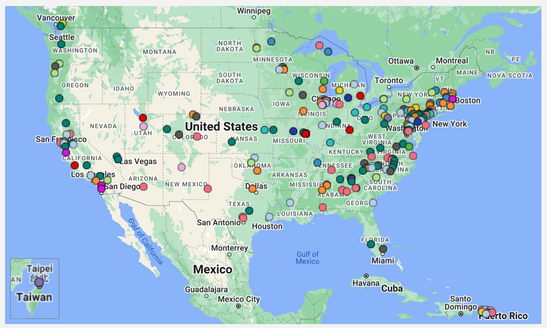
Democratizing Student Access to Help: the nationwide, virtual peer mentoring network of the Genomics Education Partnership

Katie M. Sandlin, Wilson Leung, D'Andrew Harrington, David Lopatto, S. Catherine Silver Key, Melanie Van Stry, Jamie Siders, & Laura K. Reed

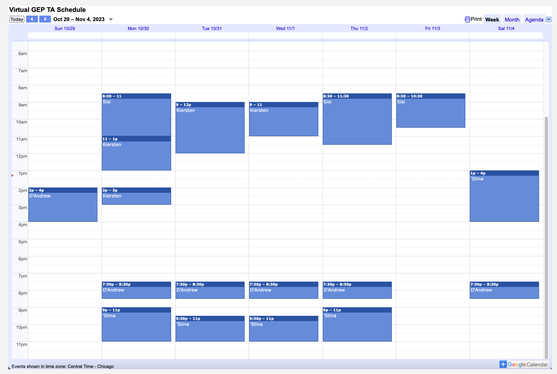
Introduction

- 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.

Virtual TAs



Institutions with GEP Students



Weekly TA Schedule

GEP's Virtual Teaching Assistants (TAs)/peer mentors are a centralized core group of students that can provide real-time support via Zoom to all GEP students seven days a week.

TABLE 1 Student responses to propositions about the Virtual Teaching Assistants[a]

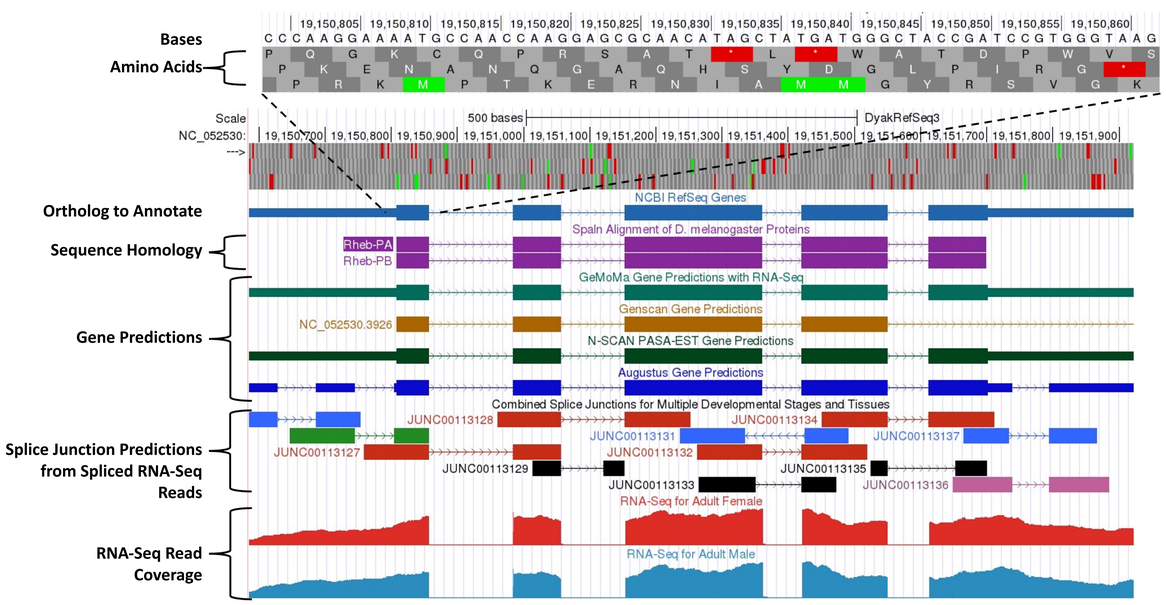
Item	Mean	Median
I felt comfortable asking the virtual TA questions	4.3	5
I felt more comfortable asking the virtual TA questions than my instructor	3.65	4
The virtual TA was knowledgeable about the GEP content material	4.3	4
The virtual GEP TA provided clear and understandable explanations	4.25	4
A virtual TA was available and responsive when I needed help	4.3	4
The virtual TA enabled me to successfully complete my GEP project	4.23	4
I would recommend other students completing GEP projects to utilize the virtual TAs	4.38	5
The virtual TAs are an important part of the GEP program and should be continued	4.43	5
I think all courses (and students) would benefit from having a nationwide set of virtual TAs associated with them	4.4	5

[a]Items were evaluated on a scale of 1 (strongly disagree) to 5 (strongly agree). $N = 137$.

Lopatto, D. et al. Supporting the democratization of science during a pandemic: genomics Course-based Undergraduate Research Experiences (CUREs) as an effective remote learning strategy. *J. Microbiol. Biol. Educ.* e00039-23 (2023) doi:10.1128/jmbe.00039-23.

- To assist GEP members and students during the COVID-19 pandemic, the GEP recruited a group of students who had previously completed a GEP course and mentored them while they served as Virtual TAs.
- The Virtual TAs are available during evenings and weekends to accommodate students with family or work commitments.

Projects



***Drosophila yakuba* GEP UCSC Genome Browser**

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.

Conclusion

Our data suggests that online delivery of the novel Virtual TA program allowed the GEP CURE to remain effective through the transition from onsite to online: the GEP CURE is resilient. This resilience aids in the democratization of science education by making research experiences available to all.

We encourage all faculty to consider implementing a Virtual TA program to provide additional support for students and to facilitate peer mentoring.

thegep.org/contact

thegep.org
@GEP_CURE
kmsandlin@ua.edu
@KatieMSandlin

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