



**Direction**

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**Advisory Committee**

**Gerald Chader**

University of Southern California Keck School of Medicine  
and Doheny Eye Institute, California, USA

**Edward H. Overstreet**

Advanced Bionics Corporation, California, USA

**Arturo Santos**

University of Guadalajara  
Guadalajara, Mexico

**Sponsors**

National Science Foundation, USA  
Department of Energy, USA  
Ministry of Science and Technology, Argentina

**Objectives**

The PASI objective is to bring together scientists with interdisciplinary expertise on biomaterials, chemistry, materials science, physics, microelectronics, biologists and medical doctors with expertise on eye and ear surgery and implantation of neural prosthesis for restoration of vision and hearing in impaired people. The main goal is to advance the knowledge to develop a new generation of advanced neural prosthesis.

**Institute Overview**

- Lectures (2 hrs each) and invited talks (1 hr each) on focused topics presented by experts in the fields addressed in the PASI.
- Talks by students selected from abstracts submitted with application
- Poster sessions for student presentation.s
- Round discussion tables and one-to-one discussions.

**General Information**

- Attendance will be limited to about 36 students from the USA and Latin American Countries .
- The working language of the PASI will be English .
- Travel and living expenses will be covered by scholarships from NSF DOE (USA) and the Ministry of Science and Technology (Argentina )
- Participants will arrange for their own Passport and Visa to enter Argentina..
- The weather in Bs As is mild in August, with temperature s of 15-20 °C.

**Scientific Program**

**Fundamentals of Sensory and Motor Physiology**

Fundamentals of Vision Physiology - G. Chader, Univ. Southern of California, USA (2 hrs)  
Fundamentals of Hearing Physiology –M. Ruggero, Northwestern University, USA (2 hrs)  
Fundamentals of Neuron Physiology – G. Aguirre, Univ. of Pennsylvania, USA (2 hrs)  
Fundamentals of Human Visual System Adaptation - I. Fine, Univ.of Washington, USA (1 hr ).  
Fundamentals of Retina Degeneration – A.M. Suburo, Universidad Austral, Argentina (1 hr)

**Fundamentals of Materials for Neural Prostheses**

Fundamentals of Carbon-Based Coatings for Neural Prostheses – O. Auciello, Argonne National Laboratory, USA (2 hrs)  
Fundamentals of Oxide Bioinert/Biocompatible Coatings for Neural Prostheses – B. Mech, Second Sight, Sylmar, USA (2 hrs)  
Fundamentals of Polymers for Neural Prostheses – X. T. Cui, Univ. of Pittsburgh, USA (2 hrs)

**Fundamentals of Neural Prostheses and Implantation**

Artificial Retina – M. Humayun, Univ. of Southern California,. USA (2 hrs)  
Cochlear Implant– E. H. Overstreet, Advanced Bionic Corporation, USA (2 hrs)  
Microelectronics for Artificial Retina – W. Liu, Univ. of California-Santa Cruz, USA (1 hr)  
Characterization of Electrical and Biological Performance of Neural Prostheses – E. Greenbaum, Oak Ridge National Laboratory (1 hr)  
Computer Simulation of Electrode Stimulation in Retina Implants – G. Lazzi, NCSU, USA (1 hr)  
Computer Simulations of Electrode Stimulation in Cochlear Implant – J. Rubinstein, University of Washington, Seattle, USA (1 hr)  
Microelectronics for Artificial Retina – W. Liu, University of California-Santa Cruz, USA (1 hr)

**Surgical Procedures for Neural Prostheses Implantation (2 hours)**

Surgical Procedures for Retinal Implantations and Relationship to Prostheses Materials  
A. Santos, University of Guadalajara, Mexico (1 hr)  
Surgical Procedures for Cochlear Implantation and Relationship to Prostheses Materials  
F. R. Orellano, Universidad Católica de Córdoba, Argentina (1 hr)

**Biological Approaches for Neural Prostheses (7 hours)**

Retinal Stem Cells – M. Young, Harvard Medical School, USA (2 hrs)  
Fundamentals of Molecular/Cell Biology and Interactions with Inorganic Surfaces-Intervention Biology, Shaping Prostheses Research – L. Chen, Rush Medical University, USA (2 hrs )  
Stem Cell Growth on Inorganic Platform Materials and Differentiation into Retinal Photoreceptors – B. Thomas, University of Southern California, USA (1 hr)  
Synthesis and Conditioning of Diamond Surfaces for Stem Cell Growth- B. Shi, Argonne National Laboratory (1 hr)  
Cell-related treatment of Cornea- A.. Berra (1 hr)

**Social Program**

- Saturday, August 8: Visit to Argentine “Stancia “, Argentina “Asado” (barbeque) , demonstration of “Gauchos skills, and show of Argentina Folklore
- Sunday, August 9: Free time to visit Buenos Aires
- Wednesday, August 12: Farewell Banquet

**How to Apply for Scholarship and Participation  
(Deadline: July 1, 2009)**

**Send application via e-mail or the Web site (see address below)**

Include the following information:

- Full Name
- Position (e.g., graduate student , postdoc, researcher)
- Sex (for the purpose of room sharing assignments)
- Institution :
  - Name and address (street address, city, postal code, country)
  - e-mail, phone number , fax number

Explain why you want to participate

Provide CV and title and abstract of talk or poster you may want to present at the PASI, and indicate type of presentation desired

Graduate students and postdoctorals should include a letter of recommendation from their advisors

Visit the PASI website at:

<http://web.austral.edu.ar/cienciasBiomedicas-programas-32.asp>

**Financial Support**

**Sponsors**

- National Science Foundation , USA
- Department of Energy, USA

**Other Financial Support**

- TBD

**Endorsements**

The PASI is endorsed by the Materials Research Society (USA).

**Venue**

**Hospital Austral, Pilar  
Buenos Aires, Argentina**

