The Genomics Education Partnership: Democratizing Genomics Research Experiences Nationwide

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The Genomics Education Partnership (GEP) is a nationwide faculty-driven collaboration of 250+ members working to ensure all undergraduates, regardless of their background & available resources, can participate in genomics research via Course-based Undergraduate Research Experiences (CUREs).

Since projects are accessible through the internet, no local research infrastructure is needed to participate in the GEP; thus, GEP is a cost-effective way for faculty & institutions to provide opportunities for students to participate in genomics research. In the GEP computer-based CURE, students experience “hands-on” how to use web-based genome browsers, bioinformatics tools, & databases to investigate eukaryotic genes & genomes based on empirical (e.g., RNA-Seq data) & computational (e.g., gene predictions, sequence alignments) evidence.

**Introduction**

The GEP is actively recruiting new members, especially faculty at Minority-Serving Institutions & Community Colleges. The GEP hosts free in-person & virtual New Member Trainings throughout the year. If you are interested in joining our Partnership, let us know by completing the “Contact” form on the GEP website (thegep.org/contact).

**Projects**

**Gene annotation** is the process of indicating the location, structure, & identity of genes in a genome.

**Students** must evaluate the available evidence, create the best gene model, & defend their conclusions.

- Expansion of the Muller F element in *Drosophila*
- Evolution of insulin pathway genes across *Drosophila*
- Evolution of venom genes in parasitoid wasps
- Annotating genes in the critically endangered Puerto Rican parrot

**Benefits**

- Curriculum & projects for easy integration
- Flexible implementation (short modules or CURE)
- Teaching & technical support from community
- Professional development (Science & Teaching)
- Opportunities to present & publish

**Institutions**

- NO COST curriculum, training, & technical support
- Only requires access to computer & internet
- Incorporates best practices in science education
- Provides undergraduate research opportunities
- Research infrastructure isn’t needed

**Faculty**

- Flexibility in implementation
- Teaching & technical support from community
- Engage in novel research within a course
- Gain marketable skills in critical thinking/big data
- Virtual peer tutor available 7 days/week
- Opportunities to co-author publications
- Improve comprehension of genomics concepts

**Students**

- Research infrastructure isn’t needed
- Gene annotation is the process of indicating the location, structure, & identity of genes in a genome.
- Gain marketable skills in critical thinking/big data
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**Conclusion**

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3,396+ students participated in 2021/2022