

Field Methods in Ecological and Environmental Genomics

Queen's University Biological Station, May 2018

Name

University and education background

Current Research (or Research Interests)

Future Goals (short-term and long-term)

1. Team Assignments (1 vehicle per team?)
2. Make up a name for your team
3. Which team member speaks the most languages?

Team HAM

Megan, Hanna, Alex

Team PB&J

Jennifer, Beatrice, Patrick

Team Loneliest Number

David, Shannon



@ColauttiLab



Rapid Evolution in novel environments

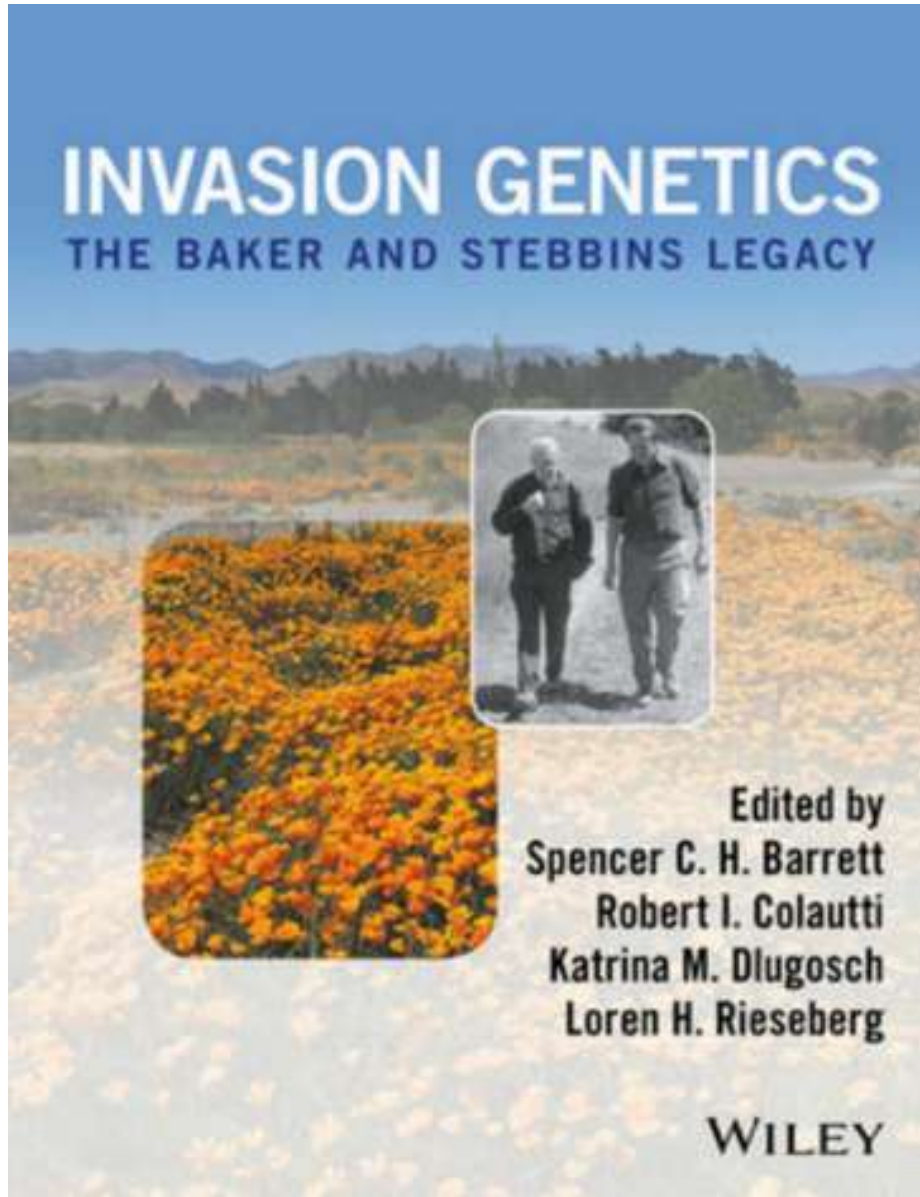


Queen's
UNIVERSITY

Ecology & Evolution in the Anthropocene



Environment --> Natural Selection --> Genome Evolution



“Invasion genetics of the spiny waterflea”
– Colautti et al. 2005

“Invasion genetics is a relatively new discipline that investigates patterns of genetic variation in populations of invasive species and their ecological and evolutionary consequences.”
– SCH Barrett 2016

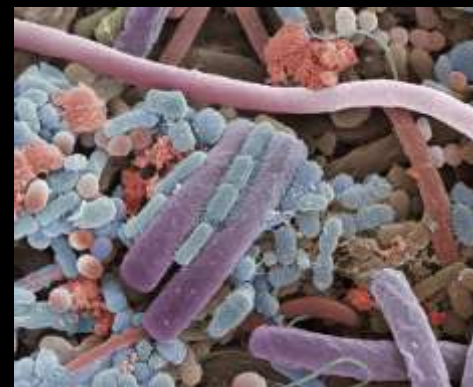
“**Invasion genetics** is a relatively new discipline that investigates patterns of genetic variation in populations of invasive species and their ecological and evolutionary consequences.”

– SCH Barrett 2016

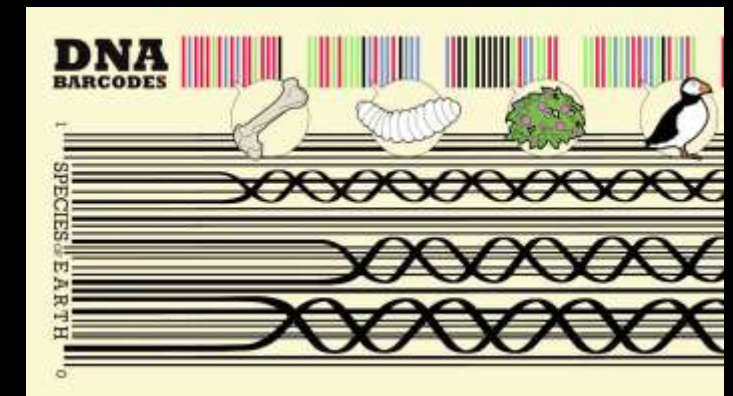
Ecological & environmental genomics investigate patterns of genome-wide variation in natural populations or species communities, to address ecological and environmental questions.

Discussion: What are some interesting questions for eco-env genomics?

eDNA & DNA barcodes for environmental monitoring

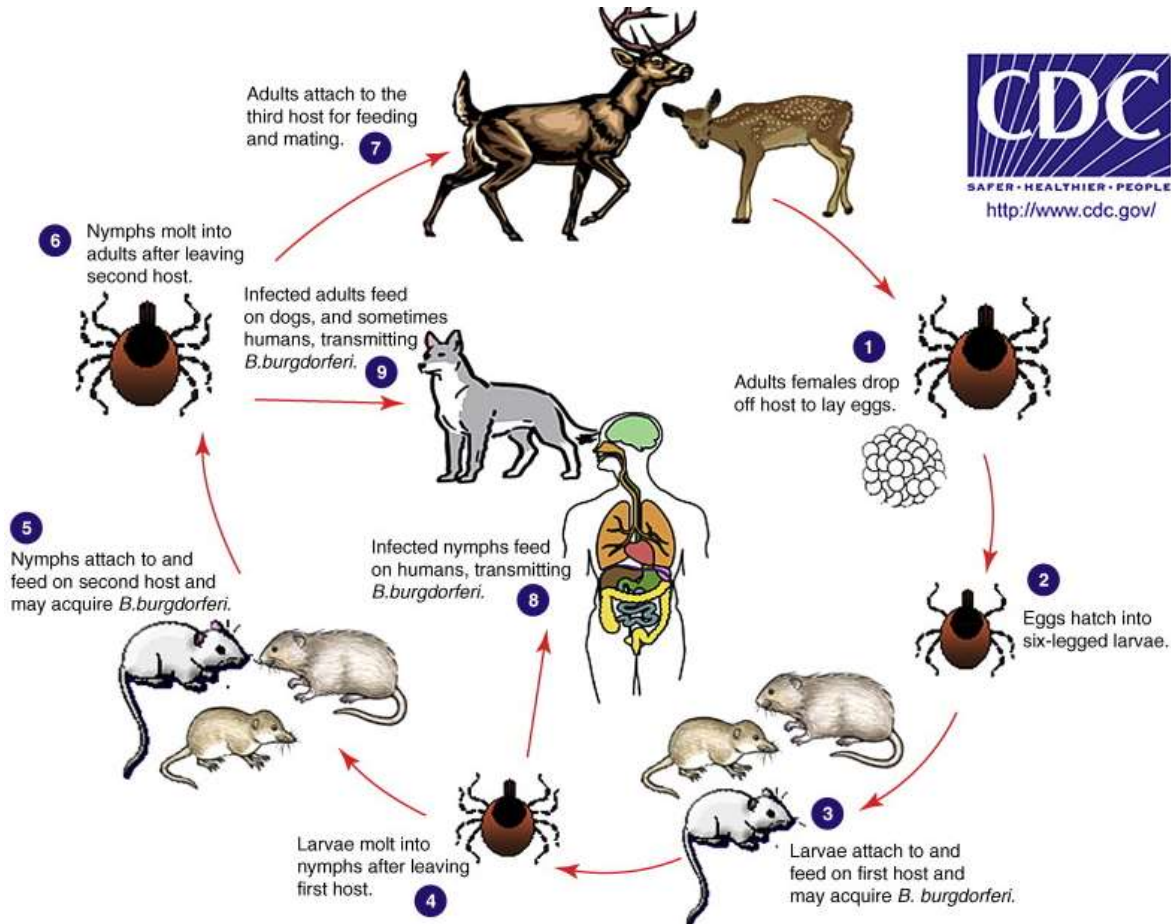


Barcode of Life Project
www.boldsystems.org

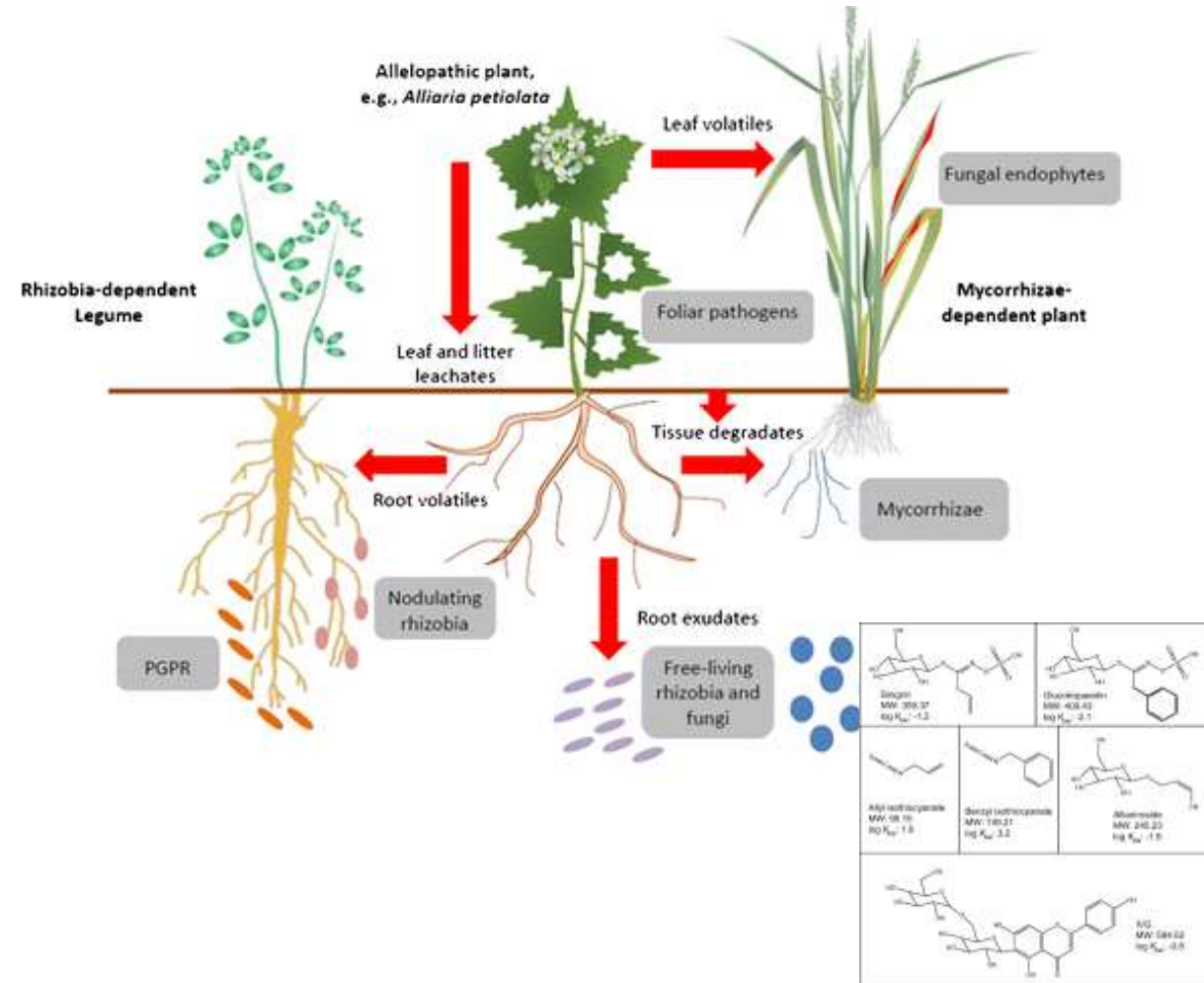


<https://www.youtube.com/watch?v=ZImiXgU6bCk>

Disease Ecology



Soil Microbiome



Rapid evolution of *Lythrum salicaria*



Muzz Abdur-Razak



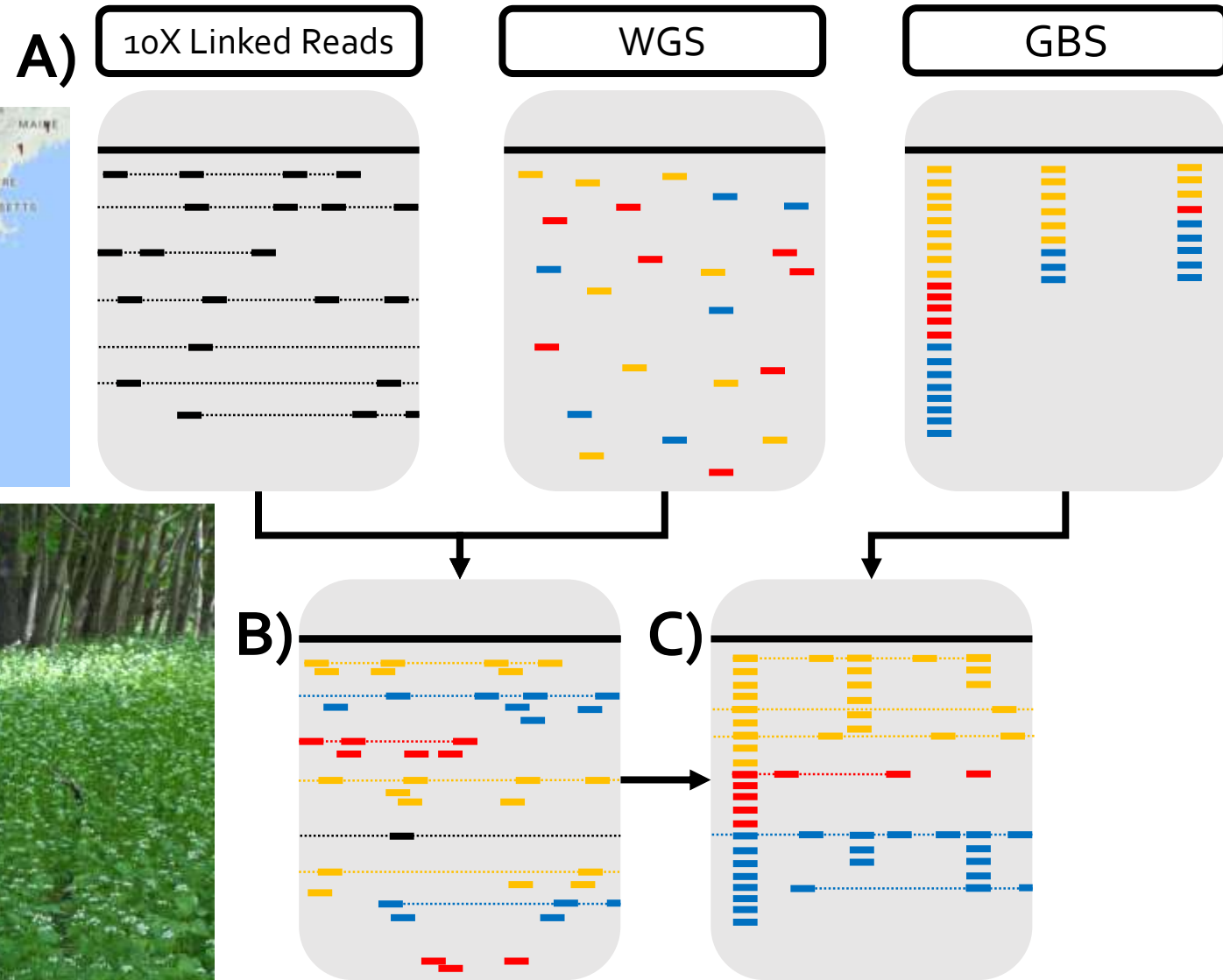
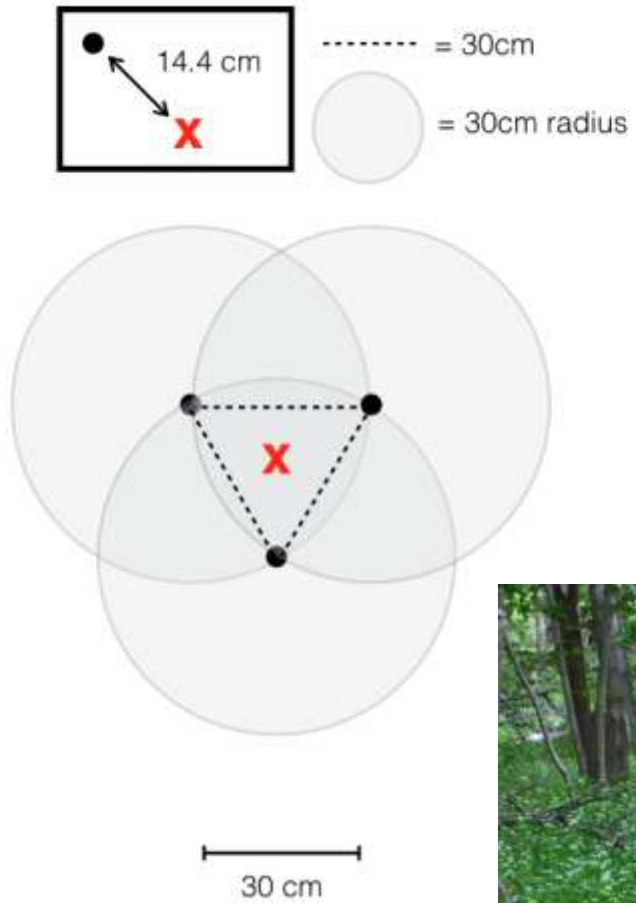
Sierra Klueppel



Eugene Sit



Population genomics of *Alliaria petiolata*



Our approach – 3 pillars

1. Learn by doing

Field Activities

Hands-on tutorials

2. Emphasis on transferrable skills

Coding

Experimental Design

Data Science! (collect → manage → visualize → analyze → report)

Communication

Teamwork

3. Cumulative learning – each day builds on previous activities/tutorials

QUIZ – What are the three pillars of our approach?

1.

2.

3.

Website: qubs.ca

Properties: qubs.ca/facilities/properties

Bathymetry: qubs.ca/resources/bathymetry

Soil and geography: qubs.ca/resources/soils-geology

***Maps: qubs.ca/resources/maps**

***Species lists: qubs.ca/resources/species-lists**

***Fowler Herbarium: fowlerherbarium.ca**

