

Introduction to R and Differential Expression Analysis

Harvard Chan Bioinformatics Core

<https://tinyurl.com/PQG-schedule>



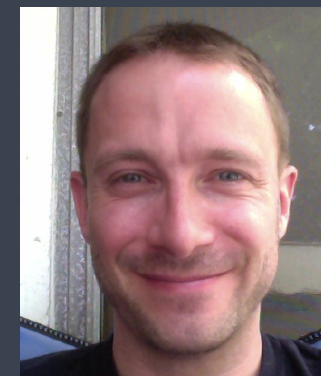
Shannan Ho Sui



John Hutchinson



Brad Chapman



Rory Kirchner



Meeta Mistry



Radhika Khetani



Mary Piper



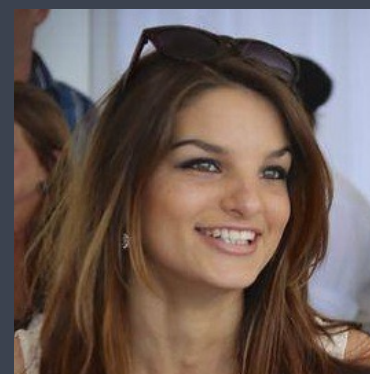
Lorena Pantano



Michael Steinbaugh



Victor Barrera



Kayleigh Rutherford

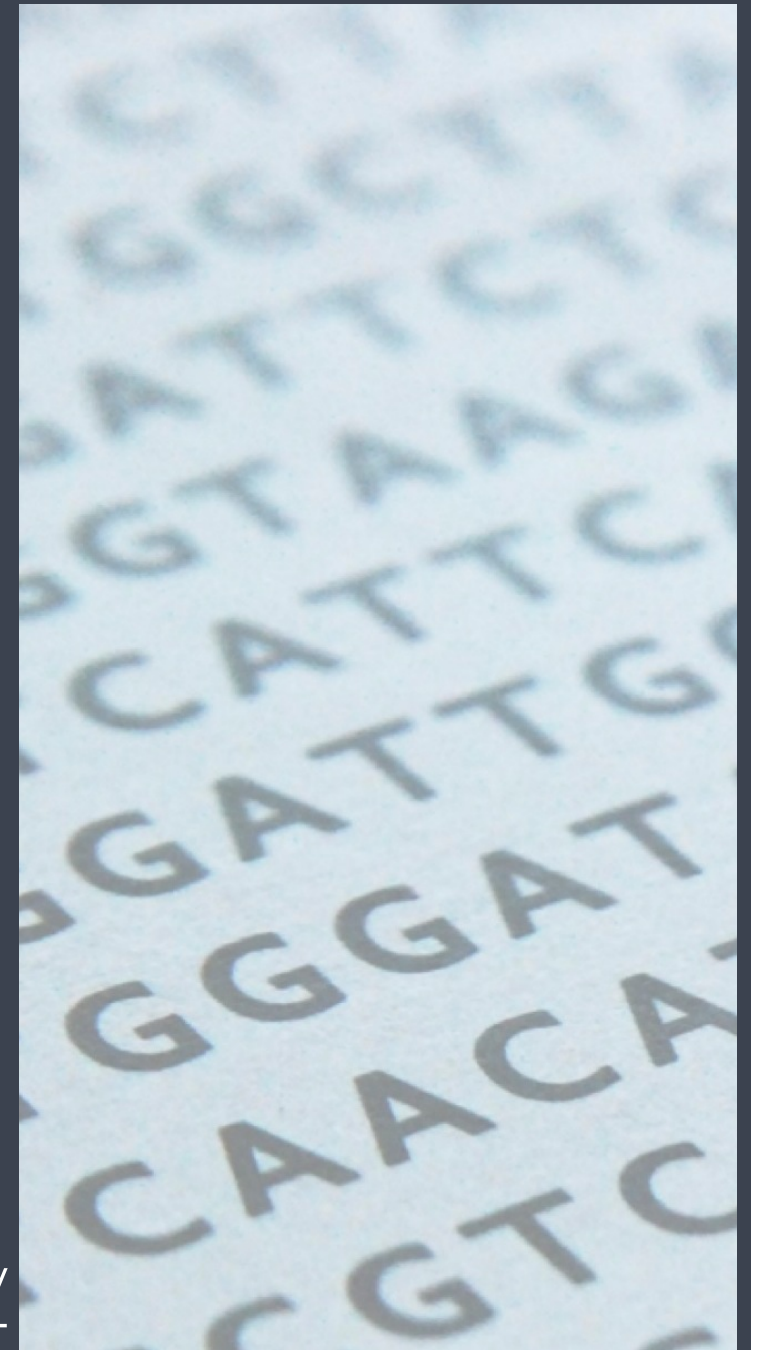


Peter Kraft

Consulting

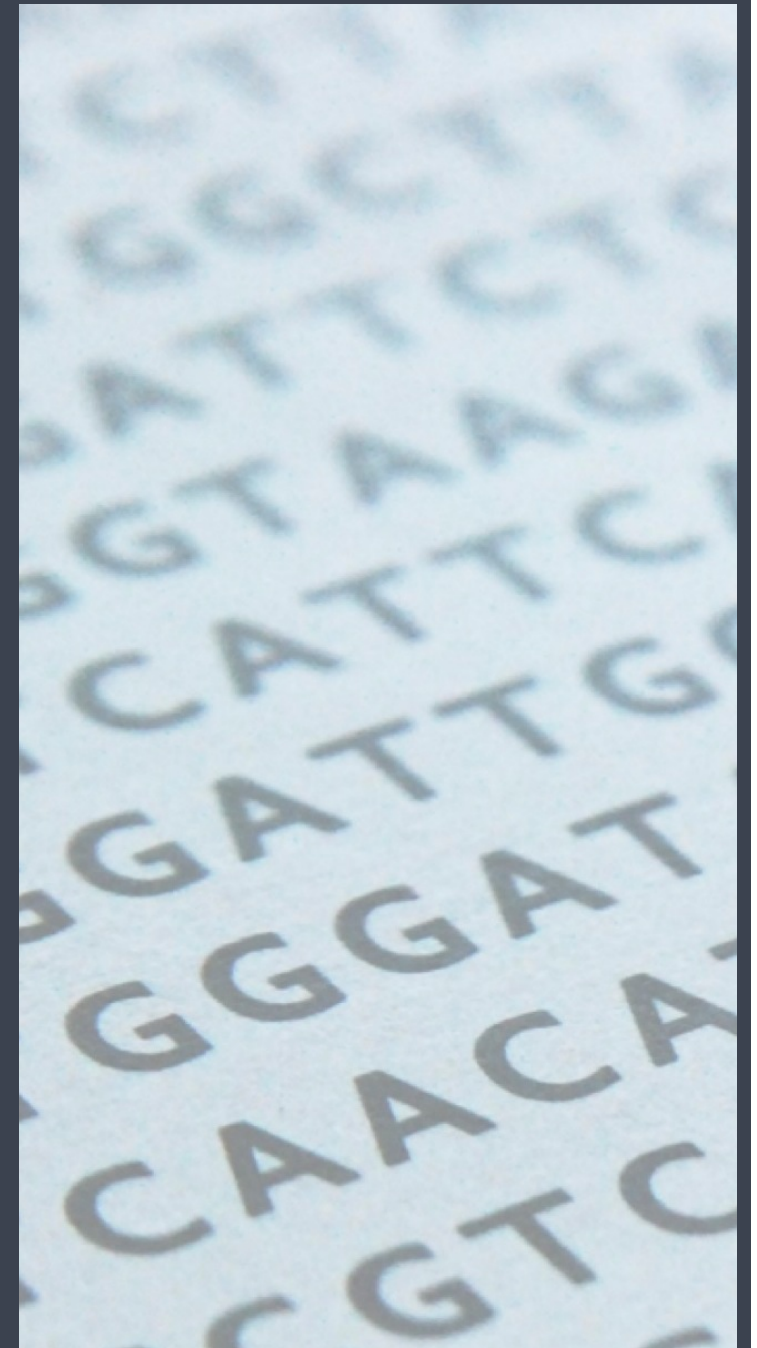
- RNA-seq, small RNA-seq and ChIP-seq analysis
- Genome-wide methylation
- WGS, resequencing, exome-seq and CNV studies
- Quality assurance and analysis of gene expression arrays
- Functional enrichment analysis
- Grant support

<http://bioinformatics.sph.harvard.edu/>



Training

- Monthly, 2-3 hour, hands-on and free workshops on “Current Topics in Bioinformatics”
- Workshops from Harvard Catalyst on various topics: <https://catalyst.harvard.edu/services/bioinformatics-workshops/>



Introductions!



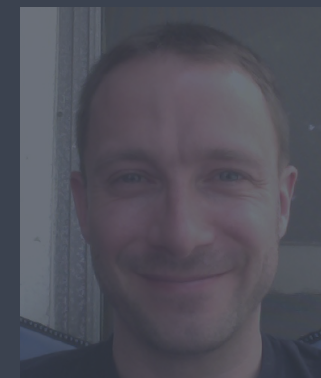
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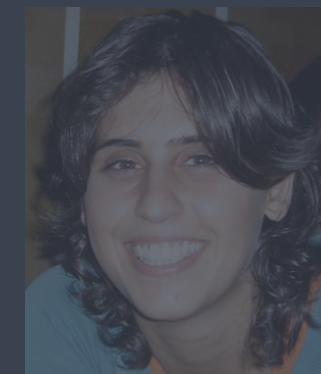
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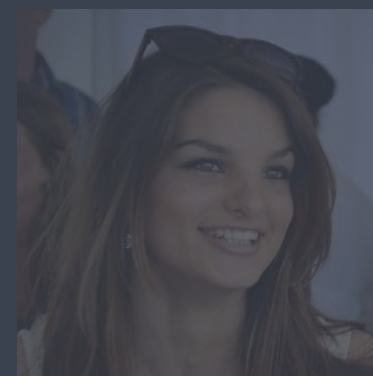
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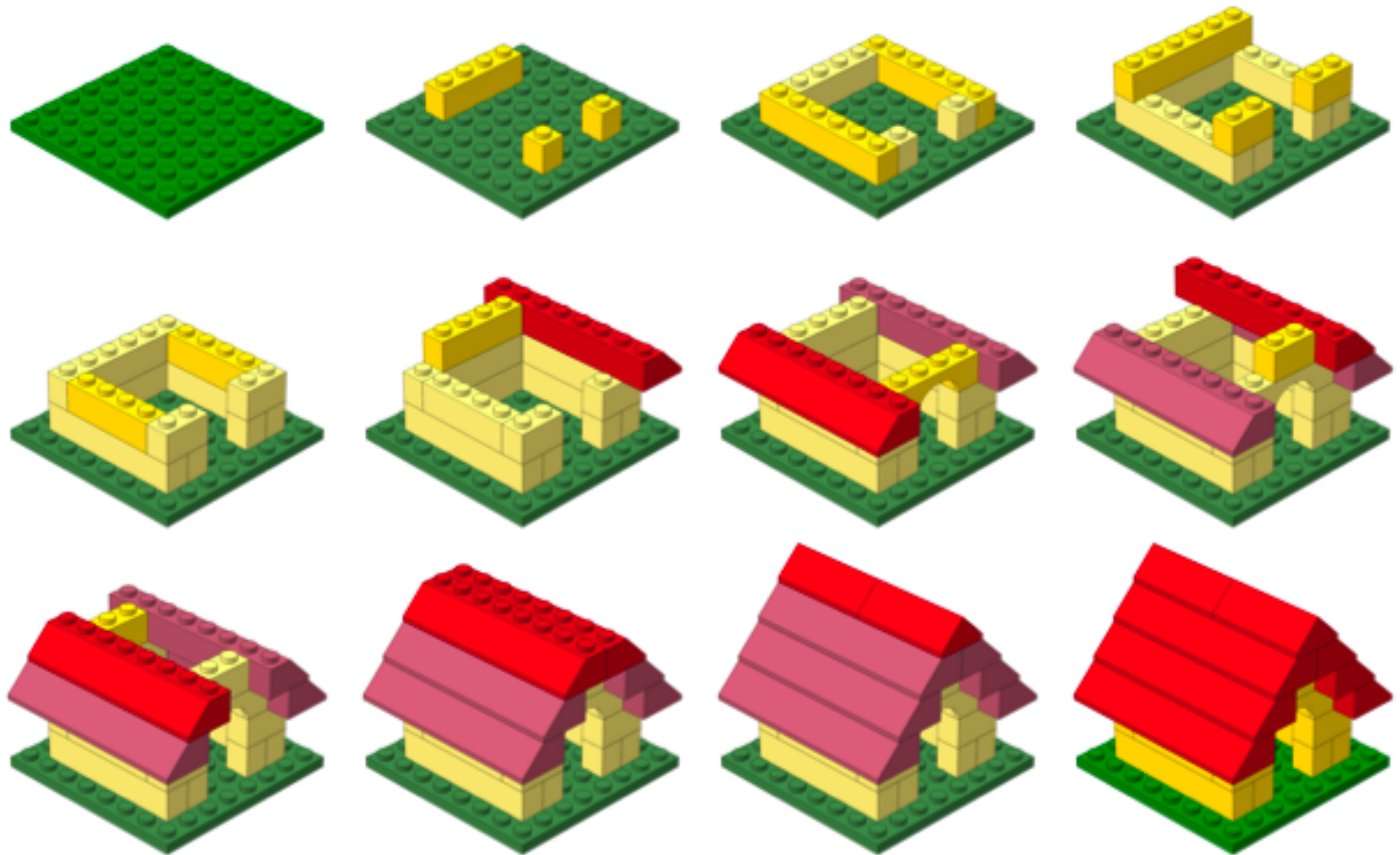
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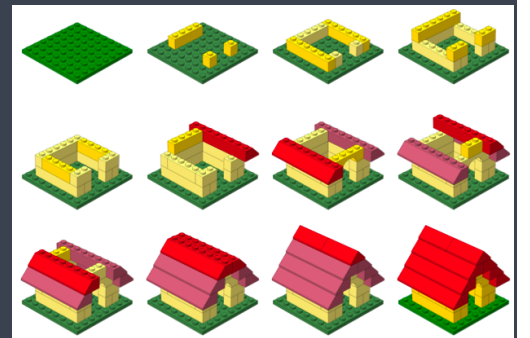
Class Introductions!

Workshop Scope...



Learning R

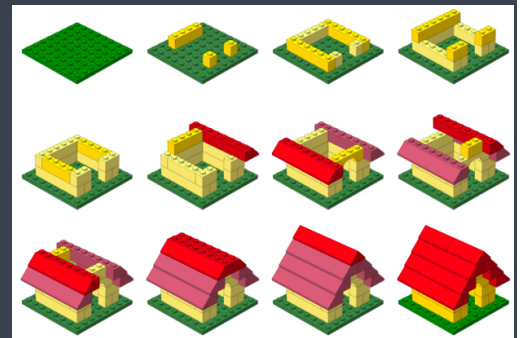
Workshop Scope (1/2)



R basics

- ✓ Become comfortable with RStudio (a graphical interface for R)
- ✓ Fluently interact with R using RStudio
- ✓ Become familiar with R syntax
- ✓ Understand data structures in R
- ✓ Inspect and manipulate data structures
- ✓ Install packages and use functions in R
- ✓ Visualize data using simple and complex plotting methods

Workshop Scope (2/2)



Differential Gene Expression analysis

- ✓ Understand the considerations for performing statistical analysis on RNA-seq data
- ✓ Start with gene counts (after alignment and counting)
- ✓ Perform QC on count data
- ✓ Use DESeq2 to perform differential expression analysis on the count data and obtain a list of significantly different genes
- ✓ Visualization of differentially expressed genes

Odds and Ends

- ❖ Red and Green post-its (stickies)
- ❖ Wi-Fi: **HMS Public**
- ❖ Lunch locations
- ❖ Bathrooms
- ❖ Water Fountain
- ❖ Phones on vibrate/silent!

Contact us!

HBC training team: hbctraining@hsph.harvard.edu

HBC consulting: bioinformatics@hsph.harvard.edu

Twitter

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