I-Patch: Neuromodulation for Pain Control & Movement Disorders
University of Iowa, Iowa State University, University of Virginia, University of Twente

I-Patch ACHIEVEMENT

MAIN ACHIEVEMENT:
• The I-Patch has made possible a complete transformation in the way in which neural fibers in the spinal cord are activated for therapeutic and restorative purposes.

HOW IT WORKS:
• A 100 µm thick silicone membrane with integral electrodes is placed directly on the spinal cord surface via a surgical durotomy, and the leads are connected to a separate epidurally implanted pulse generator. The stimulus signals applied to the spinal cord can thus be of much lower power (µW as opposed to mW), and capable of highly selective activation of the target fibers.
• I-Patch device (blue ring) is placed directly on the spinal cord surface (cross-sectional view; interconnection leads not shown).

ASSUMPTIONS AND LIMITATIONS:
• The procedure must be performed by a neurosurgeon.
• The procedure is not yet approved by the U.S. FDA.

END-OF-PHASE GOAL
1. Complete design revisions and build prototypes (3Q12)
2. Complete in vivo chronic trial in large animal model (2Q13)

Primary Objective: obtain the data needed for human testing (IDE: 3Q13).
• Introduce effective new therapies for intractable back/extremity pain.
• Map the somatotopic organization of the spinal cord pathways.
• Explore movement disorder therapies.

Budget: FY2013 - $580,000
Transition Partners: Evergreen Medical LLC, The Integra Group, Cochlear Corp., Oak Ridge National Laboratory.

I-Patch technology is transforming analgesic and restorative spinal cord therapy.