



UNIVERSITY OF MINNESOTA

Driven to Discover™

# DISCOVERY ILLUMINATES ALL HEMISPHERES.

## MnDRIVE: Advancing the treatment of brain conditions

### GOAL

Address complex and debilitating brain conditions by leveraging investments in medicine and engineering, and extending partnerships with the medical device industry

### ISSUES

- Nervous system disorders affect one in five Americans, at an annual cost of about \$500 billion
  - » Disorders include Parkinson's, Alzheimer's, dystonia, tremor, depression, obsessive-compulsive disorder, stroke, chronic pain, Tourette syndrome, and schizophrenia
- Neuromodulation is a noninvasive way to modify brain activity to decrease symptoms and restore normal functions
- Deep brain stimulation has already proven successful in treating Parkinson's
- Minnesota's biomedical device industry includes Medtronic (the world leader in neuromodulation), Boston Scientific, and St. Jude Medical—with combined neuromodulation revenues of \$2.3 billion in 2011
- The world market for neuromodulation systems is expected to grow \$5 billion–\$10 billion by 2016
- NIH invested more than \$5.5 billion in neurosciences, and more than \$3.8 billion in brain disorder research, in 2010
- The U's programs, clinic affiliations, and industry partnerships provide fertile ground for training neuroscientists, engineers, and clinicians
  - » Faculty and researchers have attracted \$45 million in NIH funding for promising discoveries

### STRATEGIES

- Hire faculty dedicated to
  - » Better understanding regions of the brain to target for various diseases
  - » Pioneering new technologies and applications in deep brain stimulation and optogenetics
- Leverage faculty and infrastructure and NIH and NSF federal grants to speed research
- Develop clinical applications
  - » Expand partnerships with key medical device industry leaders to produce clinical applications
  - » Create a neuromodulation service line to provide seamless clinical care for patients

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## STATEWIDE OUTCOMES

### Short-term

- Strengthen Minnesota's medical device industry
- Increase federal funding for research
- Attract the best trainees and faculty

### Long-term

- Improved health and quality of life of Minnesotans
- Reduced economic impact of brain conditions