1116-VH-958 **William Severa*** (wmsever@sandia.gov), **James Bradley Aimone** and **Ojas Parekh**. *A Sparse Coding Model of the Hippocampal Dentate Gyrus.*

Acting as a conduit from the entorhinal cortex (input from neocortex) to the CA3 (associative attractor network) within the hippocampus, the dentate gyrus is believed to increase the sparseness and separation of the original input signal. This action has been described as critical for the formation of fixed-point memories in the attractor landscape downstream. However, rigorous models of these systems' interactions are rare. We take a bottom-up approach and discuss a neural-inspired idealized model of the dentate gyrus sparse coding process. Combinatorial properties of this coding method point to biological plausibility and have implications for a dynamical CA3 attractor network. Moreover, the current canonical grid cell (navigation) model is group isomorphic to a special case of our domain space. By generalizing this special case, we simultaneously obtain biologically realistic scope and resolve several issues with the traditional grid cell model. (Received September 21, 2015)