

An Introduction to Gene Annotation Using the Resources of the Genomics Education Partnership

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The Genomics Education Partnership (GEP) is a national, collaborative, scientific and educational project involving hundreds of undergraduate students in the investigation of a 'real' research problem in genomics. A major goal of the GEP is to annotate the genomes of several *Drosophila* species, using the genome of *D. melanogaster* as a reference. In particular, the GEP is focused on genomic regions in other species that correspond to chromosome four (also referred to as the dot chromosome) of *D. melanogaster*. The scientific interest is based on observations that the dot chromosome shows a mixture of heterochromatic and euchromatic properties. The research approach entails generating finished DNA sequences from the fourth (dot) chromosome of various species of *Drosophila*, annotating these sequences, and making comparisons among species to discern patterns of genome organization related to the control of gene expression. Students become deeply involved in investigating existing (and often competing) evidence for gene models within a region of DNA using a variety of web-based tools. Students exhibit strong learning gains typically associated with more traditional lab-based research experiences. This project is centered at Washington University in St. Louis (www.gep.wustl.edu) and has been used in a variety of educational settings, involving over a thousand undergraduate students at over 50 diverse institutions, most primarily undergraduate colleges. The intent of this mini-workshop is introduce the tools and resources of the GEP using a relatively simple gene annotation example, and to inform other interested educators of how to become involved in this innovative and rewarding educational effort.

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