1. Background
   1. Global climate change is altering ecosystems
   2. Aquatic animals are environmental sentinels – can learn about the environment and about their biology
   3. Controlled experiments give us insight into specific processes
      1. But, must remember that in an ecological context changes will be different due to presence of other factors
   4. Oysters are useful because...
2. Ocean acidification – nearshore environmental changes
   1. Global ocean trends
      1. How chemistry works
      2. How buffering works
      3. How the ocean will change
   2. Nearshore environmental processes
      1. Upwelling
      2. Respiration
   3. Puget Sound and Washington waterways
3. Biological implications in bivalves
   1. Larvae
      1. Growth
      2. Calcification
      3. Developmental delay and energetics
   2. Adults
      1. Calcification
      2. Metabolic processes
      3. Responses to other stresses
   3. Other invertebrates
      1. Differences between bivalves and invertebrates with higher metabolic rate (cuttlefish, squid)
4. Molecular tools to understand effects of ocean acidification
   1. Assays
   2. Transcriptomics
   3. Proteomics