



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

Harvard Chan Bioinformatics Core

in collaboration with

HMS Research Computing

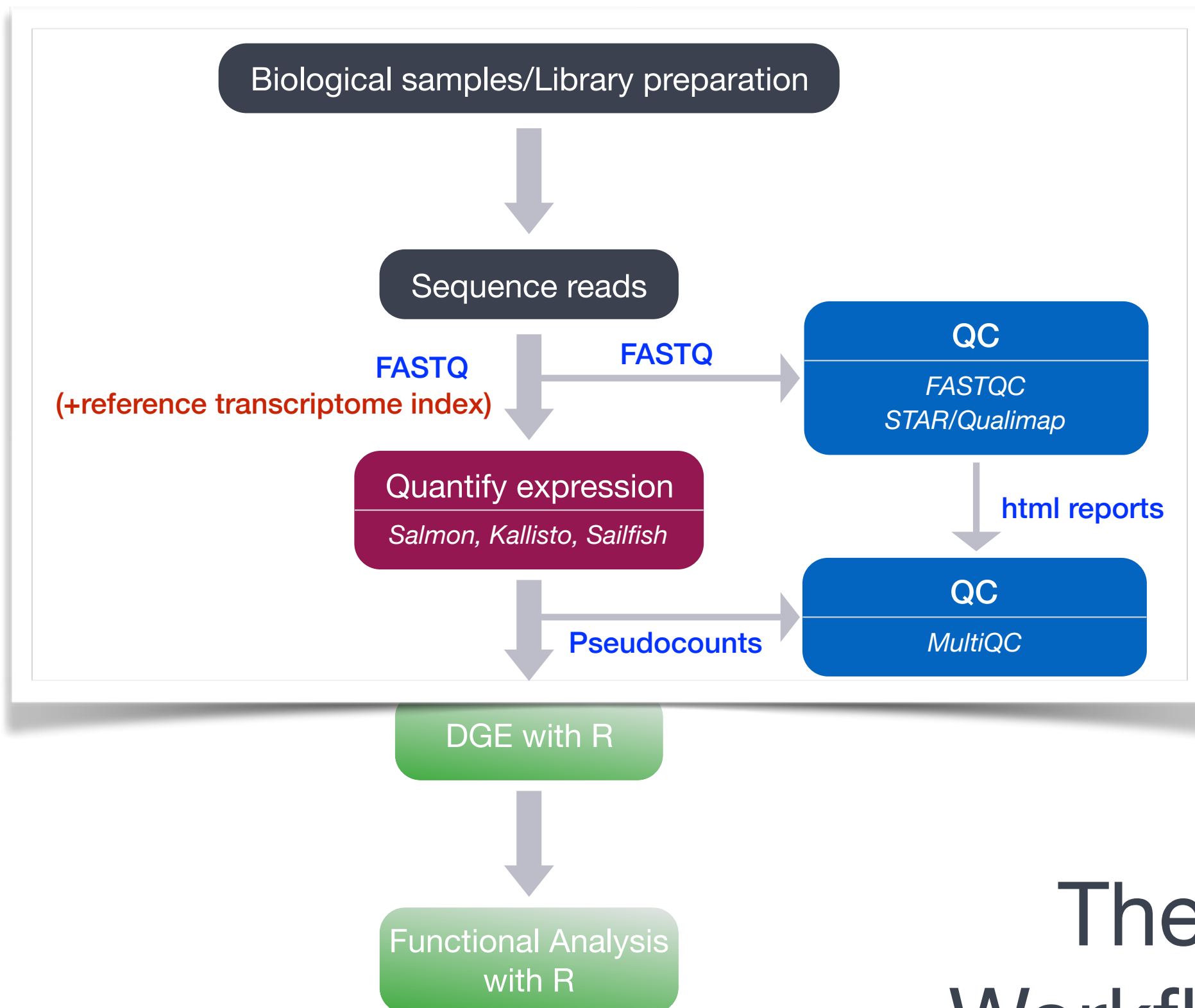
<https://tinyurl.com/hbc-rnaseq>

# Learning Objectives



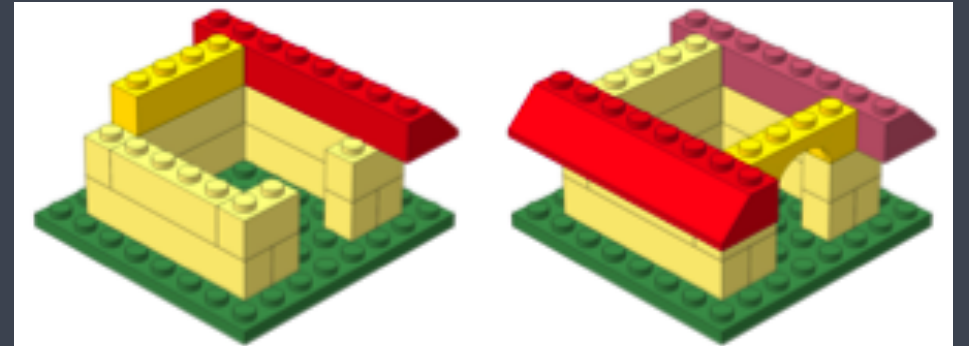
- ✓ Describe best practices for designing a bulk RNA-seq experiment
- ✓ Describe steps in an RNA-seq analysis workflow (from sequence data to expression quantification).
- ✓ Implement shell scripts on a high-performance compute cluster to perform the above steps.

We won't be covering how to perform differential gene expression (DGE) analysis on count data in this workshop. A DGE workshop will be held on April 1<sup>st</sup>/2<sup>nd</sup> and the pre-requisite for it is a working knowledge of R (March 12<sup>th</sup>/13<sup>th</sup>).



# The Workflow

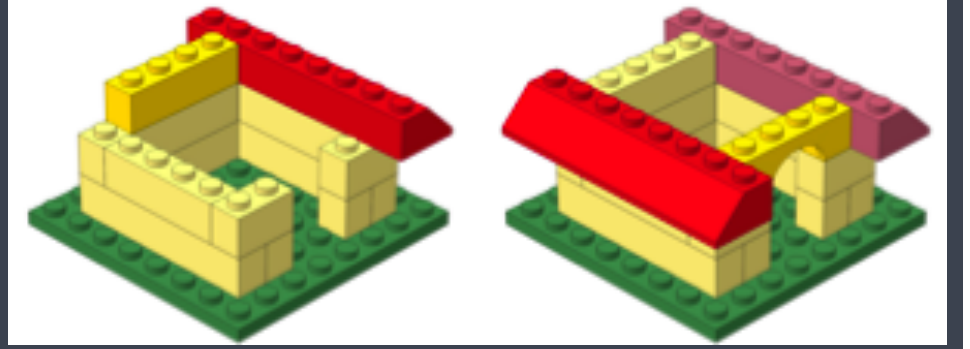
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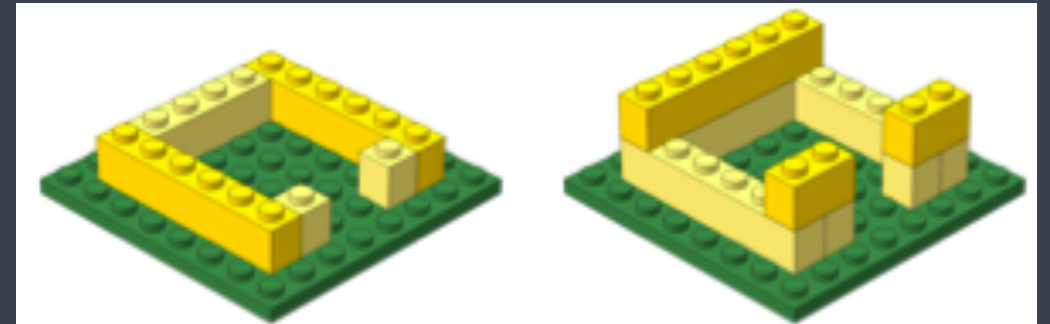
# Survey



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



# R and DGE



## Upcoming workshops

Workshops for HSCI, on-quad HMS, and DF/HCC researchers\*:

*Please note that until further notice, all workshops will be taught remotely via Zoom.*

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

Topic	Category	Date	Duration	Prerequisites
<a href="#">Introduction to R</a>	Basic	November 2nd, 5th, 9th & 12th	Four 2h sessions	None
<a href="#">Bulk RNA-seq Part 2</a> (Differential Gene Expression on expression counts)	Advanced	December 3rd, 7th, 10th & 14th	Four 2h sessions	R

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

# Harvard Chan Bioinformatics Core & The Cancer Data Sciences Program at DF/HCC

## Workshop Series Details:

- Leaders in **single-cell genomics** at Harvard present their latest tools (including demo or tutorial)
- **Once a month for 2-3 hours**
- **Free and open** to everyone at Harvard University and its affiliates

## Fall 2021 schedule:

Speakers	Date	Time	Registration
October Topic: scRNA-seq			
• Peter Kharchenko • Ilya Korsunsky • Soumya Raychaudhuri	10/13/2021	1 – 4pm	<a href="#">Sign up!</a>
November Topic: scATAC-seq			
• Luca Pinello, Huidong Chen, Jayoung Ryu (SIMBA) • Gali Bai (MAESTRO)	11/10/2021	12 – 3pm	<a href="#">Sign up!</a>
December Topic: single cell multimodal analyses			
• Cliff Meyer (SHARE-seq)	TBD	TBD	TBD

# Thanks!

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

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