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### **“Deep Brain Stimulation for Obesity”**

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Obesity is a major epidemic contributing significantly to morbidity and mortality. Obesity rates have been increasing at an alarming rate over the past couple of decades and now more than one-third of U.S. adults are obese. It is estimated that by 2030 there will be approximately 3 billion overweight or obese adults worldwide. Furthermore, the severity of obesity has been on the rise as well and now morbid obesity (body mass index >40kg/m<sup>2</sup>) affects more than 8 million American adults. Obesity contributes to the risk for coronary heart disease, type 2 diabetes, certain cancers, hypertension, stroke, respiratory problems, dyslipidemia, liver disease, and osteoarthritis. The medical costs of obesity in the United States are staggering. The work supported by this proposal will describe, design and test (in a rodent model) a novel deep brain stimulation (DBS) system for the treatment of obesity. Sensor outputs will aid in the precise functional placement of the DBS electrode and will provide feedback for optimizing the stimulation parameters. The proposed project will include design and testing of a prototype system in rats made obese by maintenance on a high fat diet to assess the fundamental 'proof-of-concept' that the system will decrease the body weight of obese rats.



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