



# GENOMICS EDUCATION PARTNERSHIP

a nationwide collaboration of 100+ institutions that integrates active learning into the undergraduate curriculum through Course-based Undergraduate Research Experiences (CUREs) centered in bioinformatics and genomics

## BENEFITS FOR FACULTY

- Genomics curriculum and projects for easy course integration
- Flexible course implementation from short modules to a CURE
- Teaching and technical support from a strong and supportive community
- Professional development in bioinformatics and genomics
- Opportunities to present and publish scientific and education research results

## BENEFITS FOR STUDENTS

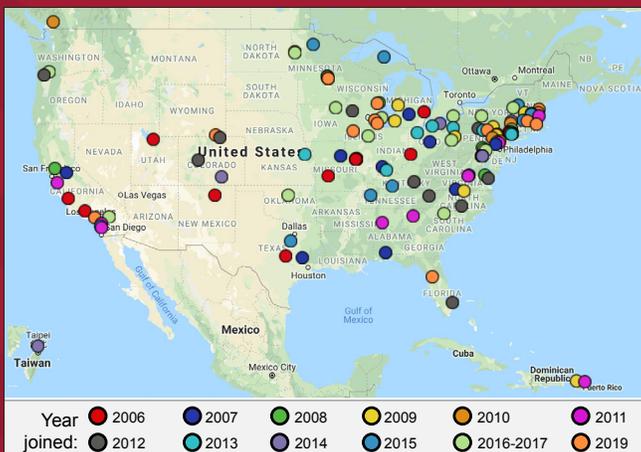
- Engage in novel genomics research during scheduled course hours
- Gain marketable skills in critical thinking, communication, and big data analyses
- Improve comprehension of genomic concepts
- Opportunities for presentations and publications
- Accessible to multiple education levels (including non-majors)

## BENEFITS FOR INSTITUTION

- FREE curriculum materials, training, and technical support
- Low capital investments (requires only computers and Internet access)
- Provides undergraduate research opportunities
- Incorporates best practices in science education into classrooms
- Supports STEM workforce development

## WHO SHOULD JOIN THE GEP?

GEP materials and research projects have been used by faculty teaching all levels of undergraduate biology at Community Colleges, Primarily Undergraduate Institutions, and Research Universities.



INTERESTED IN FINDING OUT MORE ABOUT THE GEP?

Visit us online at <http://gеп.wustl.edu>



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## **EDUCATION THROUGH RESEARCH EXPERIENCES**

The Genomics Education Partnership (GEP) helps address STEM education needs by integrating active learning into the undergraduate curriculum. Through Course-based Undergraduate Research Experiences (CUREs) centered in bioinformatics and genomics, students engage in authentic scientific research and develop valuable skills in data science, while also practicing problem-solving and perseverance to produce scientific results. Our scientific research publications use the gene models produced by GEP students to better understand the structure and evolution of genes and genomes.

## **BROADLY EFFECTIVE BENEFITS**

The GEP is a nationwide community of practice that, through training, mentorship, and collaboration, enables a broad range of institutions to introduce bioinformatics and genomics into the undergraduate curriculum. Bioinformatics training extends the teaching of molecular biology and emphasizes the power of computational approaches to explore biological systems. Inquiry-driven genomics research engages students in scientific discovery. Assessment data shows that students in GEP courses report gaining a greater understanding of how science is done and appreciate the opportunity to contribute to the knowledge base, to function as scientists.

## **DEMOCRATIZING RESEARCH EXPERIENCES**

Since its founding in 2006, the GEP has expanded across the country to encompass more than 100 institutions of all sizes and missions. The majority of the GEP member schools are Primarily Undergraduate Institutions, but members range from Community Colleges to R1 Universities. No research infrastructure is needed; the required equipment for research in bioinformatics is a laptop computer and connection to the Internet, making this opportunity broadly accessible. Because the curriculum is integrated into a course during the academic year, and is accessible 24/7 through the Internet, students have the flexibility to attend to other responsibilities while also gaining research experience.

## **COMMUNITY OF SCIENCE EDUCATORS**

The GEP provides a welcoming environment where faculty find a community devoted to pursuing excellence in science teaching. Many GEP faculty had no prior experience in genomics or bioinformatics, yet they were able to use the GEP's curriculum and professional development efforts to bring cutting-edge genomics concepts and tools into their teaching. New GEP members are paired with a mentor who teaches in a similar educational setting to discuss effective ways to introduce the curriculum and research projects to their students.

## **FLEXIBLE IMPLEMENTATION**

GEP faculty use our materials in a wide variety of ways depending on the course structure and student backgrounds. These implementations range from incorporating short lessons into an existing course (e.g., using a genome browser to investigate eukaryotic gene structure) to participating in a genomics CURE centered around comparative gene annotation.

## **EXPANDING THE PARTNERSHIP**

We host free online and in-person faculty training workshops and supply a peer mentor. We also provide training and financial support for peer student instructors. Current GEP faculty participate in our summer Alumni Workshops, at no cost to them, to share their experiences teaching GEP materials, develop new curriculum, and work on potential scientific and education research publications. We are happy to invite interested current and future faculty to contact us and join our partnership.