

**NATIONAL SCIENCE FOUNDATION  
BRAIN SCIENCE AT THE INTERFACE OF BIOLOGICAL, PHYSICAL AND  
MATHEMATICAL, COMPUTER SCIENCE AND ENGINEERING:  
ANALYSIS OF NEW OPPORTUNITIES  
Westin Arlington Gateway Hotel  
Arlington, VA**

**“HOMEWORK ASSIGNMENT”**

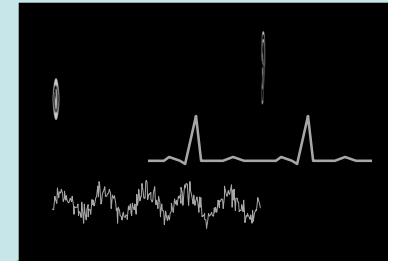
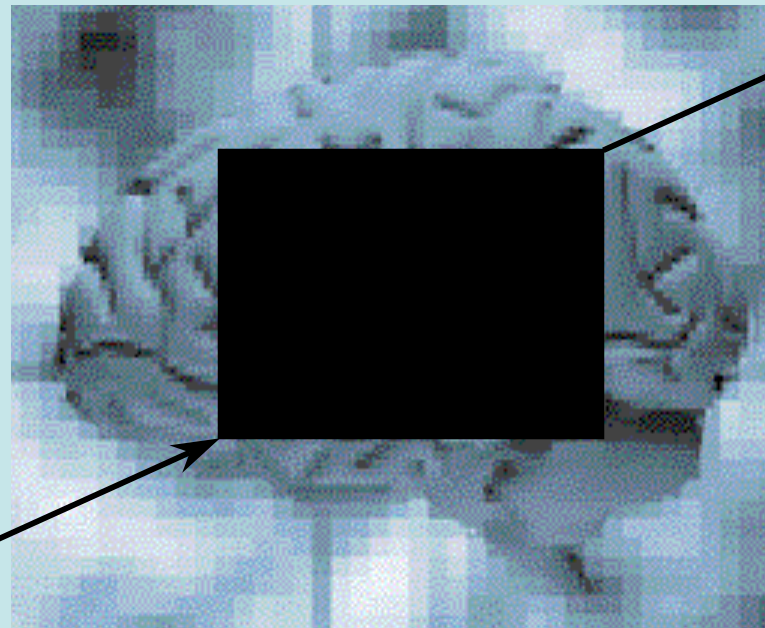
**Emery N. Brown**

**Massachusetts General Hospital  
Massachusetts Institute of Technology  
Harvard Medical School**

**March 4-6, 2007**

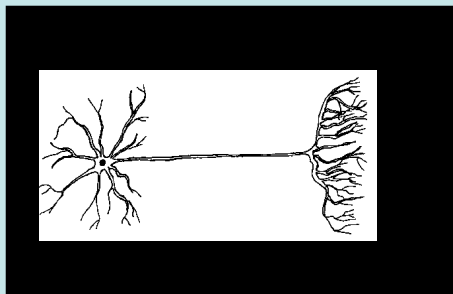
# General Anesthesia: A Systems Neuroscience Question

**Amnesia**  
- Analgesia  
- Hypnosis  
- Immobility  
- Hemodynamic Stability



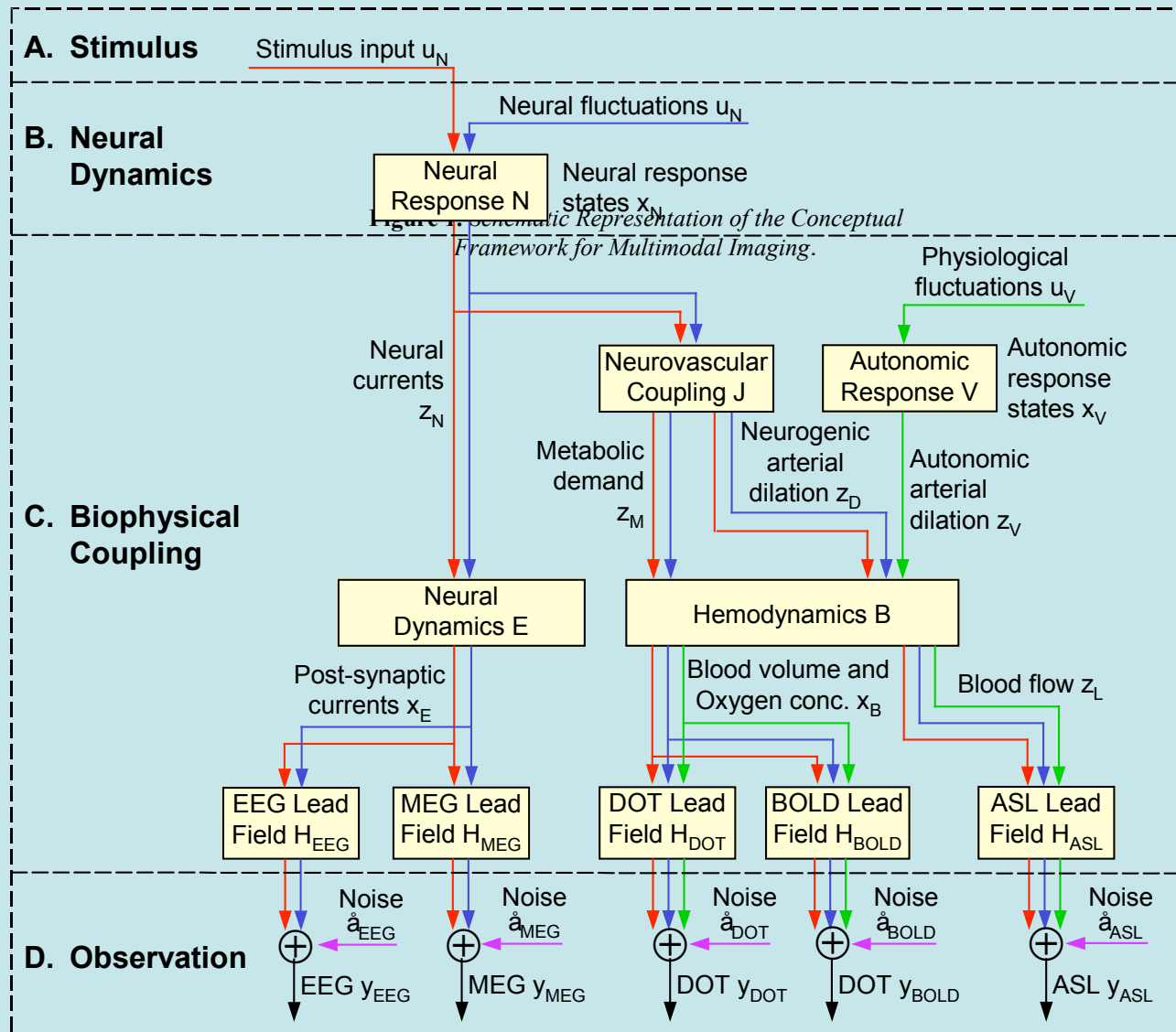
**Clinical Observations**

**Molecular and Cellular Biology**



- “.... a drug-induced, reversible depression
- of the central nervous system resulting in
- the loss of response to and perception of
- all external stimuli.” (Oliver Wendell Holmes)

# Multimodal Imaging: Fusing Information from Multiple Sources



# **Neuroinformatics**

**Cataloguing Neuroscience Data**

**Sharing of Neuroscience Data**

**Algorithms and Paradigms for  
Neuroscience Data Analysis and Data  
Mining**