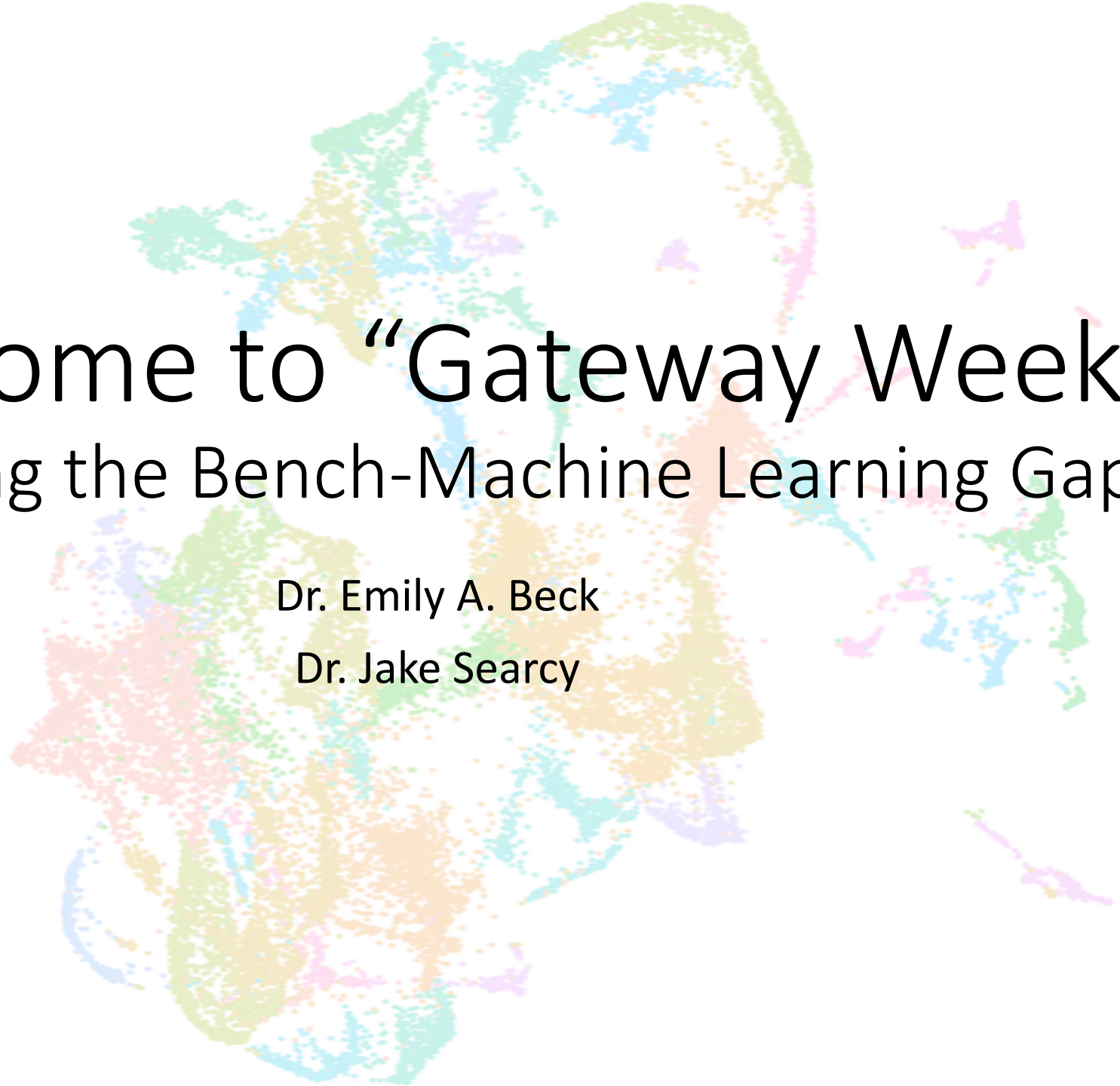


Welcome to “Gateway Week”

Bridging the Bench-Machine Learning Gap

Dr. Emily A. Beck

Dr. Jake Searcy

Why are we here? How are we here?

NIH has drastically increased funding in:

- *computational genomics,*
- *data science*
- *AI/ML*
- *bioinformatics*

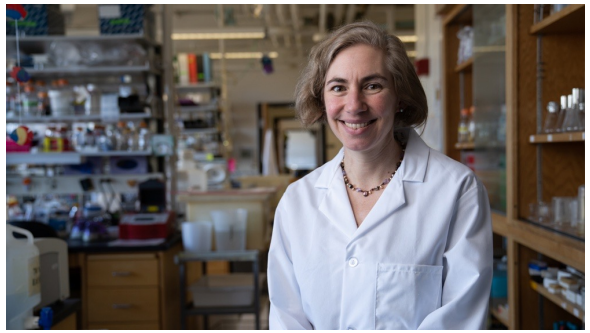
There is a lot of funding to go after if you are able to implement computational tools and strategies to your work!

Notice of Special Interest (NOSI): Administrative Supplements for Workforce Development at the Interface of Information Sciences, Artificial Intelligence and Machine Learning (AI/ML), and Biomedical Sciences

NIH has special interest in training biomedical scientist to develop competencies and skills to make data AI/ML ready!

That is what we are here to do.

We received a supplemental award to the T32 Genetics Training Grant with Karen Guillemin to develop training modules to help students take the first step toward adding ML to their toolkits



What to expect from Gateway Week

Bridging the Bench-Machine Learning Gap

We named this series deliberately. We want to increase communication between bench scientists and computational experts

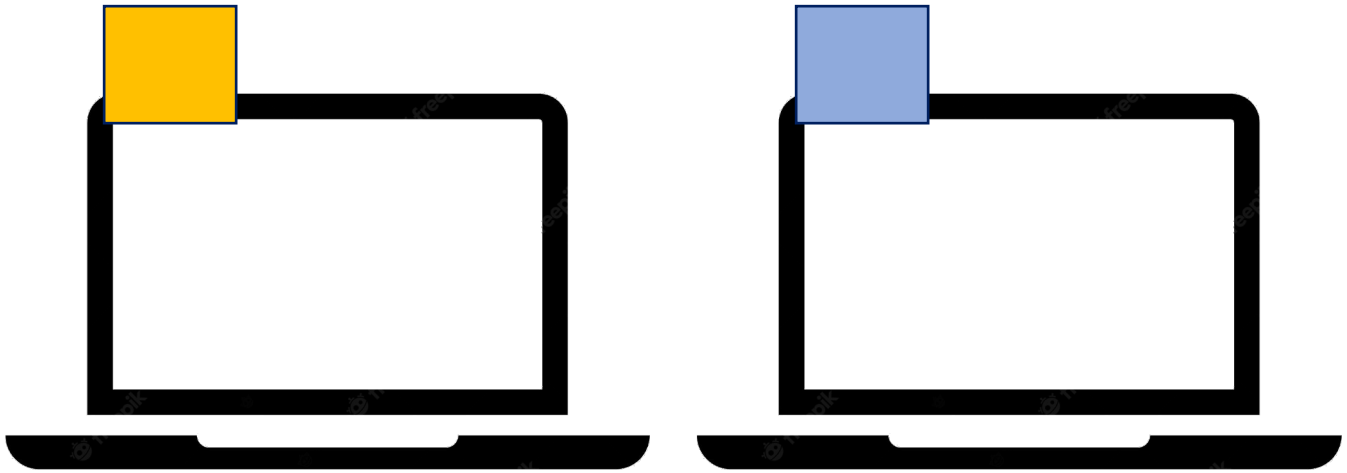
We hope you leave this series with the confidence try new computational methods and are able to communicate and work with ML experts to design robust, reproducible, research projects.

You are not going to leave here an expert in Machine Learning. That is ok!

What to expect from Gateway Week

We are assuming **no coding experience** so don't stress! It isn't a race to finish.

We will be using a color-coded post-it system during activities



HELP!

All done

Feel free to help each other, but…

Pre-Workshop Survey

Welcome to the pilot!

We have a **pre-workshop survey**

Please use some time during our first break to finish.

Also, please make sure you have provided us with a **reliable contact email**

We will be sending you a copy of your answers 6 months after completion of the workshop series and will also be contacting you for a long-term follow-up survey.

Outline for Monday

Morning Session 10:00-12:00pm

Introduction to the Workshop - 10:00am-10:15am [Emily]
Group Introductions - 10:15am-10:30am [All]
What is Machine Learning? - 10:30am-11:15am [Jake]
BREAK - 11:15am-11:30am
Computational Literacy - 11:30am-11:45am [Emily]
Setup and Software Installation - 11:45am-12:00pm [Emily and Jake]

Lunch 12:00-1:30pm

Afternoon 1:30-4:00pm

Good Data Practices - 1:30pm-2:20pm [Jake]
BREAK - 2:20pm-2:30pm
Terminal Lecture 1: Getting comfortable - 2:30pm-3:00pm [Emily]
BREAK - 3:00pm-3:10pm
Terminal Lecture 2: Bash scripting - 3:10pm-3:40pm [Emily]
Discussion - 3:40pm-4:00pm [All]
Homework-Linux!

Outline for Tuesday

Morning Session 10:30-12:00pm

Open Office Hours - 10:30am-12:00pm [Emily and Jake]

Lunch 12:00-1:30pm

Afternoon 2:00-4:00pm

Open Office Hours - 1:30-pm-2:00pm [Emily and Jake]
Guest Lecture - **Bill Cresko** *"The good, the bad and the ugly of data visualization"* 2:00pm-3:00pm
Open Office Hours and Answer Key - 3:00pm-4:00pm [Emily and Jake]

Outline for Wednesday

Morning Session 10:00-12:00pm

Terminal Lecture 3: Programming Power-Up - 10:00am-10:30am [Emily]
BREAK - 10:30am-10:45am
Introduction to R - 10:45am-12:00pm [Emily]

Lunch 12:00-1:30pm

Afternoon 1:30-4:00pm

Your first ML algorithm/ Classification - 1:30pm-3:00pm [Jake]
Datasets for ML Concepts pt 1 - 3:00pm-3:30pm [Jake]
Discussion - 3:30pm-4:00pm
Homework-Penguin ML!

Outline for Thursday

Morning Session 10:30-12:00pm

Open Office Hours - 10:30am-11:00am [Emily and Jake]
Guest Lecture - **Lillian Aoiki** *"R Markdown: USE IT"* 11:00am-12:00pm

Lunch 12:00-1:30pm

Afternoon 1:30-3:30pm

Guest Lecture-**Lillian Aoiki** *"Marine disease detection and surveillance with in situ and machine learning methods"* 1:00pm-2:00pm
Open Office Hours - 2:00pm-3:30pm [Emily and Jake]

Outline for Friday

Morning Session 10:00-12:00pm

Unsupervised Learning ML Concepts pt 2 - 10:00am-11:00am [Jake]
BREAK - 11:00am-11:15am
Clustering example - 11:15am-12:00pm [Jake]

Lunch 12:00-1:30pm

Afternoon 1:30-4:00pm

ML Algorithms - 1:30pm-2:30pm [Jake]
BREAK - 2:30pm-2:45pm
Genetics for ML Concepts - 2:45pm-3:00pm [Emily]
Images for ML Concepts - 3:00pm-3:15pm [Emily]
Discussion - 3:15pm-4:00pm