



```
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")
```

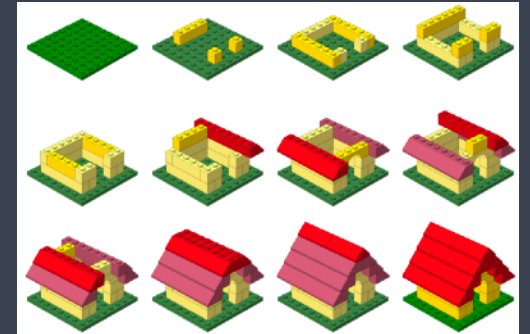
# Bulk RNA-seq Analysis Part II

## *Differential Gene Expression*

Harvard Chan Bioinformatics Core

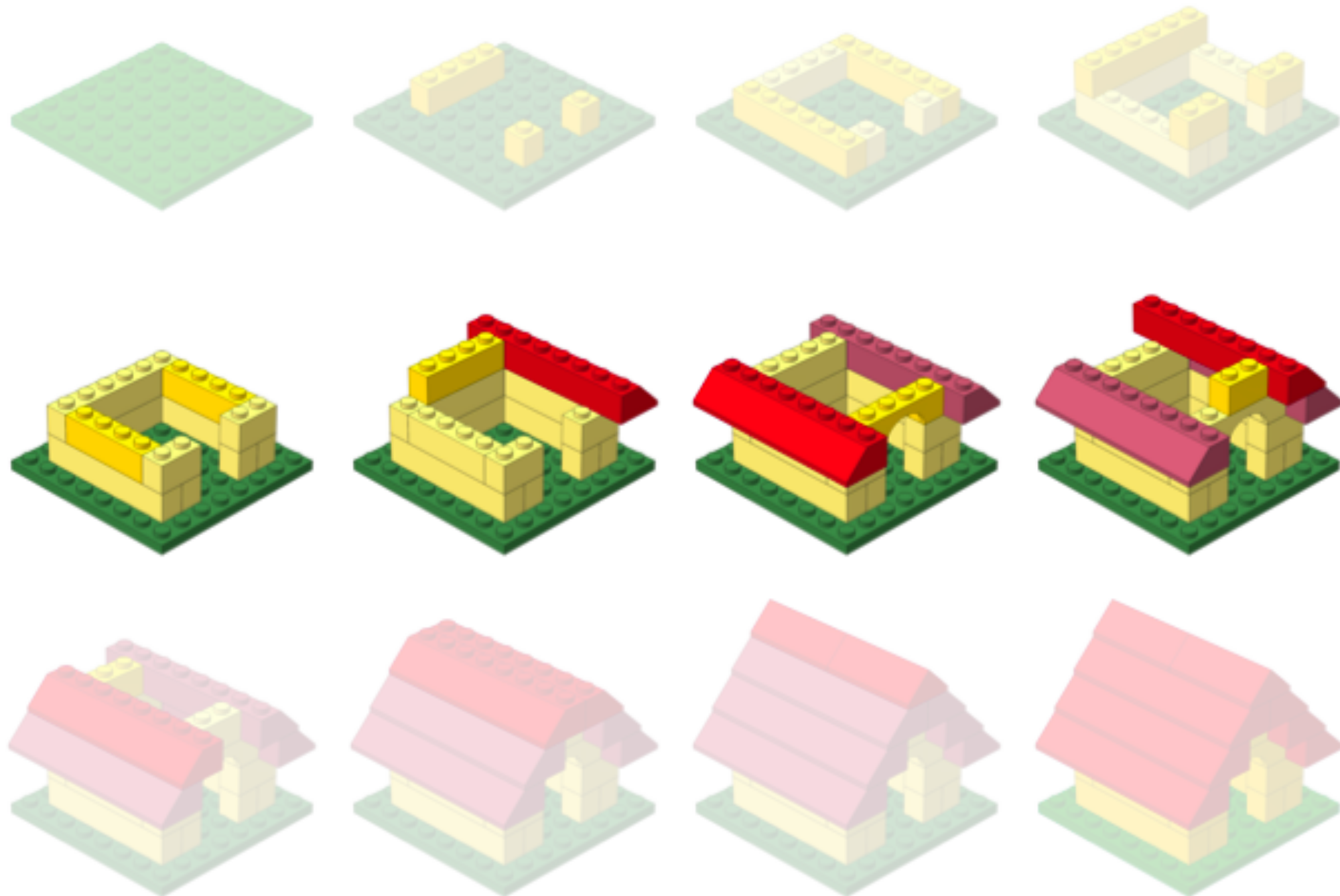
<https://tinyurl.com/hbc-dge-online>

# 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?

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

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## 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**

# Upcoming Current Topics in Bioinformatics

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

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Topic	Pre-requisites	Date/Time	Time	Registration
Shell Tips and Tricks on O2	<a href="#">Basic Shell</a>	5/22/24*	1 – 4pm	<a href="#">Register!</a>
<a href="#">R basics</a>	None	6/26/24*	1 – 4pm	<a href="#">Register!</a>
Publication Perfect I	<a href="#">R basics</a>	7/17/24	1 – 4pm	Coming soon!
Publication Perfect II	<a href="#">R basics</a>	8/21/24	1 – 4pm	Coming soon!
RShiny	<a href="#">R basics</a>	9/18/24	1 – 4pm	Coming soon!

# Interested in additional training?

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

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*Sign up for our mailing list:*

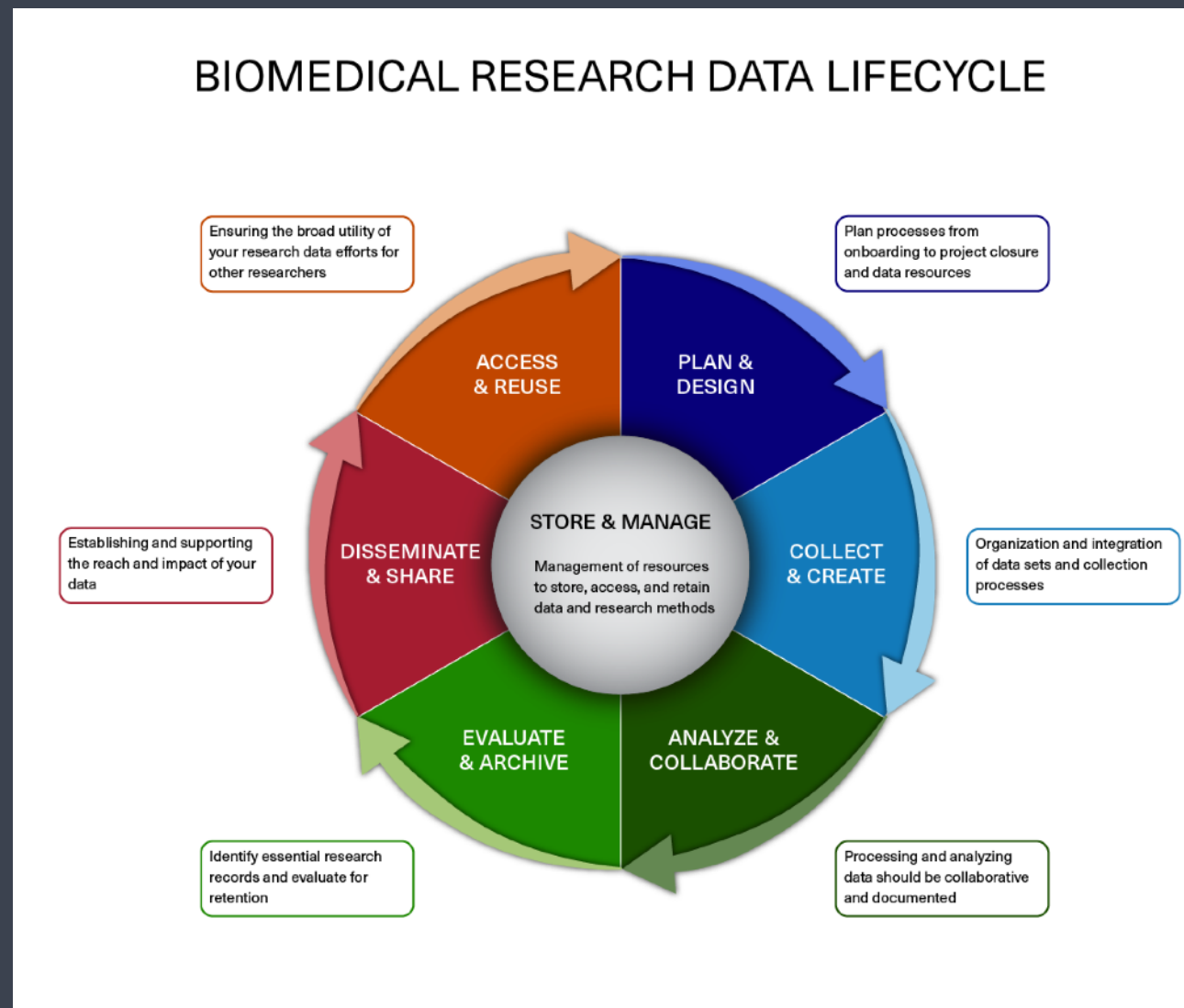
<https://tinyurl.com/hbc-training-mailing-list>

# 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

## Spring 2024 Data Lifecycle Training






### Plan & Design

- April 17**  Writing a Data Management and Sharing Plan for Grant Applications
- April 24**  Principles of Data Stewardship
- May 1**  Don't Leave Yet! Research Data Offboarding Done Right
- May 8**  Don't Leave Yet! Research Data Offboarding Done Right





### Collect & Analyze



- February 21**  Basic Shell
- March 6**  Using Metadata to Find, Interpret & Share Your Data
- March 13**  Intro to MATLAB
- March 13**  Introduction to GIS
- April 17**  Intermediate Shell
- May 15**  Active Project Version Control with Git

### Store & Evaluate

- February 7**  The When, Where, and How of Data Storage
- February 27**  Introduction to the General Records Schedule
- March 20**  Managing Data Transfer Between Collaborators
- March 26**  Managing Your Paper Records
- May 7**  Managing Your Electronic Records

### Share & Publish

- January 16**  Data Sharing and Reuse on the Vivli Platform
- February 13**  Introduction to Harvard Dataverse
- February 15**  Research Management Using the Open Science Framework
- April 10**  Achieving FAIR Data: Selecting a Repository for Your Data

 In-person  
 Virtual



**Learn More & Register:** [bit.ly/rdmwg-calendar](https://bit.ly/rdmwg-calendar)



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

# Bioinformatics Community Networking Breakfast!



- *Free and open to the Harvard community*
- *Food is first-come-first-served*
- *No computers!*
- *Quarterly* (Next meeting: June 6th)

More info: <http://bioinformatics.sph.harvard.edu/breakfast/>

# Get (stay) in touch with us!

*Training email:* [hbctraining@hsph.harvard.edu](mailto:hbctraining@hsph.harvard.edu)

*Consulting email:* [bioinformatics@hsph.harvard.edu](mailto:bioinformatics@hsph.harvard.edu)

Twitter: [@bioinfocore](https://twitter.com/bioinfocore)