

# Using the Visual System to Understand our Most Basic Cognitive Abilities



**Geoffrey Ghose**

Associate Professor, Neuroscience, Radiology, and Psychology

## CURRENT RESEARCH

### Shedding light on important public health issues and fundamental scientific principles

Dr. Geoffrey Ghose, of the University of Minnesota, studies the visual system to understand the physiological basis of cognitive attributes that are most critical for our distinct abilities. While the importance of understanding such basic scientific issues is important in its own right, Dr. Ghose's research also sheds light on important public health issues that arise due to the profound and severe effects that many neurodegenerative and developmental disorders have on higher cognition including Autism and Alzheimer's.

Dr. Ghose's studies of neuronal circuits underlying cognitive phenomena is aimed toward understand what changes in our brains when we learn a new ability, how attention enables us to do things we could not do otherwise, and how we are able to make decisions quickly and accurately. Dr. Ghose hopes to use his research to develop new experimental and computational approaches to understanding brain function. He currently uses recording and stimulation of neuronal populations, precise behavioral measurements, imaging techniques, and computer simulations towards understanding the physiological circuitry and signals responsible for the cognitive abilities which define who we are and what we can do.

Current focus areas include:

- Attention: Dr. Ghose hopes to better understand how we can flexibly and accurately shift our attention. In order to do so, he studies both monkeys and humans while they are performing demanding visual attention tasks. Through both electrophysiological recordings and imaging he then studies how attention alters the representation of information in visual cortex and improves performance. Dr. Ghose's basic research may help in development of both...

## AFFILIATION



University of Minnesota

## EDUCATION

- Ph.D., in Biophysics, 1992 , University of California, Berkeley
- A.M., in Physics, 1986 , Harvard University
- A.B., in Physics, 1986 , Harvard University

## AWARDS

- Alfred P. Sloan Research Fellowship, 2005-2007
- NIH Postdoctoral Fellowship, 1994-1997
- American Physical Society Summer Intern, 1985
- Harvard College Scholarship, 1983

## RESEARCH AREAS

Life Science, Health IT, Neurological / Cognitive, Neurological / Cognitive

## FUNDING REQUEST

Your contributions will support the research of Dr. Geoffrey Ghose, of the University of Minnesota, as he better understands the ways in which we learn, make decisions, and pay attention. Your support will fund the necessary expenses for personnel, taking care of the animals in his lab, and new technologies. In choosing to donate, you will be a part of understanding some of the most important things we all do each day!

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