

Ethology and evolution of courtship vocalization in *Xenopus*

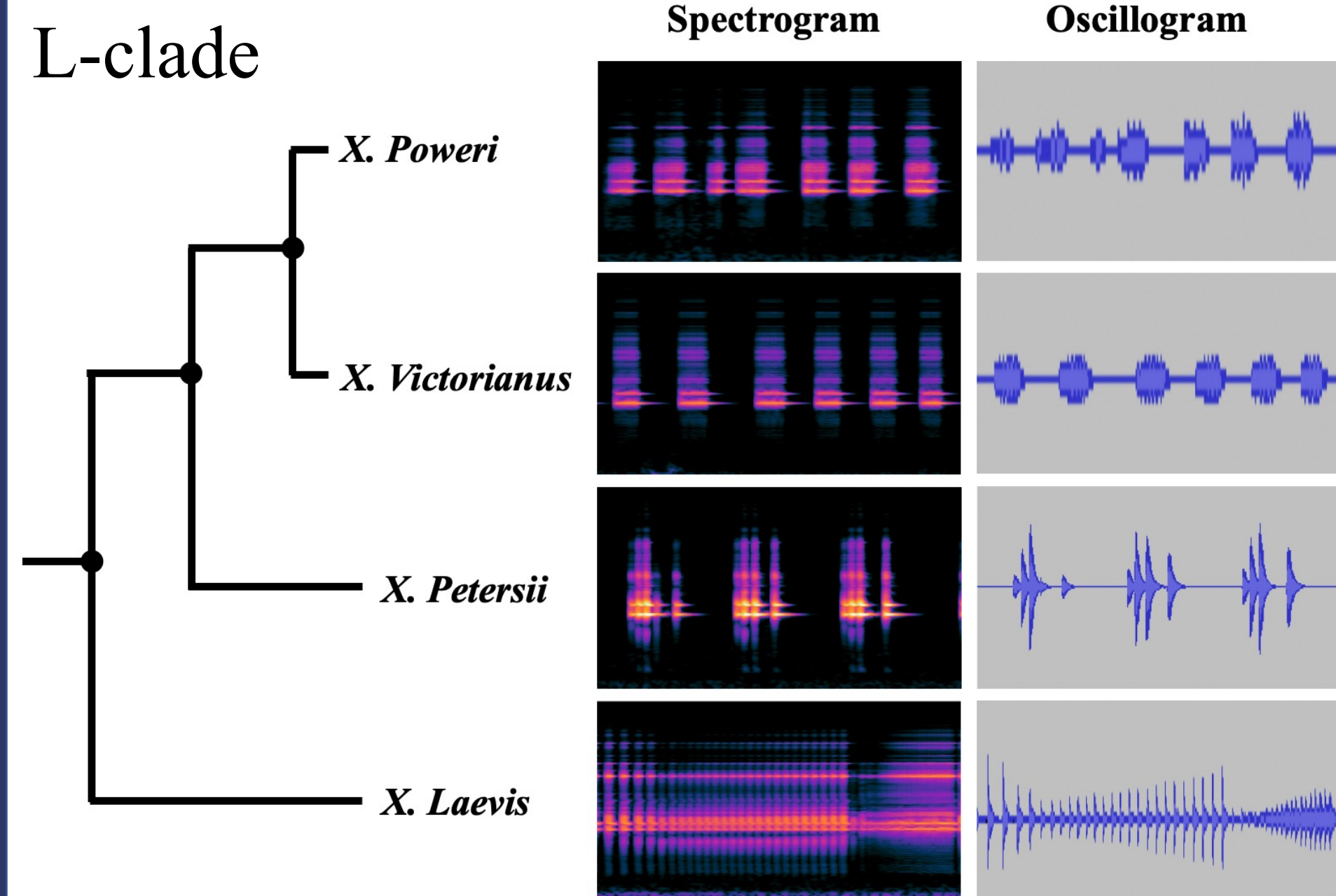
Bole Pan^{1,2}, Young Mi Kwon¹, Elizabeth Bagnato-Conlin¹, Darcy Kelley¹

¹ Department of Biological Sciences, Columbia University, New York, New York 10027

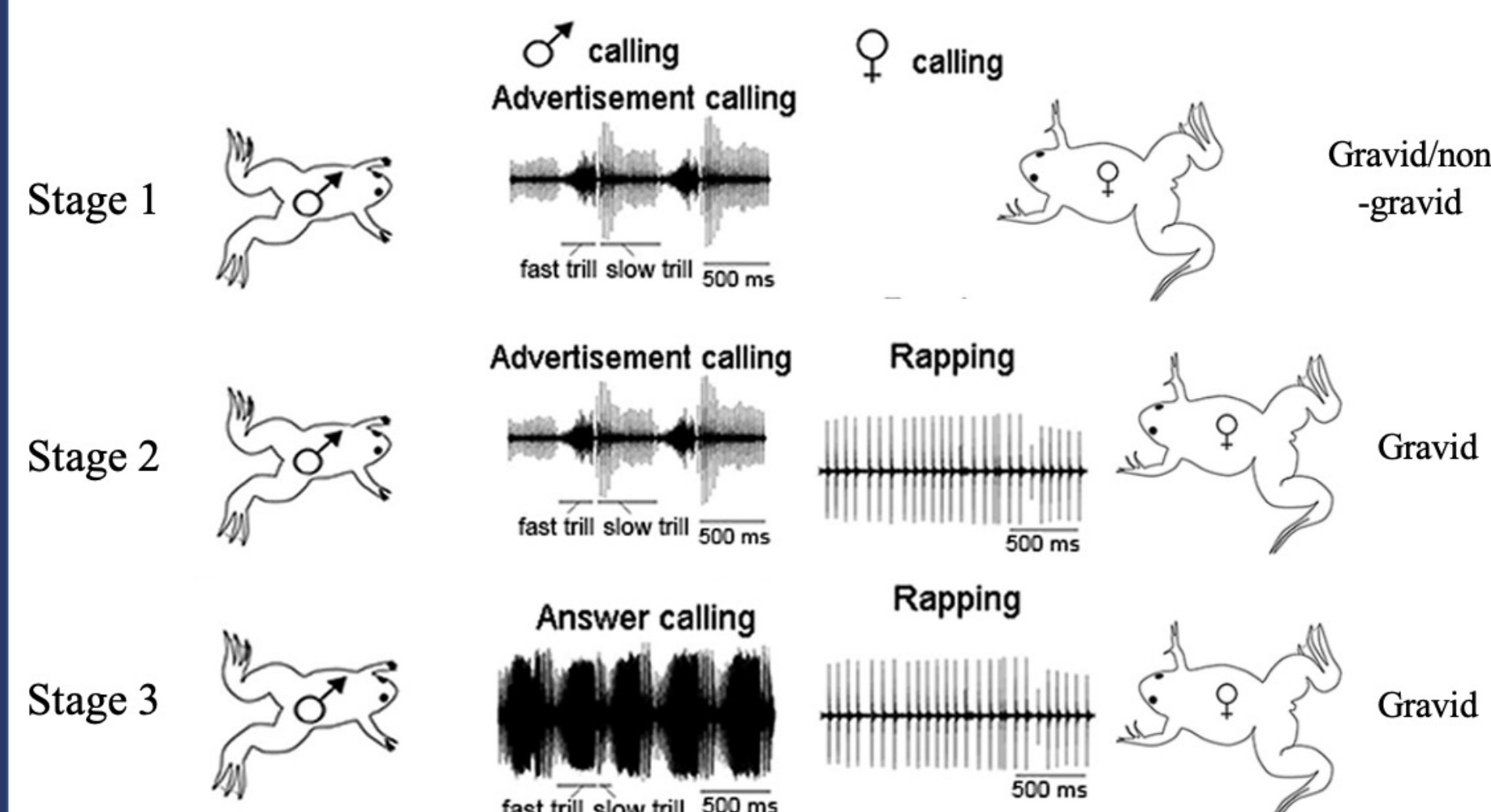
² Columbia College, Columbia University, New York, New York 10027

INTRODUCTION

- *Xenopus* genus
 - uses vocal signaling as its main mode of communication
 - include 29 species that are divided into 3 clades (A, L, M)
 - males show diverse, species-specific advertisement calls



- *Xenopus laevis* perform vocal duets, which is rare in amphibians

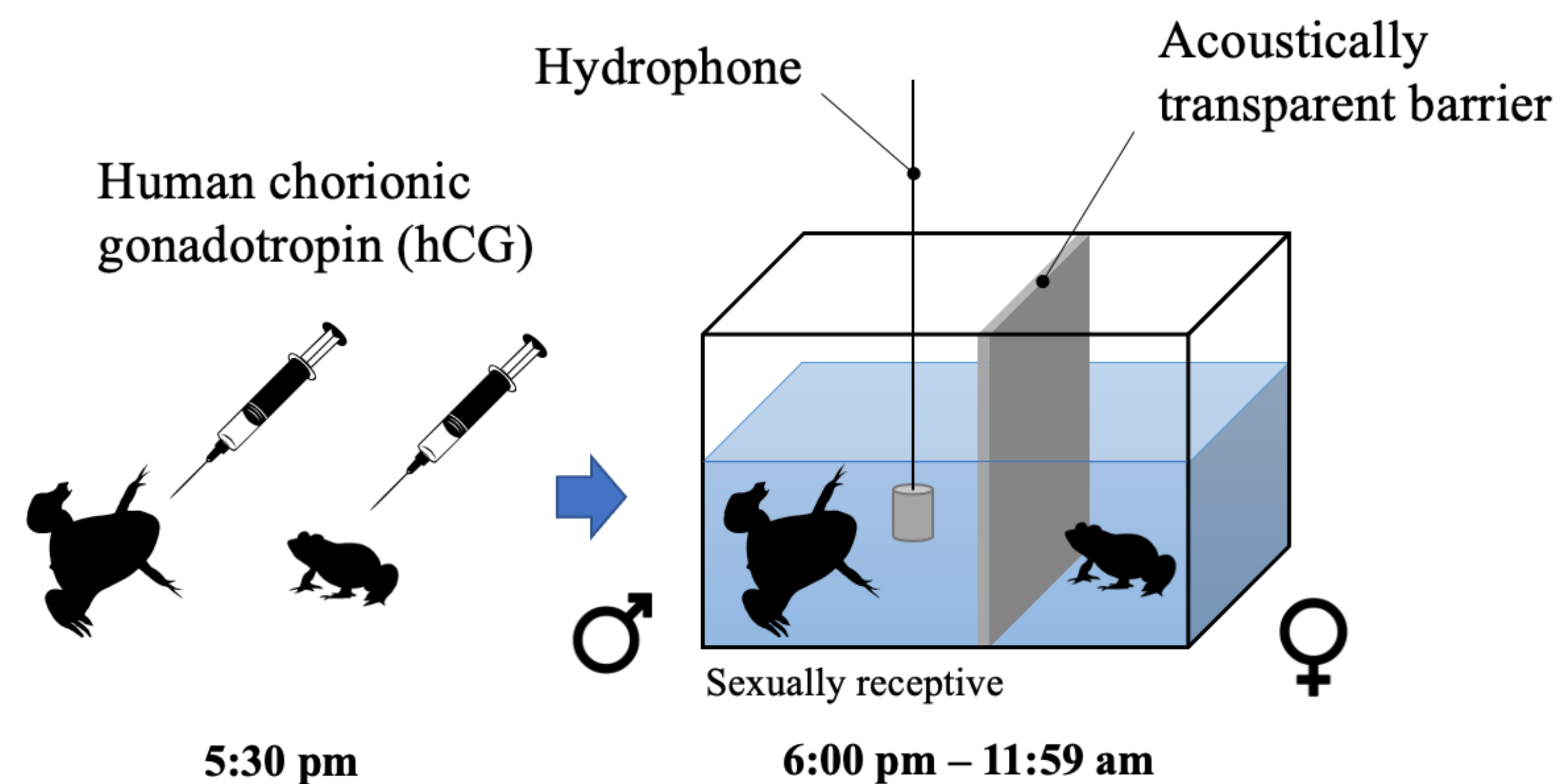


Stages of vocal duets in *X. laevis* South Africa (Kelley et al. 2020)

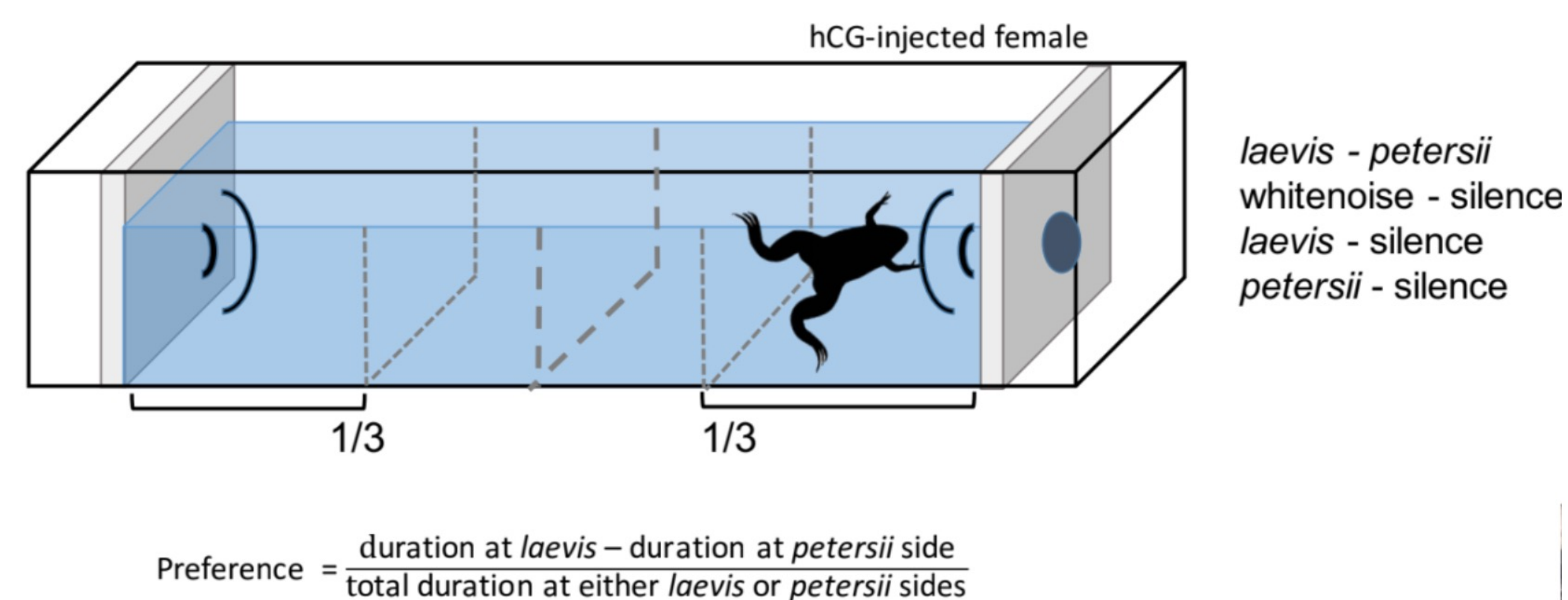
- *Xenopus* advertisement calls intensely studied across species, but duets were only studied in *X. laevis* South Africa
- **Goal:** produce comprehensive characterization of vocal duets in species in *Xenopus* L-clade

MATERIALS & METHODS

- Behavioral Assay Setup – recording vocal responses

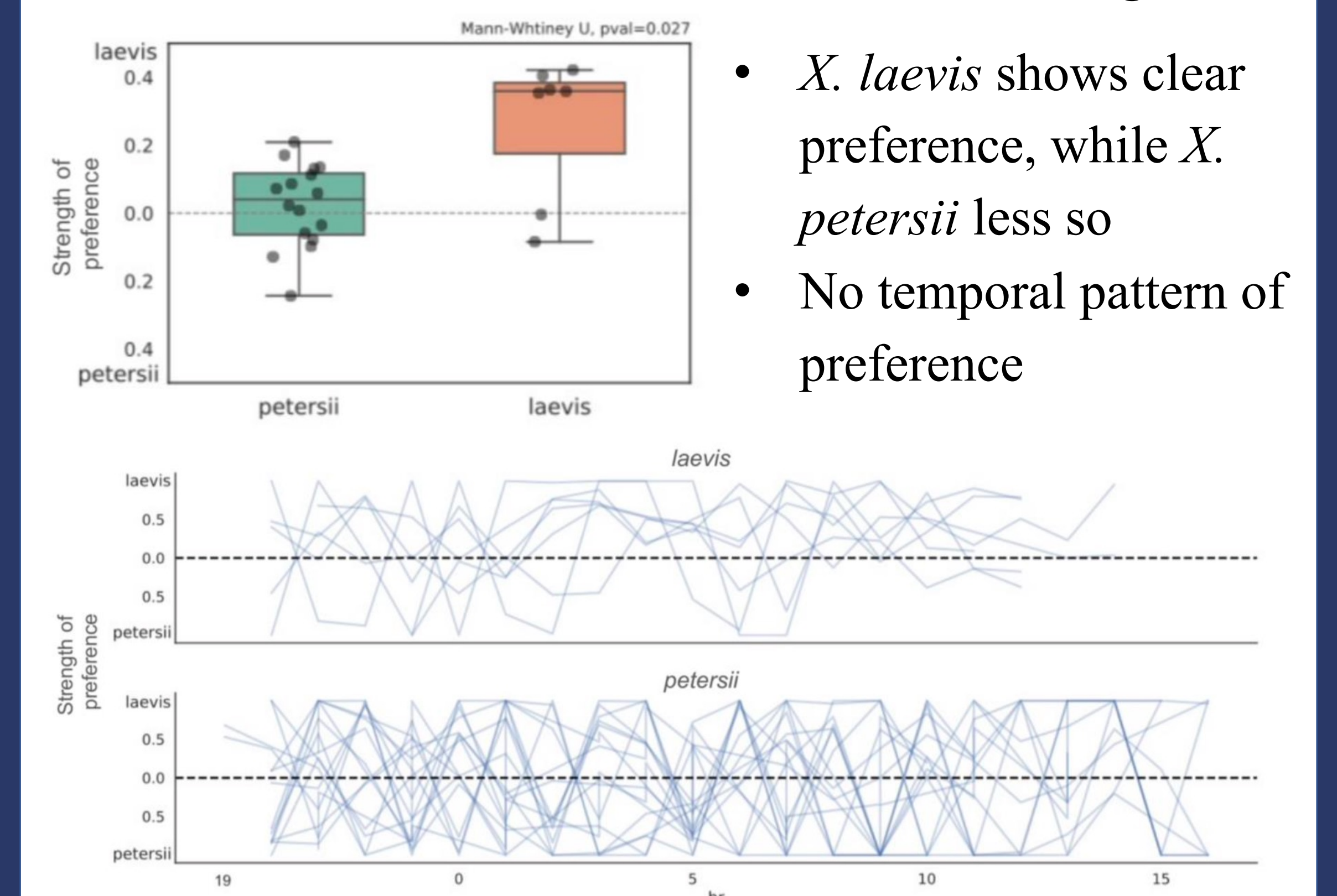


- Experimental setup for measuring physical responses

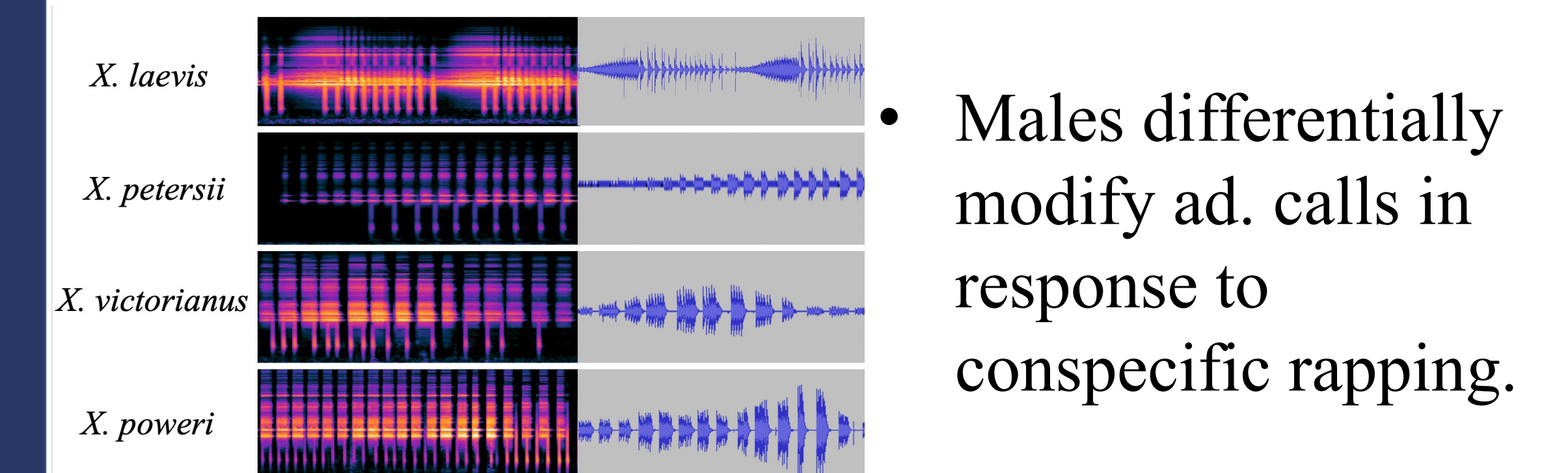


RESULTS: Female Physical Response

- Preference scores of females to male calling

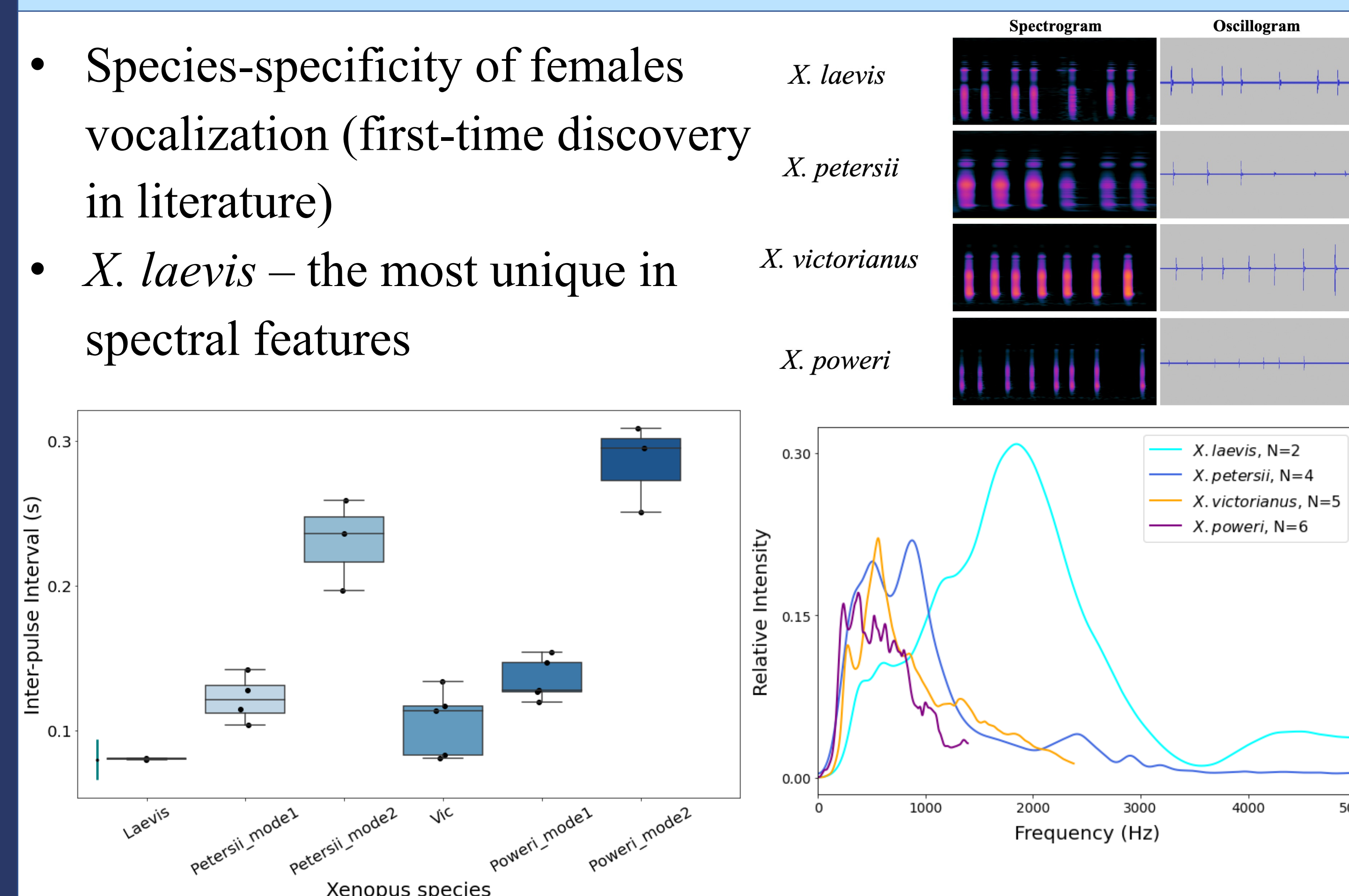


RESULTS: Male-Female Duet



RESULTS: Female Vocal Responses to Calls

- Species-specificity of females vocalization (first-time discovery in literature)
- *X. laevis* – the most unique in spectral features



Summary

- Vocal Duetting as a behavior is found in species across the *Xenopus* L-clade
- Results support a model in which sexual selection may have acted through vocal exchanges to promote speciation in *Xenopus*.

Acknowledgement & Reference

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[1] D. B. Kelley *et al.*, Generation, Coordination, and Evolution of Neural Circuits for Vocal Communication. *J Neurosci* **40**, 22-36 (2020).
 [2] U. Kwong-Brown *et al.*, The return to water in ancestral *Xenopus* was accompanied by a novel mechanism for producing and shaping vocal signals. *Elife* **8** (2019).