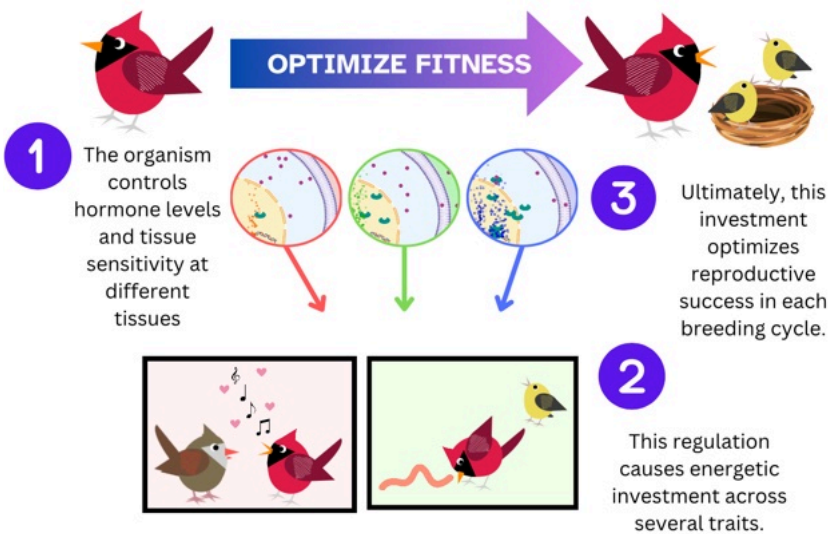# Hormonal Pathways and Trait Expression Simulator

Code <+>

William McCune III, Brandon Rivera, Haruta Otaki, Karisma Lavana, Nelson Anderson, Vanessa Lin

Graphical Abstract

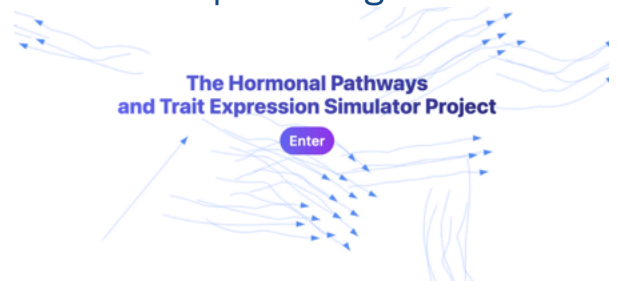Forward-looking **dynamic state model** to maximize **reproductive success** at
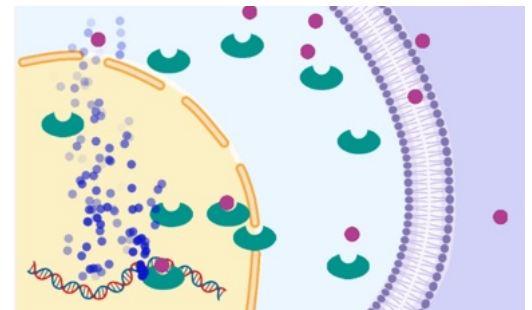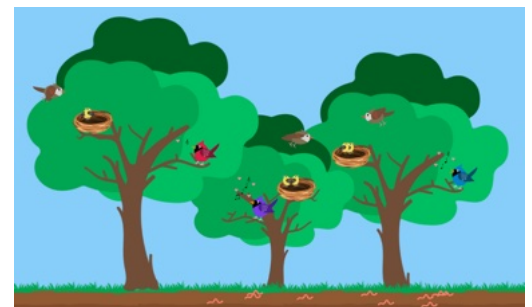
EACH REPRODUCTIVE CYCLE

OPTIMIZE FITNESS

1 The organism controls hormone levels and tissue sensitivity at different tissues

2 This regulation causes energetic investment across several traits.

3 Ultimately, this investment optimizes reproductive success in each breeding cycle.

Project Goal

Develop an interactive website for researchers to understand how hormone sensitivity affects reproductive fitness in male songbirds

Next Steps

- Improve accessibility features and mobile compatibility
- Incorporate reproductive cycles into simulations to better connect them to the graphical visualizations
- Include AI feature to explain graphics in context of research
- User testing with targeted audiences

Features

Splash Page

The Hormonal Pathways and Trait Expression Simulator Project

Enter

Tissue-Level Simulation

Environmental Simulation

Graphical Visualizations

Sensitivity to Hormone

Circulating Level Of Hormone

Fitness