* Explain what DSNs are and what they offer

Deep generative models have gained popularity from their encouraging success modeling images, speech, music, and other datasets.  In our work, we use this deep generative modeling technology to learn degenerate solution spaces of neuroscientific models. Given a parameterized model and some desired behavior, we train degenerate solution networks (DSNs) to learn the maximally expansive distribution of model parameters that yield the model behavior of interest. For example, consider the tri-phasic “pyloric” rhythm of the stomatogastric ganglion (STG) circuit in the crustacean. To characterize the space of circuit parameters that generate pyloric rhythms, modern approaches analyze the behavior of many simulations. With our approach, we can directly learn the full distribution of circuit parameters that yield pyloric rhythms.  these networks can be trained and utilized to identify robust parameterizations of models, conduct model criticism, and inform experimental design.

* Talk about technical development that is necessary
* Talk about applying this to a V1 model to learn the solution space of a **biophysical** model. This fits into the “we make toy models” and simulate story.
* Talk about characterizing solution space of RNNs for solving various **tasks** using DSNs on low-rank RNNs
  + You can learn the solution space for a task
    - Contextualize solutions of different learning algorithms within that greater solution space.
* Tangling project: test statistics