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 2nd 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 2nd 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

4:30pm 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
        3rd 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
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<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Presenter</th>
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<tbody>
<tr>
<td>10:00am</td>
<td><strong>Module #3: Exome Sequencing Variant Discovery in Galaxy</strong></td>
<td>Charles Wray, Ph.D. The Jackson Laboratory</td>
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<td>12:00am</td>
<td>Lunch</td>
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<tr>
<td>1:00pm</td>
<td><strong>Introduction to Microbiome</strong></td>
<td>Spencer Glantz, Ph.D., The Jackson Laboratory for Genomic Medicine</td>
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<td>2:00pm</td>
<td><strong>Hands-on Work: Microbiome</strong></td>
<td>Spencer Glantz, Ph.D., The Jackson Laboratory for Genomic Medicine</td>
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<td>3:30pm</td>
<td>Break</td>
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<td>4:00pm</td>
<td><strong>Curricular Discussion #2</strong></td>
<td>Reinhard Laubenbacher, Ph.D., The Jackson Laboratory for Genomic Medicine / UConn Health; Charles Wray, Ph.D. The Jackson Laboratory</td>
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<td>4:30pm</td>
<td><strong>Cloud Resources and Galaxy</strong></td>
<td>James Taylor, Ph.D., Johns Hopkins University</td>
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**Thursday, May 24**

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