

# PROCEEDINGS OF THE 2ND HEART-BRAIN SUMMIT

JUNE 7–8, 2007

Hosted by the Earl and Doris Bakken Heart-Brain Institute at Cleveland Clinic

Supplement 2 to Volume 75, March 2008

[www.ccm.org/ccjm\\_pdfs\\_supplements/heartbrain2.asp](http://www.ccm.org/ccjm_pdfs_supplements/heartbrain2.asp)

## Supplement Editor

MARC S. PENN, MD, PhD  
Director, The Earl and Doris Bakken  
Heart-Brain Institute  
Cleveland Clinic

## Course Directors

JAMES B. YOUNG, MD  
Chairman, Division of Medicine  
Medical Division Office  
Cleveland Clinic

MARC S. PENN, MD, PhD  
Director, The Earl and Doris Bakken  
Heart-Brain Institute  
Cleveland Clinic

## CONTENTS<sup>\*†</sup>

<b>Introduction: Heart-brain medicine: Update 2007</b> .....	<b>S3</b>
Marc S. Penn, MD, PhD, and Earl E. Bakken, MD, HonC, (3) SciDHon	
<b>Bakken Lecture: Depression in coronary artery disease: Does treatment help?</b> .....	<b>S5</b>
Peter A. Shapiro, MD	
<b>Case study in heart-brain interplay: A 53-year-old woman recovering from mitral valve repair</b> .....	<b>S10</b>
Thomas D. Callahan, IV, MD; Ubaid Khokhar, MD; Leo Pozuelo, MD; and James B. Young, MD	
<b>Emotional predictors and behavioral triggers of acute coronary syndrome</b> .....	<b>S15</b>
Karina W. Davidson, PhD	
<b>Impacts of depression and emotional distress on cardiac disease</b> .....	<b>S20</b>
Wei Jiang, MD	
<b>Inflammation as a link between brain injury and heart damage: The model of subarachnoid hemorrhage</b> .....	<b>S26</b>
Hazem Antar Mashaly, MD, and J. Javier Provencio, MD	
<b>Biofeedback: An overview in the context of heart-brain medicine</b> .....	<b>S31</b>
Michael G. McKee, PhD	
<b>Biofeedback therapy in cardiovascular disease: Rationale and research overview</b> .....	<b>S35</b>
Christine S. Moravec, PhD	
<b>Helping children and adults with hypnosis and biofeedback</b> .....	<b>S39</b>
Karen Olness, MD	
<b>Clinical hypnosis for reduction of atrial fibrillation after coronary artery bypass graft surgery</b> .....	<b>S44</b>
Roberto Novoa, MD, and Tracy Hammonds, BA	

*Continued on next page*

Copyright © 2008 The Cleveland Clinic Foundation. All rights reserved.

The statements and opinions expressed in this supplement to the *Cleveland Clinic Journal of Medicine* are those of the authors and not necessarily of the Cleveland Clinic Foundation or its Board of Trustees. They do not necessarily represent formal practice guidelines in effect at Cleveland Clinic.

The *Cleveland Clinic Journal of Medicine* [ISSN 0891-1150 (print), ISSN 1939-2869 (online)] is published 12 times yearly by the Cleveland Clinic Foundation.

Subscription rates: U.S. and possessions: personal \$108; institutional \$134; single

copy/back issue \$20. Foreign: \$134; single copy/back issue \$20. Institutional (multiple-reader) rate applies to libraries, schools, hospitals, and federal, commercial, and private organizations. Individual subscriptions must be in the names of and paid by individuals.

Postmaster address changes: *Cleveland Clinic Journal of Medicine*, NA32, 9500 Euclid Avenue, Cleveland, OH 44195. Subscription orders, editorial, reprint, and production offices (same address): (216) 444-2661 (phone); (216) 444-9385 (fax); [ccjm@ccf.org](mailto:ccjm@ccf.org) (e-mail); [www.ccm.org](http://www.ccm.org) (Web).

Printed in USA.



## CONTENTS

---

<b>Depression and coronary heart disease: Association and implications for treatment</b> .....	<b>S48</b>
James A. Blumenthal, PhD	
<b>Cardiovascular autonomic dysfunction in patients with movement disorders</b> .....	<b>S54</b>
Benjamin L. Walter, MD	
<b>Deep brain stimulation: How does it work?</b> .....	<b>S59</b>
Jerrold L. Vitek, MD, PhD	
<b>Sudden unexpected death in epilepsy: Impact, mechanisms, and prevention</b> .....	<b>S66</b>
Lara Jehi, MD, and Imad M. Najm, MD	
<b>Evaluating brain function in patients with disorders of consciousness</b> .....	<b>S71</b>
Tristan Bekinschtein, PhD, and Facundo Manes, MD	
<b>Preconditioning paradigms and pathways in the brain</b> .....	<b>S77</b>
Karl B. Shpargel; Walid Jalabi, PhD; Yongming Jin; Alisher Dadabayev, MD; Marc S. Penn, MD, PhD, and Bruce D. Trapp, PhD	
<b>Post-stroke exercise rehabilitation: What we know about retraining the motor system and how it may apply to retraining the heart</b> .....	<b>S83</b>
Andreas Luft, MD; Richard Macko, MD; Larry Forrester, PhD; Andrew Goldberg, MD; and Daniel F. Hanley, MD	
<b>Hippocampal volume change in the Alzheimer Disease Cholesterol-Lowering Treatment trial</b> .....	<b>S87</b>
D. Larry Sparks, PhD; Susan K. Lemieux, PhD; Marc W. Haut, PhD; Leslie C. Baxter, PhD; Sterling C. Johnson, PhD; Lisa M. Sparks, BS; Hemalatha Sampath, BSEE; Jean E. Lopez, RN; Marwan H. Sabbagh, MD; and Donald J. Connor, PhD	
<b>Heart-brain interactions in cardiac arrhythmias: Role of the autonomic nervous system</b> .....	<b>S94</b>
Douglas P. Zipes, MD	
<b>Insular Alzheimer disease pathology and the psychometric correlates of mortality</b> .....	<b>S97</b>
Donald R. Royall, MD	
<b>Poster abstracts</b> .....	<b>S100</b>
Winner of the Young Investigator Award .....	<b>S106</b>
Abstracts of Research Funded by the Bakken Heart-Brain Institute at Cleveland Clinic .....	<b>S107</b>

\* These proceedings represent the large majority of presentations at the 2nd Heart-Brain Summit, but five Summit presentations were not able to be captured for publication here.

† Articles in these proceedings were either submitted as manuscripts by the Summit faculty or developed by the *Cleveland Clinic Journal of Medicine* staff from transcripts of audiotaped Summit presentations and then revised and approved by the Summit faculty.

The 2nd Heart-Brain Summit on which this supplement is based was supported in part by educational grants from Medtronic (silver-level grant), Pfizer (silver-level grant), and Cordis (bronze-level grant).

Author financial conflict-of-interest disclosures appear within the authors' respective articles.

Topics and editors for supplements to the *Cleveland Clinic Journal of Medicine* are determined by the *Journal's* editor-in-chief and staff. Supplement guest editors are chosen for their expertise in the topics discussed and are responsible for the scientific quality of supplements, including the review process. The *Journal* ensures that supplement guest editors and authors fully disclose any relationships with industry, including the supplement underwriter. For full guidelines on grant-supported supplements to the *Journal*, go to [www.ccjm.org/instructions\\_grant-supported\\_supplements.asp](http://www.ccjm.org/instructions_grant-supported_supplements.asp).