

# Opportunities in biomedical data science

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Slides: [bit.ly/srop2023](https://bit.ly/srop2023)

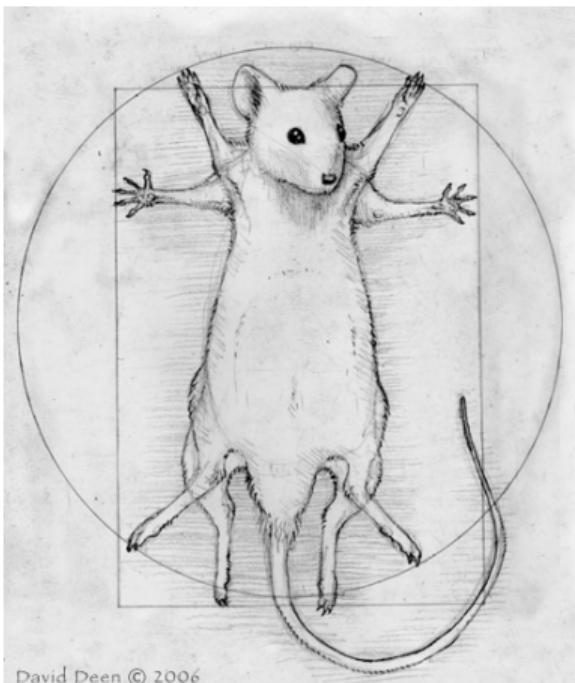
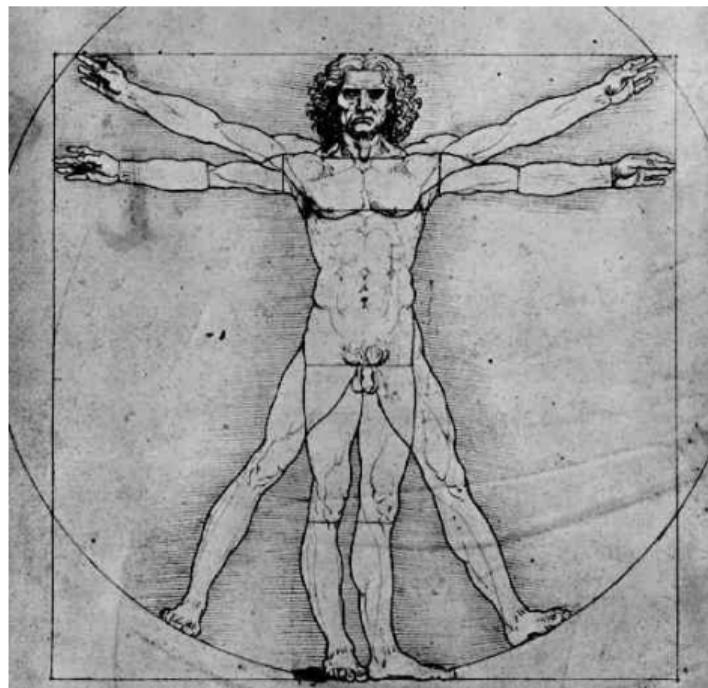
# Biomedical data explosion

- ▶ Electronic health records (EHR)
- ▶ Imaging
- ▶ Genome/proteome/metabolome/microbiome data
- ▶ Personal activity/health tracking devices

# Biomedical data explosion

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- ▶ Imaging
- ▶ Genome/proteome/metabolome/microbiome data
- ▶ Personal activity/health tracking devices
- ▶ High-throughput measurements in agriculture and ecology

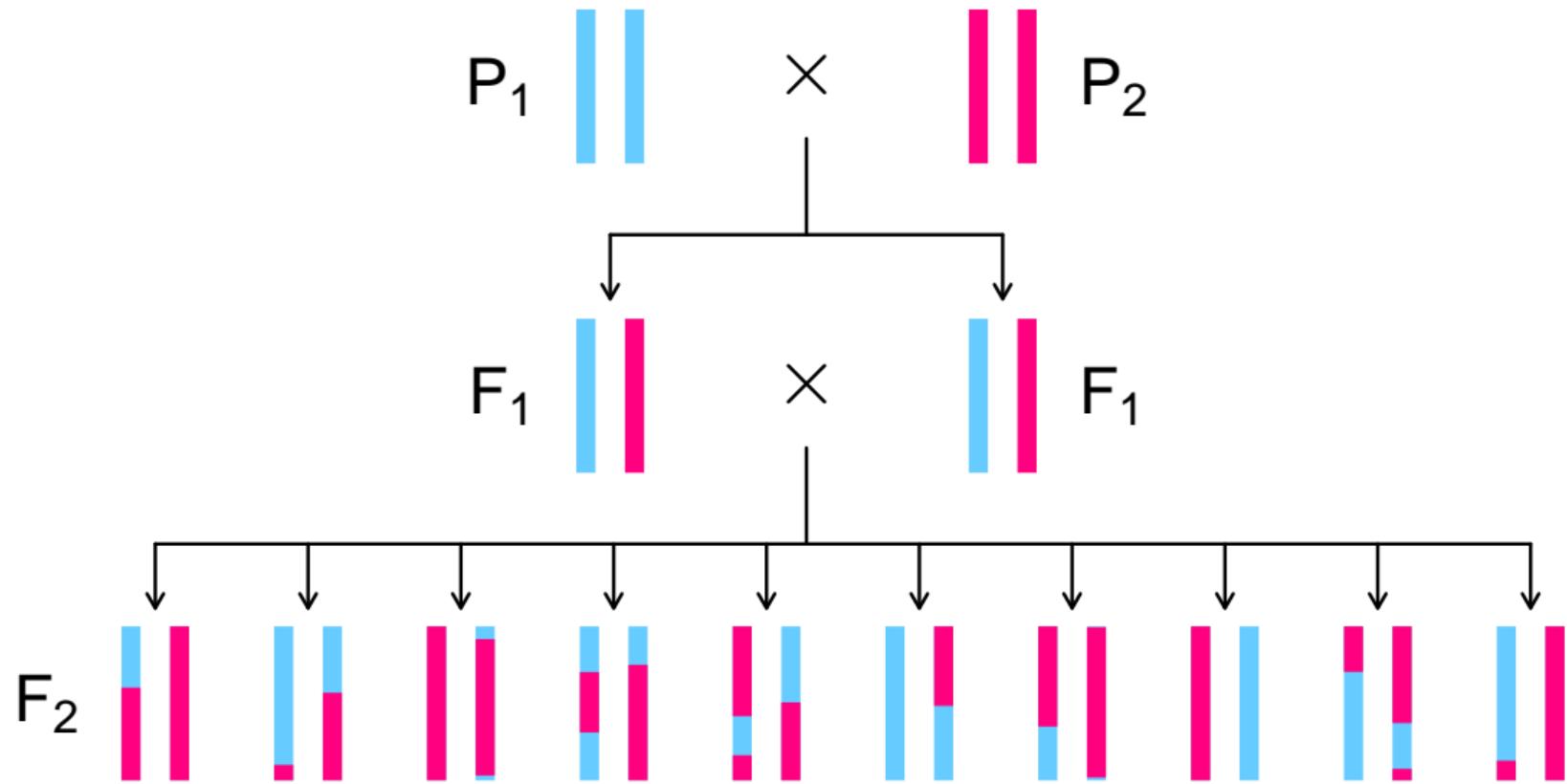




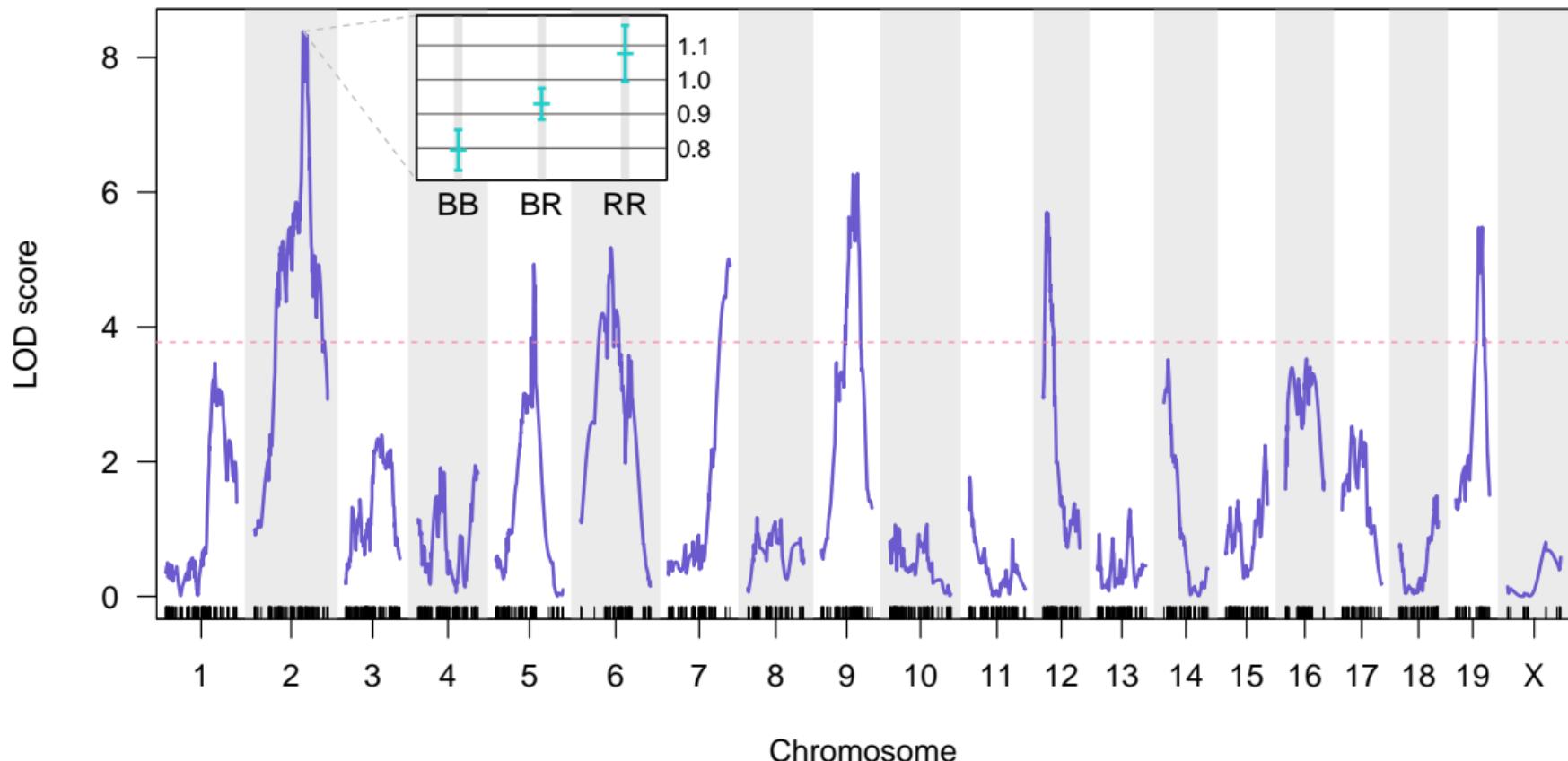
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[daviddeen.com](http://daviddeen.com)

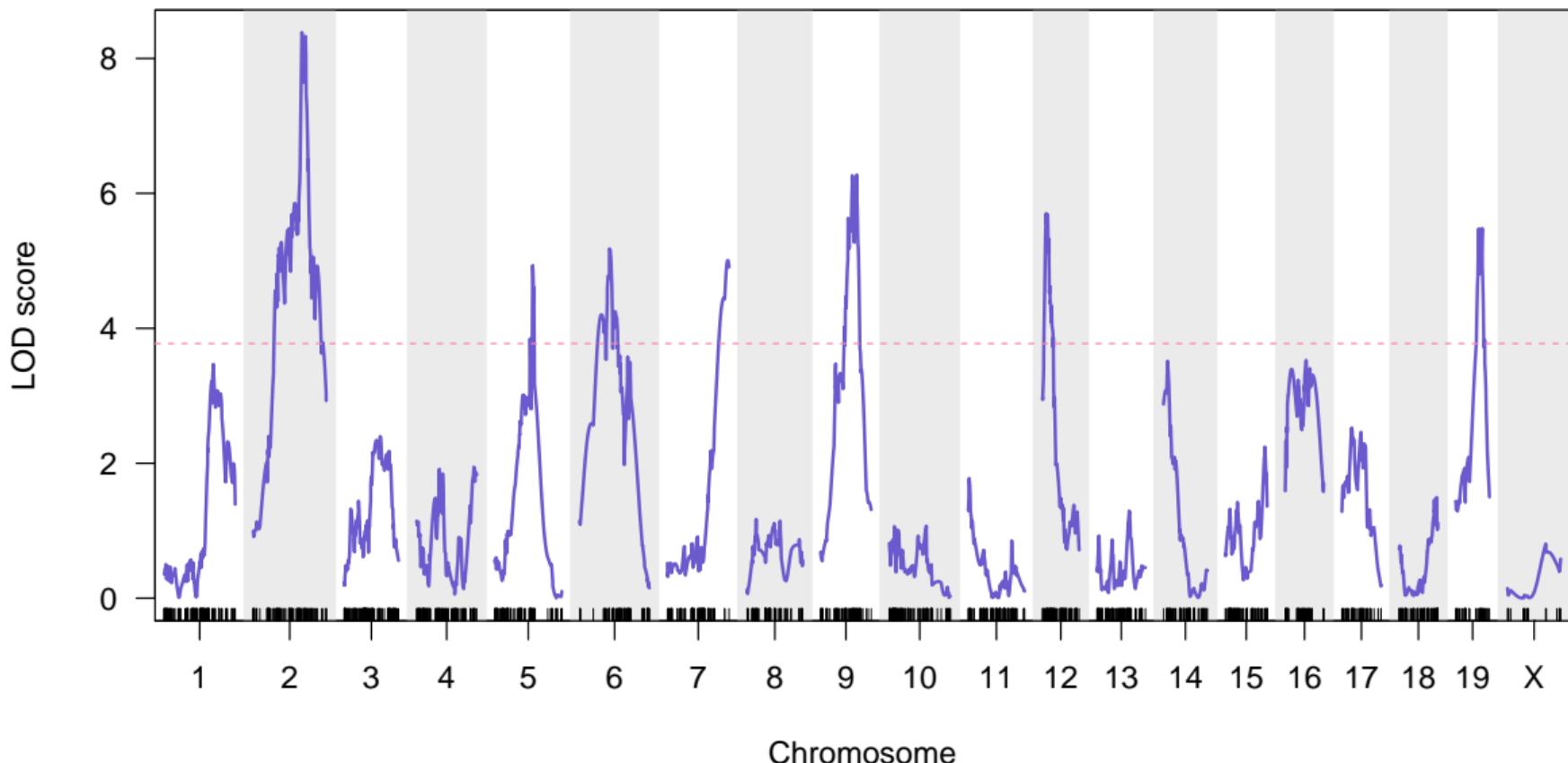
# Intercross



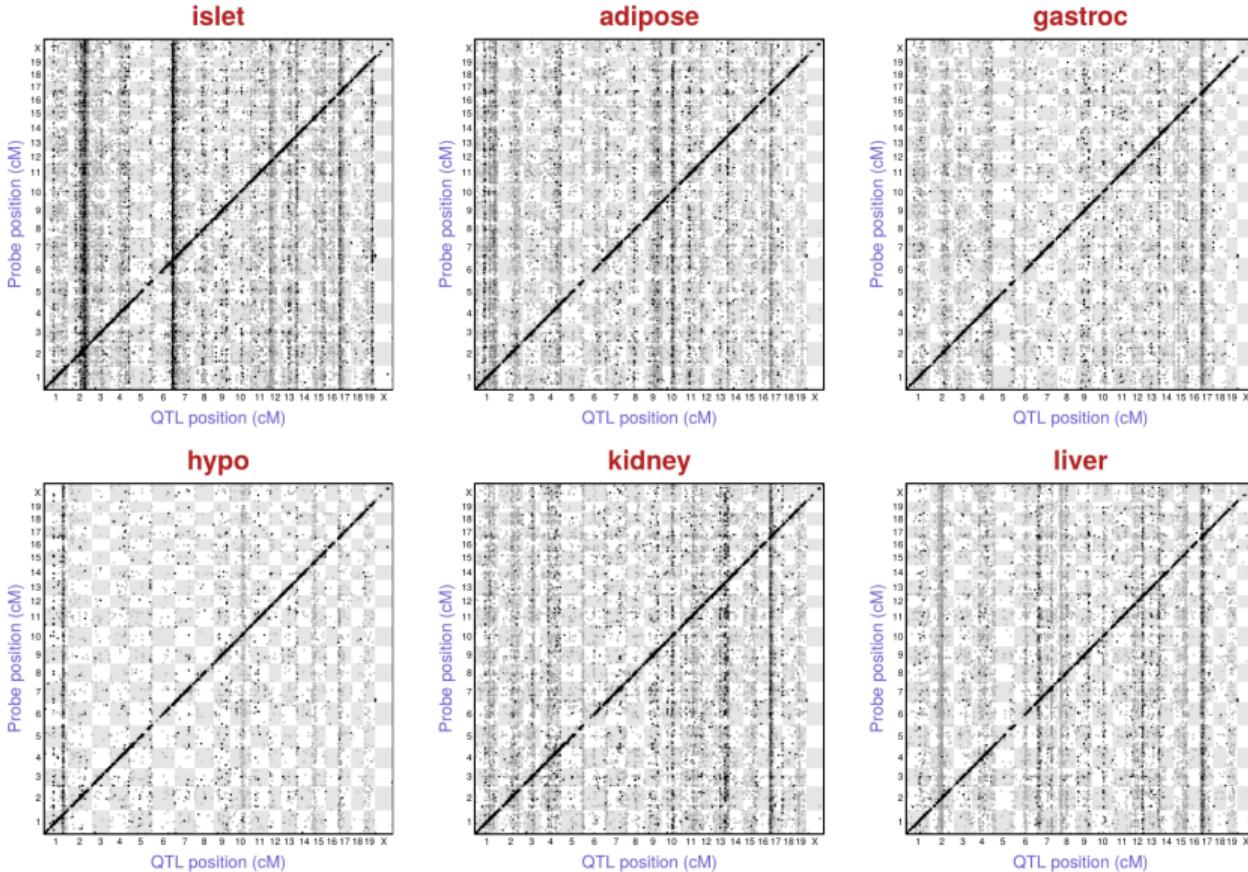
# Genome scan



# Genome scan

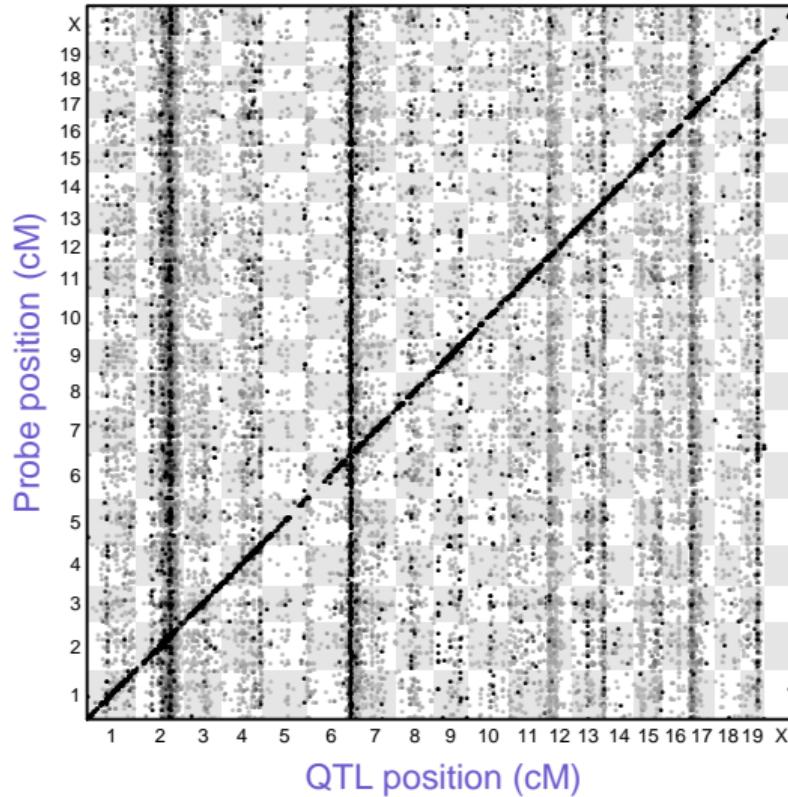


# High-throughput phenotypes

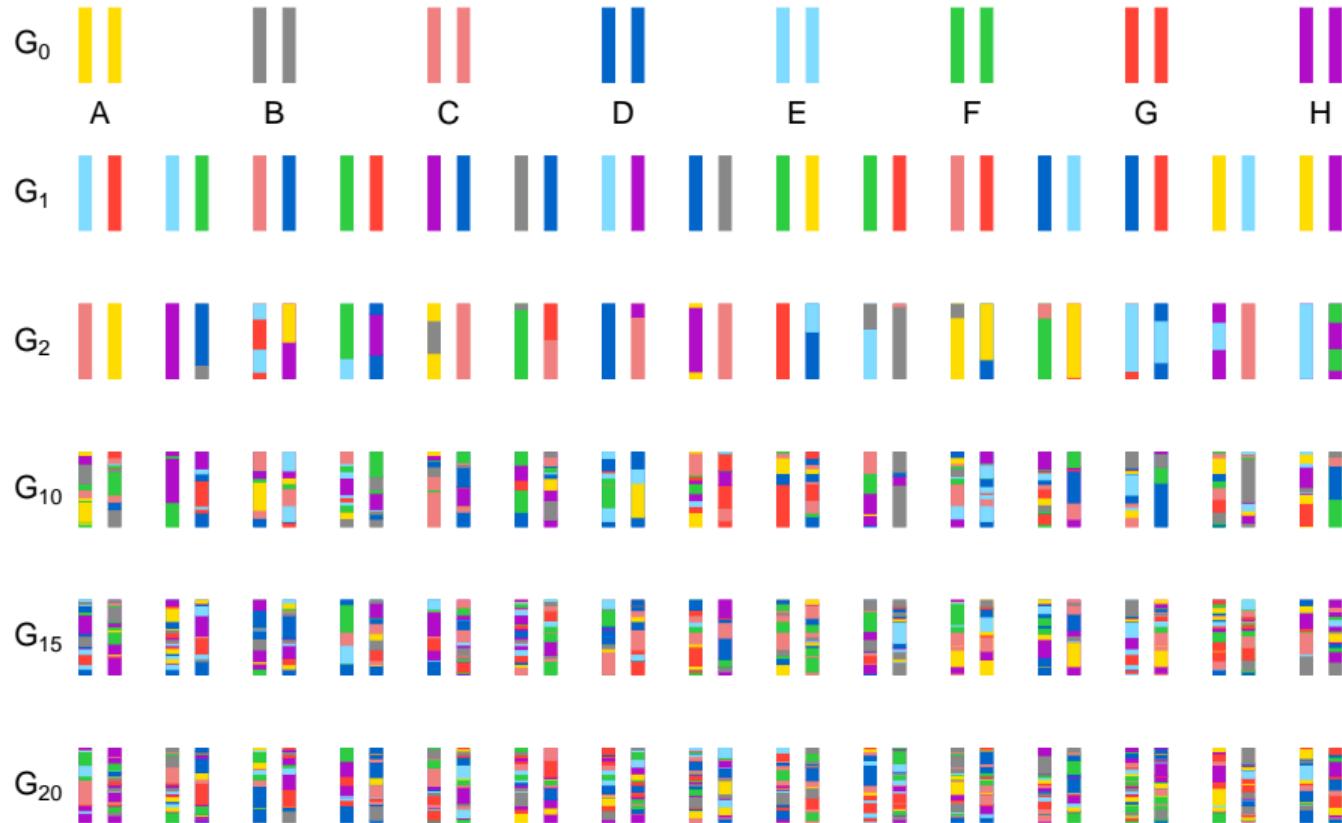


# High-throughput phenotypes

islet



# Multi-parent crosses



# The work

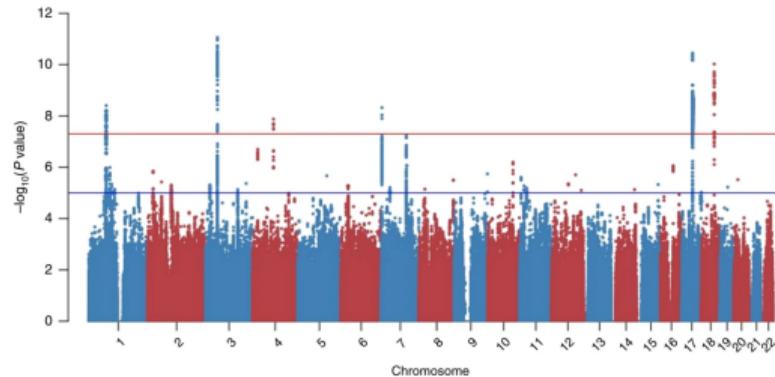
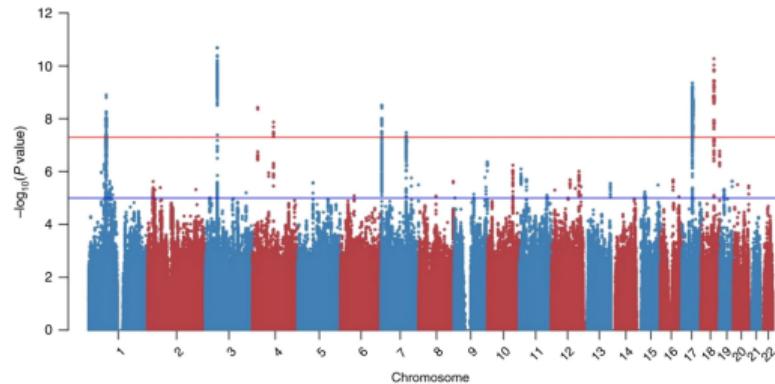
- ▶ Collaboration
- ▶ Data exploration
- ▶ Methods development
- ▶ Software development

# The work

- ▶ Collaboration
- ▶ Data exploration
- ▶ Methods development
- ▶ Software development
  - R
  - C++
  - Coffeescript
  - Ruby

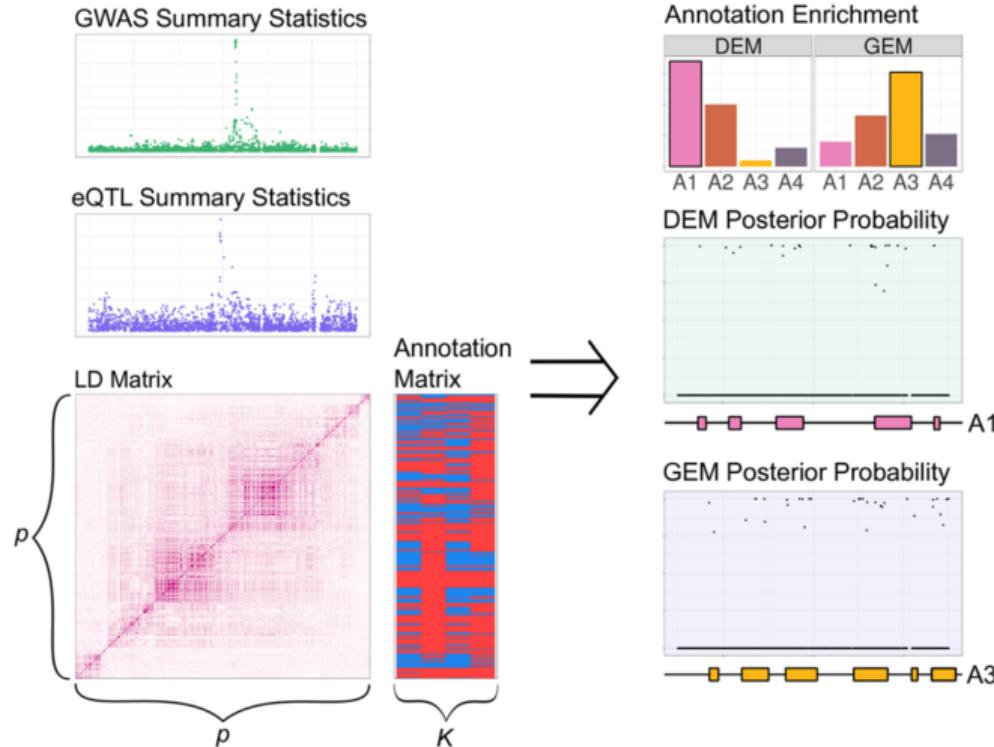
# Qiongshi Lu

## Human genome-wide association studies



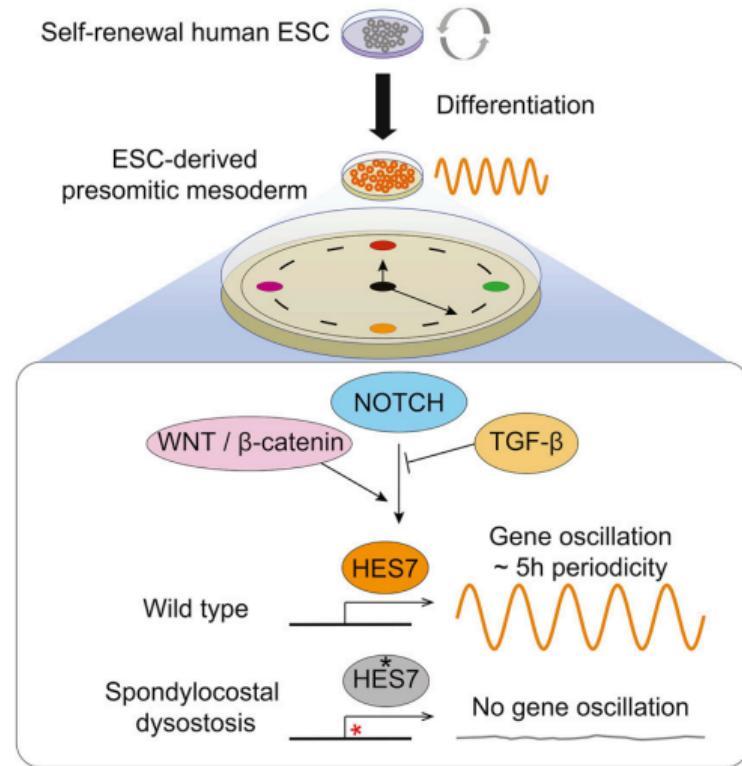
# Sündüz Keleş

## Functional mediation analysis



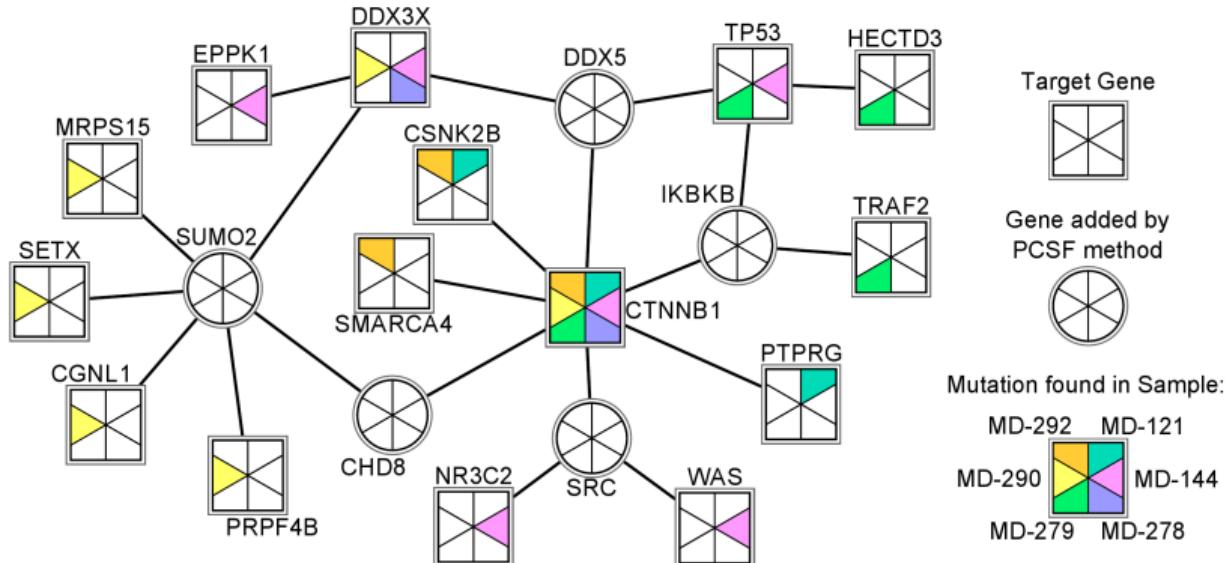
# Christina Kendziorski

## Clock genes in stem cells



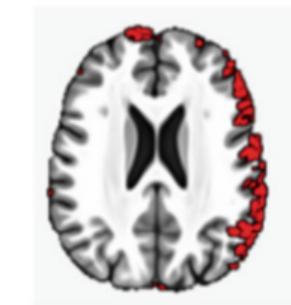
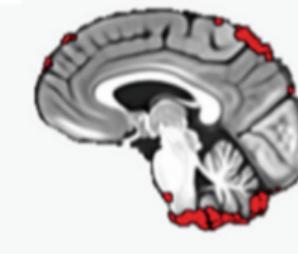
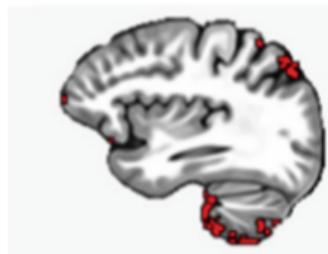
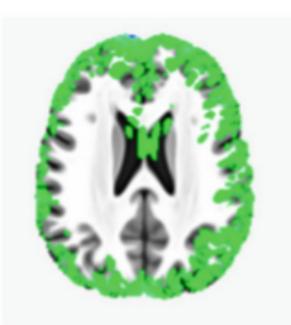
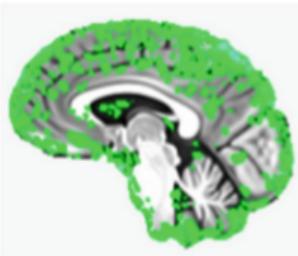
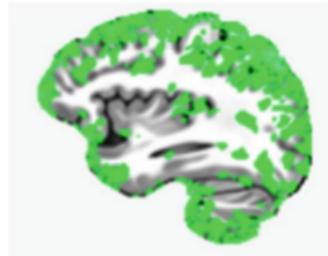
# Tony Gitter

## Pathways disrupted by cancer



# Vikas Singh

## Analysis of brain images



# Biomedical data science PhD at UW-Madison

- ▶ Faculty spanning biostatistics, bioinformatics, and computer science
- ▶ Broad opportunities for scientific collaborations
- ▶ Flexible course requirements
- ▶ Research rotations
- ▶ Literature and professional skills seminars

[bit.ly/madbds](http://bit.ly/madbds)



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