Genomics Explorers
http://serc.carleton.edu/exploring_genomics/index.html
Exploring Genomics Data

The Genomics Explorers provide an iterative way for students to choose strategies for asking and addressing biologically interesting questions using a range of genomics tools. Select which Explorer you wish to explore:

The Genomics Explorer helps students:

1. become inspired about biology
2. develop a literature-based understanding of important quantitative approaches,
3. define interesting questions that can be addressed with data,
4. make connections between genes and their biological functions,
5. analyze and critically evaluate bioinformatic data,
6. connect bioinformatic analyses with wet lab and field experiments,
7. develop and test a viable hypothesis by bringing together the literature, classroom knowledge, and analysis of data.

Explore Chamaecrista fasciculate (partridge pea), or
Explore Aiptasia pallida (a tropical sea anemone)

<table>
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<tr>
<th>Exploring Chamaecrista fasciculate (Partridge Pea)</th>
<th>A native prairie plant (legume) found in midwest and eastern USA</th>
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<tr>
<td>Explore Chamaecrista morphology, physiology, ecology, and evolution</td>
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<td>Overview of Chamaecrista Genomics Research</td>
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<td>Genomics research requires:</td>
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The Chamaecrista Explorer is designed to help you develop genomics research questions and get you started analyzing genomics data by guiding you through different strategies. The web interface guides you through strategies for exploring genomics data and using it to understand biological questions about Chamaecrista fasciculata. Genomics Data
Exploring Aiptasia pallida (a tropical sea anemone)

At its heart, genomics research requires:

1. A biological question
2. DNA or protein sequences
3. Computational methods to analyze the sequence data
4. A critical researcher to evaluate the results and connect the results to larger picture

The Aiptasia Explorer will help you develop genomics research questions and get you started analyzing genomics data by guiding you through different strategies. You can start with any one of the strategies. As you get more comfortable with the data, you'll find yourself combining strategies to ask and answer more sophisticated questions.

Not sure what topics you find interesting? Consider coral bleaching (stress biology), coral disease (immune systems), cellular interactions between the symbiont and host (immune systems, cell biology), evolution of different classes of genes in metazoa (comparative genomics).

**Aiptasia** is a genus of a symbiotic cnidian belonging to the class Anthozoa (sea anemones, corals). Aiptasia is widely distributed tropical sea anemone of benthic lifestyle typically found living on mangrove roots and nearby hard substrates. This anemone, as well as many other cnidarian species, is found to contain symbiotic dinoflagellate unicellular algae of the genus Symbiodinium living inside nutritive cells. The symbionts provide food mainly in the form of lipids and sugars produced from photosynthesis to the host while the hosts provides inorganic nutrients and a constant and protective environment to the algae. Species of Aiptasia are relatively weedy anemones able to withstand a relatively wide range of salinities and other water quality conditions. In the case of A. pallida and A. pulchella, their hardiness coupled with their ability to reproduce very quickly and out-compete other species in culture gives these anemones the status of pest from the perspective of coral reef aquarium hobbyists. These very characteristics make it easy to grow in the laboratory and thus it is extensively used as model system for scientific study. In this respect, Aiptasia has contributed a significant amount of knowledge regarding cnidian biology, especially our understanding of cnidarian-algal symbioses, a biological phenomenon crucial to the survival of corals and coral reef ecosystems. The dependence of coral reefs on the health of the symbiosis is dramatically illustrated by the devastating effects experienced by corals due to the loss of algal symbionts in response to environmental stress, a phenomenon known as coral bleaching.

Possible Idea to Explore:
Effects of Environmental Stress on *Aiptasia pallida*, by Jennifer Welborn