



## **Big Genomic Data Skills Training for Professors**

*The Jackson Laboratory for Genomic Medicine  
Farmington, Connecticut*

**May 21-25, 2018**

*This schedule is subject to change.*

### **Monday, May 21**

- 8:30am**      **Welcome and Introduction**
- 9:00am**      **Introduction to Data Science with Biological Emphasis**  
Jeffrey Chuang, Ph.D., The Jackson Laboratory for Genomic Medicine
- 10:00am**      **Introduction to High Throughput Sequencing Technologies**  
Charles Wray, Ph.D., The Jackson Laboratory
- 11:00am**      **Hands on Work: Setting up Computing Infrastructure and** Introductions to Galaxy, Genome Space, IGV, Gene Pattern, R, and Slack. Setting up of basic tools.  
Ada Zhan, Ph.D., The Jackson Laboratory for Genomic Medicine; Spencer Glantz, Ph.D., The Jackson Laboratory for Genomic Medicine
- 12:00pm**      **Lunch**    *Location: The 2<sup>nd</sup> floor Pub*
- 1:00pm**      **Introduction to Linux**  
Neil Kindlon, The Jackson Laboratory for Genomic Medicine
- 2:30pm**      **Essential Statistical Analysis**  
Jeffrey Chuang, Ph.D., The Jackson Laboratory for Genomic Medicine; The Computational Sciences staff, The Jackson Laboratory
- 3:30pm**      **Break**
- 4:00pm**      **Curricular Discussion** – Presentation and Discussion of UG courses in Genomics, presentation of previous and existing syllabi  
Reinhard Laubenbacher, Ph.D., The Jackson Laboratory for Genomic Medicine / UConn Health; Charles Wray, Ph.D., The Jackson Laboratory
- 5:00pm**      **RNA-sequencing Seminar**  
Sheng Li, Ph.D., The Jackson Laboratory for Genomic Medicine

**6:00pm**      **Light dinner**  
The 2<sup>nd</sup> floor Pub

**7:00pm**      **Evening Lecture**  
Christine Beck, Ph.D., The Jackson Laboratory for Genomic Medicine

**Tuesday, May 22**

**8:30am**      **RNA-sequencing Introduction**

**9:00am**      **Module #1: RNA-sequencing as Measurement Tool; Hands-on Work**

**10:00am**      **Break**

**10:30am**      **Module #1: Hands-on Work continued**  
Ada Zhan, Ph.D., The Jackson Laboratory for Genomic Medicine

**12:00pm**      **Lunch**

**1:00pm**      **Module Debrief: Lessons learned, Q & A.**

**1:30pm**      **Gene Set Enrichment and Pathway Analysis**  
Parveen Kumar, The Jackson Laboratory for Genomic Medicine

**2:30pm**      **Hands-on Work; Advanced and Derived RNAseq Analysis**  
Timothy Reynolds and Jason Bubier, Ph.D., GeneWeaver Team, The Jackson Laboratory

**4:00pm**      **Break**

**4:30**      **Module #2: Variant Discovery in Genomic Sequence; Hands-on Work; Mutation and Functional Analysis in R; Jeff Cancer Example**  
Jeffrey Chuang, Ph.D., The Jackson Laboratory for Genomic Medicine

**Wednesday, May 23**

**Location change: 195 Farmington Avenue, Farmington, Connecticut 06032**  
**3<sup>rd</sup> floor Conference Room A: U3071A**

**8:30am**      **Debrief on Module #2 Variant Calling: Lessons learned, Q & A.**

**9:00am**      **Exome Sequencing for Variant Discovery**  
Laura Reinholdt, Ph.D., The Jackson Laboratory

- 10:00am**      **Module #3: Exome Sequencing Variant Discovery in Galaxy**  
Charles Wray, Ph.D. The Jackson Laboratory
- 12:00am**      **Lunch**
- 1:00pm**      **Introduction to Microbiome**  
Spencer Glantz, Ph.D., The Jackson Laboratory for Genomic Medicine
- 2:00pm**      **Hands-on Work: Microbiome**  
Spencer Glantz, Ph.D., The Jackson Laboratory for Genomic Medicine
- 3:30pm**      **Break**
- 4:00pm**      **Curricular Discussion #2**  
Reinhard Laubenbacher, Ph.D., The Jackson Laboratory for Genomic Medicine / UConn Health; Charles Wray, Ph.D. The Jackson Laboratory
- 4:30pm**      **Cloud Resources and Galaxy**  
James Taylor, Ph.D., Johns Hopkins University

**Thursday, May 24**

- 8:30am**      **Data in Context**  
Judith Blake, Ph.D., The Jackson Laboratory
- 9:30am**      **Network Modeling**  
Paola Vera-Licona, Ph.D., UConn Health
- 10:30am**      **Network Modeling short exercises**  
Reinhard Laubenbacher, Ph.D., The Jackson Laboratory for Genomic Medicine / UConn Health
- 12:00am**      **Lunch**
- 1:00pm**      **Data Standards and Best Practices Data Problems: When bad things happen in genomic analysis**  
Judith Blake, Ph.D., The Jackson Laboratory
- 2:00pm**      **Introduction to ChIP-seq**  
Ada Zhan, Ph.D., The Jackson Laboratory for Genomic Medicine
- Hands on work ChIP-seq.** Shell scripts and online methods.

- 4:00pm**      **Break**
- 4:30pm**      **Module Debriefing on Exome, Microbiome, Network, and CHIP-seq;** Open Discussion on Participant Needs and Data
- 5:30pm**      **Reception Dinner at Butchers and Bakers**  
270 Farmington Ave Suite 101, Farmington, CT 06032

**Friday, May 25**

- 8:30am**      **Integrated Modeling of Genetic and Genomic Data**  
Gregory Carter, Ph.D., The Jackson Laboratory
- 9:30am**      **Running UG Courses in Genomics**  
Michael Linderman, Ph.D., Middlebury College  
Andrea Tilden, Ph.D., Colby College  
Shallee Page, Ph.D., Franklin Pierce University  
Vincent Buonaccorsi, Ph.D., Juniata College
- 11:00am**      **Cloud Environments and Web Service Grants**  
Sandeep Namburi and Aditya Srikanth Kovuri, The Jackson Laboratory Information Technology
- 12:00pm**      **Lunch**
- 1:00pm**      **Collaborative Discussion, Next Steps, and How to Support UG Implementations**  
Reinhard Laubenbacher, Ph.D., The Jackson Laboratory for Genomic Medicine / UConn Health; Jeffrey Chuang, Ph.D., The Jackson Laboratory for Genomic Medicine; Charles Wray, Ph.D. The Jackson Laboratory