



Sarah Louise Eagleman

Postdoctoral Research Fellow, Anesthesiology, Perioperative and Pain Medicine

Bio

BIO

For over a decade my research career as a systems neuroscientist has been centered around measuring the brain in different states of consciousness using electrophysiology. Two ways to study conscious transitions empirically are by investigating the brain during sleep and while under anesthesia. I spent my doctoral and early postdoctoral work studying how sleep improves learning and memory at the neural network level. I characterized a phenomenon known as replay (when networks in the brain rehearse previous experiences offline) in a novel visual area. I continued research on replay in my early postdoctoral work in the hippocampus (an area important for spatial navigation as well as memory formation). My work centered around trying to understand how different hippocampal replay trajectories are selected by reward centers in the brain for future behavioral action.

I am now interested in studying the brain activity associated with anesthetics to broaden my understanding of brain states that exhibit altered consciousness. In fact, the brain shares similar electrophysiological activity during sleep with some anesthetic transitions. With anesthetics, though one is able to compare how different anesthetic agents interact with different neuromodulatory systems to cause similar behavior outcomes (i.e. sedation and unconsciousness). My current project is to explore and evaluate different computational approaches to quantifying anesthetic depth using electroencephalography. A thorough characterization of the brain activity associated with loss of consciousness during anesthesia is of critical importance to better monitor patients undergoing anesthesia. I am excited by this new opportunity to meld my previous expertise in systems neuroscience electrophysiology with clinical and translational work. It has been a long-term aspiration of mine to do research that will have direct applications to improving human health.

HONORS AND AWARDS

- Helena Anna Henzl Gabor Young Women in Science Fund Travel Grant, Stanford University (2019)
- Dean's Postdoctoral Fellowship Award, Stanford University (2018)
- Anesthesia Training Program in Biomedical Research T32, Department of Anesthesiology, Stanford School of Medicine (2018)
- President's Research Scholarship Award, UT Health Science Center Houston (2014)
- Dean's Research Scholarship Award, UT Health Science Center Houston (2013)
- Roberta M. and Jean M. Worsham Endowed Scholarship, UT Health Science Center Houston (2012)
- Tzu-Chi Foundation Scholarship for Excellence, UT Health Science Center Houston (2012)
- Eka Francian Chemistry Honor Society, Ripon College (2007)
- Beta Beta Beta Biological Honor Society, Ripon College (2006-2007)
- The Laurel Honor Society, Ripon College (2006)
- Psi Chi National Honor Society in Psychology, Ripon College (2005 - 2007)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Member, International Anesthesia Research Society (2017 - present)
- Member, Society for Neuroscience (2008 - present)
- Student Member, Association for the Scientific Study of Consciousness (2007 - 2011)
- Student Member, Mind Science Foundation (2007 - 2011)
- Chapter President, Psi Chi National Honor Society in Psychology (2006 - 2007)
- Member, Psi Chi National Honor Society in Psychology (2005 - present)

PROFESSIONAL EDUCATION

- Postdoctoral Fellowship, Rice University , Electrical and Computer Engineering, Neuroscience (2015)
- Doctor of Philosophy, Univ Texas Health Science Ctr-Houston (2014)
- Bachelor of Arts, Ripon College (2007)

Publications

PUBLICATIONS

- **Advanced in precision anaesthesia may be found by testing our resistance to change** *British Journal of Anaesthesia*
Eagleman, S. L., MacIver, M.
2020
- **Nonlinear dynamics captures brain states at different levels of consciousness in patients anesthetized with propofol.** *PloS one*
Eagleman, S. L., Chander, D., Reynolds, C., Ouellette, N. T., MacIver, M. B.
2019; 14 (10): e0223921
- **Remifentanyl and Nitrous Oxide Anesthesia Produces a Unique Pattern of EEG Activity During Loss and Recovery of Response** *FRONTIERS IN HUMAN NEUROSCIENCE*
Eagleman, S. L., Drover, C. M., Drover, D. R., Ouellette, N. T., MacIver, M.
2018; 12: 173
- **Can you hear me now? Information processing in primary auditory cortex at loss of consciousness** *British Journal of Anaesthesia*
Eagleman, S. L., MacIver, M. B.
2018; 121 (3): 526-529
- **Do Complexity Measures of Frontal EEG Distinguish Loss of Consciousness in Geriatric Patients Under Anesthesia?** *Frontiers in neuroscience*
Eagleman, S. L., Vaughn, D. A., Drover, D. R., Drover, C. M., Cohen, M. S., Ouellette, N. T., MacIver, M. B.
2018; 12: 645
- **Calculations of consciousness: electroencephalography analyses to determine anesthetic depth.** *Current opinion in anaesthesiology*
Eagleman, S. L., Drover, D. R.
2018; 31 (4): 431-38
- **Sensory coding accuracy and perceptual performance are improved during the desynchronized cortical state** *Nature Communications*
Beaman, C., Eagleman, S., Dragoi, V.
2017
- **Image sequence reactivation in awake V4 networks** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
Eagleman, S. L., Dragoi, V.
2012; 109 (47): 19450-19455
- **Examining Local Network Processing using Multi-contact Laminar Electrode Recording** *JOVE-JOURNAL OF VISUALIZED EXPERIMENTS*
Hansen, B. J., Eagleman, S., Dragoi, V.
2011

- **Testing pigeon memory in a change detection task** *PSYCHONOMIC BULLETIN & REVIEW*
Wright, A. A., Katz, J. S., Magnotti, J., Elmore, L. C., Babb, S., Alwin, S.
2010; 17 (2): 243-249