
```
dds <- DESeqDataSetFromMatrix(countData = cts,
                              colData = coldata,
                              design= ~ batch + condition)
dds <- DESeq(dds)
resultsNames(dds) # lists the coefficients
res <- results(dds, name="condition_trt_vs_untrt")
# or to shrink log fold changes association with condition:
res <- lfcShrink(dds, coef="condition_trt_vs_untrt", type="apeglm")
```

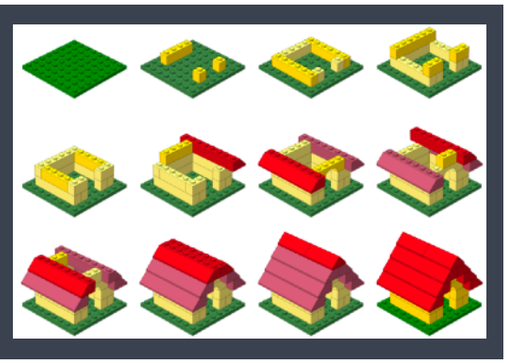
Bulk RNA-seq Analysis Part II

Differential Gene Expression

Harvard Chan Bioinformatics Core

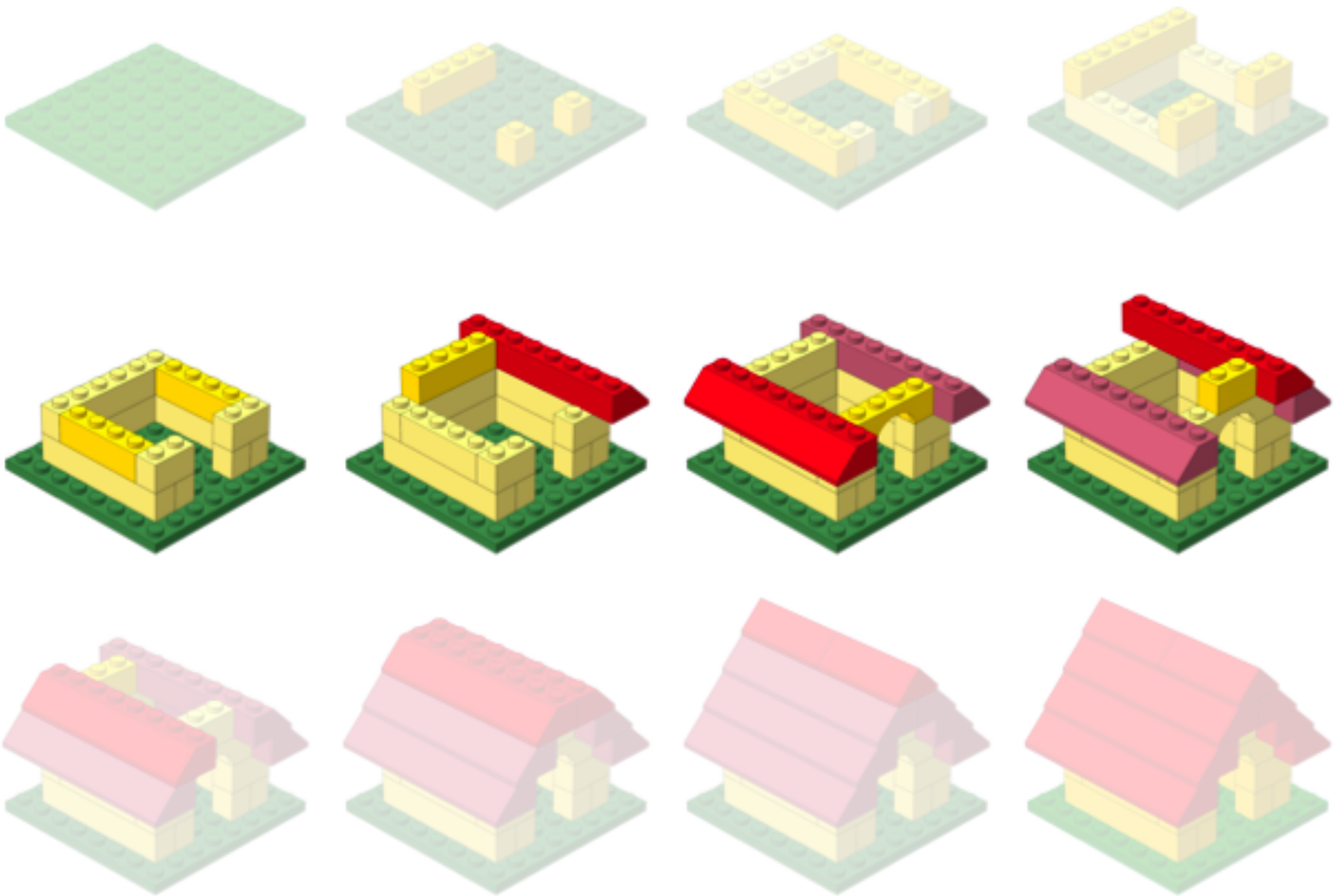
https://tinyurl.com/hbc-dge-online

Workshop Scope



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
- ✓ Visualize results of the analysis
- ✓ Perform functional analysis on the lists of differentially expressed genes



http://anoved.net/tag/lego/page/3/

Bioinformatics data analysis

Exit survey

https://tinyurl.com/DGE-exit-survey

Interested in additional training?

All workshop materials are online: https://hbctraining.github.io/main

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Sign up for our mailing list:

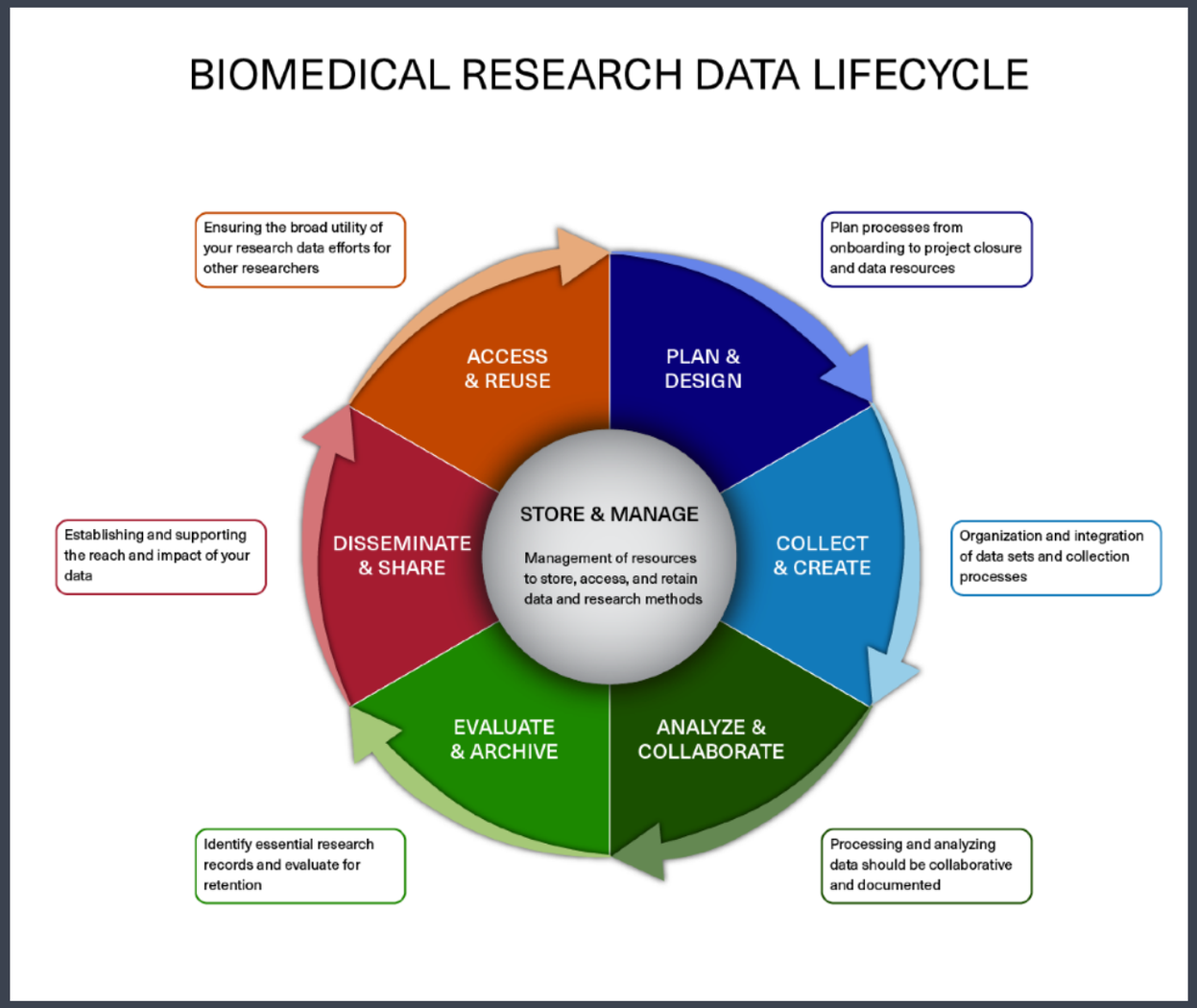
https://tinyurl.com/hbc-training-mailing-list

Data Management

- HMS Data management -
  - Webpage: https://datamanagement.hms.harvard.edu/
  - Click here to sign up for data management related emails
  - Check out the training schedule for short workshops

- Harvard-wide Research Data Management - https://researchdatamanagement.harvard.edu/

Data Management Short Workshops



https://datamanagement.hms.harvard.edu/about/news-events/rdmwg-calendar

Data Management Short Workshops

Fall 2023 Data Lifecycle Training

Plan & Design

September 19
Managing Research Data Efficiently

October 4
Onboarding: Procedures for Research Consistency

October 17
Research Management with Open Science Framework

October 31
Data Horror Stories: Avoid the Nightmare

November 7
Writing a Data Management Plan with DMPTool

Collect & Analyze

September 6
Intro to O2

September 20
O2 Portal: Simplifying the Interaction & Experience of Using an HPC Environment

September 27
Intro to MATLAB

October 18
Optimizing O2 Jobs

November 8
Intro to Python

December 13
Data Cleaning with OpenRefine

Store & Evaluate

September 26
Introduction to the General Records Schedule

October 10
Managing Your Paper Records

October 11
The When, Where, and How of Data Storage

December 5
Managing Your Electronic Records

December 6
Keeping Data Safe and Secure

Share & Publish

September 20
Publication Perfect I

September 27
Making Code and Software Open: Connecting GitHub and Harvard Dataverse

October 18
Publication Perfect II

November 15
Securely Managing and Publishing Sensitive Data

November 15
Rmarkdown: Reproducible Reports

In-person
Virtual

LONGWOOD RESEARCH DATA MANAGEMENT

Learn More & Register: bit.ly/rdmwg-calendar

https://datamanagement.hms.harvard.edu/about/news-events/rdmwg-calendar

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/

Current Topics in Bioinformatics workshops 2023 Schedule (1pm - 4pm):

Topic and Link(s) to lessons	Prerequisites	Date	Registration
Publication Perfect: Part I	Beginner R or Completion of the Intro to R online resource	9/20/2023	Coming soon
Publication Perfect: Part II	Publication Perfect: Part I	10/18/2023	Coming soon
Rmarkdown	Beginner R or Online R course - Harvard Catalyst	11/15/2023	Coming soon

Get (stay) in touch with us!

Training email: hbctraining@hsph.harvard.edu

Consulting email: bioinformatics@hsph.harvard.edu

Twitter: @bioinfocore