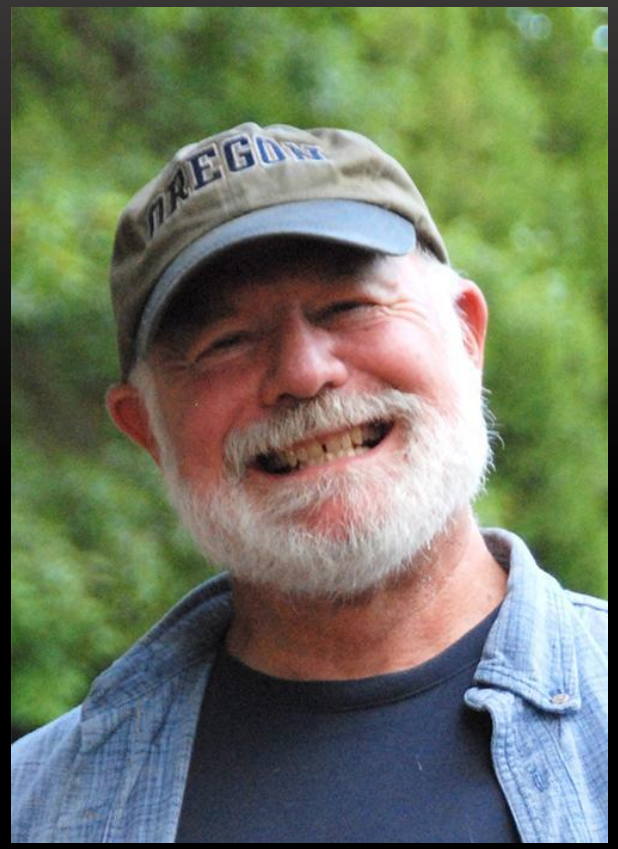
Evolutionary Quantitative Genetics Workshop 2025

eqgw.github.io

Instructors:
Josef Uyeda
Fabio Machado
Pat Carter
Jacqueline Sztepanacz
Joel McGlothlin
Laura Alencar



Joe Felsenstein
University of Washington

Stevan J Arnold
Oregon State University

Zoom breakouts:
Wednesday 6:30-8:00pm

Pat Carter
Washington State University

Jacqueline Sztepanacz
University of Toronto

Joel McGlothlin
Virginia Tech

Fabio Machado
Oklahoma State University

Josef Uyeda
Virginia Tech

Laura Alencar
Yale University

Macro
(many species, million-year timescales, fossils & phylogenies)

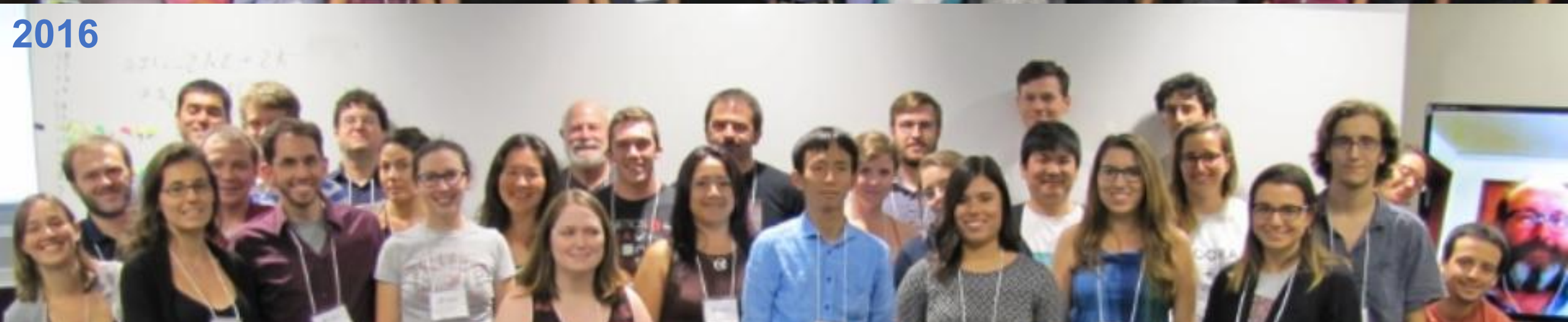
Micro
(within species, generational timescales, populations)


2011 NESCENT

2014

2015

2016




2017-2019

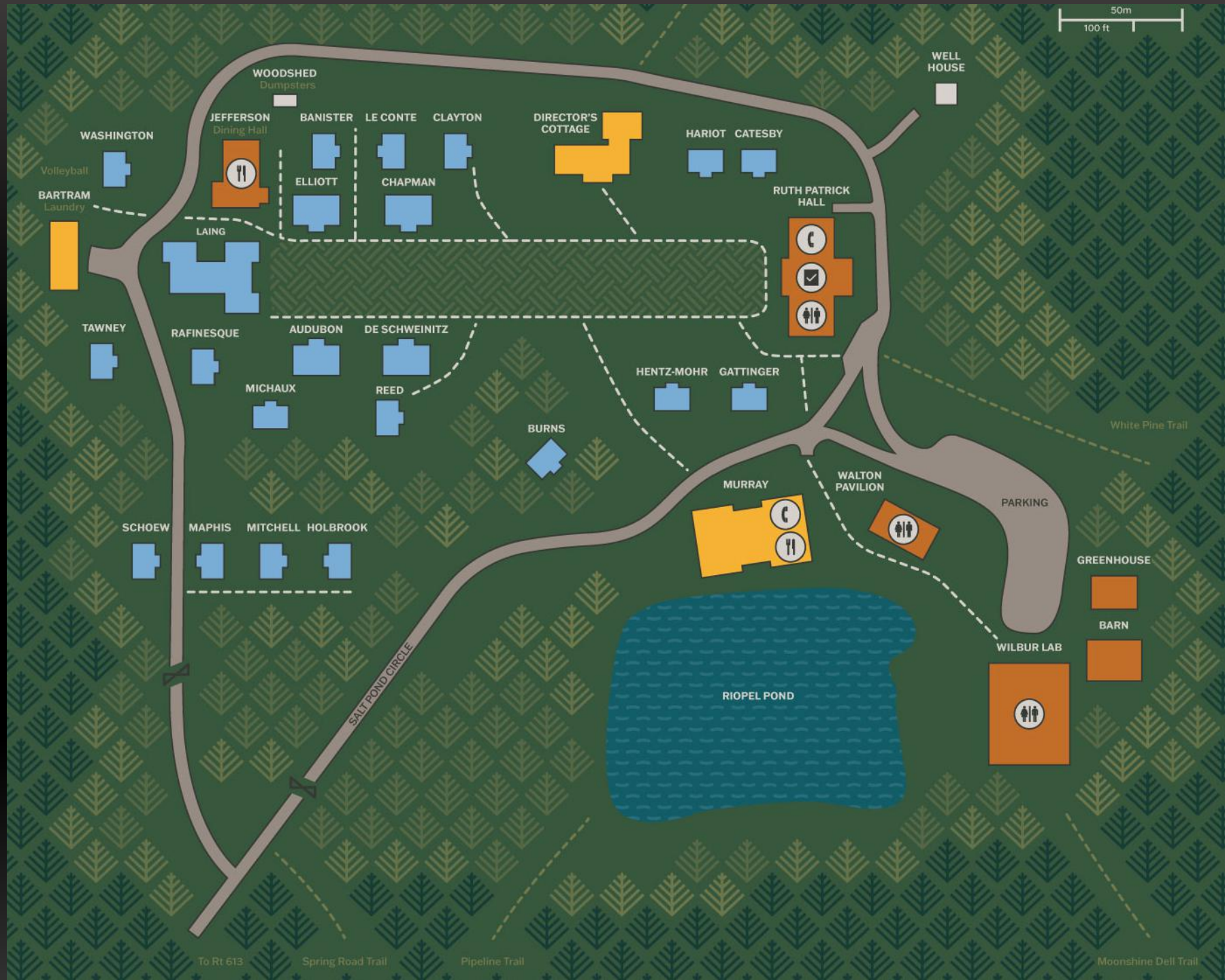
2025: Mountain Lake Biological Station

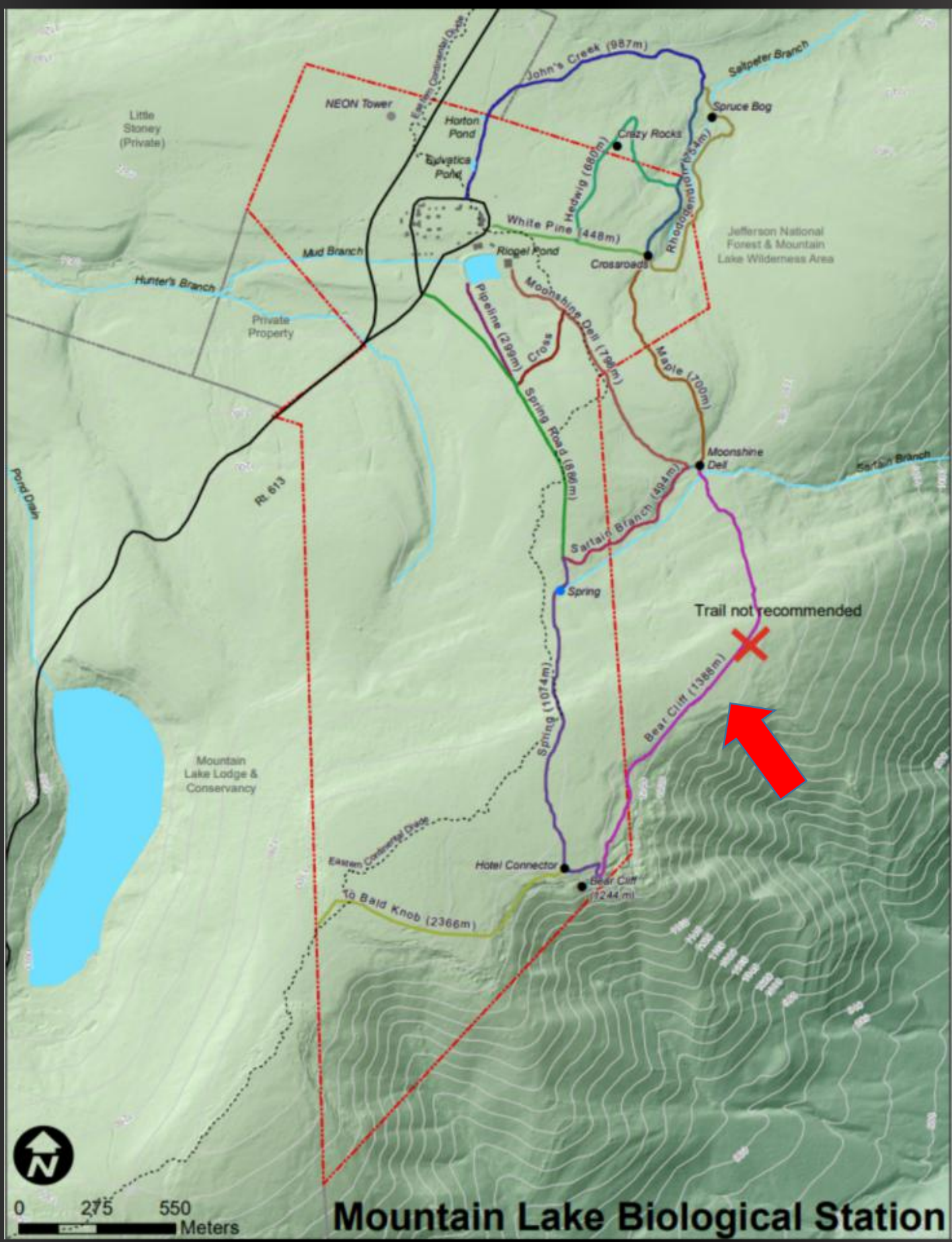
Salt pond mountain

E.D. “Butch” Brodie III
Station Director

Sandy Kawano
Station Associate Director

Jaime Jones
Station Manager


50m
100 ft
WELL HOUSE
WOODSHED
Dumpsters
JEFFERSON
Dining Hall
BANISTER
LE CONTE
CLAYTON
DIRECTOR'S COTTAGE
HARIOT
CATESBY
WASHINGTON
Volleyball
BARTRAM
Laundry
ELLIOTT
CHAPMAN
RUTH PATRICK HALL
LAING
TAWNEY
RAFINESQUE
AUDUBON
DE SCHWEINITZ
HENTZ-MOHR
GATTINGER
MICHAUX
REED
BURNS
White Pine Trail
MURRAY
WALTON PAVILION
PARKING
SCHOEW
MAPHIS
MITCHELL
HOLBROOK
GREENHOUSE
BARN
WILBUR LAB
RIOPEL POND
SALT POND CIRCLE
To Rt 613
Spring Road Trail
Pipeline Trail
Moonshine Dell Trail


John's Creek (987m)
Saltpeter Branch
NEON Tower
Eastern Continental Divide
Little Stoney (Private)
Horton Pond
Spruce Bog
Crazy Rocks
Hedwig (680m)
Rhododendron (845m)
Eastatica Pond
White Pine (448m)
Jefferson National Forest & Mountain Lake Wilderness Area
Mud Branch
Riegel Pond
Crossroads
Hunter's Branch
Private Property
Pipeline (299m)
Cross
Moonshine Dell (798m)
Maple (700m)
Spring Road (886m)
Moonshine Dell
Saltpeter Branch
Pond Drain
Rt. 613
Sartain Branch (494m)
Spring
Trail not recommended
Spring (1074m)
Bear Cliff (1388m)
Mountain Lake Lodge & Conservancy
Eastern Continental Divide
Hotel Connector
Bear Cliff (1244 m)
To Bald Knob (2366m)
N
0
275
550
Meters
Mountain Lake Biological Station

Observations

Species | Mountain Lake, VA | Go | Filters

Custom Boundary

7,597 OBSERVATIONS | 1,495 SPECIES | 1,436 IDENTIFIERS | 450 OBSERVERS

Eastern Newt
(Notophthalmus viridescens)

Eastern Red-backed Salamander
(Plethodon cinereus)

Spring Peeper
(Pseudacris crucifer)

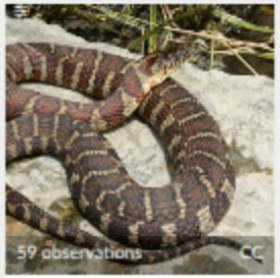
Northern Slimy Salamander
(Plethodon glutinosus)

Northern Gray-cheeked Salamander
(Plethodon montanus)

Allegheny Mountain Dusky Salamander
(Desmognathus ochrophaeus)

Northern Dusky Salamander
(Desmognathus fuscus)

Southern Two-lined Salamander
(Eurycea cirrigera)



Common Watersnake
(Nerodia sipedon)

Fly Poison
(Amianthium muscitoxicum)

American Bullfrog
(Lithobates catesbeianus)

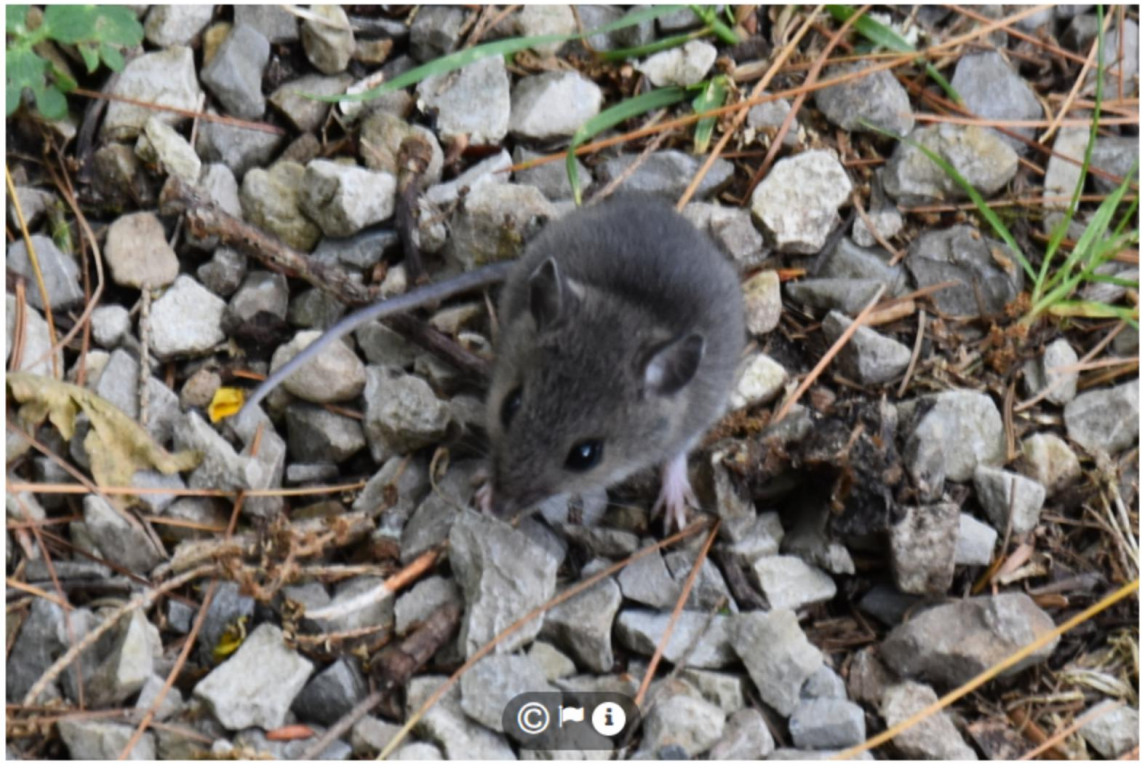
Spring Salamander
(Gyrinophilus porphyriticus)

Common Garter Snake
(Thamnophis sirtalis)

Common Milkweed
(Asclepias syriaca)

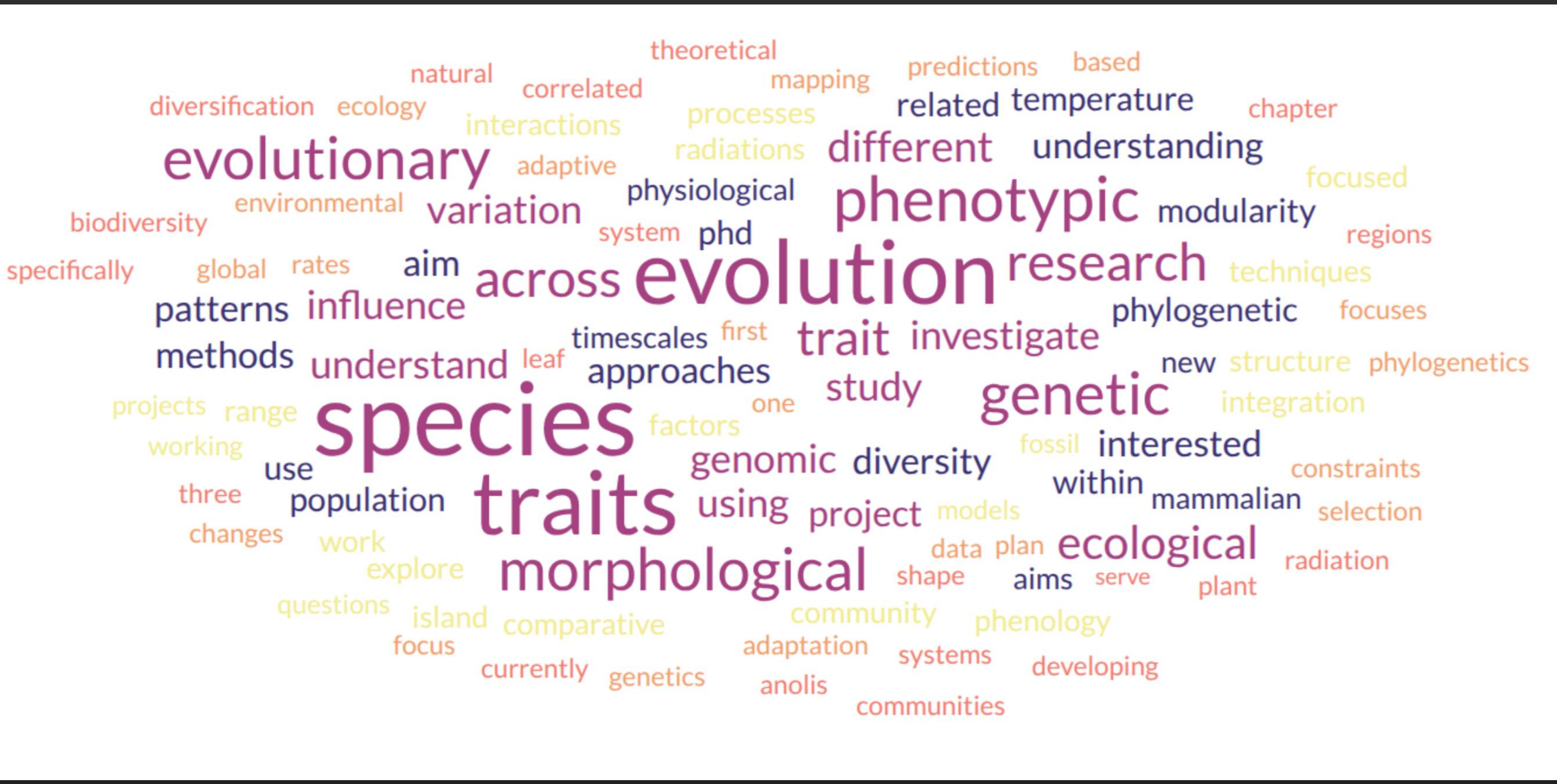
Cinnamon Fern
(Osmundastrum cinnamomeum)

North American Deer Mice (Genus *Peromyscus*) Needs ID



North American Deer Mice (Genus *Peromyscus*) Needs ID

Questions or concerns about station logistics?


theoretical
natural
predictions
based
correlated
mapping
diversification
ecology
related
temperature
chapter
processes
interactions
radiations
different
understanding
evolutionary
adaptive
focused
physiological
phenotypic
environmental
variation
modularity
biodiversity
system
phd
regions
specifically
global
rates
aim
across
evolution
research
techniques
patterns
influence
phylogenetic
focuses
timescales
first
trait
investigate
methods
understand
leaf
approaches
new
structure
phylogenetics
study
projects
range
species
one
genetic
integration
factors
working
fossil
interested
use
genomic
diversity
constraints
within
three
population
traits
using
project
models
mammalian
selection
changes
work
data
plan
ecological
explore
morphological
shape
aims
serve
radiation
plant
questions
island
comparative
community
phenology
focus
adaptation
systems
currently
genetics
developing
anolis
communities

What do you hope to get out of this course?

pollev.com/josefuyeda941

Evolutionary Quantitative Genetics
(or quantitative trait evolution from micro to macro)

Quantative Genetics

Mutation, Genetic variation, Natural selection, Genetic drift

A few generations/years

experiments/direct observation/field studies/breeding designs/genomics

Pedigrees

Macroevolution

Biodiversity, speciation, divergence, extinction

Phylogenetic comparative methods

Fossil record

Millions of years

Observational/patterns/ outcomes

Phylogenies

Where do you see your scientific work?

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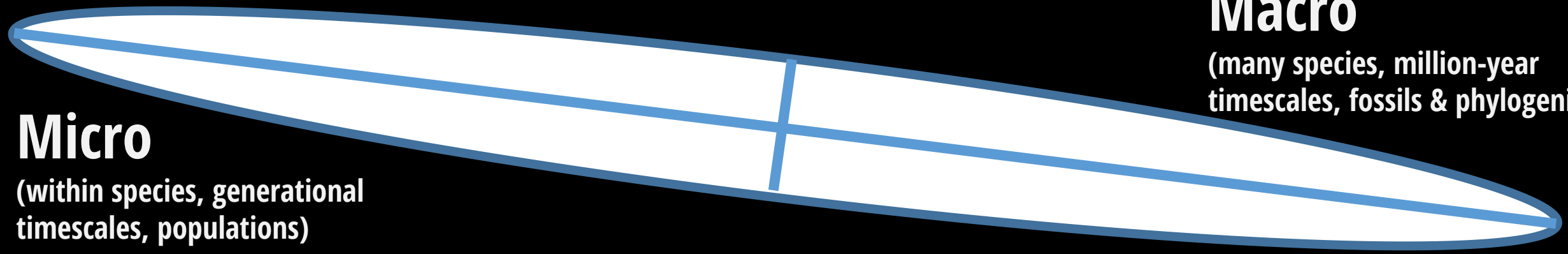
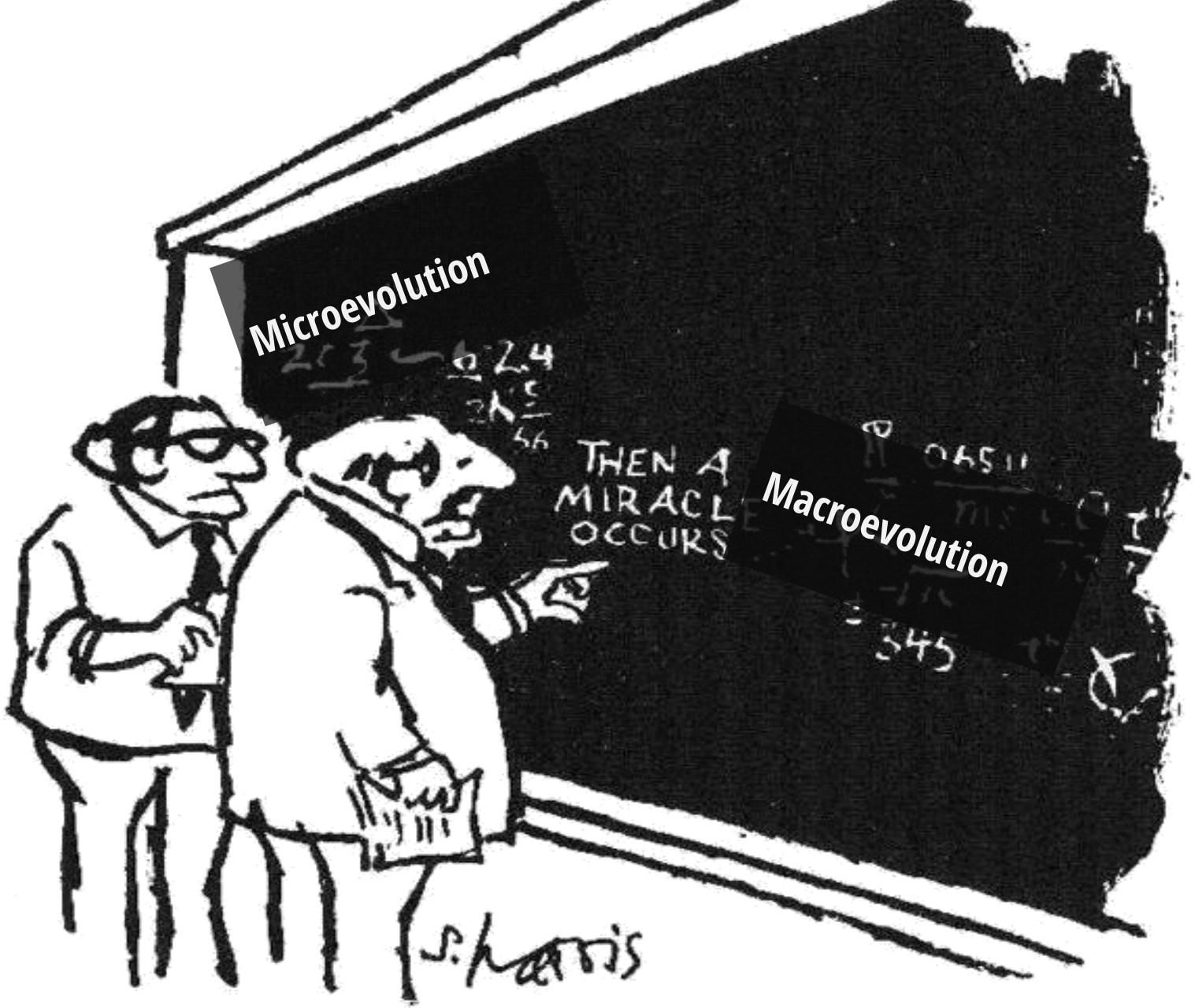
Where do you see your scientific questions?





"I think you should be more explicit here in step two."

In this workshop we will talk about:

The many powerful links in methodology, concepts, and data between micro and macro

The many paradoxes, open questions, and opportunities that exist in linking micro and macro

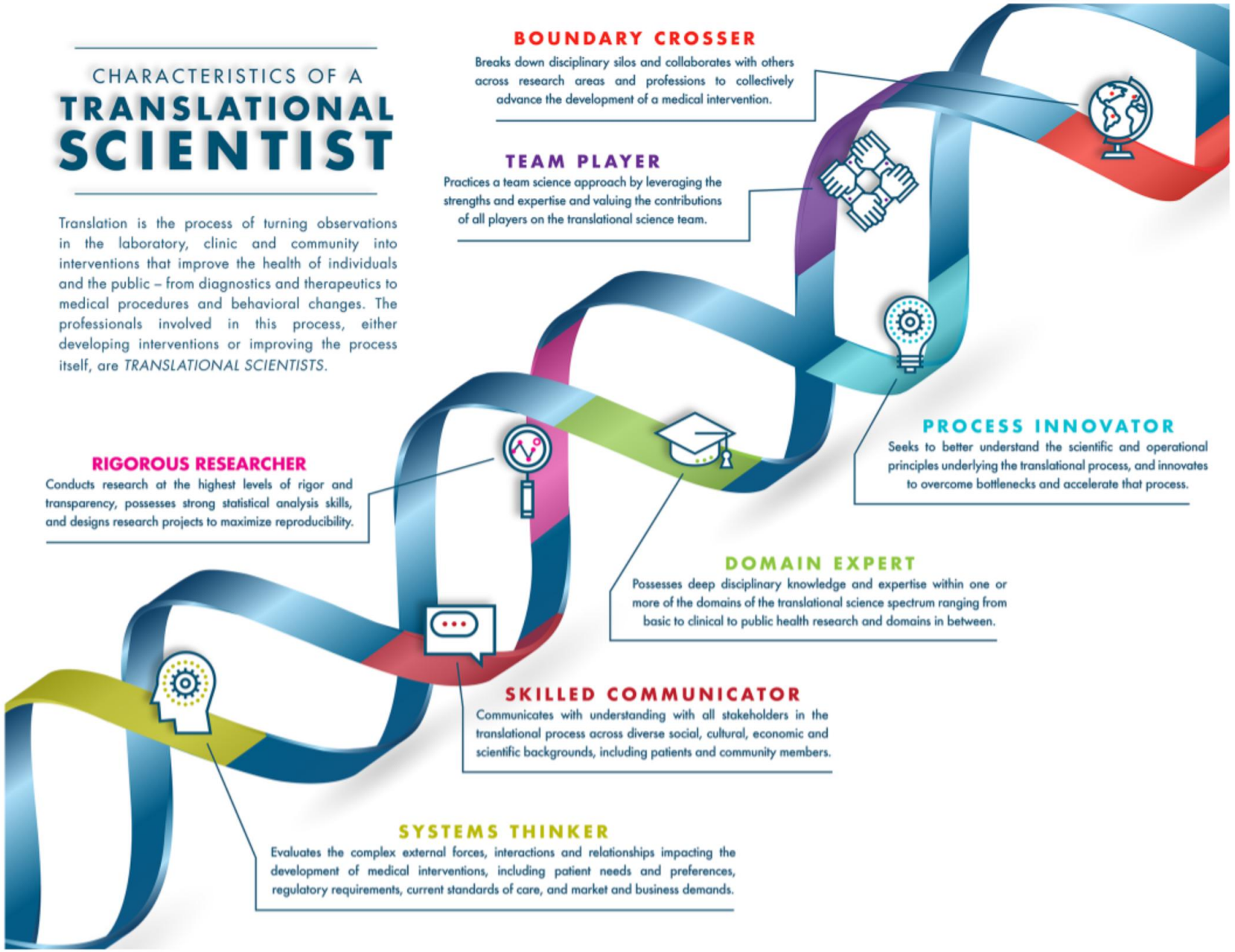


Figure 1. Seven fundamental character traits of a translational scientist.

Gilliland et al. 2019. The fundamental characteristics of a translational scientist. ACS Pharmacology & Translational Science 2:213-216.

Introduce yourselves with 3 P's!

Personal fact - something not visible or obvious about you, e.g. pet, passion, hobby

Professional fact - e.g. What you study, where you work (the usual)

Peculiar fact - e.g. stupid human tricks, rare/unusual claim to fame etc.

Participant presentations this afternoon

Upload to Google Drive by the end of Lunch!

5 minutes max!! (2 hours = 6 minutes per person x 20!)

I will enforce!

https://drive.google.com/drive/folders/1pZ-tbb4DouWzcKhAMbSK9o1nNkHwPXdf?usp=sharing

(link on slack)

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