**Genome Solver QUBES Workshop**

**Agenda**

**August 14th 2020 1-4pm**

**Zoom link:**

[**https://georgetown.zoom.us/j/94825188852**](file:///Users/rosenwaa/Downloads/Join%20Zoom%20Meeting%20https%3A/georgetown.zoom.us/j/94825188852)

**Before the workshop**

1. Please join the Genome Solver Community

* Go to <https://qubeshub.org/community/groups/genomesolver/> and sign up for your own account - see the green tabs near the top of the page.
* Note: For those of you who took a workshop before 2017 - we have a new website (the old http://genomesolver.org site no longer exists). So please take a spin around and let us know what you think.

2. Questions – contact

* Anne Rosenwald, Georgetown University – anne.rosenwald@georgetown.edu

3. Prepare your computers – most of the tools we use are web-based and open-source. However, there are some important exceptions:

* Download MAUVE (<http://darlinglab.org/mauve/download.html>) for your machine prior to the workshop - free but not available on the web.

4. Information from you

We will also be asking you for information on

* the courses you teach now and plan to teach in the future
* research questions you are interested in
* active learning practices you currently use

We can help you incorporate the tools we’ll discuss in the workshop in your teaching assignments/research projects

**To have with you before the workshop**

1. Your laptop with Mauve installed

2. Your enthusiasm for undergraduate STEM education!

**Workshop Learning Goals**

Through taking part in the workshop, faculty will:

* Remind yourself about your facility with genome annotation and comparative genomics tools;
* Become familiar with the online space, Genome Solver;
* Identify projects that complement your curricular needs;
* Identify projects that complement your research needs;
* Made connections with other participants to help create a community for student learning and research progress

Students engaged in research, as a result of working with trained faculty, will learn to**:**

* Recognize the process of genome analysis as it relates to gene structure and function
* Recognize the relationship between DNA sequence and predicted protein coding sequence
* Recognize that homology to defined protein domains can infer function;
* Apply comparative analysis to demonstrate that fitness for an environmental niche is determined by the genes an organism has.

**Workshop Agenda**

All materials are located in [this folder](https://drive.google.com/file/d/11ClBKgyfcSV4BMFRai4soWodSmfjF6sc/view?usp=sharing). Files in the folder are numbered and correspond to numbers here.

**Friday August 14th, 2020**

**1:00 – 1:05** Introductions and Goals of Genome Solver - Anne

 1\_Main Slide Deck

**1:05 – 1:15** Overview of BLAST and Databases - Gaurav

 1\_Main Slide Deck

**1:15 – 1:30** Assigning Accession Numbers - Vinayak

*Accession Numbers Exercise*

 2\_Accession Number Spreadsheet - each participant has been assigned one to examine this afternoon.

 3\_Accession Number Exercise - explore your sequence

**1:30 – 1:45** Community Science Project Workflow - Vinayak

4\_CSP\_workflow

**1:45 – 2:00 BREAK**

**2:00 – 2:45** Python Pipeline - Vinayak

 5\_Instructions for Pipeline

 CLICK THIS LINK: <https://forms.gle/XXxXRmMyRWetV5C3A>

**2:45 – 3:00** Submitting Data to the Community Science Project - Vinayak

 7a\_Forward BLAST spreadsheet

 7b\_Reverse BLAST spreadsheet

 CLICK THIS LINK: <https://forms.gle/eVcWa6s8HnVa4uoSA>

**3:00 – 3:15 BREAK**

**3:15 – 3:30** Discussion of HGT analysis - a few reminders - Anne, Gaurav, and Vinayak

 1\_Main Slide Deck

**3:30 – 3:45** Synteny - Gaurav

 8\_Synteny Slide Deck

 9\_Synteny Exercise

 Sequence files 10a - 10e

**3:45 – 3:55** Data Visualization - Gaurav

 1\_Main Slide Deck

**3:55 – 4:00** Wrap-Up and Invitation - Anne