

Opportunities in biomedical data science

Karl Broman

Biostatistics & Medical Informatics, UW–Madison

kbroman.org

github.com/kbroman

@kwbroman

Slides: bit.ly/carleton2019

Biomedical data explosion

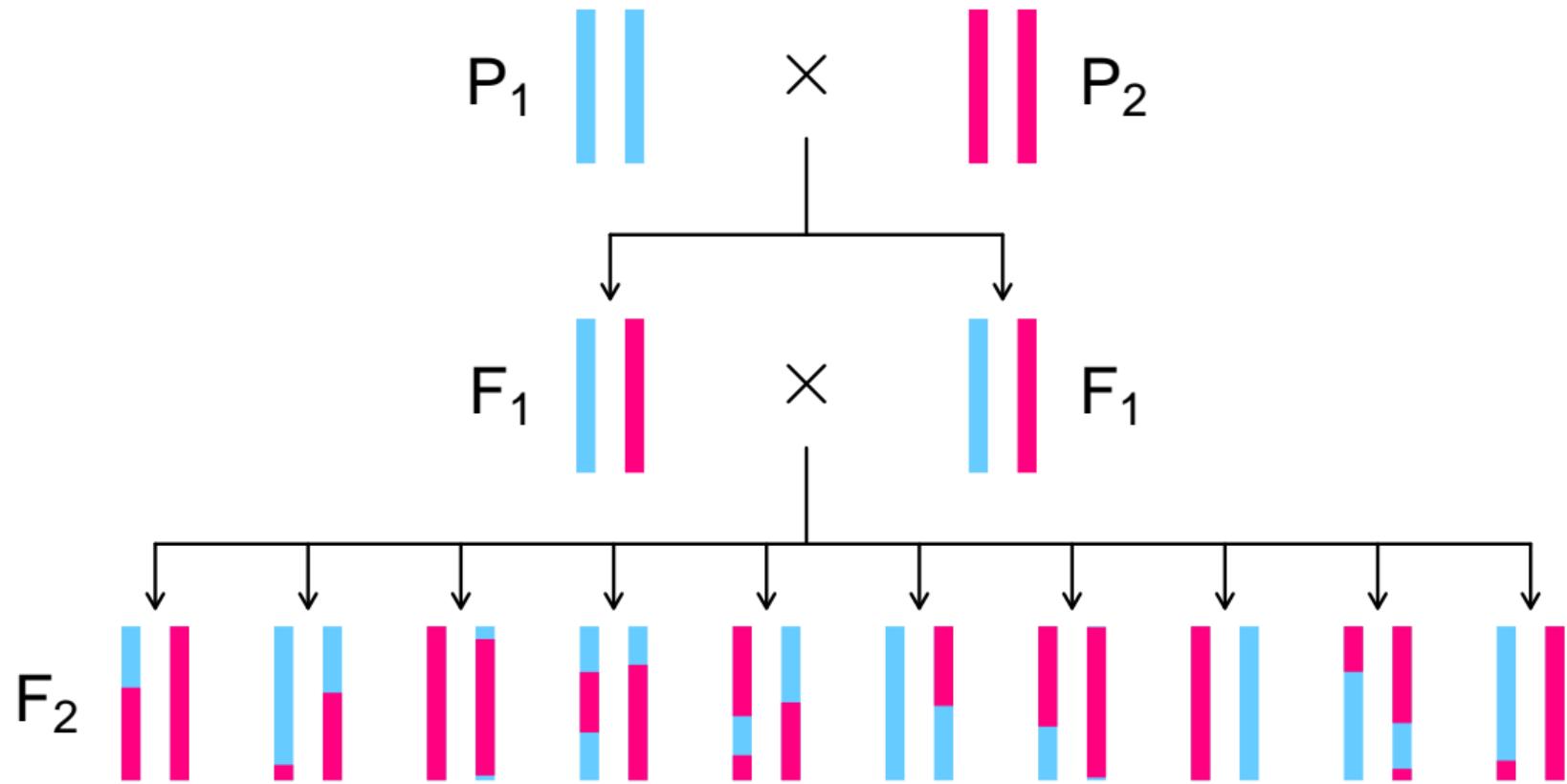
- ▶ Electronic health records (EHR)
- ▶ Imaging
- ▶ Genome/proteome/metabolome/microbiome data
- ▶ Personal activity/health tracking devices

Biomedical data explosion

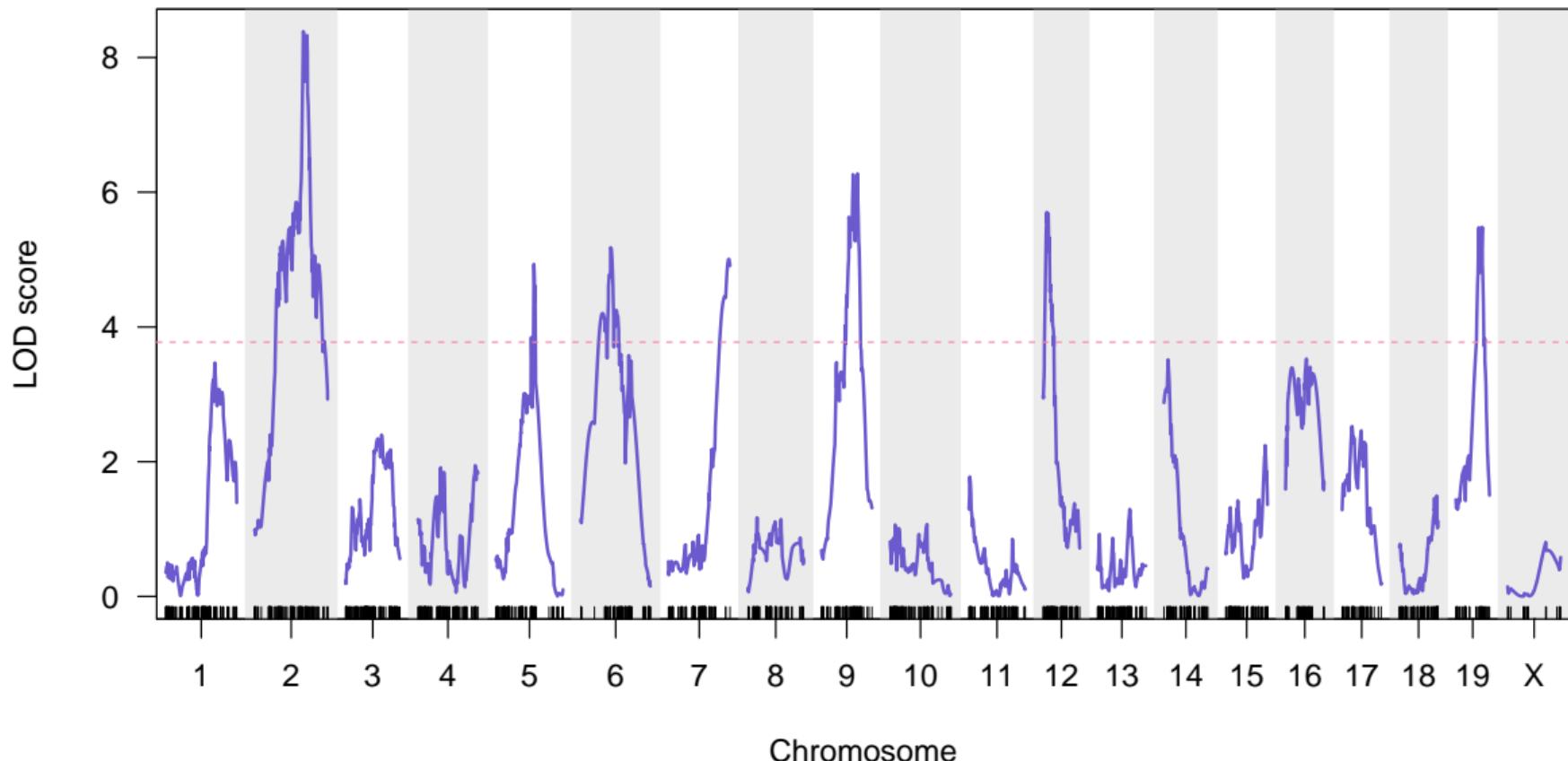
- ▶ Electronic health records (EHR)
- ▶ Imaging
- ▶ Genome/proteome/metabolome/microbiome data
- ▶ Personal activity/health tracking devices
- ▶ High-throughput measurements in agriculture and ecology



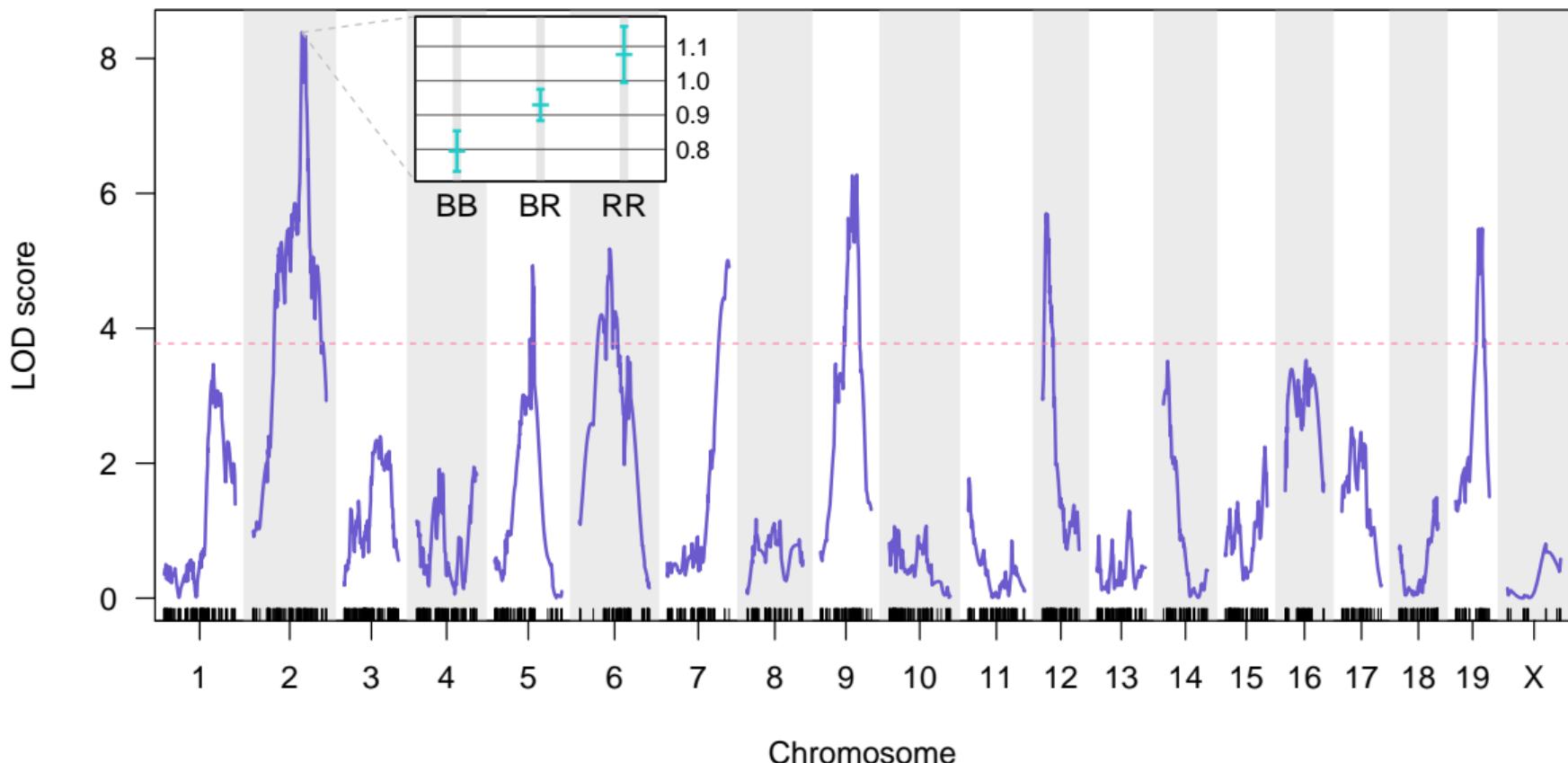
Intercross



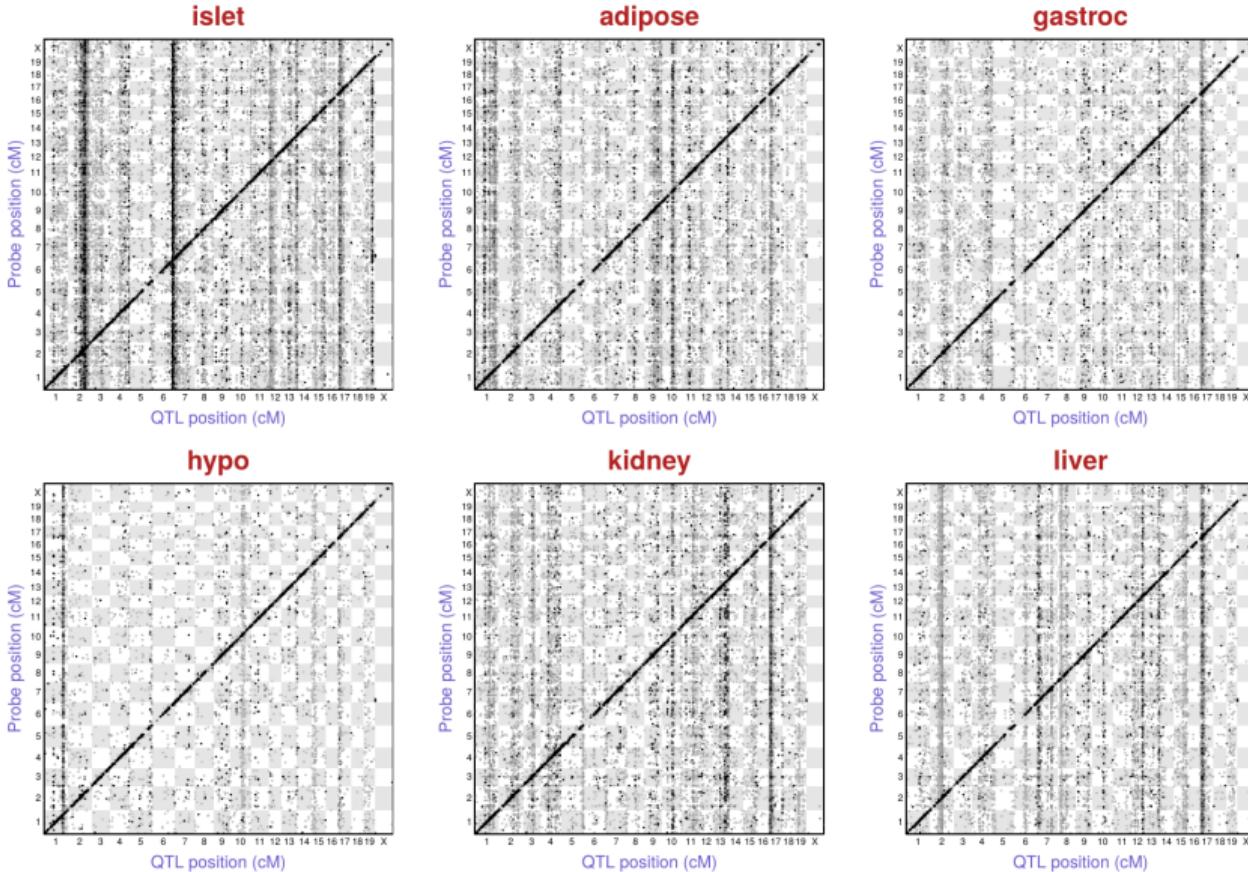
Genome scan



Genome scan

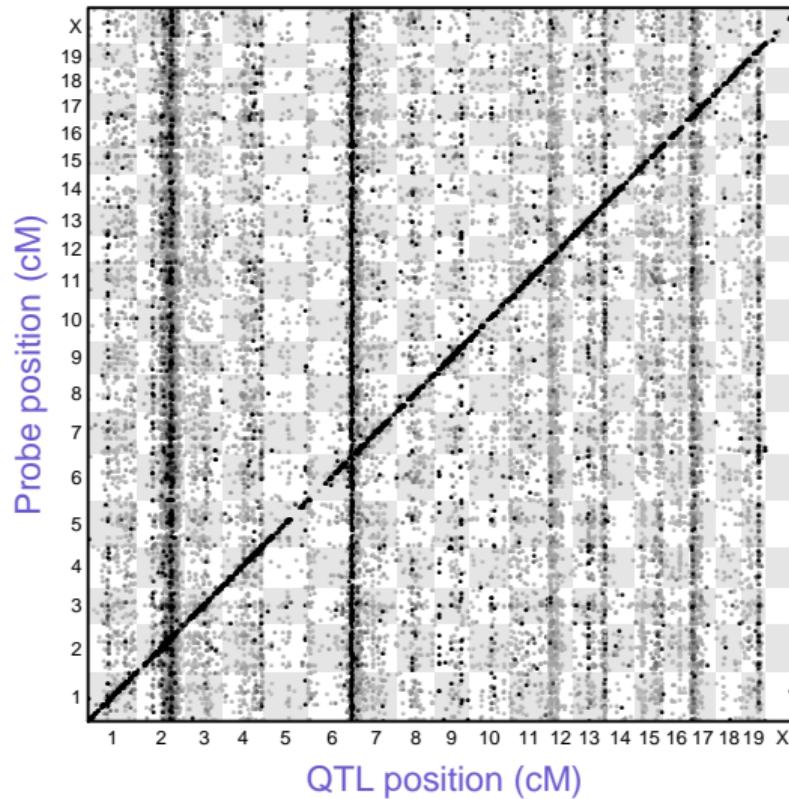


High-throughput phenotypes

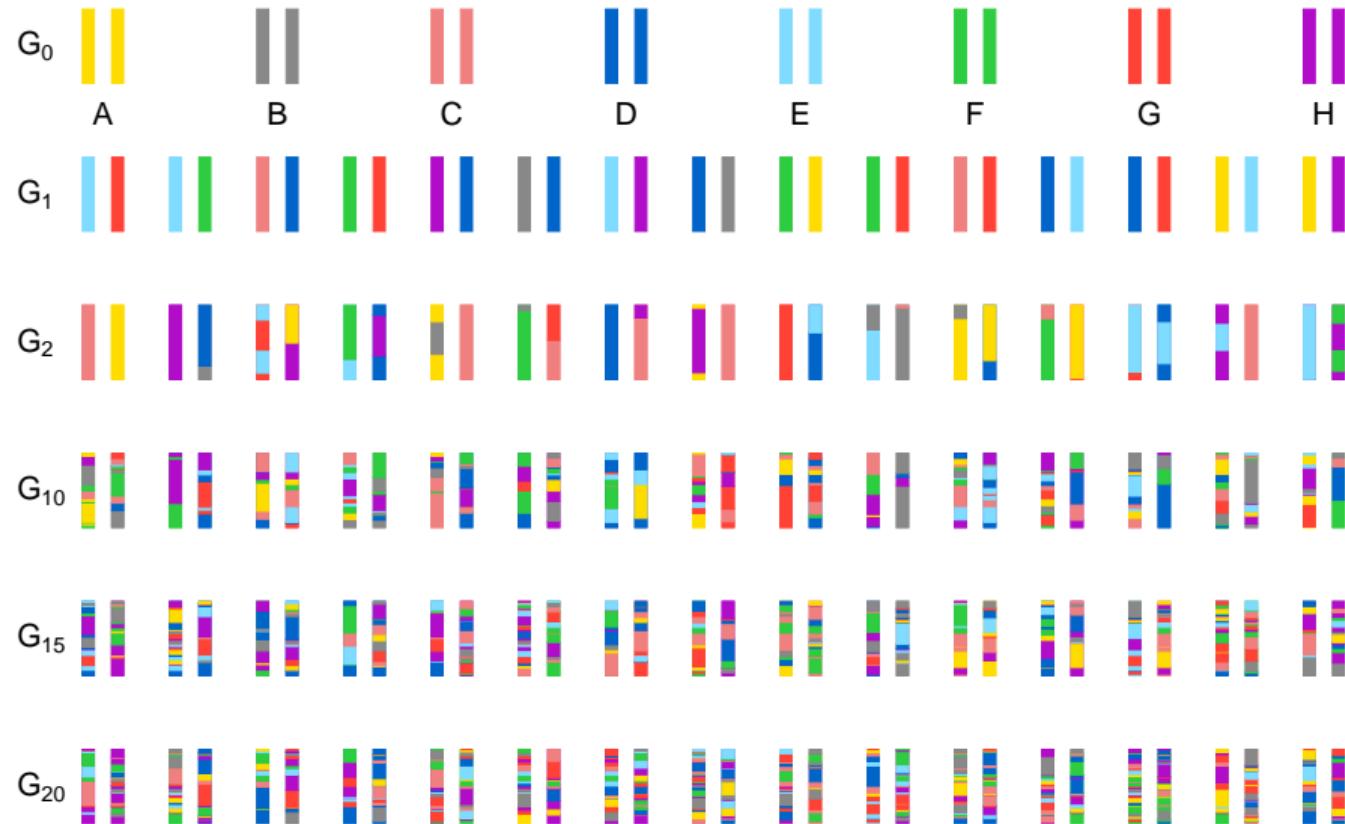


High-throughput phenotypes

islet



Multi-parent crosses



The work

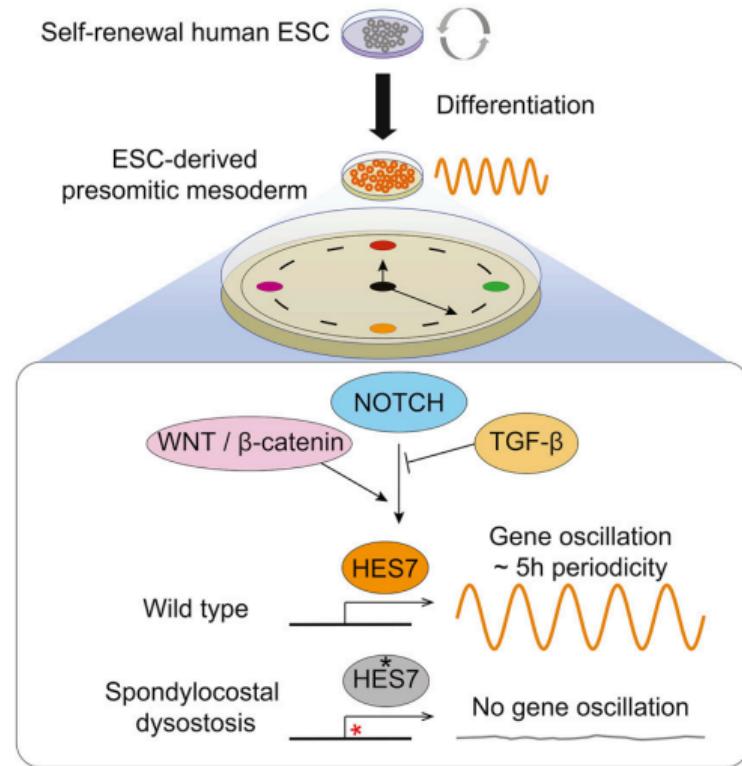
- ▶ Collaboration
- ▶ Data exploration
- ▶ Methods development
- ▶ Software development

The work

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

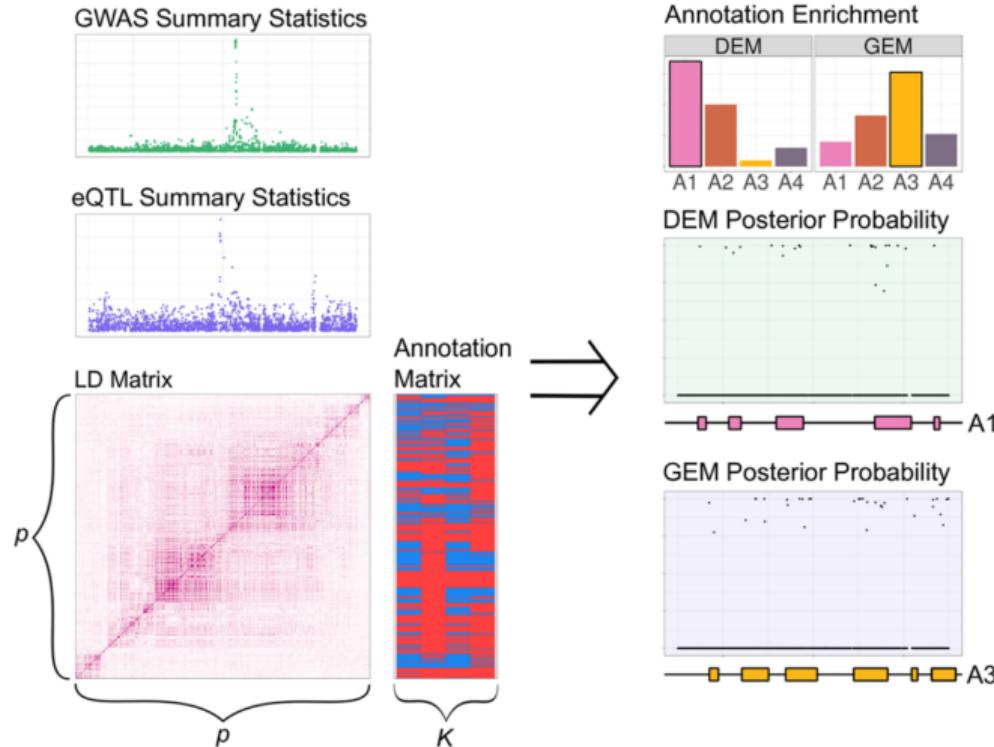
Christina Kendziorski

Clock genes in stem cells



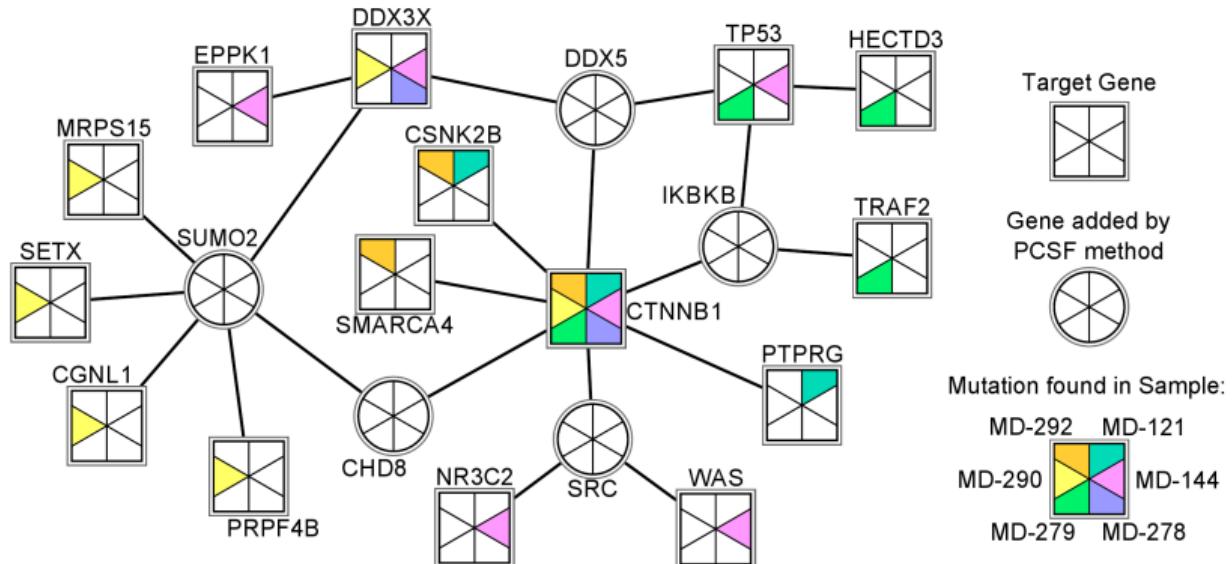
Sündüz Keleş

Functional mediation analysis



Tony Gitter

Pathways disrupted by cancer



Mutation found in Sample:

MD-292	MD-121
MD-290	MD-144
MD-279	MD-278

Biomedical data science PhD

- ▶ 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



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