**428r Characterizing the Effects of Electrical Stimulation on Neural Progenitor Cell Behavior**

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To successfully apply stem cells therapeutically to treat nervous system injuries and neurodegenerative diseases, control of stem cell growth and differentiation is necessary. Individual cues present in vivo which contribute to changes in stem cell behavior are best discovered and studied in vitro. We have designed and fabricated a microelectrode device to combine electrical cues with chemical, physical and biological cues and investigate the effect of these cues on neural stem cell (NSC) derived from the hippocampus of adult rats. The device allows for selective stimulation of individual cells present in microgrooves that physically confine the cells. The effect of neural stem cell growth and differentiation in response to electrical cues is being investigated.