

BRAIN MAPPING



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Unlocking the Mysteries of the Brain

How does the human brain give rise to the mind? How can we use the new sciences of the mind and brain to treat neurological diseases? Major advances have been made over the last decade in our ability to examine the anatomy and function of the human brain using noninvasive brain imaging. These techniques have opened up new frontiers in the basic sciences that are only beginning to be applied in the clinic to diagnose and treat patients. Neurosurgeons may be able to use brain mapping to plan safer surgeries, or to diagnose neurodegenerative diseases like Parkinson's and Alzheimer's by understanding what goes wrong physically in the brain during these diseases. This is a new dawn for how we understand the function of the human brain, the mechanisms of brain disease, and how the brain may be repaired. Drs. Web Pilcher and Brad Mahon are exploring the most recent applications of this new science to the diagnosis and treatment of neurological diseases.

As chair of the Department of Neurosurgery, Dr. Pilcher is credited for the transformation of a small clinical service department into a nationally-recognized academic and clinical enterprise. His leadership in therapeutic discovery for brain and spinal diseases and his recruitment of scientific and clinical faculty vaulted UR Medicine's Neurosurgery to a top five ranking nationally in funding.

Dr. Mahon's work is focused on understanding how functional interactions among anatomically distinct brain systems may promote the recovery of neurological function after a brain lesion. In collaboration with faculty in the Department of Neurosurgery, Dr. Mahon is currently working on the optimization and extension of pre-surgical brain mapping techniques. His goal is to develop the next generation of methods for mapping brain function, specifically tailored to the particular functional anatomy of each neurosurgery patient.

The Brain and Data Science. The field of data science is transforming how the world consumes, uses, applies, and understands information. As home to internationally-recognized research in cognitive science and artificial intelligence, the University is uniquely positioned to advance our understanding of how the brain makes sense of the world. We are exploring how vast quantities of data—including images of the brain, models of neuron behavior, and maps of the genes that are “turned on” in different brain regions—and this collaborative science can help us analyze the brain more intimately. By making the data sharable and searchable, brain researchers can piggyback off of one another's studies and discover more ways to improve outcomes for patients.

Your gift can help us *better understand how the brain works*

Through research and clinical outreach, Drs. Pilcher and Mahon and their colleagues are developing better ways to understand various aspects of the brain and how they give us certain abilities. In doing so, we can potentially solve some of the greatest health challenges facing the world today. Your support will help revolutionize what we know about the brain as it develops, ages, and is affected by disease.

ENDOWED AND DISTINGUISHED PROFESSORSHIPS IN BRAIN MAPPING—\$1,500,000 to \$2,000,000 OR MORE

Professorships are among the most coveted and defining rewards that a faculty member can receive. They provide invaluable support that helps the recipient expand research projects, conduct clinical studies, and mentor Ph.D. candidates and junior faculty. An endowed professorship is a long-term commitment to excellence that links its donors to quality medical education, research, and patient care in perpetuity.

ENDOWED RESEARCH FUNDS—\$750,000 to \$1,000,000 OR MORE

Supports mid-career scientists who have not yet attained the rank of full professor, providing a vital connection between the work of our most eminent scientists and tomorrow's future scientific leaders.

RISING STAR FUNDS—\$250,000 to \$500,000 (multi-year)

Support at this level can help the best and brightest, early-career researchers fund promising science that may be too cutting-edge to attract external funding from traditional avenues of support like the National Institutes of Health (NIH); work that is vital to scientific discoveries and advances.

BRIDGE FUNDS—\$100,000

As government research funds become more restrictive, it is increasingly difficult for both well-established and new investigators to maintain funding when there is an interruption in NIH funding—interruptions that can have a significant, negative impact on the research being conducted. Private philanthropy is an essential stopgap measure to sustain promising science and highly meritorious research projects.

PILOT PROJECTS/SEED FUNDS—\$50,000 to \$100,000 (annually)

Gifts for seed funding are “risk capital.” They allow scientists to shift the direction of their research to follow promising leads or new ideas, propelling scientific discoveries in new ways. You can help give researchers the time they need to push the boundaries of science and allow innovative ideas to reach their full potential.



For more information about how your gift can make an impact, please contact Brenda Gaglia at:
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