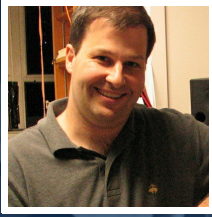


# Revealing How the Brain Learns and Remembers



## Loren Frank

Full Professor, Center for Integrative Neuroscience and Department of Physiology Associate Professor, Center for Integrative Neuroscience and Department of Physiology Assistant Professor, Center for Integrative Neuroscience and Department of Physiology

## CURRENT RESEARCH

Discovering the brain processes that store and retrieve memories, and seek to understand how these processes can go awry

The human brain is remarkable. It gives us our consciousness, our identities and our memory. And when our brain falters, we falter with it. How do we find ways to keep our brains healthy and our memories robust? Our current understanding of how the brain works remains primitive at best - but we must understand it in detail if we want to fix it when it fails.

The research of Dr. Loren Frank at the University of California, San Francisco is revealing how the brain learns and remembers and how those processes go awry in aging and disease. By studying how animals form memories, he has already helped move the field forward. His work has linked specific brain processes with learning, memory and decision-making -- findings that can inform our health, as these processes also underlie human brain function. Dr. Frank's discoveries include:

- The identification of a pattern of brain activity seen in awake animals where past experiences are 'replayed'
- The demonstration that these memory replay events are critical for learning and memory-guided decision-making
- The demonstration that these event replay not only the past, but also possible futures, providing a link between memory and imagination
- The demonstration, in collaboration with Dr. Yadong Huang, a researcher at the Gladstone Institutes, that these events are disrupted in a mouse model of Alzheimer's disease
- The development of new ways to make the brain learn and remember more effectively

One of the central challenges in understanding the brain is that the current state of research technology is not up...

## AFFILIATION



University Of California, San Francisco

## EDUCATION

- Postdoctoral Research in Brain and Cognitive Sciences 2003, Harvard University and Massachusetts General Hospital
- Ph.D. in Department of Brain and Cognitive Sciences 2000, Massachusetts Institute of Technology
- B.A. in Psychology and Cognitive Studies 1994, Carleton College

## AWARDS

- University of Indiana Fill Young Investigator Award, 2013
- College Mentors for Kids Inspire Award, 2013
- Society for Neuroscience Young Investigator Award, 2011
- McKnight Memory and Cognitive Disorders Award, 2010
- UCSF Outstanding Faculty Mentorship Award, 2009

## RESEARCH AREAS

Education, Neuroscience

## FUNDING REQUEST

Your contribution would accelerate innovative, early stage ideas for which other funding is not yet available. These high risk, high reward projects include the development of a memory prosthetic device that could maintain brain function over the lifespan, and efforts to identify the environmental factors that influence learning and remembering. These insights have the potential to drive new therapeutic approaches for cognitive dysfunction and memory loss.

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