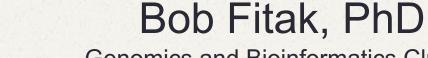
Who am I?



Genomics and Bioinformatics Cluster
Department of Biology
University of Central Florida











GROUP ACTIVITY

Best practices and recommendations for genomics research in wildlife diseases.

2017: Horizon Scan



Journal of Heredity, 2019, 261–274 doi:10.1093/jhered/esz001 Perspective Advance Access publication January 12, 2019

Perspective

The Expectations and Challenges of Wildlife Disease Research in the Era of Genomics: Forecasting with a Horizon Scan-like Exercise

Robert R. Fitak[®], Jennifer D. Antonides, Eric J. Baitchman, Elisa Bonaccorso, Josephine Braun, Steven Kubiski, Elliott Chiu, Anna C. Fagre, Roderick B. Gagne, Justin S. Lee, Jennifer L. Malmberg, Mark D. Stenglein, Robert J. Dusek, David Forgacs, Nicholas M. Fountain-Jones, Marie L. J. Gilbertson, Katherine E. L. Worsley-Tonks, W. Chris Funk, Daryl R. Trumbo, Bruno M. Ghersi, Wray Grimaldi, Sara E. Heisel, Claire M. Jardine, Pauline L. Kamath, Dibesh Karmacharya, Christopher P. Kozakiewicz, Simona Kraberger, Dagan A. Loisel, Cait McDonald, Steven Miller, Devon O'Rourke, Caitlin N. Ott-Conn, Mónica Páez-Vacas, Alison J. Peel, Wendy C. Turner, Meredith C. VanAcker, Sue VandeWoude, and Jill Pecon-Slattery

Improving Communication

- · New partnerships
- · Integration with genomics
- Recommendations for improvement

Translation into Practice

- Validating results
- Fostering an environment for practical application

Genomics of Disease in Wildlife

Integrating Landscape Ecology and Genomics

- Inferring host and pathogen gene flow
- Coordinating technology, data, and expertise
- Understanding the effects of rapid environmental change

Emerging New Questions

- In situ models of human disease
- Epigenetics and phenotypic plasticity
 - Evolutionary rates

Methodological and Analytical Advancements

- · Advances in sequencing
- Advances in sample processing
 - Best practices
 - Accessibility



2018: Best Practices



Retroviral resistance in a rediscovered tarsier species



Vector-borne bacterial outbreak in indigo snakes



Permafrost pathogen outbreak!



Viral biocontrol of an invasive rat species

2018: Best Practices

Specimen Collection, Handling, Preparation Data Analysis Methodology Results and Publishing



2019: PROJECT ROULETTE



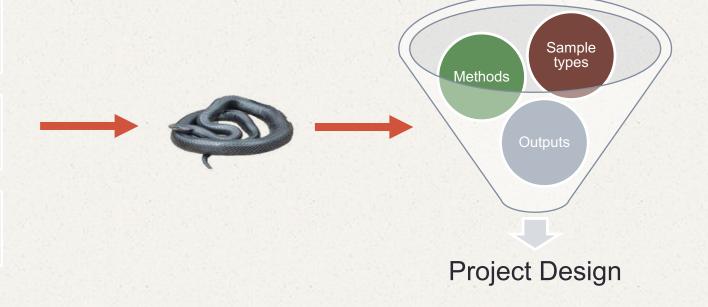
Pathogen resistance in a rediscovered tarsier species



Vector-borne disease outbreak in indigo snakes



Permafrost pathogen outbreak!



Project Roulette

Samples

fresh tissue

non-invasive

Technology

MiSeq

NovoSeq

Oxford Nanopore (Gridion/Minion)

Output

\$\$\$ for data and open access publication costs

no \$\$\$

Etiological Agent

bacterium

virus

fungus

it's a PRION!

Tentative Schedule

- Sunday June 2
 - Meet your group
 - Vote on Projects
 - Pick project attributes
- June 3, 4, 5
 - Break into groups
 - ~30 minutes to discuss and outline your project
- Saturday morning, June 8
 - Group Presentations
 - Assess recommendations 'shared' across projects, and those unique to different projects

Randomly Assigned Groups

Group 1

• Borland, Neddermeyer, Johnson, Kuthyar, Goldsmith

Group 2

Verdugo, Anderson, Bruce, Garwood, Crane

Group 3

Mistrick, Lee, Maly, Yates, Valdivieso

Group 4

Barandongo, Wright, Diss, Wild, Calatayud



2019: Project Roulette



Pathogen resistance in a rediscovered tarsier species



Vector-borne disease outbreak in indigo snakes



Permafrost pathogen outbreak!

Presentations (essentially, a study proposal)

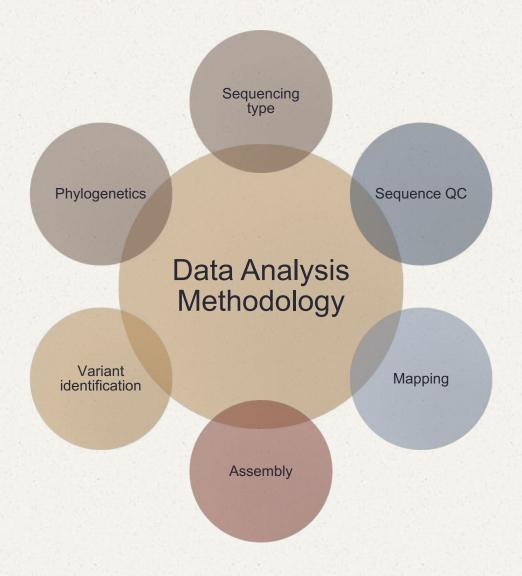
- What is your group's specific scenario?
- What are your questions?
- Study design
 - Sample types
 - Sequencing
 - Types of analyses?
- Research dissemination
 - Where will you publish?
 - How will you make your data and analyses available?

Bob Fitak: GDW 2019

Day 1



Day 2



Day 3

