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Ian Besse and **Colleen Mitchell*** (mtchl1@math.uiowa.edu), 225E MacLean Hall, Iowa City, IA 52242. *Regulation Of The Cardiac Action Potential Through Caveolar Current*. Preliminary report.

Cardiac caveolae are microdomains which serve as reservoirs of recruitable sodium ion channels. In response to stress, caveolae open exposing up to 40% more sodium channels to the extracellular space. This can cause marked changes in action potential morphology and conduction. We will present a three compartment model incorporating caveolar current into a Hodgkin-Huxley type cardiac model. Recent studies suggest that mutations in the structural proteins of caveolae can lead to a new form of Long QT syndrome. Simulations which incorporate dynamic opening of caveolae provide a new hypothesis for the way in which this mutation leads to the diseased state. (Received August 25, 2009)