Group Activity

A fun case-study activity to meet new people and apply what you have learned!



GDW 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

- 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

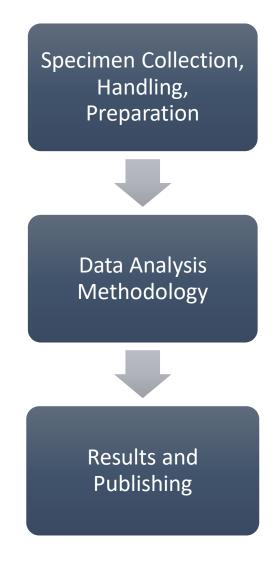
- In situ models of human disease
- Epigenetics and phenotypic plasticity
 - Evolutionary rates

Methodological and Analytical Advancements

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



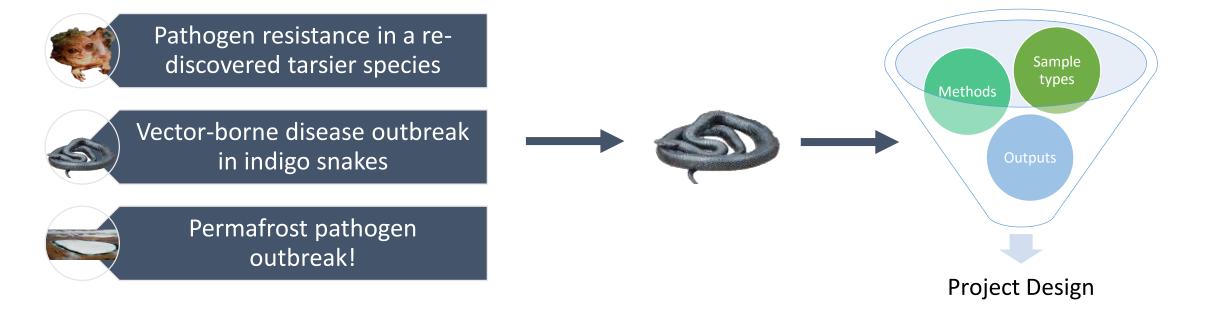
GDW 2018: Best Practices







GDW 2019: Project Roulette





GDW 2019: Project Roulette

Samples

fresh tissue

non-invasive

Technology

MiSeq

NovoSeq

Oxford Nanopore Output

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

no \$\$\$

Etiological Agent

bacterium

virus

fungus

It's a Prion!



GDW 2021: Rapid Response Proposals

Two wildlife disease outbreak scenarios

- Scenario 1: Indigo snake vector-borne disease
- **Scenario 2:** Permafrost disease outbreak

NSF-style Proposal Development

- 3 groups of 4-5 people for each scenario
- Each group proposed a genomics study to identify/control/mitigate the outbreak.

Proposal "Review" Panel (Presentations)

- The audience anonymously scored proposals
- Scores ≈ CSU swag!



GDW 2023: Back to Basics



Retroviral resistance in a rediscovered tarsier species



Vector-borne bacterial outbreak in indigo snakes



Permafrost pathogen outbreak!



Viral biocontrol of an invasive rat species



mysterious bat mortality event



Final Presentations: Saturday (15 min + 5 Q&A)



What is your scenario?

What are your questions/hypotheses?





Study design

- Sample types
- Sequencing (how much/what kind?)
- Types of analyses

Research dissemination

- Where will you publish?
- How will you make your data and analyses available?





Randomly Assigned Groups

