THE Flexner DISCOVERY LECTURE SERIES

Upcoming Discovery Lecture:

GILBERT S. OMENN, M.D., PH.D.
Director, Center for Computational Medicine and Bioinformatics (CCMB)

February 25, 2016
208 Light Hall / 4:00 P.M.

THE Flexner DISCOVERY LECTURE SERIES

EMERY N. BROWN, M.D., PH.D.

DECIPHERING THE DYNAMICS OF THE UNCONSCIOUS BRAIN UNDER GENERAL ANESTHESIA

FEBRUARY 11, 2016
4:00 P.M.
208 LIGHT HALL

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ANESTHESIOLOGY

VANDERBILT UNIVERSITY MEDICAL CENTER

DECIPHERING THE DYNAMICS OF THE UNCONSCIOUS BRAIN UNDER GENERAL ANESTHESIA

General anesthesia is a drug-induced, reversible condition comprised of five behavioral states: unconsciousness, amnesia (loss of memory), analgesia (loss of pain sensation), akinesia (immobility), and hemodynamic stability with control of the stress response. The mechanisms by which anesthetics induce unconsciousness relate to the extent to which these agents create oscillations in key brain circuits that impair the ability of these regions to communicate. These oscillations are readily discernible in the EEG recorded from patients under general anesthesia and sedation. Our results show that it is now possible to have a detailed neurophysiological understanding of the brain under general anesthesia, and that this understanding, can be used to monitor the anesthetic state more accurately and design more principled strategies for drug delivery.

EMERY N. BROWN, M.D., PH.D.

EDWARD HOOD PROFESSOR OF MEDICAL ENGINEERING AND PROFESSOR OF COMPUTATIONAL NEUROSCIENCE, MIT
WARREN M. ZAPOL PROFESSOR OF ANAESTHESIA, HARVARD MEDICAL SCHOOL
DEPARTMENT OF BRAIN AND COGNITIVE SCIENCES
MIT-HARVARD DIVISION OF HEALTH SCIENCES AND TECHNOLOGY
MEMBER, INSTITUTE OF MEDICINE
MEMBER, NATIONAL ACADEMY OF ENGINEERING
MEMBER, NATIONAL ACADEMY OF SCIENCES

Emery N. Brown is the Edward Hood Professor of Medical Engineering and Professor of Computational Neuroscience at Massachusetts Institute of Technology; the Warren M. Zapol Professor of Anaesthesia at Harvard Medical School; and an anesthesiologist at Massachusetts General Hospital. Dr. Brown received his B.A (magna cum laude) in Applied Mathematics from Harvard College, his M.A. and Ph.D. in Statistics from Harvard University and his M.D. (magna cum laude) from Harvard Medical School. He is an anesthesiologist-statistician whose experimental research has made important contributions towards understanding the neuroscience of how anesthetics act in the brain to create the states of general anesthesia. His statistics research has developed signal processing algorithms to help understand how the brain represents and transmits information. Dr. Brown served on the NIH BRAIN Initiative Working Group. He is the recipient of an NIH Director's Pioneer Award, an NIH Director's Transformative Research Award, and the 2015 American Society of Anesthesiologists Excellence in Research Award. Dr. Brown is a Fellow of the American Academy of Arts and Sciences and a 2015 Guggenheim Fellow in Applied Mathematics. Dr. Brown is a member of the National Academy of Inventors, the National Academy of Medicine, the National Academy of Sciences and the National Academy of Engineering.