

Introduction to RNA-seq using High-Performance Computing (HPC)

Harvard Chan Bioinformatics Core

in collaboration with

HMS Research Computing

<https://tinyurl.com/hbc-rnaseq>

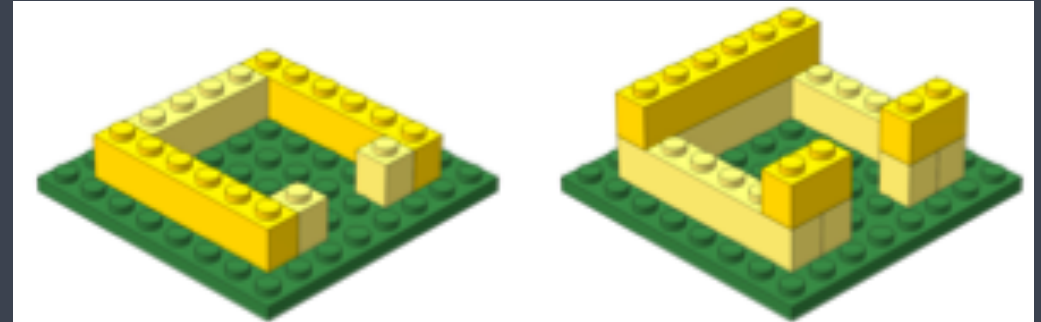
Learning Objectives



- ✓ Describe best practices for designing a bulk RNA-seq experiment
- ✓ Describe steps in an RNA-seq analysis workflow (from sequence data to expression quantification).
- ✓ Implement shell scripts on a high-performance compute cluster to perform the above steps.

We won't be covering how to perform differential gene expression (DGE) analysis on count data in this workshop.

DGE and scRNA-seq

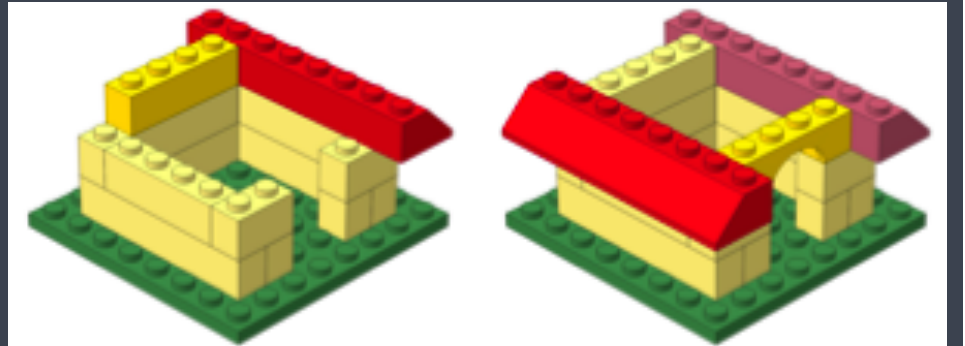


Workshop registration opens about 3 weeks prior to workshop date(s). Register by clicking on the class title.

Topic	Category	Date	Duration	Prerequisites
Bulk RNA-seq (Part 1 - FASTQ to counts)	Advanced	August 26th, 30th, Sept 2nd	Three 2.5h sessions	Shell
Bulk RNA-seq (Part II - Differential gene expression)	Advanced	Sept 9th, 13th, 16th, 20th	Four 2h session	R
Introduction to scRNA-seq	Advanced	Sept 27th, 30th, Oct 4th	Three 2.5h sessions	R
Introduction to Shell	Basic	October 11th, 14th, 18th	Three 2.5h sessions	None
Introduction to R	Basic	Oct 25th, 28th, Nov 1st, 4th	Four 2h sessions	None
Understanding chromatin biology using high-throughput sequencing	Advanced	November 15, 18, 22	Three 2.5h sessions	Shell

<https://bioinformatics.sph.harvard.edu/upcoming-workshops>

Survey



<https://tinyurl.com/hbc-rnaseq-exit>

Get an O2 account!

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O2 Cluster Account

Description

What does it do?

Get an account on O2, the HMS High Performance Compute cluster

Available To

Who is eligible?

Any HMS or HMS-affiliated researcher who has an HMS eCommons account.

Cost

What does it cost?

There is no cost to labs whose PI has a primary or secondary faculty appointment in an HMS Quad department.

If the PI of your lab does not have a primary or secondary faculty appointment in an HMS Quad department, cluster usage will be charged for beginning later in 2021. Please see the following page for current details about rates: <https://it.hms.harvard.edu/rc/core/rates>.

Support

Please fill out the [online help request form](#), or email rchelp@hms.harvard.edu.

How to Access

How do I get it?

Two-factor authentication is required to request an account on O2, as well as for O2 logins once your account is created. Harvard University uses a mobile app called Duo that makes the process quick and easy. Even if you already use Duo for HarvardKey, you will still need to setup a Duo profile for HMS.

- [Setup HMS two-factor Authentication \(HMS Duo Mobile\)](#)
- [Reactivate or Reconnect HMS two-factor Authentication \(HMS Duo Mobile\)](#)

Once you have Duo set up, Click the "Get Service" link to login and complete the request form.

Get this service

Learn more

Don't see what you're looking for?

Interested in additional training?

<https://hbctraining.github.io/Training-modules/>

Short workshops: Current Topics in Bioinformatics

These workshops are free and open to all researchers at Harvard University and affiliated institutions.

- **Workshops** on bioinformatics methods & related skills.
- Once a month for 3 hours
- Hands-on workshops - be prepared with your MAC or Windows computer
- **Free and open to everyone at Harvard University and its affiliates**
- Will meet the **first Wednesday of the month** (with one exception) **online via Zoom**
- **Sign up at the links below to receive the workshop Zoom link**

Interested in additional training?

<https://hbctraining.github.io/Training-modules/>

Summer-Fall 2022 Schedule (1pm - 4pm):

Topic and Link(s) to lessons	Prerequisites	Date	Registration
Basics of Python	None	8/10/2022	Closed
R practice exercises	Beginner R or Online R course - Harvard Catalyst	9/7/2022	Sign up!
Generating reports with Rmarkdown	Beginner R or Online R course - Harvard Catalyst	10/5/2022	Sign up!
Introduction to Shell	None	11/2/2022	Sign up!
Version control using Git/Github	Introduction to Shell	12/7/2022	Sign up!

Interested in additional training?

All workshop materials available at:

<https://hbctraining.github.io/main>

Upcoming relevant courses from our partners at Countway Library:

1. Managing Research Data Efficiently (September 14th)
2. Getting the Most out of Your Data: Standards to Find, Interpret & Share Data (September 28th)
3. Ask an Expert: NIH Data Management and Sharing Policy (October 6th)
4. Achieving FAIR Data: Selecting a Repository for Your Data (October 26th)

Thanks!

- Kathleen Chappell and Andy Bergman from HMS-RC
- [Data Carpentry](#)

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Contact us!

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