INDIVIDUAL RESEARCH GRANTS

RESEARCH PROGRAM
AND
GUIDELINES

Deadline: December 15, 2005

CHRISTOPHER REEVE FOUNDATION
636 MORRIS TURNPIKE
SHORT HILLS, NJ 07078

(973) 379-2690
www.ChristopherReeve.org

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INDIVIDUAL RESEARCH GRANTS

INTRODUCTION

This Individual Research Grants overview details the funding priorities and procedures of the Christopher Reeve Foundation (CRF). CRF is committed to the goal of developing treatments and cures for paralysis caused by spinal cord injury. Since its 1982 founding as the American Paralysis Foundation, the organization has invested more than $32 million in its individual research grants program.

CRF funds activities that hold promise of identifying therapies for paralysis caused by spinal cord injury and other sequelae of CNS injury. The areas of research listed below are the focus of current CRF emphasis and funding:

FUNDING PRIORITIES

❖ Studying strategies that may promote neuronal growth and survival, encourage the formation of synapses, enhance the production of myelin, restore conduction capabilities, or may otherwise lead to restoration of the compromised circuitry in the acutely and chronically injured spinal cord.
❖ Evaluating the efficacy of drugs or other interventions that protect against secondary neuronal injury or provide insight into the mechanisms causing such damage.
❖ Defining anatomical characteristics of spinal cord injury in well-defined animal models and in the human spinal cord, specifically documenting the neuronal systems that are most vulnerable to spinal cord injury and the functional losses occurring as a result.
❖ Elucidating the biological mechanisms underlying approaches to improve concomitant functions affected by spinal cord injury, (e.g., bladder function, sexual function) and alleviate chronic pain and spasticity.

The development of treatments for chronic injury is a high priority for the organization; however, funding will also be provided for studies more relevant to the acute phase of injury. Basic research will be supported if it has clear potential to accelerate progress at the applied end of the continuum and/or if it reflects a research "change of direction."

MEETINGS

A Grant Holders' meeting will be organized by CRF and held on a recurring basis. Awardees will be required to attend this meeting during their award periods. The meeting will provide a venue for dialogue between research scientists and the spinal cord community and will provide opportunities to establish SCI networks and collaborations that may be funded through supplemental grants awarded by CRF. Awardees will be required to allocate $1,000 from their total award budget toward this meeting.

Additionally, symposia or workshops may be sponsored to promote information exchanges deemed of particular relevance to the current aims of the Foundation.

INDIVIDUAL RESEARCH GRANTS

Applications will be accepted from those with a Ph.D., M.D., or other equivalent professional degree, employed at a qualifying research institution. Senior scientists, young investigators and postdoctoral fellows may serve as principal investigator. **Two-year awards** are available for senior scientists and young investigators with a maximum funding level of $75,000 per year (indirect costs limited to 10% of the direct). Postdoctoral fellowships are available with a maximum funding level of $60,000 per year. The guidelines described throughout this document pertain to all applicants with the following exceptions:

1. Postdoctoral applicants listed as the primary investigator can request up to $60,000 per year.
2. Specific requirements for postdoctoral applicants are highlighted in the "Review Process" section below.
3. Postdoctoral applicants must submit a **full** CV and letters of recommendation as described in section 8 of proposal guidelines (p.6.)

The goals of the individual research grants program are to (1) encourage promising new investigators to undertake research on regeneration and recovery, particularly with respect to the spinal cord; (2) encourage researchers who are well-established in other areas to transfer their efforts to spinal cord research; and (3) enable researchers with novel ideas to test their ideas and develop pilot data for seeking larger awards from NIH and other funding sources.

Two-year awards are made through one-year contracts. **Second-year support is not automatic** and is contingent upon the grantee submitting a continuation application that is favorably reviewed by CRF's Science Advisory Council. (Postdocs and mentors – see "Note for Postdocs" below)

It is suggested that if you have questions about the relevance of your work to CRF's program you send a pre-proposal letter or email (1 - 2 pages maximum) describing the proposed research (aims, brief description of methods, perceived relevance of research to CRF priorities, etc.), to insure that the development of a full proposal is warranted. This letter (or email) should be sent to Dr. Landsman no later than 6 - 8 weeks prior to the application deadline. The Foundation has witnessed a substantial increase in the number of applications submitted for review. With such competition, relevance to CRF's mission takes on paramount importance. Please review awards from the last two years (see below) to gain a better sense of the Foundation's research priorities.

CRF encourages research grant applicants to seek support from more than one funding source, if this fits the applicant's situation.

Applications for research grants are accepted from American or international investigators located at institutions that have clearly established lines of accountability and fiscal responsibility. Applications must include institutional assurances regarding research on human subjects and/or on animals, and must be signed by the individual responsible for administration of the contract. Funds are awarded to the principal investigator's host institution; however, if the PI moves after the initiation of the contract to a new host institution, all efforts will be made by CRF to insure the transfer of the contract and unexpended funds (Postdocs and mentors – see "Note for Postdocs below).

The intent of these awards is to promote innovative and groundbreaking work, not to provide ongoing, long-term support. However, awardees are eligible to apply for subsequent funding, but such applications will be reviewed competitively.

THE REVIEW PROCESS

All proposals are given preliminary review by the Director of Individual Grants and, if considered to be consonant with the CRF's goals, are distributed to expert members of the Science Advisory Council (SAC) for review.

The SAC convenes to evaluate proposals, applying the criteria described below. Based on this review, funding recommendations are made to CRF's Research Planning Committee and then the Board of Directors, which decides final approval/disapproval.

Following Board action, notification is sent to applicants; feedback may be provided at the discretion of the SAC review panel. In all other cases, it is policy that written reviews will not be provided to applicants because alone, taken out of context of the complete SAC discussion, they oftentimes fail to convey the full and final consensus of the reviewers. The Director of Research, the principal investigator and the host institution negotiate contracts; the latter is the formal contracting agent.

Note for POSTDOCTORAL APPLICANTS -- Postdoctoral applications are evaluated on three criteria: 1) The applicant; 2) The host laboratory and research environment; and 3) The proposal's scientific merit and relevance of the proposal to the Foundation's goals. Second-year funding is contingent upon successful review of a continuation proposal. A change in the relationship between the postdoctoral fellow and the PI or between the postdoctoral fellow and the institution will require the submission of a new, competing application (as opposed to a continuing application) for 2nd year funding. Postdoctoral applicants must submit a letter of support from the laboratory's senior scientist, as well as two other appropriate letters of reference.

Review Criteria

Research proposals are evaluated on scientific merit and adherence to CRF's priorities:

Scientific merit

- Adequacy of prior research and theory in providing a basis for the research
- Adequacy of methods
- Adequacy of environment: facilities/equipment, available expertise (in-house and through consultants), research "atmosphere"
- Qualifications and productivity of the PI and key staff
- Time commitments of PI and key staff
- Availability of subjects/patients (if human model is used)
- Adequacy of procedures for assessing the effect of interventions on recovery
- Any other factors that affect the potential of the applicant to address successfully the research aims.

Adherence to the CRF's priorities
Indicate which of the four funding priorities are being addressed and how your proposal will further the field of SCI research.

RESEARCH GRANTEE RESPONSIBILITIES

The responsibilities of recipients of research funding are clearly detailed in the contract signed by CRF, by the principal investigator and by the contracting institution. Of particular importance to note prior to application:

- Grantees are required to attend one bi-annual meeting organized and sponsored by the Christopher Reeve Foundation. $1,000 of their total award will be withheld to partially support the award recipient's attendance at the meeting.
- Research contracts are signed for one-year periods.
- Grantees must provide CRF narrative and financial reports of progress using CRF-specified formats.
- For two-year grants in the first year: (1) in lieu of mid-year progress report, a report of progress is included in the continuation application; (2) mid-year financial reports are due 6 months after contract initiation and final financial and narrative reports are due 30 - 90 days after contract termination, respectively. For two-year grants in the second year: (1) mid-year narrative and financial reports are due 6 months after contract initiation and (2) a final narrative report is due 30 days, and a final financial report 30 – 90 days, after contract termination. Financial reports are to be completed by the office of grants and contracts of the contracting institution. All reports are to be made using CRF-specified formats.
- The principal investigator is expected to share with CRF copies of all publications that emerge as a result of the funded research, during and after the period of the contract. The PI may also be asked to draft a lay-oriented description of the funded research, for publication in CRF's newsletter or for other use.
- The principal investigator is encouraged to make full use of research results using the usual avenues for dissemination (i.e., journals, conferences). **CRF expects grantees to acknowledge the source of funding ("the Christopher Reeve Foundation") in all such publications and presentations.** Publicity releases or other public statements aimed at sharing results with lay audiences must be reviewed by CRF prior to issuance, to insure that such statements are congruent with reports made to CRF; if a serious lack of congruence is perceived, CRF will not allow its association with the research to be publicized. CRF is concerned that results of its funding program be responsibly publicized.
- Research grant awardees must notify CRF if an application for patent or copyright is being considered, to allow us to participate in the application process if we judge this course to be the most appropriate in the given situation.

FUNDING GUIDELINES AND LIMITATIONS

- Requests to purchase major items of equipment are discouraged. Such funding may be allowed if the equipment reflects a change in research direction embodied in the proposal.
- If equipment is to be purchased costing more than $2,500, the applicant must attach an explanation of the proposed disposition of the equipment following termination of the contract.
- Funding of the PI's salary is discouraged unless the application is for a post-doctoral fellowship. Other exceptions should be discussed with CRF's Director of Individual Grants prior to application.
- Indirect costs (i.e., administrative fees of the host institution) are limited to 10% of direct costs (i.e., salaries, fringe benefits, travel, equipment, animals, supplies, etc.). Total costs (direct plus indirect) cannot exceed the maximum allowable award.
- A Grant Holders' meeting will be organized by CRF and held every other year. Awardees will be required to attend this meeting. The meeting will provide a venue for dialog between research scientists and the spinal cord community, will foster the exchange of data and ideas between scientists, and will provide opportunities to establish collaborations that will be funded through supplemental grants by CRF. Awardees will be required to allocate $1,000 from their total award budget toward this meeting.

DEADLINES
The next deadline for applications is **June 15, 2005** Applicants will likely be notified of the disposition of their requests in November 2005. Applications will again be accepted **December 15, 2005.**

PROPOSAL SUBMISSION

Grant proposals must be submitted following the guidelines below. **Applications that do not adhere to these guidelines will be rejected without review.**

Applicants are required to complete an on-line application and to submit 7 hard copies. The online submission transfers your information and a formatted PDF copy of your application to the CRF research database for processing and archiving (the on-line application can be completed in multiple sessions). Hard copies are required for the review process. Applications must be **mailed**, and **on-line forms completed**, on or before June 15, 2005.

Please follow these steps for submitting an application to CRF:
1. Download guidelines and application forms.
2. Complete application forms and gather all supplemental material.
3. Use information contained in the completed application forms to fill out the on-line application and upload a PDF (or Word) version of your application and reprints (the on-line application can be completed in multiple sessions). Applicants can visit Adobe® to learn more about PDF files.
4. Mail 7 hard copies of application as per guidelines to the address below.

Hard copies (including reprints and appendices), affixed with a binder clip or one staple, should be sent to:

Douglas S. Landsman, Ph.D.
Director, Individual Research Grants Program
Christopher Reeve Foundation
636 Morris Turnpike
Short Hills, NJ 07078

Applicants must adhere to these guidelines using the forms and instructions at http://www.christopherreeve.org/.
- Applications that do not adhere to the appropriate format will be rejected without review.
- Be sure to send 7 sets of ALL materials.
- Staple the front section of the proposal (Sections 1 - 8); use binder clips or staples to attach appendices to the front section (ultimately you want to ensure that each reviewer receives all of your information).
- Do not: (1) send loose pages
  Do not: (2) send uncollated materials or use small paperclips
  Do not: (3) enclose individual proposal copies in binders, folders or envelopes.

For international applicants (not including Canada), the on-line application must be submitted by the due date. The 7 hard copies must be **mailed** on or before the due date and be received within two weeks thereafter. The purpose of this delayed receipt is to save foreign applicants excessive postage costs.

QUESTIONS

Contact Dr. Landsman at the address above or at dlandsman@ChristopherReeve.org

PROPOSAL GUIDELINES AND FORMAT

1. **Applicant information** (page 1) (All items required)

a. Principal investigator: Name of principal investigator, degree, title, host institution, address, phone and fax numbers, email address. Name of co-investigator (if any), title and degree.

b. Check one to indicate career level of applicant.

Proposal information

c. Title of research: A short descriptive title (retained for the second year).

d. Proposal hypothesis: Clearly state the working hypothesis.

e. Key words: Five key words of the proposal.

f. Amount requested: Stipulate the exact amount for year one and if applicable for year two (to a maximum of $75,000 per year ($60,000 for postdoctoral applicants)); indicate grand total.

g. Postdoctoral fellowship: Check appropriate box.

Institutional information

h. Contract officer: Person at host institution responsible for administering the contract; include title, address, phone and fax numbers, email address.

i. Fiscal officer: Person at host institution responsible for fiscal reports, include title, address, phone and fax numbers, email address.

j. Check payable to: What entity?

k. Address for mailing payments: Person and address to which payments should be mailed.

l. Institution's legal name: This information is used when writing a contract for your award.

m. U.S. Tax ID (for U.S. institutions only) -- please include the tax ID of your host institution.

2. **Budget** (page 2)

For the first-year budget, provide both the amount requested and justification for each: (2a-e).

a. Personnel: For each salary requested, indicate name, title, percent of time on project, salary request, and fringe benefit request. Even if funding to support the P.I.'s salary is not being requested, **indicate the percent of the P.I.'s time** to be devoted to the research activity for which funds are being requested from the CRF. Describe the role of each person listed, on page 2a.

b. Equipment: **Equipment purchase is not encouraged**; fully justify any proposed equipment purchases on page 2b. Describe proposed disposition of equipment costing more than $2,500.

c. Travel: Describe proposed use of travel funds. Remember to allocate $1,000 for the CRF meeting

d. Animals and supplies: Itemize purchases over $1,000; justify non-obvious expenditures.

e. Other: Itemize proposed expenses over $1,000; justify non-obvious expenditures.

f. Total direct expenses: total of 2a through 2e.

g. Indirect: maximum allowable is 10% of amount at 2f.

h. TOTAL FUNDS REQUESTED: total of 2f and 2g (not to exceed a total of $75,000 for either year).

2*. **Budget for Postdoctoral Fellowships** (page 2)

a. Same as above EXCEPT that the maximum total award amount is $60,000.

b. The salary and fringe benefits should reflect at least the minimum level recommended by the host institution.

c. A maximum of $15,000 is allowed for non-salary expenses.

3. **Other Support** (page 3) Note at 3(a) that all other sources and amounts of possible support are to be listed, including private foundations, federal agencies, corporations and/or other. If application is for a postdoctoral fellowship, indicate financial status of the sponsor. Also, if this application is a re-submission of a previous application to CRF, we suggest that you include a cover letter highlighting the changes in the new application and responding to reviewer comments, if any.

4. **Institutional Forms and Collaborations** (also on page 3) Please include a letter from an appropriate institution official indicating that the institution is willing to administer a grant should funds be awarded. If questions arise, contact CRF's Director of the Individual Research Grants Program.

5. **Non-technical Abstract** (page 4)
   Lay readers constitute the target audience for this section of the proposal; thus, it should avoid technical detail. Define your terms, as well as expected results. (1/2 page).

6. **Relationship to CRF Priorities** (also on page 4)
   Using lay language, address salient points described in these guidelines with respect to the scientific priorities that CRF emphasizes related to spinal cord injury (1/2 page).

7. **Narrative** (begin pagination with page 5)
   The narrative (7a - 7e) is not to exceed 5 single-spaced pages, including preliminary data and figures. Type-size must be 12 point. Full references are in addition to the five-page limit. Margins must be at least 3/4", with at least a 1" top margin. If photos are included, the P.I. may opt to submit only three sets of original photos, with the other 4 being copies. This may be the best choice if the photos in question are expensive but Xerox adequately. **If this option is selected, it must be noted in a cover letter,** so that the primary and secondary reviewers are assured of receiving the originals.

a. **Aims:** Enumerate the specific aims/objectives of this research; avoid vague generalities. What hypotheses will be tested? What products will be developed? Etc.
b. **Background/Significance:** Describe both theory and prior and current research related to your proposal. How does your proposal fit into the larger picture of spinal cord injury research and how is it timely?
c. **Methods and Experimental Design:** Describe both your (a) experimental design and (b) laboratory methods. As appropriate to your research, this may be done either in terms of each specific aim described in Section 7a or may be done for the overall project, ensuring in the latter case that the methods of addressing each specific aim are clearly described. Describe procedures and provide description of subjects to be studied. Be sure to indicate sample sizes and, in research with humans, procedures for subject selection. Also, if relevant, address issues raised regarding assessment of recovery of function.
d. **Timetable:** Tie the tasks described in Section 7c to an estimated timetable, providing a schedule for the entire project and in detail for the first year.
e. **Facilities/Resources:** Describe the equipment and facilities available to you that will be used in this research. If CRF funds are being requested to purchase additional equipment, place the needed equipment in the context of that presently available to you. Also describe, if appropriate, other research being done in your institution and colleagues that may provide support for your work.
f. **References:** References are **not** included within the 5-page limit.

8. **Curriculum Vitae**
   Senior Scientists and Young Investigators
   Submit a **summary** of the curriculum vitae of the PI and key personnel, following the NIH Biographical Sketch format; list key publications **(4-page limit for each CV)**.

   Postdoctoral Applicants
   Applications for postdoctoral fellowships must include a **full CV for the fellow,** and an NIH Biographical Sketch of, and letter of recommendation from, his/her sponsor, and two other appropriate letters of reference. *Letters of reference should be provided in sealed envelopes with the referee's signature across the back flap*. They may be included with the application or mailed directly to the CRF office at 636 Morris Turnpike, Short Hills, NJ 07078.

9. **Publications**
   Enclose copies of a maximum of three publications representative of your work. Be sure to attach publications to each hard copy. CRF will not make copies for you.

CHRISTOPHER REEVE FOUNDATION
SCIENCE ADVISORY COUNCIL
2005

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Vancouver, BC, CANADA

Mark H. Tuszynski, M.D., Ph.D.
University of California, San Diego
La Jolla, CA

2005 $1,934,893 (1st Cycle Competing Awards)

Carter, Bruce D., Vanderbilt University, Nashville, TN, United States
The requirement for TRAF6 in p75 receptor mediated neurite inhibition

Cotman, Carl W, University of California, Irvine, Irvine, CA, United States
Mammalian CNS axonal mRNA

Frédérique Jeanne Courtois, Ph.D., Université du Québec à Montréal, Montreal, QC, Self-induced ejaculation and orgasmic potential in spinal cord injured men (continuation)

Steven A. Crone, Ph.D., University of Chicago, Chicago, IL, Identification of spinal interneurons required for locomotor function (continuation)

Cross, Kevin Jay, Weill Medical College of Cornell University, New York, NY, United States
Hypoxia response element (HRE) promoter driven growth factor production for more rapid decubiti pressure sore closure.

Eric Daniel Crown, Ph.D., University of Texas Medical Branch, Galveston, TX, Cellular memory: A mechanism for pain after spinal cord injury (continuation)

Mike Fainzilber, Ph.D., Weizmann Institute, Rehovot, ISRAEL, A mechanistic approach to the conditioning lesioning paradigm in injured nerve (continuation)

Galvez, Jose A, University of California, Irvine, Irvine, CA, United States
Optimization of robotic control for automating gait training

Giger, Roman J, University of Rochester Medical Center, Rochester, NY, United States
Antagonism of myelin inhibition with a soluble synthetic Nogo receptor

Hannila, Sari S, Hunter College, City University of New York, New York, NY,
Enhancing axonal regeneration by administration of secretory leukocyte protease inhibitor

Henderson, Christopher E., Columbia University, New York, NY, United States
Mechanism of action of JLK169, a cyclic polyamine that enhances axonal regeneration

Jaffrey, Samie R, Weill Medical College of Cornell University, New York, NY, United States
The role of RhoA mRNA translation in models of spinal cord injury

Bernhard H.J. Juurlink, Ph.D., University of Saskatchewan, Saskatoon, SK, Glutamine and Quercetin as Therapeutic Interventions following Spinal Cord Injury (continuation)

Scott T. Magness, Ph.D., University of North Carolina at Chapel Hill, Chapel Hill, NC, Characterizing SOX2 Function in Neural Stem Cell Induction, Maintenance and Regeneration Capacity Following Spinal Cord Injury (continuation)

Martin, John H., Research Foundation for Mental Hygiene, Inc., Columbia University, New York, NY, United States
Electrical stimulation of the corticospinal tract after incomplete spinal cord injury

Professor Stephen Brendan McMahon, FMedSci, PhD, King's College London, London, ENGLAND, Use of retinoic acid receptor beta2 to promote functional recovery after spinal cord injury (continuation)

Paxinos, George, Prince of Wales Medical Research Institute, Sydney, NSW, Australia
The Rat and Human Spinal Cord: Atlases and 3D Models

Dr. Steve I. Perlmutter, Ph.D., University of Washington, Seattle, WA, Function of Reflex Circuits in the Spinal Cord of Behaving Primates (continuation)

Elisabeth Schultke, M.D., University of Saskatchewan, Saskatoon, SK, Does administration of the flavonoid quercetin modulate glial scar formation after spinal cord injury? (continuation)

Sherman, Larry Scott, Oregon National Primate Research Center, Beaverton, OR,
Role of Brg1 in neural stem cell differentiation

Harold David Shine, Ph.D., Baylor College of Medicine, Houston, TX, Mechanisms of induced neuroplasticity in the lesioned spinal cord (continuation)

Smith, Joseph Richard, University of Cambridge, Cambridge, , United Kingdom
Generation of enriched motor neuron cultures from human embryonic stem cells

Richard Bernard Stein, Ph.D., University of Alberta, Edmonton, Alberta, Strengthening Connections By Functional Electrical Stimulation After Human Spinal Cord Injury (continuation)

Charles Haskell Tator, Ph.D. M.D., The Toronto Western Hospital Research Institute, Toronto, ON, Transplantation of Adult Human Spinal Cord Stem/Progenitor Cells to the Injured Adult Rat Spinal Cord (continuation)

Vinay, Laurent, Centre National de la Recherche Scientifique (CNRS), Marseille, France
Plasticity of inhibitory synaptic transmission during development and after adult spinal cord injury

Ina Beate Wanner, Ph.D, University of Miami School of Medicine, Miami, FL, Novel use of Schwann cell precursors to promote axonal regeneration across reactive astrocytes (continuation)

Whelan, Patrick John, University of Calgary, Calgary, AB, Canada
The control of afferent transmission onto spinal locomotor pattern generators by monoamines.

Yang, Jaynie Frances, University of Alberta, Edmonton, Alberta, Canada
Retraining of walking skills after spinal cord injury
Sung Ok Yoon, Ph.D., The Ohio State University, Columbus, OH, Role of p75 as the receptor regulating pro-apoptotic JNK3 and Rho activity after spinal cord injury (continuation)

2004 $2,342,973 (2nd Cycle Competing Awards)

Claudia Barros, Ph.D., The Scripps Research Institute, La Jolla, CA, ErbB signaling in glial development and myelination in the CNS Stem Cells

Dr. Bonni Azad, M.D., Ph.D., Harvard Medical School, Boston, MA, Cell-intrinsic regulation of axonal growth by Cdh1-anpahase promoting complex

Barbara S. Bregman, P.T., Ph.D., Georgetown University School of Medicine, Washington, DC, The synergistic effect of rolipram administration and increased post-injury activity after spinal cord injury

Robert M. Brownstone, M.D., Ph.D., FRCSC, Dalhousie University, Halifax, NS, Canada,Functional characterization of spinal cord interneurons expressing the homeodomain protein Hb9

Jose M. Carmena, Ph.D., Duke University Medical Center, Durham, NC, Closed-loop brain-controlled prosthesis for recovery of upper-limb functionality in subjects with spinal cord injuries (continuation)

Priscilla Clarkson, Ph.D., University of Massachusetts, Amherst, MA, Gene expression profiling of skeletal muscle after spinal cord injury (continuation)

Eftekhar, Eftekharpour, Ph.D., The Toronto Western Hospital Research Institute, Toronto, ON, Canada, Repair of the chronically injured spinal cord: Use of neural stem cell transplantation to promote spinal cord remyelination.

Michael D. Ehlers, M.D., Ph.D., Duke University Medical Center, Durham, NC, Spatial regulation of endocytosis during growth cone migration and collapse (continuation)

Abdeljabbar El Manira, Ph.D., Karolinska Institutet, Stockholm, Awaking locomotor networks by activation of endogenous modulatory receptors (continuation)

K. Christopher Garcia, Ph.D., Stanford University School of Medicine, Stanford, CA, Structural biology of Nogo receptor-ligand interactions (continuation)

Professor Sten Erik Grillner, Ph.D., Karolinska Institutet, Stockholm, Mechanisms of modulation of the locomotor CPG – a synaptic, cellular and molecular analysis (continuation)

Chenghua Gu, Ph.D., Johns Hopkins University School of Medicine, Baltimore, MD, Semaphorin/neuropilin signaling during development and adult CNS regeneration (competitive renewal)

Pierre A. Guertin, Ph.D., Laval University Research Hospital, Quebec, PQ, Canada, Differential role of 5-HT2A and 5-HT2C receptor subtypes in acute induction of hindlimb movements in early chronic paraplegic mice

Thomas M. Jessell, Ph.D., Columbia University, New York, NY, Axonal Receptors and the Control of Motor Axon Guidance

Ana Martin-Villalba, M.D., Deutsches Krebsforschungszentrum, Heidelberg, Blocking of CD95-Ligand-Induced cell death to treat spinal cord injured patients (continuation)

Birgit Neuhuber, Ph.D., Drexel University College of Medicine, Philadelphia, PA, Temporal and spatial regulation of transgene expression to promote axonal regeneration and recovery of function in spinal cord injury

Damien Daniel Pearse, Ph.D., University of Miami School of Medicine, Miami, FL, Sensory plasticity and pain associated with regenerative therapies for spinal cord injury

Angela-Jane Irene Roskams, Ph.D., The University of British Columbia, Vancouver, BC, Canada, Can Human Lamina Propria Ensheathing Cells Stimulate Repair in Contused Spinal Cord

Richard Kemp Shields, Ph.D., P.T., The University of Iowa, Iowa City, IA, Neuromusculoskeletal recovery after spinal cord injury

J. Marc Simard, M.D., Ph.D., University of Maryland, Baltimore, Baltimore, MD, The NC(Ca-ATP) channel - a new player in spinal cord contusion

William D. Snider, M.D., University of North Carolina at Chapel Hill, Chapel Hill, NC, Roles of GSK-3 and ILK in Regenerative Axon Growth

Wolfram Tetzlaff, M.D., Ph.D., The University of British Columbia, Vancouver, BC, Canada, Minocycline treatment of spinal cord injury

Scott Whittemore, Ph.D., University of Louisville, Louisville, KY, Stem cell repair of spinal cord injury (continuation)

Sara Ivy Wilson, Ph.D., Columbia University, New York, NY, Spinal Commissural Neurons: Functional Development and Circuitry

Jean R. Wrathall, Ph.D., Georgetown University School of Medicine, Washington, DC, Endogenous precursor cells in chronic SCI

Xiaorong Xu, Ph.D., University of Rochester, Rochester, NY, Assuring conduction in spinal motor neurons

Binhai Zheng, Ph.D., University of California, San Diego, La Jolla, CA, Assessing the role of Nogo in spinal cord regeneration failure by acute deletion of the Nogo gene in adult mice

2004 $2,026,780 (1st Cycle Competing Awards)

William A. Barton, Ph.D., Sloan Kettering Institute, New York, NY, Sturctural study of Nogo, NogoR, and p75NTR

Frédérique Jeanne Courtois, Ph.D., Université du Québec à Montréal, Montreal, QC, Self-induced ejaculation and orgasmic potential in spinal cord injured men

Gerald R. Crabtree, M.D., Stanford University School of Medicine, Stanford, CA, Understanding and recapturing patterns of embryonic neurite outgrowth (Continuation)

Steven A. Crone, Ph.D., University of Chicago, Chicago, IL, Identification of spinal interneurons required for locomotor function

Eric Daniel Crown, Ph.D., University of Texas Medical Branch, Galveston, TX, Cellular memory: A mechanism for pain after spinal cord injury

Mike Fainzilber, Ph.D., Weizmann Institute, Rehovot, ISRAEL, A mechanistic approach to the conditioning lesioning paradigm in injured nerve

Francis John Golder, DVM PhD DACVA, University of Wisconsin, Madison, WI, Respiratory functional recovery after cervical spinal cord injury: strengthening existing synaptic pathways (Continuation)

Barbara Grimpe, Ph.D., Case Western Reserve University, Cleveland, OH, Xylosyltransferase 1, the GAG-chain initiating enzyme, and the use of bridge-building Schwann cells to stimulate regeneration in the spinal cord (Continuation)

Bryan C. Hains, Ph.D., Yale University School of Medicine, West Haven, CT, Sodium channels and pain after spinal cord injury (Continuation)

Mark Henkemeyer, Ph.D., University of Texas Southwestern Medical Center, Dallas, TX, Eph-Ephrin signaling in the growth cone (Continuation)

Bernhard H.J. Juurlink, Ph.D., University of Saskatchewan, Saskatoon, SK, Glutamine and Quercetin as Therapeutic Interventions following Spinal Cord Injury

Scott T. Magness, Ph.D., University of North Carolina at Chapel Hill, Chapel Hill, NC, Characterizing SOX2 Function in Neural Stem Cell Induction, Maintenance and Regeneration Capacity Following Spinal Cord Injury

John H. Martin, Ph.D., Research Foundation for Mental Hygiene, New York, NY Engineering spinal connections to bypass spinal injury (Continuation)

Professor Stephen Brendan McMahon, FMedSci, PhD, King's College London, London, ENGLAND, Use of retinoic acid receptor beta2 to promote functional recovery after spinal cord injury

Dr. Steve I. Perlmutter, Ph.D., University of Washington, Seattle, WA, Function of Reflex Circuits in the Spinal Cord of Behaving Primates

Barbara Ranscht, Ph.D., The Burnham Institute, La Jolla, CA, Cadherins in establishing connectivity in the spinal cord (Continuation)

Stephen I Ryu, M.D., Stanford University School of Medicine, Stanford, CA, Enhancing the performance of cortically controlled prosthetic arm systems (Continuation)

Christine N. Sang, M.D., M.P.H., Harvard Medical School, Boston, MA, Sodium channel antagonists in the treatment of central neuropathic pain in patients following spinal cord injury (Continuation)

Elisabeth Schultke, M.D., University of Saskatchewan, Saskatoon, SK, Does administration of the flavonoid quercetin modulate glial scar formation after spinal cord injury?

Harold David Shine, Ph.D., Baylor College of Medicine, Houston, TX, Mechanisms of induced neuroplasticity in the lesioned spinal cord

Rajeev Sivasankaran, Ph.D., Children's Hospital, Boston, MA, Investigating the role of protein kinase C in axon regeneration (Continuation)

Richard Bernard Stein, Ph.D., University of Alberta, Edmonton, Alberta, Strengthening Connections By Functional Electrical Stimulation After Human Spinal Cord Injury

Charles Haskell Tator, Ph.D. M.D., The Toronto Western Hospital Research Institute, Toronto, ON, Transplantation of Adult Human Spinal Cord Stem/Progenitor Cells to the Injured Adult Rat Spinal Cord

Ina Beate Wanner, Ph.D, University of Miami School of Medicine, Miami, FL, Novel use of Schwann cell precursors to promote axonal regeneration across reactive astrocytes

Sung Ok Yoon, Ph.D., The Ohio State University, Columbus, OH, Role of p75 as the receptor regulating pro-apoptotic JNK3 and Rho activity after spinal cord injury

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Daniel C. Anthony, Ph.D., University of Southampton, Southampton, UK; Neutrophil-mediated damage in the spinal cord (continuation)

Bruce Appel, Ph.D., Vanderbilt University, Nashville, TN, Analysis of Oliogodendrocyte precursor migration in zebrafish

Nancy L. Brackett, Ph.D., HCLD, The Miami Project to Cure Paralysis, Miami, FL, Abnormal semen cytokine levels may be a reversible cause of infertility in men with spinal cord injury (continuation)

Jose M. Carmena, Ph.D., Duke University Medical Center, Durham, NC, Closed-loop brain-controlled prosthesis for recovery of upper-limb functionality in subjects with spinal cord injuries.

Stefan Clemens, Ph.D., Emory University, Atlanta, GA, Dopaminergic control of spinal cord function

Felicia Cosman, M.D., Helen Hayes Hospital, West Haverstraw, NY, Acute spinal cord injury: a randomized controlled trial to prevent bone loss.

Corinna Darian-Smith, Ph.D., Stanford University School of Medicine, Stanford, CA, Cervical dorsal root lesions in monkey: impairment of dexterity and plasticity of primary sensory neurons

Stephen Davies, Ph.D., Baylor College of Medicine, Houston, TX, An investigation of the ability of transplanted type 1 astrocytes to modify glial scar formation and promote axon regeneration after adult rat spinal cord injury (continuation)

Tatian Deliagina, Ph.D., Karolinska Institute, Stockholm, Spinal mechanisms for postural control and their activation (continuation)

Michael D. Ehlers, M.D., Ph.D., Duke University Medical Center, Durham, NC, Spatial regulation of endocytosis during growth cone migration and collapse

Abdeljabbar El Manira, Ph.D., Karolinska Institutet, Stockholm, Awaking locomotor networks by activation of endogenous modulatory receptors

Barry Festoff, M.D., University of Kansas Medical School, Kansas City, MO, Functional recovery by minocycline and its mechanism in acute spinal cord injury (continuation)

K. Christopher Garcia, Ph.D., Stanford University School of Medicine, Stanford, CA, Structural biology of Nogo receptor-ligand interactions

Professor Sten Erik Grillner, Ph.D., Karolinska Institutet, Stockholm, Mechanisms of modulation of the locomotor CPG – a synaptic, cellular and molecular analysis

Chenghua Gu, Ph.D., Johns Hopkins University School of Medicine, Baltimore, MD, Semaphorin/neuropilin signaling during development and adult CNS regeneration

Susan Harkema, Ph.D., UCLA, Los Angeles, CA, The effects of stand training on standing, stepping, and bone mineral density after clinically complete spinal cord injury (continuation)

Alex L. Kolodkin, Ph.D., The Johns Hopkins University School of Medicine, Baltimore, MD, Redox signaling and semaphorin repulsion in axon regeneration (continuation)

Ana Martin-Villalba, M.D., Deutsches Krebsforschungszentrum, Heidelberg, Blocking of CD95-Ligand-Induced cell death to treat spinal cord injured patients

Cristina Lavinia Sadowsky, M.D., Washington University in St. Louis, St. Louis, MO, Effects of an Activity-Based Therapeutic Program on Physical Health and Quality of Life in Persons with Spinal Cord Injuries

Jeffrey Macklis, M.D., D.HST, Harvard Medical School, Boston, MA, Induction of neurogenesis of cortico-spinal projection neurons in adult mice (continuation)

Thomas Misgeld, M.D., Washington University School of Medicine, St. Louis, MO, Spinal cord injury in the spotlight: Imaging spinal cord transection in vivo (continuation)

Matt Ramer, Ph.D., University of British Columbia, Vancouver, British Columbia, CA; Improving neurotrophin-mediated sensory regeneration in the spinal cord through antagonism of the p75 receptor (continuation)

W. Zev Rymer, M.D., Ph.D., Rehabilitation Institute of Chicago, Chicago, IL, Effects of robotic vs. manual assistance on locomotor recovery in humans following motor incomplete spinal cord injury (continuation)

Peter A. Smith, Ph.D., University of Alberta, Edmonton, Alberta, Spinal neuropathic pain, the signal and the message (continuation)

Wolfram Tetzlaff, M.D., Ph.D., University of British Columbia, Vancouver, BC, Cell body treatment for the promotion of spinal cord regeneration (continuation)

Mark H. Tuszynski, M.D., Ph.D., University of California, San Diego, La Jolla, CA, Nerve guidance channels for spinal cord injury

Scott Whittemore, Ph.D., University of Louisville, Louisville, KY, Stem cell repair of spinal cord injury

Sara Ivy Wilson, Ph.D., Columbia University, New York, NY, Spinal Commissural Neurons: Functional Development and Circuitry

Xiaorong Xu, Ph.D., University of Rochester, Rochester, NY, Assuring conduction in spinal motor neurons

E. Paul Zehr, Ph.D., University of Alberta, Edmonton, Alberta, CA; Cutaneous nerve stimulation to reduce spasticity and improve motor coordination after spinal cord injury (continuation)

2003 $1,975,950.10 (1st Cycle Competing Awards)

William A. Barton, Ph.D., Sloan Kettering Institute, New York, NY, Structural study of Nogo, NogoR and p75NTR

Michael S. Beattie, Ph.D., The Ohio State University, Columbus, OH, TNF-alpha effects on AMPA receptor recycling and secondary spinal cord injury (Continuation)

Catherina G. and Thomas Becker, Center for Molecular Biology, Hamburg, Supraspinal determinants of functional recovery after spinal cord transection in adult zebrafish (Continuation)

Prodip Bose, M.D., Ph.D., University of Florida, Gainesville, FL, Mechanisms underlying locomotor recovery induced by locomotor training (Continuation)

Valeria Cavalli, Ph.D., University of California, San Diego, La Jolla, CA, Role of the kinesin receptor Sunday Driver (syd) in axonal transport and JNK signaling following nerve injury (Continuation)

Alain Chedotal, Ph.D., Batiment Kourilsky, Paris, Role of Sema4D/CD100 in axonal regeneration (Continuation)

Gerald R. Crabtree, M.D., Stanford University School of Medicine, Stanford, CA, Understanding and recapturing patterns of embryonic neurite outgrowth

Denise Dixon, Ph.D., UMDNJ, Newark, NJ, Sympathetic nervous system (SNS) dysregulation and diminished cellular immunity in spinal cord injury (Continuation)

Paul Dolber, Ph.D., Duke University Medical Center, Durham, NC, Serotonergic therapy for bladder dysfunction in spinal cord injury (Continuation)

David D. Fuller, Ph.D., University of Wisconsin, Madison, WI, Plasticity in spinal respiratory pathways following treadmill exercise

Francis John Golder, DVM PhD DACVA, University of Wisconsin, Madison, WI, Respiratory functional recovery after cervical spinal cord injury: strengthening existing synaptic pathways

David I. Gottlieb, Ph.D., Washington University, St. Louis, MO, ES Cell-derived spinal cord cells (Continuation)

Barbara Grimpe, Ph.D., Case Western Reserve University, Cleveland, OH, Xylosyltransferase 1, the GAG-chain initiating enzyme, and the use of bridge-building Schwann cells to stimulate regeneration in the spinal cord

Bryan C. Hains, Ph.D., Yale University School of Medicine, West Haven, CT, Sodium channels and pain after spinal cord injury

Mark Henkemeyer, Ph.D., University of Texas Southwestern Medical Center, Dallas, TX, Eph-Ephrin signaling in the growth cone

Carole Ho, M.D., Stanford University, Stanford, CA, Identification and characterization of neuronal regeneration associated genes induced by cAMP and laminin by expression profiling

Jonathan Ivins, Ph.D., The University of Texas Health Science Center at Houston, Houston, TX, A combinatorial aproach to overcoming growth inhibition in the spinal cord (Continuation)

David W. Koh, Ph.D., The Johns Hopkins School of Medicine, Baltimore, MD, The role of poly(ADP-ribose) glycohydrolase in spinal cord cell death (Continuation)

Shuxin Li, M.D., Ph.D., Yale University School of Medicine, New Haven, CT, Combined therapies to promote axonal regeneration of injured spinal cord: nogo-66 receptor inhibition and olfactory ensheathing cell transplantation (Continuation)

John H. Martin, Ph.D., Research Foundation for Mental Hygiene, New York, NY
Engineering spinal connections to bypass spinal injury

Mehdi M. Mirbagheri, Ph.D., Rehabilitation Institute of Chicago, Chicago, IL, Tizanidine decreases reflex stiffness and increases reflex threshold, while improving gait speed

Sergei Prokopenko, Ph.D., Emory University School of Medicine, Atlanta, GA, Signaling pathways of Derailed axon guidance receptor controlling a choice of commissures in the central nervous system

Barbara Ranscht, Ph.D., The Burnham Institute, La Jolla, CA, Cadherins in establishing connectivity in the spinal cord

Stephen I Ryu, M.D., Stanford University School of Medicine, Stanford, CA, Enhancing the performance of cortically controlled prosthetic arm systems

Christine N. Sang, M.D., M.P.H., Harvard Medical School, Boston, MA, Sodium channel antagonists in the treatment of central neuropathic pain in patients following spinal cord injury

Lonnie D. Shea, Ph.D., Northwestern University, Evanston, IL, Guidance channels for controlled gene delivery (Continuation)

Rajeev Sivasankaran, Ph.D., Children's Hospital, Boston, MA, Investigating the role of protein kinase C in axon regeneration

Ernest F. Terwilliger, Ph.D., Harvard Institutes of Medicine, Boston, MA, Targeting therapeutic gene transfer to spinal cord motor neurons