* Introduction
  + Environments can be favorable or unfavorable from moment to moment and from season to season
  + Animals must respond to environmental variation appropriately
  + Seasonal dormancy (diapause) is how some insects respond to unfavorable winter stress
  + Diapause protects animals from winter stress by dramatically changing their physiology
  + There is variation in diapause physiology between species and even between genotypes of a single species
  + We think genotypic variation is what drives the evolution of diapause
  + As we begin to experience the effects of climate change, understanding how diapause genotypes respond to climate change will affect how insects respond to their environment and how we manage insect pests.
* Specific goal
  + During diapause, many animals do not feed however surviving diapause takes energy
  + One strategy used by insects to meet the energetic demands of diapause is to increase nutrition stores. But so many more exist.
  + ECB has a larval diapause and after diapause ends, development resumes with two rounds of metamorphosis, they mate, and eventually reproduce using only the nutrition they stored at the start of diapause.
  + My research is focused on understanding variation in diapause genotypes by testing the nutrition storage response using ECB.
* Predictions
  + ECB has at least two genotypes for diapause; long and short
  + I predict that each ECB strain will accumulate energy in relation to the length of time it spends in diapause. The genotype for a longer diapause will accumulate relatively more nutrients than the genotype for a shorter diapause period.
* Setup
  + Before we can understand the variation between these two diapause genotypes we needed be sure we compared developmentally similar insects. We needed a way to diagnose the onset of diapause in animals programmed to enter diapause.
    - ECB is known to be receptive to diapause cues during the ultimate instar, so eclosion into the ultimate instar was our starting point
    - ECB begins diapause at the end of the ultimate larval instar and one of the tenants of diapause is metabolic suppression. So, we first tried to diagnose diapause by rate of metabolism
      * Explain process
      * Show pictures
      * Show results
    - Metabolic activity didn’t exactly pan out so we went back to the next hallmark of diapause; developmental arrest and in ECB feeding is terminated.
    - For continuously developing ECB, before pupation larvae pass through a wandering period. During this stage, ECB do not feed and do not produce frass. We tracked feeding and pupation during the final instar and in diapause programmed animals and asked, “When does the wandering period occur in diapausing larvae?” and “Are all the larvae in the wandering stage?”.
      * Explain process
      * Show pictures
      * Show results (pupation and wandering)
* Results