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