



# International Symposium on Neural Regeneration “ISNR”

The Ninth International Symposium on Neural Regeneration will be held at the Asilomar Conference Center in Pacific Grove, California from December 12-16, 2001. The meeting will be co-sponsored by the US Department of Veterans Affairs (Medical Research Service), the Paralyzed Veterans of America (Spinal Cord Research Foundation), the National Institutes of Health (National Institute of Neurological Disorders and Stroke), the Christopher Reeve Paralysis Foundation and the Eastern Paralyzed Veterans Association.

The keynote speaker for this year's symposium will be Corey Goodman from the University of California, Berkeley. Featured talks will be given by Paul Letourneau from the University of Minnesota and Larry Benowitz from Harvard Medical School and Boston's Children's Hospital. Following the format preceding neural regeneration symposia, the program is divided into six sessions, including: 1) Targeted Axonal Growth/Regeneration in the PNS, chaired by Ronald Oppenheim; 2) Human Cells for Transplantation, chaired by Mahendra Rao; 3) Neuron-Glia Interactions and Synaptic Plasticity,

chaired by Platon Kostyuk; 4) Signaling Pathways in Neural Plasticity, chaired by Joseph Neary; 5) Neurogenesis in the Adult, chaired by Fernando Nottebohm; and 6) Emerging Topics in Regeneration, chaired by Oswald Steward. The speakers for each of these sessions and their titles are given in the program on the following pages.



The complete list of speakers and titles for each scheduled session is also available on the Neural Regeneration Website at <http://www.harvard.org/neural/neural.htm>. Please see the News Comments section later in this newsletter for additional information about the website.

Free communication will be presented in the form of posters. Two poster sessions have been scheduled, one on Thursday afternoon, December 13 and one on Friday afternoon, December 15. Symposium registrants are invited to submit poster abstracts, the deadline for which is October 1. An individual may be the first author on only one poster, but a laboratory group may submit more than one abstract.

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# The Director's Chair



Roger Madison

## Where We've Been and Where We're Going

The International Neural Regeneration Symposia began in 1985, and has been held on a biennial basis since that time. The primary sponsor has been the Department of Veterans Affairs, with the NIH continuously co-sponsoring the symposia since 1987. In more recent years, generous support has also been given by the Paralyzed Veterans of America, the Christopher Reeve Paralysis Foundation and the Eastern Paralyzed Veterans Association; all of whom co-sponsored the 1997 and 1999 symposia. The 2001 symposium will be the ninth meeting in this series.

Dr. Roger Madison recently took over the directorship of the symposium. Dr. Fredrick Seil, from the VA Office of Regeneration Research Programs in Portland, has been directing the meetings since 1985. He retired at the end of this July (2001), and Dr. Madison was selected by Veterans Affairs Central Office to take over the responsibility of all aspects of the symposium. Although Dr. Seil has "officially" retired, he remains quite active with the planning aspects of the symposium through his key participation on the symposium Planning Committee, and he will certainly be in attendance at the upcoming symposium.

The primary purpose of the symposium is to present current work in neural regeneration, especially in those areas of research in which there has been some notable recent progress or in which some particularly interesting issues have been raised. A secondary purpose is to foster an atmosphere that is both stimulating and conducive to a free interchange of ideas among investigators, or between seasoned investigators and students. These International Neural Regeneration Symposia have become an established, regularly occurring event with high attendance by both students as well as internationally recognized experts in the field of neural regeneration.

For those who are not familiar with the meeting format, the following

material should help to paint a picture of the symposium. The International Symposium on Neural Regeneration has a single session format, including morning, late afternoon and evening presentations, with afternoons free to view posters or relax in pleasant natural surroundings or have a quiet discussion with one or more colleagues and/or students. This format has proven to be quite successful in terms of maximizing interactions among participants. During the previous eight symposia a great deal of interchange took place at these symposia among scientists, among scientists and students, and among scientists and clinicians.

The morning sessions each include an introductory overview by the session chairman (15 minutes) and six speakers (20-25 minutes each, followed by a 5-10 minute question/discussion period). The two evening and one late afternoon sessions are similarly organized, except that there are four rather than six speakers per session. The major topics for each symposium are chosen for their timeliness, current interests, and recent progress. Also a factor is their novelty to the symposium, in the sense that these areas of research will not have been covered in depth in recent symposia. Session speakers are chosen on the basis of the contribution they can make to a session and the "cutting edge" quality of their work in a particular area. An attempt is made to balance the subject matter covered in a session.

### Student Support

The Eastern Paralyzed Veterans Association (EPVA) has again provided funds for partial support of symposium attendance by graduate students, postdoctoral fellows or clinical residents in training.

#### Applications for support should include the following:

- 1) A letter indicating the applicant's area(s) of scientific interest and what benefits he/she would expect to attain from attending the symposium;
- 2) A curriculum vitae or resume;
- 3) A letter from the training director both in support of the applicant and verifying the applicant's training status.

While presentation of a poster is not a requirement for an award, a statement of intent to present a poster accompanied by a poster abstract will enhance an application. Applications must be received by Sept. 15, 2001 and should be sent to Dr. Madison at the same address as the Symposium Registration materials listed in this newsletter. Applicants will be notified of the evaluating committee's decision before Oct. 28. Women and minority students are invited and encouraged to apply.

### Symposium Proceedings

Abstracts of the symposium proceedings including both oral and poster presentations will be published following the conclusion of the conference. Chapters based on the oral presentations will be published in book format as a single volume. Presentation information will also be available on the symposium website.

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# ISNR Schedule of Events

## Wednesday - December 12, 2001

### Afternoon Session

3:00-6:00 PM Arrival of participants and Check-in

6:00 PM Dinner

7:30 PM Welcome and Keynote Address

### Keynote Speaker:

**Corey Goodman (University of California, Berkeley)**  
**Molecular Mechanisms that Control Axon Growth and Guidance and Implications for Axon Regrowth after Injury**

## Thursday - December 13, 2001

### Morning Session

**Targeted Axonal Growth/Regeneration in the PNS**  
**Chairman: Ronald Oppenheim (Wake Forest University)**

8:15 AM Chairman's Introduction

8:30 Wolfram Neiss (University of Cologne, Germany)  
 The misdirection of reinnervation after peripheral nerve suture and chances of its therapy

9:00 Roger Madison (Durham, NC VAMC / Duke University)  
 Preferential Motor Reinnervation and PNS Regeneration

9:30 Michael Laskowski (University of Idaho)  
 Reinnervation of muscle: Cues that guide synaptic choices

10:00 Break

10:30 Christian Krarup (Copenhagen, Denmark)  
 The influence of the near nerve environment on the rate of elongation in the cat

11:00 William Snider (University of North Carolina, Chapel Hill)  
 Roles of growth factor signaling in developmental and regenerative sensory axon growth

11:30 Julia Terzis (Eastern Virginia Medical School)  
 Neural Regeneration Following End-to-Side Coaptation:  
 A Basic Science and Clinical Review

Noon Lunch

1:00 Poster Session 1

5:00 Featured Speaker: Paul Letoumeau (University of Minnesota)  
 Guiding growth cone navigation: stop and go in complex environments

6:00 Dinner

### Evening Session

**Human Cells for Transplantation**  
**Chairman: Mahendra Rao (University of Utah)**

7:15 PM Chairman's Introduction

7:30 Steven Goldman (Cornell University Medical College)  
 Neural progenitor cells of the adult human brain

8:00 Evan Snyder  
 (Harvard Medical School/Children's Hospital, Boston)  
 The biology of neural stem cells may make them uniquely suited for neural regenerative processes

8:30 Melissa Carpenter (Geron Corporation, Menlo Park, CA)

9:00 Ian Duncan (University of Wisconsin)  
 Myelinating cells for transplantation and myelin repair; comparative aspects of human versus animal cells

## Friday - December 14, 2001

### Morning session

**Neuron-Glia Interactions and Synaptic Plasticity**  
**Chairman: Platon Kostyuk (Bogomoletz Institute of Physiology; Kiev, Ukraine)**

8:15 AM Chairman's Introduction

8:30 Ian Wishaw (University of Lethbridge; Canada)  
 The relation between neuron-glia plasticity and behavior

9:00 Bryan Kolb (University of Lethbridge; Canada)  
 Neurotrophic factors, synaptic plasticity, and recovery from cortical injury

9:30 Micheva Matteoli (University of Milan; Italy)  
 Glutamate-glutamine shuttling at the hippocampal synapse

10:00 Break

10:30 Bruce Ransom (University of Washington School of Medicine)  
 Glial modulation of neural excitability mediated by extra cellular pH

11:00 Harald Sontheimer (University of Alabama, Birmingham)  
 Modulation of neurotransmission by astrocytic regulation of perisynaptic glutamate

11:30 Harry Goshgarian (Wayne State University)  
 Activity-dependent plasticity in the rat phrenic nucleus following reversible hemispinalization of the cervical spinal cord by a cooling device

Noon Lunch  
 (Breakout lunch presentation for interested attendees by Dr. Donald Fink of the FDA: Regulatory Issues of Clinical Trials)

5:00 PM Featured Speaker: Larry Benowitz (Harvard Medical School/Children's Hospital)  
 Apurine-sensitive switch regulates the axon growth program of CNS neurons

6:00 PM Dinner

### Evening Session

**Signaling Pathways in Neural Plasticity.**  
**Chairman: Joseph Neary (VA Medical Center, Miami and University of Miami)**

See **SCHEDULE** Page 7

## Symposium Website

The Internet address for the Ninth International Neural Regeneration Symposium web site is [www.vard.org/neural/neural.htm](http://www.vard.org/neural/neural.htm). It features information on the conference, registration, abstract submission, contacts and student travel awards. You will also find a list of scheduled guest speakers, a copy of the 2000 and 2001 Regeneration Research Newsletters, pictures from prior symposia and previous conference information. There are also links to the symposium sponsors, PVA, EPVA, NIH and the Christopher Reeve Paralysis Foundation.

## Symposium Session Proposals

We would encourage potential contributors to begin thinking now of ideas for a session for the Tenth International Symposium on Neural Regeneration, which will be held at the Asilomar Conference Center in December, 2003. Session proposals are due by July 1, 2002 so they can be reviewed by the program planning committee at its meeting in late July or August of next year. The program planning committee meets well in advance of the symposium in order to allow adequate time for application for symposium support funds after a program has been generated. The format for a session proposal is also available from our office, and the format must be followed for a proposal to be duly considered.

## Planning Committee

Members of this year's program planning committee include Drs. Susan Bryant (University of California, Irvine), Mary Bartlett Bunge (University of Miami), Edward Hall (Parke-Davis Pharmaceutical Research, Ann Arbor), Roger Madison (VAMC, Durham, Duke University), Marston Manthorpe (Vical, Inc., San Diego), Ken Muneoka (Tulane University), Fredrick Seil (VAMC, Portland) and John Steeves (University of British Columbia). Guest attendees representing co-sponsoring institutions at the planning committee meeting were Drs. Vivian Beyda (EPVA), Arlene Chiu (NIH-NINDS), Michael Cohen (VA, Medical Research Service) and Jeffery Kocsis (VAMC, West Haven, Yale University). The committee members would like to thank all of those from outside the committee who sent in symposium session proposals for review.

## SYMPOSIUM Continued From Page 1

Abstract forms will be sent to all registrants who indicate on the registration form that they plan to submit an abstract. If abstract submissions exceed available poster space, abstracts that have been received by October 1 will be reviewed by an ad hoc committee for selection for presentation and abstracts received after October 1 will not be considered.

Similar to past symposia, talks are scheduled for morning, late afternoon and evening sessions, with afternoons free for viewing posters or for the multitude of activities available on the conference center grounds or in the surrounding area. The Asilomar Conference Center is a state of California facility located in Pacific Grove, just south of Monterey and about 100 miles south of San Francisco. Asilomar State Beach is across the road from the conference center and is quite inviting for pleasant walks or spectacular views of the coast. Local attractions include the Monterey Bay Aquarium on Cannery Row, the Museum of Natural History, Point Pinos Lighthouse and the Pacific Grove Art Center, which showcases local, regional and international talent. To the south of Pacific Grove is 17-mile drive and Pebble Beach golf course. Further south is Carmel and site of the Carmel Mission, which was founded by Father Junipero Serra in 1770. Carmel also hosts numerous art galleries and unique shops. Within driving distance is Point Lobos State Reserve where hundreds of different animal and bird species have been identified. A spectacular event in nature occurs December to April when the migration of the Pacific gray whale takes place. The weather is generally warm and sunny in December, although evenings can be cold and rain is always possible. Dress at Asilomar is casual.

Space is limited at the conference center, and early registration is advised. Rooms and meals are on a package basis. Most rooms are for occupancy by two or more people and sharing arrangements are encouraged, which

will reduce the cost per individual. Day use arrangements are possible, but these are on a fee basis, and also require registration. To register, please detach or photocopy the registration form in the newsletter and fill in the appropriate information. Include a check or money order (purchase orders or credit cards cannot be accepted) for the appropriate registration fee(s) in US dollars made out to Regeneration Research Symposium and mail it to the Office of the International Symposium on Neural Regeneration at the address below.

Upon receipt of your registration form and fee, we will forward the forms and information for making your lodging arrangements directly with Asilomar. Please do not attempt to contact the conference center directly without having registered. The registration fee is \$75 for conference attendees, \$30 for graduate or post-doctoral students or residents in training (a letter from the program director verifying the training status is required for qualification for the student registration rate), and \$15 for accompanying persons not attending the symposium, but planning to participate in the social activities, including the symposium banquet. Attendance at and participation in the symposium by minorities and women is invited and encouraged.

## Any Questions?

**Questions about the symposium should be addressed to the International Symposium on Neural Regeneration at the following address:**

**Roger Madison, Ph.D., Director  
International Symposium on  
Neural Regeneration  
VA Medical Center  
(Bldg. 16/Room 38)  
508 Fulton Street  
Durham, NC 27705 USA**

**Phone: (919) 286-0411, ext. 7691  
Fax: (919) 286-6811  
E-mail: [rdm100@duke.edu](mailto:rdm100@duke.edu)**

# A Look At What's New In Xi'an

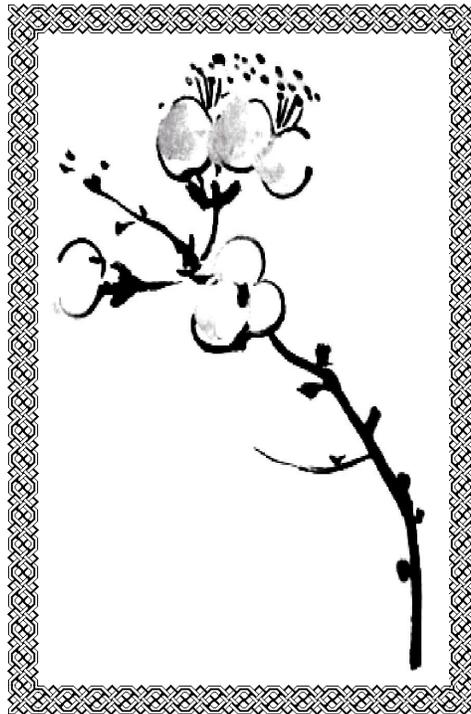
## Report on the Second Asia Pacific Symposium on Neural Regeneration

by Fredrick Seil

The Second Asia Pacific Symposium on Neural Regeneration was held at the Sheraton Hotel, Xi'an, China from November 30 to December 2, 2000. The meeting was cosponsored by: The Fourth Military Medical University (Xi'an, China); the Eastern Paralyzed Veterans Association (USA); the Paralyzed Veterans of America; the VA Office of Regeneration Research Programs (USA); The University of Western Australia; and by contributions from Sir Harry Fang (Hong Kong, China) and from the Leica, Nikon and Olympus Corporations. The symposium was organized by Dr. Gong Ju (The Fourth Military Medical University), with outstanding assistance from two symposium secretariats, Ms. Yu Liu (The Fourth Military Medical University) and Dr. Vera Yip (The University of Hong Kong). The local organizing committee, which was chaired by Dr. Ju, also included Drs. Zuo-Jing Luo, Guo-Xiong You and Si-Wei You from The Fourth Military Medical University. The program planning committee was chaired by Dr. Fredrick Seil (VA Office of Regeneration Research Programs) and cochaired by Dr. Kwok-Fai So (The University of Hong Kong). Committee members included Drs. Lyn Beazley, Sarah Dunlop and Alan Harvey of The University of Western Australia, Yutaka Fukuda (Osaka University), Gong Ju, Geoffrey Raisman (National Institute for Medical Research, London) and Frank Yatsu (University of Texas, Houston). The symposium advisory committee consisted of Dr. Bo Su, President of The Fourth Military Medical University, and Sir Harry Fang.

The symposium included a keynote address, nine featured lectures, and platform presentations grouped under four main headings: Development and Plasticity of the Nervous System, chaired by Dr. Dunlop; Visual System Injury and Repair, chaired by Dr. So; Spinal Cord Injury and Repair, chaired by Dr. Ju; and Functional Recovery After Stroke, chaired by Dr. Yatsu. Posters covering these and additional topics were on display throughout the meeting.

The keynote address, entitled "Neural Repair 2000 - What is the Promise?", was delivered by Dr. Albert Aguayo (McGill University). Dr. Aguayo discussed some of the recent advances in regeneration research, including the development of new neurons and glia from stem cells and increased understanding of molecular mechanisms involved in synaptic plasticity, neuronal remodeling and pathway and tar-



get recognition, and also reviewed some of his work with peripheral nerve bridges for central axon regeneration.

Featured lectures were presented by Drs.: Fredrick Seil, "Neurotrophins BDNF and NT-4 Promote Activity-Dependent Inhibitory Synaptogenesis"; Ian Duncan, University of Wisconsin, "Transplantation of Glial Cells as a Means of Promoting CNS Repair"; Yutaka Fukuda, "Regeneration of Retinal Ganglion Cell Axons and Functional Recovery of Vision in Adult Animals"; Sarah Dunlop, "Up-Regulation of Ephrin A2 During Optic Nerve Regeneration and After Optic Nerve Lesion"; Mu-ming Poo, University of California, Berkeley, "Cyclic Nucleotide-Dependent Modulation of Axon Guidance by Diffusible Factors"; Michal

Schwartz, The Weizmann Institute of Science, Rehovot, "ABeneficial T-Cell-Mediated Response Evoked by CNS Injury: Prospects for Vaccination for Therapy"; Henrich Cheng, Taipei Veterans General Hospital, "Recent Development of the Research for CNS Repair"; Timothy Schallert, University of Michigan, "Use-Dependent Neural Events and Recovery of Function"; and Jacques Hugon, University of Hong Kong, "Alzheimer's Disease, Apoptosis and Neuroprotection".

Abroad spectrum of regeneration research was covered in the four Platform Sessions and 68 posters on display during the symposium. In addition to presentations given by international speakers, several other biomedical institutions in China were represented, including: Beijing Institute of Neurosurgery; Beijing Medical University; Beijing Military Medical College; China-Japan Friendship Hospital, Beijing; Chongqing University of Medical Sciences; Fudan University, Shanghai; Harbin Medical University; Hubei Medical Sciences, Beijing; Jining Medical College; Kunming Medical College; Nantong Medical College; Shandong Medical University, Jinan; Shanghai Institute for Biological Sciences; Shanghai Second Medical University; The First Military Medical University, Guangzhou; The Second Military Medical University, Shanghai; The Third Military Medical University, Chongqing; Tianjin Medical University; and West China University of Medical Sciences, Chengdu.

Following the oral and poster presentations, 6 papers by young scientists/students were selected by a committee chaired by Dr. Harvey for an award for merit. The awards were presented during the banquet that concluded the symposium.

Over 100 participants were present at the meeting, about half from within and half from outside of China. Countries represented by symposium presenters included

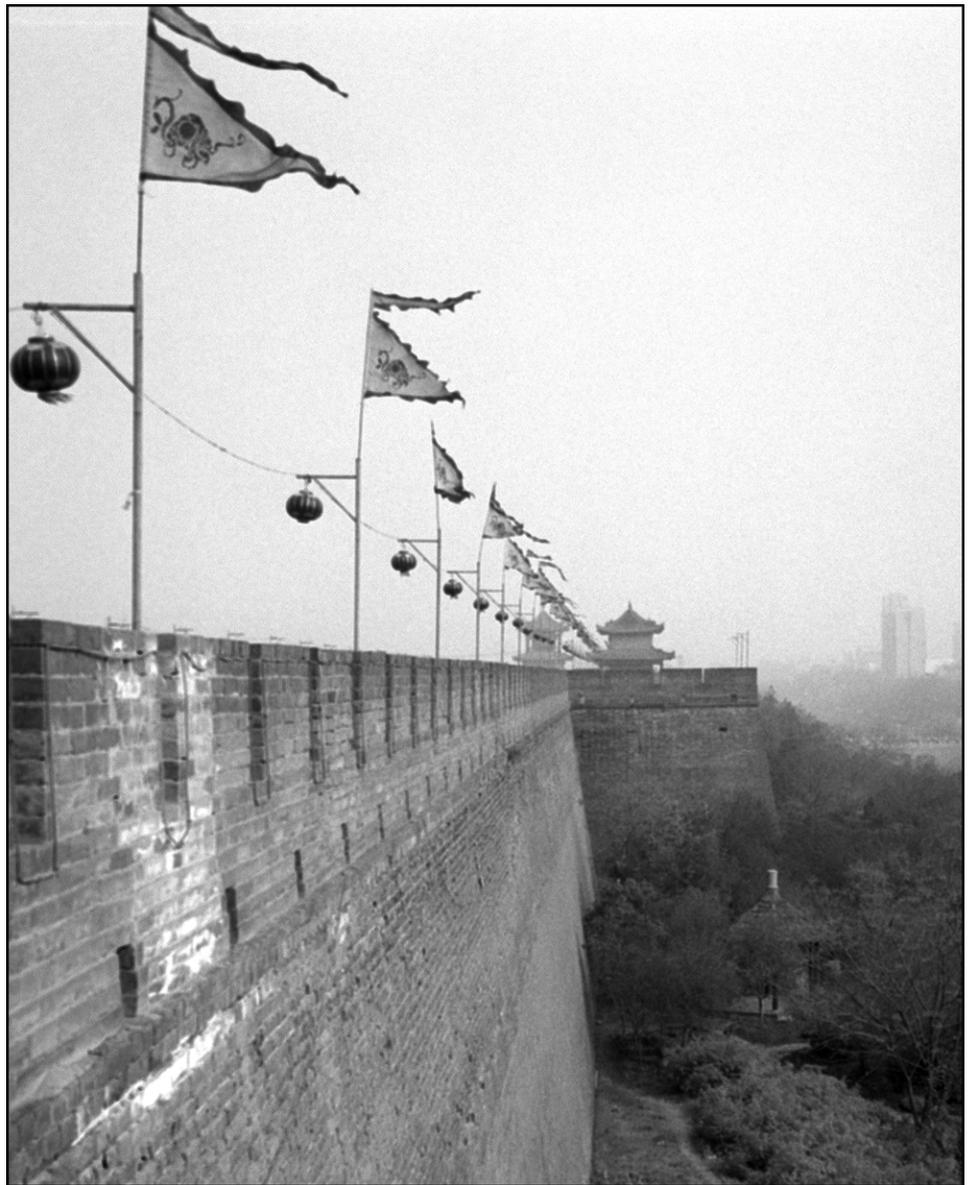
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## XI'AN

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Australia, Canada, China, France, Israel, Japan and the USA. As with the first of these conferences, the Second Asia Pacific Symposium on Neural Regeneration provided a forum for an exchange of ideas between regeneration neuroscientists from different parts of the world and also gave students an opportunity to interact with established investigators representing different disciplines in regeneration research. One of the informal delights of the meeting, in addition to exploring Xi'an, was a tour of the archeological site of the terra cotta warriors that date to the reign of Emperor Qin Shi Huang, the first ruler to unify China more than 2000 years ago. Over 3000 of the life-size figures have been excavated to date, and each represents an individual member of the Emperor's imperial guard. Permission is currently being awaited from Beijing to excavate the nearby tomb of the Emperor, which will probably yield some additional dramatic discoveries.

The symposium will continue to be scheduled on alternate years from the International Symposia on Neural Regeneration held at the Asilomar Conference Center in Pacific Grove, California, the next of which will be in December of this year. The Third Asia Pacific Symposium on Neural Regeneration is planned for December, 2002 in Perth, Australia, and program and registration information will be available in the June, 2002 issue of this newsletter.



## *A Glimpse at Xi'an*

*Above: Flags and lanterns sway atop the wall bordering the old city of Xi'an.*

*At Left: Rows of terra cotta warriors stand in stony silence at the excavation site.*

## SCHEDULE

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- 7:15 PM Chairman's Introduction  
7:30 Bruce Gold (Oregon Health Sciences University)  
FKBP-52/Hsp-90 Steroid Receptor Chaperones and ERK  
Signaling in the Regulation of Nerve Regeneration  
8:00 Joseph Avruch (Harvard Medical School)  
Signaling output of the Ras GTPase  
8:30 Lisa McKerracher (University of Montreal, Canada)  
Overcoming growth inhibition in the CNS: use of  
Rho antagonists  
9:00 Seth Finkelstein (Harvard Medical School)  
The Role of Growth Factors in Repair and Recovery from  
Brain Injury and Stroke

### Saturday - December 15, 2001

#### Morning Session

##### Neurogenesis in the Adult

Chairman: **Fernando Nottebohm (Rockefeller University)**

- 8:15 AM Chairman's Introduction  
8:30 Jeffrey Macklis (Harvard Medical School)  
Induction of Neurogenesis in the neocortex of adult mice  
9:00 Theodore Palmer (Stanford University)  
Microenvironments and Neural Stem Cells in the Adult  
Brain  
9:30 Marla Luskin (Emory University)  
Factors controlling the proliferation and migration of neuronal  
progenitor cells in the postnatal mammalian forebrain  
10:00 Break  
10:15 Anne Calof (University of California, Irvine)  
Bone Morphogenetic Proteins: Multifunctional Regulators  
of Neurogenesis  
10:45 Jack Parent (University of Michigan)  
Adult Neurogenesis in Animal Models of Epilepsy and  
Stroke  
11:15 Pasko Rakic (Yale University)  
Adult Neurogenesis in Primates: Controversies and  
Potential  
11:40 Round Table: Chaired by Pasko Rakic (Yale University)  
Noon Lunch  
1:00 PM Poster Session 2

#### Afternoon Session

##### Emerging Topics in Regeneration

Chairman: **Oswald Steward (University of California, Irvine)**

- 4:15 PM Chairman's Introduction  
4:30 Michael West (Duke University)  
Issues in the analysis of microarray data  
5:00 To be announced  
5:30 To be announced  
6:00 To be announced  
6:30 PM Symposium Banquet

### Sunday - December 16, 2001

Departure of Participants

# Another Look at Asilomar



Symposium Registration Form

*Ninth International Symposium on Neural Regeneration*  
**December 12-16, 2001**  
*Asilomar Conference Center, Pacific Grove, CA, USA*

Upon receipt of payment with this registration form you will be sent an Asilomar housing registration form.  
An abstract form will be sent if you have indicated that you plan to present a poster.

REGISTRATION FORM - NINTH INTERNATIONAL NEURAL REGENERATION SYMPOSIUM  
December 12-16, 2001 \* Asilomar Conference Center \* Pacific Grove, CA

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

E-mail: \_\_\_\_\_

I plan to present a poster  Yes  No (Abstract Deadline is October 1, 2001)

Enclose a check/ money order made out to:  
"Regeneration Research Symposium" to cover the following --

Registration fee (regular)	\$75	_____
Registration for accompanying person (not attending the conference)*	\$15	_____
Registration for a student, fellow or resident (with letter from training director)	\$30	_____

TOTAL \$ \_\_\_\_\_

\* Name of accompanying person \_\_\_\_\_

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(we cannot process International or Canadian checks or money orders).*

**Mail this form plus payment to:**

Roger Madison, Ph.D., Director  
International Symposium on Neural Regeneration  
VA Medical Center (Bldg. 16/Room 38)  
508 Fulton Street  
Durham, NC 27705 USA