Thirty Fourth Neural Prosthesis Workshop

October 21-23, 2003
Natcher Auditorium on the NIH campus in Bethesda, MD

National Institute of Neurological Disorders and Stroke (NINDS)
National Institute on Deafness and Other Communication Disorders (NIDCD)
National Center for Medical Rehabilitation Research (NCMRR)
National Institute of Biomedical Imaging and Bioengineering (NIBIB)
National Institutes of Health

Tuesday, October 21

7:30 – 8:30	**Registration**	
8:30	Bill Heetderks	Orientation and Update NINDS/NIDCD/NICHD-NCMRR/NIBIB
8:45 – 12:00	**Session 1, Mini Workshop: *Planning and Execution of Clinical Feasibility Studies and Clinical Trials of Neural Prostheses.*** Chair: Naomi Kleitman	
8:50	Steve Phurrough	*The Nature and Quality of Evidence to Support Reimbursement,* CMS.
9:20	Ted Stevens	*The Nature and Quality of Evidence to Support FDA Device Approval,* REDB /CDRH/ FDA.
9:50	Hunter Peckham	*FDA and CMS Approval for an Implantable FNS System from a Researcher's Prospective,* Case Western Reserve University.
10:20 – 10:50	**Break and Poster Viewing**	
10:50	Richard Stein	*Technology Transfer: Some Good and Bad Experiences,* University of Alberta.
11:05		Round Table Discussion
Noon – 1:00	**Lunch** (On Your Own)	
1:00 – 3:00	**Session 2, Focus Group: *Functional Microstimulation of LSC.*** Chair: Naomi Kleitman	
1:05	Doug McCreery	*Functional Microstimulation of the Lumbosacral Spinal Cord,* Huntington Medical Research Institutes.
1:40	Arthur Prochazka	*Functional Microstimulation of the Lumbosacral Spinal Cord,* University of Alberta.
2:15	Warren Grill	*Neural Prosthetic Control of Continence and Micturition,* Case Western Reserve University.
2:30		Round Table Discussion: *Comparison of Approaches for the Functional Microstimulation of the Lumbosacral Spinal Cord.*
3:00 – 3:30	**Break and Poster Viewing**	
3:30 – 5:00	**Session 3** Chair: Naomi Kleitman	

3:30	Bob Kirsch	*FNS to Restore Hand and Arm Function,* Case Western Reserve University.
4:10	Dave Martin	*CNS Biomaterials,* University of Michigan.
4:50	Meredith Temple-O'Connor	Student Assistance Program
5:00	**Adjourn**	
6:00	Informal Get-Together at Chatter's - Four Points (1/2 block South on Wisconsin Ave.)	

Wednesday, October 22

8:00 – 12:00	**Session 4** Chair: Roger Miller	
8:00	Doug McCreery	*A Cochlear Nucleus Auditory Prosthesis Based on Microstimulation,* Huntington Medical Research Institutes.
8:40	Russ Snyder	*Neurophysiological Effects of Simulated Auditory Prosthesis Stimulation,* University of California San Francisco.
9:20	Pat Leake	*Protective Effects of Patterned Electrical Stimulation,* University of California, San Francisco.
10:00 – 10:30	**Break and Poster Viewing**	
10:30	Richard Normann	*Feasibility of an Intraneural Auditory Prosthesis Stimulating Electrode,* University of Utah.
11:10	Paul Abbas	*Effects of Remaining Hair Cells on Cochlear Implant Function,* University of Iowa.
Noon – 1:00	**Lunch** (On Your Own)	
1:00 – 5:00	**Session 5** Chair: Roger Miller	
1:00	Rob Shepherd	*Protective Effects of Patterned Electrical Stimulation,* University of Melbourne.
1:40	Dewey Lawson	*Speech Processors for Auditory Prosthesis,* Research Triangle Institute, North Carolina.
2:20	Don Eddington	*Speech Processors for Auditory Prosthesis,* Massachusetts Institute of Technology.
3:00 – 3:30	**Break and Poster Viewing**	
3:30	Paul Abbas	*Neurophysiological Effects of Simulated Auditory Prosthesis Stimulation,* University of Iowa.
4:10	Dave Edell	*Insulating Biomaterials*, Innersea Technology.
5:00	**Adjourn**	

Thursday, October 23

8:00 – 12:00	**Session 6** Chair: Daofen Chen	
8:00	Ken Wise	*Stimulating and Recording Microelectrode Arrays,* University of Michigan.
8:40	Andy Schwartz	*Cortical Control of Neural Prostheses*, University of Pittsburgh.
9:20	John Donoghue	*Cortical Control of Neural Prostheses*, Brown University.
10:00 – 10:30	**Break and Poster Viewing**	
10:30	Miguel Nicolelis	*Cortical Processing of Somatosensory Information*, Duke University Medical Center.
11:10	Eberhard Fetz	*Volitional Control of Neural Activity,* University of Washington.
11:50	Richard Andersen	*Cognitive Control Signals for Neural Prostheses,* California Institute of Technology.
12:30 – 1:30	**Lunch** (On Your Own)	
1:30 – 3:30	**Session 7** Chair: Daofen Chen	
1:30	Sandro Mussa-Ivaldi	*Brain-Computer Interface (Robotic),* Northwestern University.
2:10	Daryl Kipke	*Intracortical Control of Neuroprostheses in Humans: Technological Issues and Implications*, University of Michigan.
2:50		General Discussion. (Panel joined by discussants Drs. Conrad Kufta, Gyorgy Buzsaki, and Philip Troyk)
3:30	**Meeting Adjourns**	

Notes:
Please visit http://www.ninds.nih.gov/npp/index.htm#workshop to register for the workshop mailing list and obtain additional details about travel and lodging.

Email questions to: npp@ninds.nih.gov

Board #	Location
1-19	F1/F2
20-23	outside poster rooms
24-36	C1/C2

Posters should be placed on the correct board number to facilitate viewing on the scheduled day. Poster authors who are recipients of a travel fellowship are denoted by an asterisk*.

Posters on display Tuesday		
Location	**Author(s)**	**Title**
1	Russ Snyder	Deep Brain Stimulation Acts by Creating an "Informational Lesion" in the Stimulated Nucleus
2	Alexis Kuncel *	Response of Tremor and Side Effects to Varying Deep Brain Stimulation Parameter Combinations
3	Seung Jae Oh	Regional Differences of Reactive Responses Against Silicon Neural Probe Implanted Into Deep Brain Regions
4	Warren Grill	Current Density Distribution and Impedance Analysis of Banded Deep Brain Stimulating Electrodes
5	Andrew Bestor	Neuroprosthetics: Revisiting a Unified System Circa 1995
6	Ronald Triolo	Neuroprostheses for Standing, Walking and Control of Seated Posture
7	Dimitra Blana	A Forward Dynamic Musculoskeletal Model of the Shoulder and Elbow
8	Joseph Boggs *	Stimulation of the Deep Perineal Nerve Evokes an Increase in Bladder Pressure
9	Chloe de Balthasar	Feasibility of Implantable Diaphragm Pacing System: A Case Report
10	Rogers, Roenigk, Ruff	Response of Chronic Stroke Gait Deficits to Combination Electrical Stimulation and Weight Supported Gait Training
11	Kenneth Gustafson	Bladder Contractions Evoked by Urethral Afferent Stimulation in Humans
12	Benjamin Heilman	Selection of An Optimal Muscle Set for a Standing Neuroprosthesis Using Human Musculoskeletal Model
13	Juan Hincapie	TBD
14	Jose Luis Lujan	Optimal Solution
15	Mark Pierre *	Characterizing the Three Dimensional Stiffness of the Human Arm
16	Boggs, Gustafson, Grill	The Relationship Between Hyper-Reflexive Bladder Contractions and Pudendal Nerve Electrical Activity
17	Matt Williams	Evaluation of Command Sources for a High Tetraplegia Neural Prosthesis
18	Smith, Lo, Retterer, Isaacson, Saltzman, Turner, Shain	Modulating Reactive Responses to Neuroprosthetic Devices Through Local Drug Deliver: Successes and Challenges
19	Retterer, Bjornsson, Smith, Turnere, Isaacson, Shain	Silicon Neural Prostheses with Integrated Fluidics for Intervening in the Reactive Response to Implanted Devices
24	Kofi Amankwah *	A Model Based Investigation of Joint Stiffness in Individuals With Spinal Cord Injuries
25	Niloy Bhadra *	High Frequency Peripheral Motor Nerve Conduction Block
26	Lisa Guervremont *	A Chronic Study of Intraspinal Microstimulation in Spinalised Cats
27	Brian Hatt	Development of Clinical Neuroprosthesis

28	Jane Huggins	2003 Progress on a Direct Brain Interface Based on Detection of ERPs in ECoG
29	Jayme Knutson *	Feasibility of Myoelectric Control of A Hand Grasp Neuroprosthesis in Low Cervical Tetraplegia
30	Vivian Mushahwar	Quantifying Spasticity in Spinal Rats
31	Peckman, Kilgore, Smith, Crish	Development of Networked Implantable Neuroprostheses
32	Katharine Polasek *	Intraoperative Testing of Selective Nerve Cuff Electrodes for Neuroprostheses
33	Kimberlyn Gray	Floating Light Activated Micro-Stimulators
34	Jingtao Huang	Imaging of the Upper Airways During Selective Stimulation of the 12th Cranial Nerve
35	Dawn Taylor	Using Brain Signals for Control of Functional Electrical Stimulation (FES) Systems and Other Assistive Technologies

Posters on display Wednesday		
Location	**Author(s)**	**Title**
1	Hongbin Chen, * Fan-gang Zeng	Pitch Perception in Cochlear Implant Users
2	Scott Corbett	High Density Liquid Crystal Polymer Cochlear Electrodes
3	Charley Della Santina	Vestibulo-Ocular Reflex of Chinchilla During Head Rotation and Functional Vestibular Electrical Stimulation
4	Yoon Seob Lim	Two Dimensional Fem Analysis on the Mechanical Effect of Cochlear Electrode With Various Wire Arrangements
5	Hubert H. Lim	Midbrain Auditory Prosthesis: Effects of Electrical Stimulation of the Inferior Colliculus on tonotopic Projections to the Auditory Cortex
6	Sheng Liu *	Clear Speech Perception in Acoustic and Electric Hearing
7	Marshall Smith	Differential Stimulation of the Recurrent Laryngeal Nerve Using A Penetrating Electrode Array
8	Francis Spelman	Electrodes and Stimulators for Strial Presbycusis
9	Anthony Caparso	A Nerve Cuff Electrode for Controlled Reshaping of Nerve Geometry
10	Cogan, Troyk, McCreery, Bullara, Ehrlich, Plante	Variability and Evaluation of Intracortical Iridium Oxide (AIROF) Microelectrodes
11	Cogan, Ehrlich, Plante, McCreery, Bullara	Charge-Injection Waveforms for Iridium Oxide (AIROF) Microeclectrodes
12	DeMichele	Stimulus-Resistant Neural Recording Amplifier
13	Martin Han	Planar Microelectrode Arrays for Development of Implantable Biomimetic Electronics for the Hippocampus
14	Philip Kennedy	Density of Fast Transients Recorded via the Neurotrophic Electrode in Humans
15	Jit Muthuswamy	Microactuated Neural Probes for Single Neurons

16	Janez Rozman	Tissue and Electrode Responses on Chronic Selective Stimulation of Vagus Nerve of a Dog With Multi-Electrode Spiral Cuff
17	Michael Wilson	Electrochemical Immunoassays Based on Iridium Oxide Matrices
18	Jong Keun Song	Development of High-Yield Fabrication Process and Low-Noise Structure for Silicon Neural Probe
19	Xueyan Xu	Wireless Brain Computer Interface for Disabled Individuals
24	Paul Yoo *	Selective Fascicular Recording of the Canine Hypoglossal Nerve Using a Multi-Contact Electrode
25	Maysam Ghovanloo *	A Wireless Microsystem for Neural Stimulating Microprobes I (the Latest Results)
26	Maysam Ghovanloo	A Wireless Microsystem for Neural Stimulating Microprobes II (The Latest Results)
27	Elias Greenbaum	Dynamic Testing of Retinal Prosthesis Electrode Arrays
28	Satinderpall Pannu	Polymer-Based Micro-Electrode Array for an Epiretinal Prosthesis
29	Matthew Schiefer	A Model of Excitation Sites During Epiretinal Electrical Stimulation