Preconditioning the Brain: Moving on to the Next Frontier of Neurotherapeutics
Sebastian Koch, Ralph L. Sacco and Miguel A. Perez-Pinzon

Stroke published online March 29, 2012
Stroke is published by the American Heart Association. 7272 Greenville Avenue, Dallas, TX 75214
Copyright © 2012 American Heart Association. All rights reserved. Print ISSN: 0039-2499. Online ISSN: 1524-4628

The online version of this article, along with updated information and services, is located on the World Wide Web at:
http://stroke.ahajournals.org/content/early/2012/03/29/STROKEAHA.111.646919.citation

Data Supplement (unedited) at:
http://stroke.ahajournals.org/content/suppl/2012/03/29/STROKEAHA.111.646919.DC1.html
Editorial

Preconditioning the Brain
Moving on to the Next Frontier of Neurotherapeutics

Sebastian Koch, MD; Ralph L. Sacco, MD; Miguel A. Perez-Pinzon, PhD

In December 2011, the 2nd Translational Preconditioning Meeting was held at the University of Miami Miller School of Medicine. The motivation for this meeting arose from the success of the first meeting organized by Dr Guohua Xi and Dr Richard Keep at the University of Michigan, which took place in Ann Arbor in 2009. The main goal of the Miami meeting was to discuss and identify effective strategies to promote the basic science research of ischemic preconditioning for neurological diseases, with the ultimate objective of advancing ischemic preconditioning therapies to clinical use. With this goal in mind, the meeting was divided into clinical and basic science sessions. The discussions were organized in a question-and-answer format. More than 40 national leaders in the field attended the meeting to exchange ideas and brainstorm on ways to translate the basic science of preconditioning to clinical neurology (for a list of attendees and meeting agenda, please see online-only Supplemental Materials, http://stroke.ahajournals.org). The meeting took place over only 1 day and, given the early stages of development of this workshop, it was felt prudent to limit attendance to United States nationals. The organizers acknowledged this as a shortcoming of the conference that will, hopefully, be remedied in the future as the scope of the meeting expands.

The purpose of this editorial is to summarize the key elements that arose out of these discussions in response to several questions posed to the attendants.

The preconditioning phenomenon rests on the basic premise that organisms have developed complex and active defenses to counter adversarial conditions such as starvation and oxygen deprivation.1,2 From an evolutionary point of view, successful adaptation to environmental stress ensured survival. Triggering these innate defense systems to maintain cellular homeostasis, in the face of noxious injury, is at the root of the preconditioning response, which rests on the central principle that mild forms of stress induce tolerance to an otherwise lethal injury. Thus, it has been shown that preconditioning the brain with brief occlusions of a cerebral artery leads to a reduction in infarct size in laboratory models of stroke or cardiac arrest.3-6

Many stimuli, such as ischemia, pharmacological agents, hypoxia, hypothermia, and essentially anything that causes cellular stress, induce a preconditioning response.7 In laboratory models of ischemia, consistent protection from noxious durations of ischemia has been demonstrated in many different organs. Whereas preconditioning is one of the most powerful laboratory anti-ischemic strategies known, its clinical potential has remained unexplored in neurological disorders. Several clinical studies have been completed in cardiac medicine and, for the most part, have shown a diminution of surrogate markers of myocardial ischemia.8 Only few such studies have been reported concerning neurological conditions, and many questions remain regarding the most favorable clinical setting to test the preconditioning phenomenon, the optimal preconditioning stimulus, and whether a cerebral preconditioning response can even be induced in humans who, in contrast to laboratory animals, are elderly and have multiple comorbidities.9-11

A recent PubMed search lists ~1160 entries for ischemic preconditioning and brain alone, showing a trend of logarithmic increase in publications in this field over the past few years (1986–2012). Such an abundance of largely preclinical data naturally begets the question of whether the concept of preconditioning is ready to be incorporated into clinical trials.

The general sentiment of the attendees was to proceed with clinical studies, prudently. A few preliminary trials already have been completed in neurological disorders and others were in progress. Many preconditioning trials have been performed in cardiac medicine, even though the optimal preconditioning stimulus for myocardial protection also remains poorly characterized. Although all agreed that the past failures of translating neuroprotection to clinical medicine needed to be avoided, applying STAIR-like criteria12 to preconditioning agents or techniques was controversial and not fully endorsed. It was clear from the discussion that STAIR-like criteria should be tailored specifically to preconditioning and should be different from those developed for neuroprotection, because this phenomenon is clearly distinct from poststroke treatment.

There was a general understanding that such trials needed to be conducted cautiously and needed to be exploratory, with an emphasis on finding suitable biomarkers to measure whether a preconditioning response is even able to be elicited in humans. There was concern that the stress of concomitant disease, advanced age, and widespread medication use in human subjects might modify and even prevent preconditioning. The search for a suitable biomarker also could be the objective of additional laboratory investigations of preconditioning.

Received January 24, 2012; accepted February 15, 2012.

The opinions in this editorial are not necessarily those of the editors or of the American Heart Association.

From the Department of Neurology, University of Miami, Miller School of Medicine, Miami, FL.

The online-only Data Supplement is available with this article at http://stroke.ahajournals.org/lookup/suppl/doi:10.1161/STROKEAHA.111.646919/-/DC1.

Correspondence to Miguel A. Perez-Pinzon, PhD, Department of Neurology, D4-5, University of Miami Miller School of Medicine, PO Box 016960, Miami, FL 33101. E-mail perezpinzon@miami.edu

Stroke is available at http://stroke.ahajournals.org

DOI: 10.1161/STROKEAHA.111.646919
tioning and may be valuable in separating responders to a preconditioning stimulus from nonresponders. An additional focus of preliminary trials would include safety. Although this is readily apparent with pharmaceutical preconditioning and requires drug safety testing and compliance with Food and Drug Administration regulations, it may also apply to the safety of other preconditioning stimuli such as remote preconditioning in which transient ischemia is induced in a limb.

Remote preconditioning, which has been tested in animal models by means of limb ischemia,13–15 was generally felt to be easily instituted and readily available; however, it remained uncertain if this is the most effective preconditioning stimulus, with other considerations including volatile anesthetics or pharmacological agents already tested in the clinic for other ailments. Most preconditioning studies in cardiology and some conducted in neurological disorders were performed with remote preconditioning using limb ischemia as a stimulus. Some attendees cautioned against this presently preferred preconditioning technique, just because of its ease of use and ready availability.

In several clinical settings, preconditioning was not felt to be readily achievable. This included stroke and cardiac arrest, in which the unpredictable nature of the event precluded previous treatment. In these types of clinical scenarios, basic science animal models should attempt to determine predictive factors for as yet unpredictable but associated diseases (eg, diabetes, hypertension, smoking, transient ischemic attacks for stroke). In addition, in stroke and cardiac arrest, the evolving strategy of postconditioning might be of greater practical value. Nevertheless, it is not clear yet if preconditioning and postconditioning, although both cytoprotective, are based on the same phenomenon. More appropriate settings include preconditioning before interventions, such as cardiac or coronary artery bypass graft surgery, or after subarachnoid hemorrhage, with the risk of eliciting delayed cerebral ischemia. Similar clinical settings have been proposed in reviews of preconditioning and, interestingly, in the past, for studies of prophylactic neuroprotection.16–18

Based on these fruitful and insightful discussions, the afternoon session was dedicated to the basic science of preconditioning, seen from the perspective of the clinical scenarios reviewed in the morning session. The discussion led to the suggestion that new STAIR-like criteria should be developed and tailored to the preconditioning or postconditioning paradigms. Although these criteria may require further development, several suggestions emerged, such as proper animal models, which closely simulate the clinical condition to be studied. For example, if subarachnoid hemorrhage is the clinical target and remote preconditioning is used for neuroprotection, then appropriate animal models should be used for preclinical design and its mechanisms should be defined before clinical trial design. Another proposal suggested that both basic science and clinical grant applications require the participation of both basic scientists and clinicians to better-translate basic science research on preconditioning into the clinic.

There was a discussion on whether investigators in the field should design clinical trials immediately if a drug (eg, pharmacological preconditioning) is found to be protective against stroke rather than study its mechanisms of action. This was controversial because there are many examples in which the prompt bypass of a rigorous definition of mechanisms of action of a given drug has failed to promote neuroprotection for stroke and other neurological diseases.

Another point that came across in the afternoon session was that on careful review of the literature, it was clear that almost anything that caused some degree of stress induces ischemic tolerance. This fact is puzzling. Why would volatile anesthetics have such similar effects as pharmacological or remote preconditioning? It is highly unlikely that the mechanisms are the same. This issue raised an active discussion that clearly suggests the need for additional investigations on the topic.

In conclusion, the success of the meeting was in the exchange of ideas and interest to continue to investigate the therapeutic potential of the preconditioning phenomenon. Great enthusiasm with the format of the meeting was expressed by most participants. It was generally felt that more time was needed to discuss key issues. By expanding the duration of the workshop in the future, it would be more feasible to attract leaders in the field from around the world. Passing on the torch, Dr John Zhang from Loma Linda University will lead the effort to organize the 3rd Translational Preconditioning Meeting in 2013, which will be co-organized by Dr Gabriel Haddad from University of California San Diego and Dr Nestor Gonzalez from University of California Los Angeles. In addition, it was also felt that these discussions should continue. It was suggested to establish a blog in which investigators in the field can maintain an active participation in these issues. Although this is not yet established, Dr John Zhang suggested continuing the discussion in a blog at NeuroNetwork (http://www.theneurnetwork.com).

Finally, the authors of this editorial acknowledge that not everything discussed in the meeting is presented here. Only the most salient ideas are summarized. We also recognize that the points discussed here do not necessarily reflect the opinion of all the participants. Many of the issues addressed will be peer-reviewed in articles submitted to a special issue of the journal Translational Stroke Research that is dedicated to proceedings of this meeting.

Disclosures

None.

References


Downloaded from http://stroke.ahajournals.org/ at Oregon Health & Science University on April 7, 2012


Key Words: neuroprotection  neuroprotective agents  treatment
ATTENDEES:

**Josef Anrather, VMD**  
Associate Professor of Neuroscience  
Division of Neurobiology  
Department of Neurology and Neuroscience  
Weill Cornell Medical College  
407 East 61st Street RR409  
New York, NY10065  
Phone: (646) 962-8254  
E-mail: joa2006@med.cornell.edu

**Jarek Aronowski, Ph.D.**  
Professor of Neurology  
University of Texas  
Health Science Center at Houston  
P.O. Box 20708  
Houston, TX 77225-0708  
Phone: (713) 500-7059  
Fax: (713) 500-7019  
E-mail: J.Aronowski@uth.tmc.edu

**Rena Bahjat, Ph.D.**  
Research Assistant Professor  
Department of Microbiology and Immunology  
Oregon Health and Sciences University  
3181 SW Sam Jackson Pk Rd (Mail Code L220)  
Portland, OR 97239  
Phone: (503) 494-2423  
Fax: (503) 494-6862  
E-mail: bahjat@ohsu.edu

**Neeraj Chaudhary MD, MRCS(UK), FRCR(UK)**  
Assistant Professor  
Fellowship Program Co-Director  
Division of Neurointerventional Surgery  
Department of Radiology  
University of Michigan Hospital and Health Systems  
1500 E. Medical Center Drive  
Ann Arbor, MI-48109  
Off.-B1D330A  
Email: neerajc@med.umich.edu  
Phone: (734) 763-2082 / (734) 763-5842  
Fax: (734) 615-5111

**Jun Chen, M.D.**  
Professor of Neurology and Pharmacology  
Department of Neurology  
University of Pittsburgh School of Medicine  
3500 Terrace St. (S507 BST)  
3471 Fifth Avenue  
Pittsburgh, PA 15213  
Phone: (412) 648-1263  
Fax: (412) 692-4636  
E-mail: chenj2@upmc.edu
Michael Collins, Ph.D.
Professor
Department of Molecular Pharmacology
Loyola University Stritch School of Medicine
Bldg. 101 Rm. 2726
2160 S. First Avenue
Maywood IL 60153
Phone: 708-216-4560
Fax: 708-216-6289
E-mail: mcollin@lumc.edu

Cameron Dezfulian, M.D.
Assistant Professor, Adult and Pediatric Critical Care Medicine
Department of Critical Care Medicine
University of Pittsburgh School of Medicine
3550 Terrace Street
Pittsburgh, PA 15261
Phone: (412) 383-3128
Pager: (412) 958-2497
Cell: (305) 812-2331
Fax: (412) 624-0943
E-mail: dezfulianc@upmc.edu

Sylvain Doré PhD
Associate Professor, Anesthesiology, Neurology, Psychiatry, and Neuroscience
Program Director of Research Operations, Department of Anesthesiology
Center for Translational Research in Neurodegenerative Disease
University of Florida College of Medicine
1275 Center Drive (Bldg. Biomed Sci J493)
PO 100159
Gainesville, FL 32610
Phone: (352) 273-966 / (443) 803-1910
Fax: 352-294-5060
Email: sdore@ufl.edu

Jeffrey M. Gidday, Ph.D.
Associate Professor of Neurological Surgery
Cell Biology and Physiology, and Ophthalmology and Visual Sciences
Washington University School of Medicine in Street Louis
Department of Neurological Surgery
660 S. Euclid Avenue (Campus Box 8057)
Street Louis, MO 63110
Phone: (314) 286-2795
Fax: (314) 286-2900
E-mail: gidday@wustl.edu

Nestor Gonzalez, M.D.
Assistant Professor of Neurosurgery and Radiology
Ruth and Raymond Stotter Chair in Neurosurgery
David Geffen School of Medicine at UCLA
BOX 957039, 18-251 CHS
Los Angeles, CA 90095-7039
Phone: (310) 267-8761 / (310) 825-5154
Fax (310) 206-6242
E-mail: ngonzalez@mednet.ucla.edu
Gabriel G. Haddad, MD  
Professor of Pediatrics and Neuroscience  
Chair, Department of Pediatrics  
University of California, San Diego  
Physician-in-Chief and Chief Scientific Officer  
Rady Children’s Hospital-San Diego  
Department of Pediatrics  
Office of the Chairman  
115 Leichtag Building  
9500 Gilman Drive, (0735)  
San Diego, CA 92093-0735  
Phone: (858) 966-8536  
Alternate Phone: (858) 822-4740  
Fax: (858) 534-6972  
E-mail: ghaddad@ucsd.edu

John M. Hallenbeck, M.D.  
Senior Investigator and Chief  
Stroke Branch, NINDS  
Clinical Investigations Section  
10 Center Drive, Bldg. 10, Rm. 5B02, MSC 1401  
Bethesda, MD 20892-1401  
Office/Laboratory Phone: (301) 496-6231  
Fax: (301) 402-2769  
E-mail: HallenbJ@ninds.nih.gov

Richard Keep, Ph.D.  
Professor of Neurosurgery and Neuroanatomy  
Professor of Molecular and Integrative Physiology  
Director of Crosby Neurosurgical Laboratories  
Associate Chair for Research  
University of Michigan  
Department of Neurosurgery  
109 Zina Pitcher Pl. (5001 BSRB)  
An Arbor, MI 48109-2200  
Phone: (734) 764-5128  
E-mail: rKeep@umich.edu

Joseph LaManna, Ph.D.  
Professor of Physiology and Biophysics, Neurology, Neurosciences and Pathology  
Department of Physiology and Biophysics  
Case Western Reserve University School of Medicine  
Robbins Bldg. E 611  
2109 Adelbert Road  
Cleveland, OH 44106-4970  
Phone: (216) 368-1112  
Fax: (216) 368-1144  
E-mail: jcl4@case.edu
Rehana Leak, Ph.D.
Assistant Professor of Pharmacology
Mylan School of Pharmacy
Duquesne University
Mellon Hall, Room 407
600 Forbes Avenue
Pittsburgh, PA 15282
Phone: (412) 396-4734
FAX: (412) 396-4660
Email: leakr@duq.edu

BethAnn McLaughlin, Ph.D.
Assistant Professor of Neurology
Vanderbilt University School of Medicine
Department of Neurology
465 21st Avenue, MRB III Rm. 8110
Nashville, TN 37232-8548
Phone: (615) 936-3847
Lab: (615) 936-5548
Fax: 615-936-3747
E-mail: BethAnn.McLaughlin@Vanderbilt.Edu

Robert Meller, D.Phil.
Associate Professor
Morehouse School of Medicine
Neuroscience institute
Department of Neurobiology/Pharmacology
720 Westview Dr. SW
Atlanta, GA 30310-1495
Phone: 404-756 5789
E-mail: rmeller@msm.edu

Thaddeus Nowak, Ph.D.
Professor and Director of Research
The University of Tennessee College of Medicine
The University of Tennessee Health Science Center
Department of Neurology
Department of Anatomy and Neurobiology
855 Monroe Avenue, Rm. 415
Memphis, TN 38163
Phone: (901) 448-7384
Fax: (901) 448-7440
E-mail: tnowak@uthsc.edu

Rajiv R. Ratan M.D., Ph.D.
Burke Professor of Neurology and Neuroscience
Associate Dean
Weill Medical College of Cornell University
Executive Director
Burke/Cornell Medical Research Institute
785 Mamaroneck Avenue
White Plains, New York 10605
Phone: (914) 597-2851
E-mail: rrr2001@med.cornell.edu
Roger Simon, M.D.
Director, Translational Programs in Stroke
Professor, Medicine (Neurology) and Neurobiology
Department of Neuroscience
Morehouse School of Medicine
720 Westview Dr. SW
Atlanta, GA 30310-1495
Phone: 404-752-1500 (main)
E-mail: rsimon@msm.edu

Mary Stenzel-Poore, Ph.D.
Associate Dean for Basic Sciences
Professor and Chair
Molecular Microbiology and Immunology
Oregon Health and Sciences University
3181 SW Sam Jackson Pk Rd (Mail Code L220)
Portland, OR 97239
Phone: (503) 494-2423
Fax: (503) 494-6862
E-mail: poorem@ohsu.edu

Byron Gregory Thompson, M.D.
Professor and Associate Chair of Neurological Surgery
University of Michigan
Taubman Center Floor 2 Reception G
1500 E Medical Center Dr SPC 5338
Ann Arbor, MI 48109
Phone: 734-936-7010
E-mail: gregthom@med.umich.edu

Michael Wang, M.D., Ph.D.
Associate Professor
University of Michigan
Department of Neurology
1500 E. Medical Center Dr.
Ann Arbor, MI 48109-5316
Phone: (734) 936-9020
E-mail: micwang@med.umich.edu

Alternate
Molecular and Integrative Physiology
7629 Med Sci II (0622)
Ann Arbor, MI 48109
Phone: (734) 845-3306

Ling Wei, MD
Professor
John E. Steinhaus Endowed Chair in Anesthesiology
Emory University School of Medicine
Department of Anesthesiology
101 Woodruff Circle
Woodruff Memorial Research Building Suite 617
Atlanta, Georgia 30322
Office Phone- 404-712-8661
Email Address: lwei7@emory.edu
Guohua Xi, M.D.
Richard C. Schneider Research Professor
Professor of Neurosurgery
University of Michigan
109 Zina Pitcher Place (BSRB, R5018)
Ann Arbor, MI 48109-2200
Tel: (734)764-1207
Fax: (734)763-7322
E-mail: guohuaxi@umich.edu

Shan Ping Yu, MD, PhD
Professor
O. Wayne Rollins Chair in Anesthesiology and Pain Medicine
Department of Anesthesiology
Emory University School of Medicine
101 Woodruff Circle
Woodruff Memorial Research Building Suite 620 A
Atlanta, Georgia 30322
Office Phone- 404-712-8678
Email Address: spyu@emory.edu

John H. Zhang, M.D., Ph.D.
Professor of Neurosurgery, Anesthesiology, and Physiology and Pharmacology,
Director of Neurosurgery Research, Director of Anesthesiology Basic Science Research, Associate
Chair and Physiology Graduate Program Coordinator
Department of Neurosurgery
Loma Linda University School of Medicine
Loma Linda University Medical Center
11234 Anderson Street, Rm. 2562B
Loma Linda, CA 92354
Tel: (909) 558-4952
Fax: (909) 558-4825

Alternate
Department of Physiology and Pharmacology
Risley Hall, Rm. 219
Loma Linda University School of Medicine
Loma Linda, CA 92350
Tel: (909) 558-4723
Fax: (909) 558-0119
E-mail: johnzhang3910@yahoo.com
Alternate E-mail: jhzhang@llu.edu

Heng Zhao, Ph.D.
Associate Professor (Research)
Stanford University
Department of Neurosurgery
1201 Welch Rd., P306 MSLS Bldg.
Stanford, CA 94305
Phone: (650) 725-7723
E-mail: hzhao@stanford.edu
Zhiyi Zuo, M.D., Ph.D.
Professor of Anesthesiology, Neurological Surgery, and Neuroscience
University of Virginia School of Medicine
Department of Anesthesiology
PO Box 800710
Charlottesville, VA 22908-0710
Phone: (434) 924-2283
Email: ZZ3C@hscmail.mcc.virginia.edu

FROM THE UNIVERSITY OF MIAMI:

FACULTY

Ross Bullock, M.D., Ph.D.
Professor, Department of Neurological Surgery
Director, Clinical Neurotrauma
Miami Project to Cure Paralysis
University of Miami Miller School of Medicine
P.O. Box 016960 (R-48)
Miami, FL 33101-6960
Phone: (305) 243-8183
Fax: (305) 243-3914
E-mail: rbullock@med.miami.edu

Kunjan Dave, Ph.D.
Research Assistant Professor of Neurology
University of Miami Miller School of Medicine
Department of Neurology, (D4-5)
P.O. Box 016960
Miami, FL 33101
E-mail: kdave@med.miami.edu
Phone: (305) 243-3590

Richard A. DeFazio, Ph.D.
Assistant Professor of Neurology
University of Miami Miller School of Medicine
Department of Neurology, (D4-5)
P.O. Box 016960
Miami, FL 33101
E-mail: rdefazio@med.miami.edu
Phone: (305) 243-6064

W. Dalton Dietrich, Ph.D.
Scientific Director, Miami Project to Cure Paralysis
Kinetic Concepts Distinguished Chair in Neurosurgery
Senior Associate Dean for Discovery Science
Professor, Neurological Surgery, Neurology and Cell Biology and Anatomy
Vice-Chair for Research, Neurological Surgery
University of Miami Miller School of Medicine
P.O. Box 016960 (R-48)
Miami, FL 33101-6960
Phone: 305-243-2297 / (305) 243-8182
Fax: (305) 243-3913
E-mail: ddietrich@med.miami.edu
Myron D. Ginsberg, M.D.
Scheinberg Professor of Neurology
University of Miami Miller School of Medicine
Department of Neurology, (D4-5)
P.O. Box 016960
Miami, FL 33101
Phone: (305) 243-6103
Fax: (305) 243-5830
E-mail: mginsberg@med.miami.edu

Michael Katsnelson, M.D.
Assistant Professor of Clinical Neurology
University of Miami Miller School of Medicine
Clinical Research Building
1120 NW 14th Street, Rm. 1360
Miami, FL 33136
Phone: 305-243-6732
Fax: 305-243-4678
E-mail: mkatsnelson@med.miami.edu

Sebastian Koch, M.D.
Associate Professor of Clinical Neurology
Director, Patrick Cesarano Neurovascular Laboratory
University of Miami Miller School of Medicine
Clinical Research Building
1120 NW 14th Street, Rm. 1365
Miami, FL 33136
Phone: 305-243-2336
Fax: 305-243-4678
E-mail: SKoch@med.miami.edu

Miguel A. Perez-Pinzon, Ph.D.
Director of the Cerebral Vascular Disease Research Center
Professor and Vice-Chair of Neurology
University of Miami Miller School of Medicine
Department of Neurology, (D4-5)
P.O. Box 016960
Miami, FL 33101
Phone: (305) 243-7698
Fax: (305) 243-5830
E-mail: perezpinzon@miami.edu

Ami Raval, Ph.D.
Research Assistant Professor of Neurology
University of Miami Miller School of Medicine
Department of Neurology, (D4-5)
P.O. Box 016960
Miami, FL 33101
Phone: (305) 243-7491
E-mail: araval@med.miami.edu
Myron Rosenthal, Ph.D.
Vice Provost for Human Subject Research
University of Miami Miller School of Medicine
Department of Neurology, (D4-5)
P.O. Box 016960
Miami, FL 33101
Phone: (305) 243-3195
E-mail: mrosenthal@med.miami.edu

Ralph Sacco, M.D., M.S., FAAN, FAHA
Olemberg Family Chair in Neurological Diseases
Miller Professor of Neurology, Epidemiology and Human Genetics
Chairman, Department of Neurology
University of Miami Miller School of Medicine
Clinical Research Building
1120 NW 14th Street, Rm. 1352
Miami, FL 33136
Phone: 305-243-7519
Fax: 305-243-4678
E-mail: RSacco@med.miami.edu

Thomas J. Sick, Ph.D.
Professor of Neurology
University of Miami Miller School of Medicine
Department of Neurology, (D4-5)
P.O. Box 016960
Miami, FL 33101
Phone: 305-243-3858
E-mail: tsick@miami.edu

Dileep Yavagal, M.D.
Assistant Professor of Clinical Neurology and Neurosurgery
Director, Interventional Neurology
Co-Director, Endovascular Neurosurgery
Neurointervention/Stroke Division
University of Miami Miller School of Medicine
Clinical Research Building
1120 NW 14th Street, Rm. 1356
Miami, FL 33136
Phone: (305) 243-4621
Fax: 305-243-4678
E-mail: DYavagal@med.miami.edu

UNIVERSITY OF MIAMI TRAINEES:

Postdoctoral Associates:
Hung W. (Kevin) Lin
Jake Neumann
William Thompson

PhD Students:
Kahlilia Morris-Blanco
Sri Narayanan
Holly Stradecky
Charles Cohan
Alex Kreymerman
MORNING SESSION

8:00 a.m. - 8:15 a.m.  Ralph Sacco
Welcome

8:15 a.m. - 8:30 a.m.  Introduction: Miguel Perez-Pinzon

Main Goal: To Discuss about and identify effective strategies to promote the basic science research of ischemic preconditioning for neurological diseases. The ultimate goal is to translate ischemic preconditioning therapies to the clinic.

The meeting will be divided in two sessions. The morning session will be solely dedicated to clinical applications of PC. The afternoon session will attempt to unify the basic science of preconditioning.

CLINICAL SESSION

8:30 a.m. - 8:35 a.m.  Moderator: Sebastian Koch
Welcome and opening remarks

8:35 a.m. - 9:15 a.m.  Question 1:
Moving from the laboratory to the clinic: Are we ready for to start clinical preconditioning trials in neurological disorders? Should the STAIR criteria be applied to preconditioning as well? Deja vu - will clinical preconditioning follow the path of neuroprotection? (Michael Wang)

9:15 a.m. - 10:00 a.m.  Question 2:
Potential clinical applications: When, where and how? What are the clinical settings to prove that a preconditioning response can be elicited? What is the most promising or feasible clinical setting? What is the most practical preconditioning method? Can we apply cardiac preconditioning results to the brain? What about surrogate markers for preconditioning? Are there suitable biomarkers for preconditioning? (Sebastian Koch)

10:00 a.m. - 10:15 a.m.  Refreshments

10:15 a.m. - 10:35 a.m.  Preconditioning: the UCLA experience. (Nestor Gonzalez)
10:35 a.m. - 10:55 a.m.  Preconditioning: the Miami experience  (Sebastian Koch/Katsnelson)

11:00 a.m.- 12:00 p.m.
Alternative scenarios for preconditioning (20 min each):
  • Preconditioning for cardiac arrest - Cameron Dezfulian
  • Preconditioning for traumatic brain injury - Ross Bullock
  • Preconditioning to prevent perinatal injury - Gabriel Haddad

12:00 p.m. - 1:15 p.m.  LUNCH
Downloaded from http://stroke.ahajournals.org/ at Oregon Health & Science University on April 7, 2012
BASIC SCIENCE SESSION

Moderator: Miguel Perez-Pinzon
The afternoon session will comprise of key questions, guided by different investigators in the field.

1:15 p.m. – 2:00 p.m.  Question 1:
The phenomena of ischemic preconditioning seem to be activated by many different pathways and paradigms. Should we focus on few, rather than many? Should we identify several paradigms that can be replicated by multiple laboratories and have better chance for clinical translation?
Jun Chen (Perez-Pinzon)

2:00 p.m. – 2:45 p.m.  Question 2:
What are the goals of genetics and epigenetics on Preconditioning?
M. Stenzel-Poore (Roger Simon, Raj Rattan, Gabriel Haddad)

2:45 p.m. – 3:00 p.m. REFRESHMENTS

3:00 p.m. - 3:45 p.m.  Question 3:
The phenomena of ischemic preconditioning has been tested in many different animal models. Which are the best models to use? What are the quality control criteria that we should follow?
Thaddeus Nowak (Guohua Xi, John Zhang)

3:45 p.m. - 4:30 p.m.  Question 4:
Based on the previous discussion, what are the best disease models to use (neonatal, adult, aging, metabolic syndrome, TIA, hypertension, trauma, stem cells, etc)? (Jeff Gidday)

4:30 p.m. - 5:00 p.m.  Summary discussion from the morning/afternoon discussion:
Miguel Perez-Pinzon and Sebastian Koch: Basic Science summary: (Perez-Pinzon); Clinical: How should preliminary clinical trials proceed? Safety and feasibility of preconditioning? Clinical outcomes? (Sebastian Koch)

7:30 p.m. DINNER