood Flow & Metabolism.

Dr. Hall's research effort at U.K. will be focused upon:

- Peroxynitrite-mediated oxidative damage mechanisms and antioxidant neuroprotection in acute TBI
- Role of calpain and caspase 3 cytoskeletal degradation in acute TBI
- Gender differences in the pathophysiology of TBI
- Plasma and CSF biomarkers of oxidative damage and cytoskeletal degradation in SCI and TBI

- **RECRUIT ADDITIONAL FACULTY**

We have been fortunate to recruit two tenure track Assistant Professors during the past year.

Dr. Alexander Rabchevsky joined SCoBIRC as Assistant Professor, Regular Title Series, Tenure-Track, Department of Physiology in February, 2002. Dr. Rabchevsky received his Ph.D. from the University of Florida under the direction of Dr. Paul Reier, and subsequently received postdoctoral training at the University of Paris and University of Kentucky (laboratory of Dr. Stephen Scheff. He is currently funded by KSCHIRT and the International Spinal Research Trust.

Dr. Rabchevsky's research is focused on:

- Role of microglia in axonal regeneration
- Acute neuroprotection in SCI
- Mechanisms of autonomic dysreflexia after SCI.

Dr. Patrick G. Sullivan joined SCoBIRC as Assistant Professor, Regular Title Series, Tenure-Track, Department of Anatomy & Neurobiology in August, 2002. Dr. Sullivan received his Ph.D. for the University of Kentucky in 2000 followed by a successful post-doctoral fellowship under the direction of Dr. Oswald Steward at the Christopher Reeve-Irvine Research Center at the University of California at Irvine.

Dr. Sullivan's current research interest is:

- Role of mitochondrial dysfunction in the acute pathophysiology of traumatic brain and spinal cord injury and epilepsy.
- Modulation of mitochondrial uncoupling proteins as a neuroprotective approach to CNS injury

In addition, two new Faculty Associates have been added to the SCoBIRC ranks. The first is **Jimmi Hatton-Kolpek, Pharm.D.** who is an Associate Professor in the U.K. College of Pharmacy. Dr. Hatton-Kolpek, in collaboration with Dr. Byron Young, Chief of Neurosurgery, has been a key player in UK's involvement in several traumatic brain injury clinical trials.

She and Dr. Young are currently involved in a phase II trial of the immunosuppressive agent cyclosporin A in severe TBI.

The second new Faculty Associate is **D. Allan Butterfield, Ph.D.**, Professor of Chemistry and Director of the U.K. Center on Membrane Sciences. Dr. Butterfield is an internationally known expert on the role of reactive oxygen mechanisms in Alzheimer's disease, and more recently has been involved in looking at protein oxidative damage and proteomics in acute SCI models.

Related to SCoBIRC, efforts have continued aggressively to fill the Cardinal Hill Hospital-funded faculty positions in Physical Medicine and Rehabilitation. This includes an endowed Chair position and two endowed professorships. Of the latter, one is to be directed at SCI, and the other at TBI. Several candidates have been interviewed. We are in the process of making an offer to a candidate to fill the endowed chair position. This has been a difficult search due to the paucity of strong leaders in the relatively young PMR field who are not only excellent clinicians, but who also have solid research programs.

- **RECRUIT ADDITIONAL POSTDOCTORAL RESEARCHERS**

Three KSCHIRT-supported post-doctoral fellows have been recruited in 2002:

- **Duane Hassane, Ph.D.** joined the laboratory of Dr. Jim Geddes in September after completion of his Ph.D. at U.K. in the Department of Microbiology and Immunology. He is working on mechanisms of cytoskeletal damage in acute SCI.
- **Natasa Dragicevic, M.D.** joined the laboratory of Dr. Sasha Rabchevsky in October following a one year post-doctoral fellowship at the University of Miami (The Miami Project). She is working on mechanisms of mitochondrial dysfunction in acute SCI.
- **Edward Modafferri, Ph.D.** has been recruited, and will begin a post-doctoral position in the laboratory of Dr. Patrick Sullivan in January, after having completed a post-doctoral fellowship in the laboratory of Dr. Oswald Steward (U.C Irvine-Reeve Center). He will be working on a proteomic analysis of post-traumatic mitochondrial dysfunction.

- **DEVELOP SCI GENE RELATED DATABASE**

In collaboration with the University of Louisville, we continue to develop SCIGenes, a database of genes whose expression is altered by spinal cord injury. This database, which is freely accessible online (<http://scigenes.uky.edu/>), is directed by Dr. Tim McClintock. The database now includes more than 1,000 entries. Recent advances include tools for batch submission of data, and tools to save and compare searches of the database. A manuscript describing the first uses of SCIGenes for data mining is in preparation.

- **KSCHIRT-SUPPORTED RESEARCH SYMPOSIUM**

The Eighth Annual Kentucky Spinal Cord and Head Injury Research Symposium was held on June 24-26, 2002 at the Embassy Suites Hotel, Lexington, Kentucky. The final program which included nine non-UK, non-UL speakers is attached.

- **DEVELOP SCOBIRC WEB PAGE AND BROCHURE**

The SCoBIRC web page is online (<http://www.mc.uky.edu/scobirc/>). However, we are in the process of making revisions to include new faculty and more information on individual research projects.

2. ADDITIONAL GOALS OUTLINED IN FIVE-YEAR PLAN AND RELATED ACTIVITIES

• SCOBIRC EXECUTIVE COMMITTEE

Dr. Hall has established a new SCoBIRC Executive Committee to replace the former Internal Advisory Board. The newly formed committee consists of the following faculty:

- Edward D. Hall, Committee Chair-Professor of Anatomy & Neurobiology, Neurology and Neurosurgery
- James W. Geddes-Associate Professor of Anatomy & Neurobiology
- George Smith-Associate Professor of Physiology
- Stephen Scheff-Professor of Anatomy & Neurobiology
- Joseph Springer-Professor of Anatomy & Neurobiology
- Jimmi-Hatton-Kolpek-Associate Professor of Pharmaceutical Sciences and Neurosurgery
- Deborah Blades, Associate Professor of Neurosurgery
- Gerald Klim-Associate Professor of Physical Medicine & Rehabilitation

The roles of the committee include:

- Input concerning strategic directions
- Guidance on recruiting and interviewing of faculty candidates
- Construction of new 5 year plan
- Mentoring of junior faculty
- Previewing of grants from junior and senior colleagues
- Leadership on PPG applications and strategies
- Planning for basic-clinical translation efforts

• NEW UNIVERSITY OF KENTUCKY KSCHIRT BOARD REPRESENTATIVE

Dr. Mary Vore, Professor of Toxicology and Director of the Center of Toxicology, was appointed by the U.K. Administration to serve as a U.K. Representative to the KSCHIRT Board. She replaces Dr. Phyllis Wise who left U.K. during the past year to become a Dean at the University of California, Davis. Dr. Vore joins Dr. William Markesbery who has also represented U.K. since the Board's inception.

• SCOBIRC EXTERNAL ADVISORY BOARD

Dr. Douglas K. Anderson, Professor and Chairman of the Department of Neuroscience, University of Florida College of Medicine has been invited to replace Dr. Hall on the SCoBIRC External Advisory Board. Dr. Anderson will join Dr. Bradford Stoke, Ohio State University and Dr. Jerry Silver, Case-Western Reserve University on the board.

• SCOBIRC LECTURE SERIES AND SYMPOSIUM

Thanks to the generous support of KSCHIRT, we hosted the following speakers during 2002:

- March 4 David Magnuson, University of Louisville
SCI: CPG, BBB, VLF, MEP, PNG, & TGN
- March 13 Patrick Kochanek, University of Pittsburgh
Mechanisms of Secondary Damage after Severe Traumatic Brain Injury in Infants and Children: The role of Child Abuse.
- March 26 Ed Hall, Pfizer
Pharmacological Treatment of Acute CNS Injury: What Have We Accomplished Clinically and Where Do We Go From Here?
- April 15 Fernando Gomez-Pinilla, University of California, Los Angeles
Wiring up the CNS by Experience
- June 24-26 **8th Annual Spinal Cord & Head Injury Research Symposium**
Non-UK or UL Invited Speakers:
- Andrew Blight, Acorda Therapeutics
Seeking Approval: the Challenge of Getting Therapies for SCI to the Clinic
- C.J. Heckman, Northwestern University
Role of Cellular Properties in Generating Spasticity After Injury
- Anne Bekoff, University of Colorado, Boulder
Development of Pattern Generation in Chicks: Role of Intrinsic and Environmental Factors
- Bruce Lyeth, U.C. Davis
The Severity of Traumatic Brain Injury May Be Related to the Fate of Astrocytes
- Larry Jenkins, University of Pittsburgh
Developmental Protein Synthesis after Pediatric TBI
- Stephen Strittmatter, Yale University
Nogo Receptor and Axonal Regeneration in Spinal Cord Injury
- Marie Filbin, Hunter College
Encouraging CNS Regeneration by Changing the Intrinsic Growth State of the Neuron
- Susan Knoblach, Georgetown University
Caspases, Cell Death and Apoptosis after Head Injury
- Kathryn Saatman, University of Pennsylvania
Calpains in Head Injury: Current Experimental Evidence
- October 9 Hans Keirstad, University of California, Irvine

Emerging Strategies for Spinal Cord Injury

- October 14 Leonard Kaczmarek, Yale University
Regulation of Prolonged Changes in Neuronal Excitability
- October 16 Phillip Popovich, Ohio State University
Neuroinflammatory Mechanisms of Secondary Injury and Repair after Spinal Cord Injury
- November 18 Janet Dubinsky, University of Minnesota
Mitochondrial Dysfunction in Neurodegeneration
- December 9 Ian Reynolds, University of Pittsburgh
The Secret life of Mitochondria in Neurons
- December 17 Dominico Pratico, University of Pennsylvania
Oxidative Stress in the CNS: What can Isoprostanes Tell Us?

- **NEUROTRAUMA SOCIETY ANNUAL MEETING**

Twelve SCoBIRC investigators from the University of Kentucky attended the National and International Neurotrauma Symposium (NINTS) held in Tampa, Florida, in October, 2002.

- **FULL PUBLICATIONS BY SCoBIRC FACULTY AND FACULTY ASSOCIATES**

Askenova, M., **Butterfield, D.A.**, Zhang, S.-X., Underwood, W. and **Geddes, J.W.** Increased protein oxidation and decreased creatine kinase BB expression and activity following spinal cord contusion injury. *J. Neurotrauma* 19: 491-502, 2002.

Bu, J., Bruckner, S.R., Sengoku, T., **Geddes, J.W.**, and Estus, S. Glutamate regulates caveolin expression in rat hippocampal neurons. *J. Neurosci. Res.* (in press).

Chouthai, N.S., J. Sampers, N. Desai, and **G. M. Smith**, Changes in Neurotrophin Levels in Umbilical Cord Blood from Babies with Different Gestational Age and Clinical Conditions. *Pediatric Research* (In Press)

Hall, E.D. Acute treatment strategies for spinal cord injury. Chapter 59 in: Spinal Cord Medicine: Principles and Practice (V.W. Lin et al., eds.); Demos, N.Y., 2002, pp.777-784.

Hostettler ME, **Knapp PE** and Carlson SL (2002). Platelet activating factor induces caspase-3 dependent apoptosis in astrocytes and oligodendrocytes in vitro. *Glia*, 38:228-239.

Hynds D. L. and **Snow D. M.** A semi-automated image analysis method to quantify neurite preference/axon guidance on a patterned substratum. *J. Neurosci. Methods* 121(1):53-64.

Hynds, D. L., Inokuchi, J-i, and **Snow, D.M.** (2002) L- and D- threo-1-phenyl-2-decanoylamino-3-morpholino-1-propanol (PDMP) inhibit neurite outgrowth from SH-SY5Y cells. *Neuroscience* 114(3):731-744.

Karpuj , M.V., Becher, M.W., **Springer, J.E.**, Chabas, D., Pedotti, R., and Steinman, L. Prolonged survival and decreased abnormal movements in transgenic model of Huntington

disease with administration of the transglutaminase inhibitor cystamine. *Nature Medicine*, 8(2):143-149, 2002.

Knapp PE and Adams MA. Epidermal growth factor promotes oligodendrocyte differentiation and enhances survival and regrowth after injury. *Exp. Cell Res.*, In Press.

Kupina, N.C., M.R. Detloff, W.F. Bobrowski, B.J. Snyder and **E.D. Hall**. Cytoskeletal protein degradation and neurodegeneration evolves differently in males and females following experimental head injury. *Exp. Neurol.*, in press.

Kupina, N.C., M.R. Detloff, S. Dutta and **E.D. Hall**. The Neuroimmunophilin ligand V-10,367 is neuroprotective following 24-h delayed administration in a mouse model of diffuse traumatic brain injury. *J. Cereb. Blood Flow & Metab.* 22:1212-1221, 2002.

La Fontaine, M., **Geddes, J.W.**, and **Butterfield, D.M.** 3-Nitropropionic acid-induced changes in bilayer fluidity in synaptosomal membranes: Implications for Huntington's disease. *Neurochem. Res.* 27: 507-511, 2002.

McCullers, D.L., **Sullivan, P.G.**, **Scheff, S.W.** and Herman, J.P. Mifepristone protects CA1 hippocampal neurons following traumatic brain injury in rats. *Neuroscience* 2002, 109:219-230 (January)

McCullers, D.L. **Sullivan, P.G.**, **Scheff, S.W.** and Herman, J.P. Traumatic brain injury regulates adrenocorticosteroid receptor mRNA in rat hippocampus. *Brain Research* 2002, 947:41-9. (August)

Nasr, P., Gursahani, H.I., Pang, Z., Bondada, V., Lee, J, Hadley, R.W. and **Geddes, J.W.** Influence of cytosolic and mitochondrial Ca^{2+} , ATP, mitochondrial membrane potential, and calpain activity on the mechanism of neuron death induced by 3-nitropropionic acid. *Neurochemistry International* (in press).

Ngo T.B., P.J. Waggoner, A.A. Romero, R.C. Eberhart, K.D. Nelson, and **G.M. Smith**. Bioresorbable microfilaments enhance axonal regeneration across a sciatic nerve lesion. *J. Neurosci. Res.* (In Press).

Mu, X., Azbill, R.D., and **Springer, J.E.** Treatment with NBQX improves mitochondrial function and reduces oxidative events after traumatic spinal cord injury. *J. Neurotrauma* 19(8):917-927, 2002.

Narayan, R.K., M.E. Michel, B. Ansell, A. Baethmann, A. Biegon, M.B. Bracken, M.R. Bullock, S.C. Choi, G.L. Clifton, C.F. Contant, W.M. Coplin, W.D. Dietrich, J. Ghajar, S.M. Grady, R.G. Grossman, **E.D. Hall**, W. Heetderks, D.A. Hovda, J. Jallo, R.L. Katz, N. Knoller, P.M. Kochanek, A.I. Maas, J. Majde, D.W. Marion, A. Marmarou, L.F. Marshall, T.K. McIntosh, E. Miller, N. Mohberg, J.P. Muizelaar, L.H. Pitts, P. Quinn, G. Riesenfeld, C.S. Robertson, K.I. Strauss, G. Teasdale, N. Temkin, R. Tuma, C. Wade, M.D. Walker, M. Weinrich, J. Whyte, J. Wilberger, A. B. Young and L. Yurkiewicz. Clinical Trials in Head Injury. *J. Neurotrauma* 19:503-557, 2002.

Nottingham SA, **Knapp PE**, **Springer JE** (2002). FK506 treatment inhibits caspase-3 activation and promotes oligodendroglial survival following traumatic spinal cord injury. *Exp. Neurol.*, 177:242-251.

Rabchevsky, A.G., Fugaccia, I., **Sullivan, P.G.**, Blades, D.A., **Scheff, S.W.**, (2002). Efficacy of Methylprednisolone Therapy for the Injured Rat Spinal Cord. *Journal of Neuroscience Research*, 68(1), 7-18.

Rabchevsky, A.G. (2002) Influences of activated microglia/brain macrophages on spinal cord injury and regeneration. In: Microglia in the regenerating and degenerating central nervous system. Streit W.J. (ed.), Springer-Verlag: New York. pp. 209-226.

Roof, R.L. and **E.D. Hall**. Gender Differences in Acute Cerebral Ischemia: Neuroprotective Mechanisms of Estrogen. In: New Concepts in Cerebral Ischemia. R. Lin (ed.), CRC Press, pp. 1-30.

Roof, Robin and **E.D. Hall**. Gender differences in acute CNS trauma and stroke: neuroprotective effects of estrogen and progesterone. *J. Neurotrauma* 17:367-388, 2002.

Scheff, S.W., **Rabchevsky**, A.G., Fugaccia, I., Main, J. and Lump, J. Experimental modeling of spinal cord injury: Characterization of a force-defined injury device. Journal of Neurotrauma 2002 (in press).

Scheff, S.W., Saucier, D.A., and Cain, M.E. A statistical method for analyzing rating scale data: The BBB locomotor score. Journal of Neurotrauma 2002, 19:1251-1260.

Snow, D. M., Smith, J.D., and Gurwell, J. A. (2002), Binding characteristics of chondroitin sulfate proteoglycans and laminin-1, and correlative neurite outgrowth behaviors in a standard tissue culture choice assay. *J. Neurobiol* 51:285-301.

Snow, D.M., Smith, J.D., Cunningham, A., McFarlin, and Goshorn E.C. Neurite elongation on chondroitin sulfate proteoglycan is characterized by axonal fasciculation. *Exp. Neurol.* – *In press*

Springer, J.E. Apoptotic cell death following traumatic injury to the central nervous system. *J. Biochem. and Molec. Bio.* 35(1):94-105, 2002.

Sullivan P.G., **Rabchevsky** A.G., Keller J.N., Lovell M.A. and **Scheff S.W.** Intrinsic differences in isolated brain and spinal cord mitochondria: implication for therapeutic interventions following injury. Submitted

Sullivan, P.G., Keller, J.N., Bussen, W.L., **Scheff, S.W.**, (2002). Cytochrome C Release and Caspase Activation after Traumatic Brain Injury. *Brain Research*, 949, 88-96.

Sullivan, P.G., Dorenbos, K.A., Steward, P, Baram, T.Z. Mitochondrial uncoupling protein-mediated neuroprotection against excitotoxicity. *Ann. Neurol.* In press.

Szebenyi G, **G.M. Smith**, P.Li, S.T. Brady. (2002) Levels of neurofilament heavy chain expressed from tetracycline-inducible adenoviral construct modulate intermediate filament structure and cell function. *J.Neurosci. Res.* (68:185-198).

Thompson, J.S., Brown, S.A., Khurdayan, V., Zeynalzadedan, A., **Sullivan, P.G.**, **Scheff, S.W.**, (2002). Early effects of Tribromoethanol, Ketamine/xylazine, Pentobarbital, and

Isoflurane Anesthesia on Hepatic and Lymphoid Tissue in ICR Mice. *Comparative Medicine*, 52(1), 63-67.

Verbois, S.L., **Scheff, S.W.**, and **Pauly, J.R.** Time-dependent changes in rat brain cholinergic receptor expression following experimental brain injury. *Journal of Neurotrauma* 2002, 19:1569-1585.

Verbois, S.L., **Scheff, S.W.**, and **Pauly, J.R.** Chronic nicotine treatment attenuates $\alpha 7$ nicotine receptor deficits following traumatic brain injury. *Neuropharmacology* 2002 (in press).

Verbois, S.L., Hopkins, D.M., **Scheff, S.W.**, and **Pauly, J.R.** Chronic intermittent nicotine administration attenuates traumatic brain injury induced cognitive dysfunction. *Neuroscience* 2002 (in press).

Zhang, S.-X., Bondada, V., and **Geddes, J.W.** Evaluation of conditions for calpain inhibition in the rat spinal cord: effective postinjury inhibition with intraspinal MDL28170 microinjection. *J. Neurotrauma* (in press).

- **NEW EXTRAMURAL GRANTS AWARDED TO SCoBIRC FACULTY AND FACULTY ASSOCIATES IN 2002**

NIH:

NINDS R01 P.I.: **P. E. Knapp** "Strategies for Controlling Apoptosis in Oligodendrocytes" \$1,120,000 7/02- 06/06

NINDS R01 P.I. **G.M. Smith** "Gene Therapy for Spinal Cord Regeneration" \$875,000; 1/02 - 12/06

NINDS R01 P.I. **J. Pauly**, Co-PI **S. Scheff**, "Cognitive Dysfunction Following TBI: Role of $\alpha 7$ nAChr's" \$825,000; 4/02-3/06

NINDS R01 Response of the aging nervous system to trauma P.I. **S. Scheff** \$1,250,000; 12/02-1/07

KSCHIRT:

1/1/2002-12/31/2004 PI: **J Geddes** "Calpain as a Therapeutic Target Following Spinal Cord Injury" Annual Direct Costs: \$97,000

FOUNDATION

International Spinal Research Trust (ISRT STR063): P.I. **A.G. Rabchevsky** "Mechanisms of autonomic dysreflexia following spinal cord injury". \$71,235/year; 6/13/2002-6/12/05

American Paraplegia Society. P.I. **P. Kitzman** "Changes in Synaptic Input to Spinal Motoneurons: A Basis for Spasticity and Hyperreflexia". 11/01/02-10/31/03.

American Heart Association. P.I. **J. Geddes** Fellowship for Tomoko Sengoku "Developing Novel Therapeutic Agents: Calpastatin and Protein Transduction Domains" Annual Direct Costs: \$17,000

- **HIRING OF FULL-TIME SCoBIRC ADMINISTRATOR**

In September, 2002, Ms. Lora Vifquain was hired as SCoBIRC Administrator. Ms. Vifquain was formerly responsible for administering the UK COBRE (NIH) grant devoted to Womens' Health. Lora is a graduate of Sullivan University with a B.S. in Business Administration.

3. SCoBIRC GOALS FOR 2003

- **RECRUIT ADDITIONAL FACULTY**

Following the recruitment of Dr. Hall as SCoBIRC Director, we have expanded our recruitment effort to ultimately add 4 additional tenure-track faculty to the Center which will bring the total number of SCoBIRC faculty to nine. An advertisement (attached) appeared in the December 6th issue of **Science**. Two excellent candidates have already visited for seminars and interviews.

- **RECRUIT ADDITIONAL POSTDOCTORAL RESEARCHERS AND GRADUATE STUDENTS**

We are continuing in our attempt to recruit post-doctoral fellows and graduate students. An advertisement was posted at the recent National and International Neurotrauma Symposium in Tampa, Florida.

- **DEVELOP SCI GENE RELATED DATABASE**

As noted above, the development of an SCI Gene Related Database is continuing in collaboration with the University of Louisville.

- **SUBMIT NEW UK KSCHIRT 5 YEAR PLAN: 2003-2008**

4. SCoBIRC Five-Year Plan, Progress and Revisions

Year 01 (1998-99)

- Recruit Director (Completed)
- Recruit one Faculty Position (Completed)
- Establish Distinguished Lecture Series (Ongoing)
- Hire Center Staff (Completed)

Year 02 (1999-00)

- Recruit Clinical Director (In Progress)
- Host Spinal Cord and Brain Injury Symposium (Completed)
- Establish Center Advisory Board (Completed)

Year 03 (2000-01)

- Recruit one Faculty Position (Completed)
- Host Rehabilitation Symposium (Completed)
- Develop SCoBIRC Web Page and Brochure (Completed)

Year 04 (2001-02)

- Recruit one Faculty Position (Completed, two were hired)
- Host Spinal Cord and Brain Injury Symposium (Completed)
- Recruit SCoBIRC Director (Completed)

Year 05 (2002-03)

- Recruit two Additional Faculty (new goal)
- Recruit Additional postdoctoral Researchers and Graduate Students
(With the additional KSCHIRT support for Postdoctoral Researchers, this has been revised to recruit one additional faculty position.)

ATTACHMENTS:

1. Final program for the 8th Annual Kentucky Spinal Cord and Head Injury Research Symposium; Lexington, KY; June 24-26, 2002.
2. December 6, 2002 *Science* advertisement for SCoBIRC tenure-track faculty
3. Fall, 2002 University of Kentucky research magazine *Odyssey* featuring article **Regenerating Hope: Spinal Cord Research at UK.**