


A hummingbird is captured in mid-flight, its wings blurred, against a soft sunset sky. The bird is positioned on the right side of the frame. The background shows a hazy landscape with rolling hills or mountains. The foreground is dominated by dense, dark green foliage, including large, feathery leaves and thin, vertical stems, which are slightly out of focus, creating a sense of depth and framing the central scene.

FANNING THE FLAMES

**Perspectives on supporting
marginalized students**

January 15, 2024

A hummingbird is captured in mid-flight, its wings blurred, against a soft sunset sky. The background features a range of mountains partially obscured by a layer of mist or low clouds. The foreground is filled with dense, lush green foliage, including various leaves and vines, which are slightly out of focus, creating a sense of depth and immersion in a tropical or subtropical environment.

María José Navarrete Méndez
PhD candidate at UC Berkeley
Museum of Vertebrate Zoology
Tarvin lab
Field Inclusive- 2023



ABOUT ME



MY JOURNEY



RESEARCH



ABOUT ME



ABOUT ME







Anhalzer





MY JOURNEY



MY JOURNEY



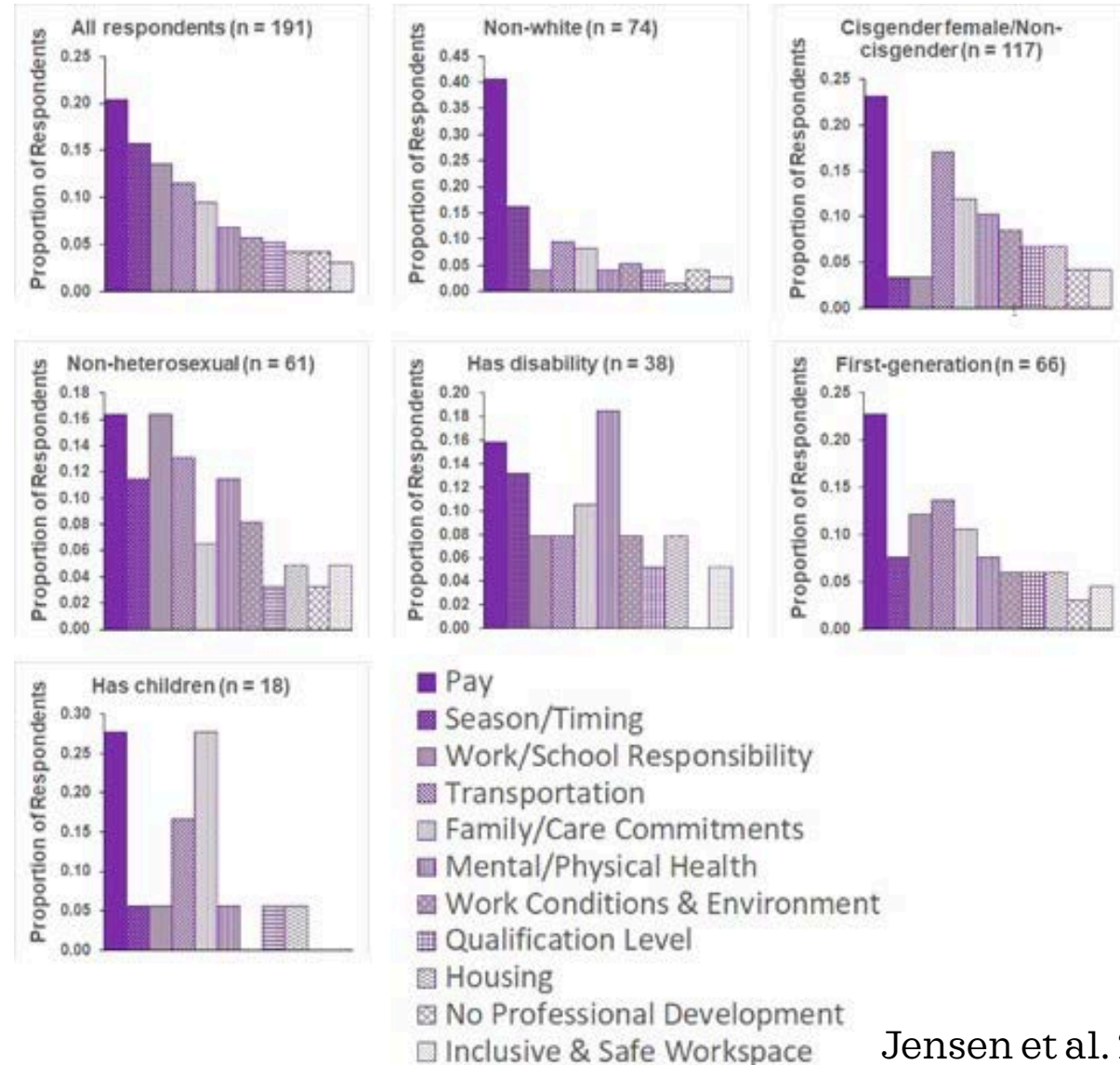






HOW CAN UNIVERSITIES/ORGANIZATIONS SUPPORT MARGINALIZED STUDENTS?

SECURE FUNDING FOR PAID UNDERGRADUATE RESEARCH





RESEARCH

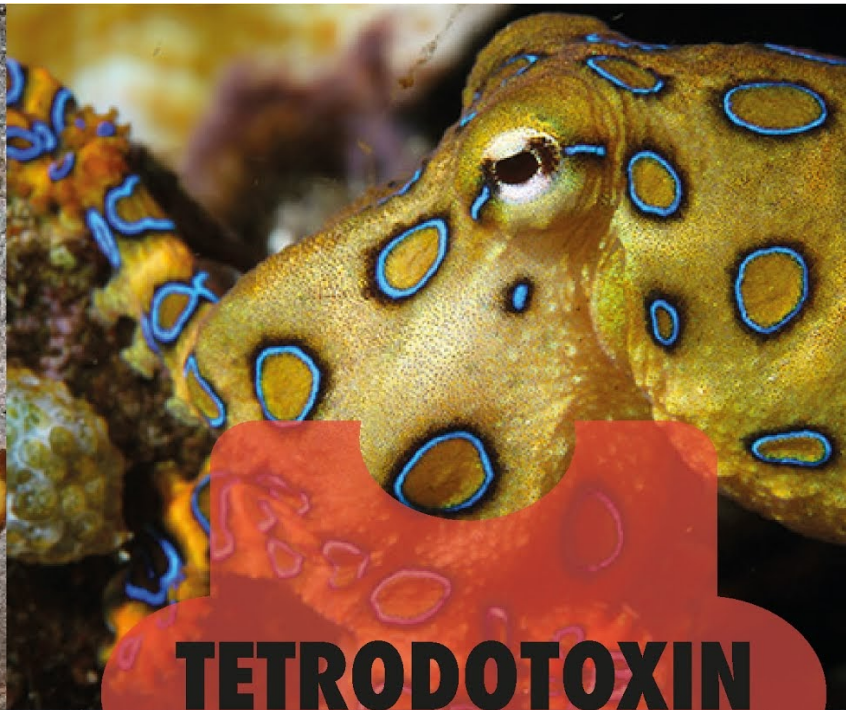


RESEARCH

The origin and evolution of the acquisition of guanidinium alkaloids in Harlequin Frogs (*Atelopus*, Bufonidae) from Ecuador and Colombia

Atelopus bomolochos, Azogues province, Ecuador

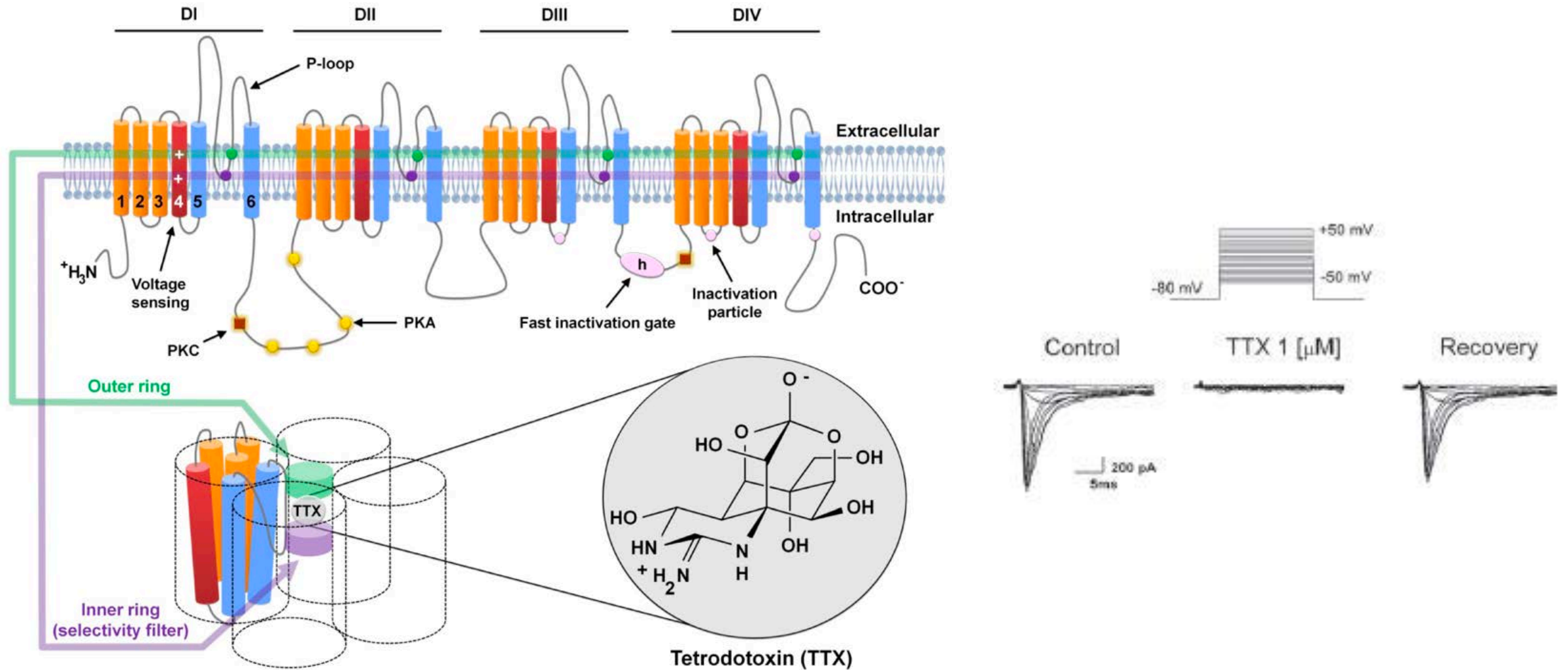




TETRODOTOXIN



TETRODOTOXIN TARGETS VOLTAGE GATED Na⁺ CHANNELS



Nieto et al. 2012

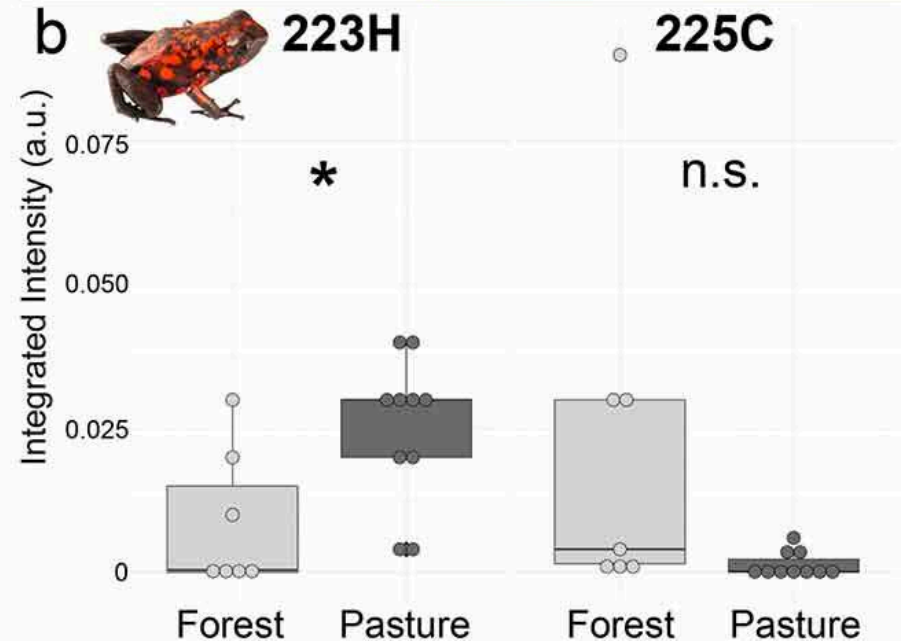
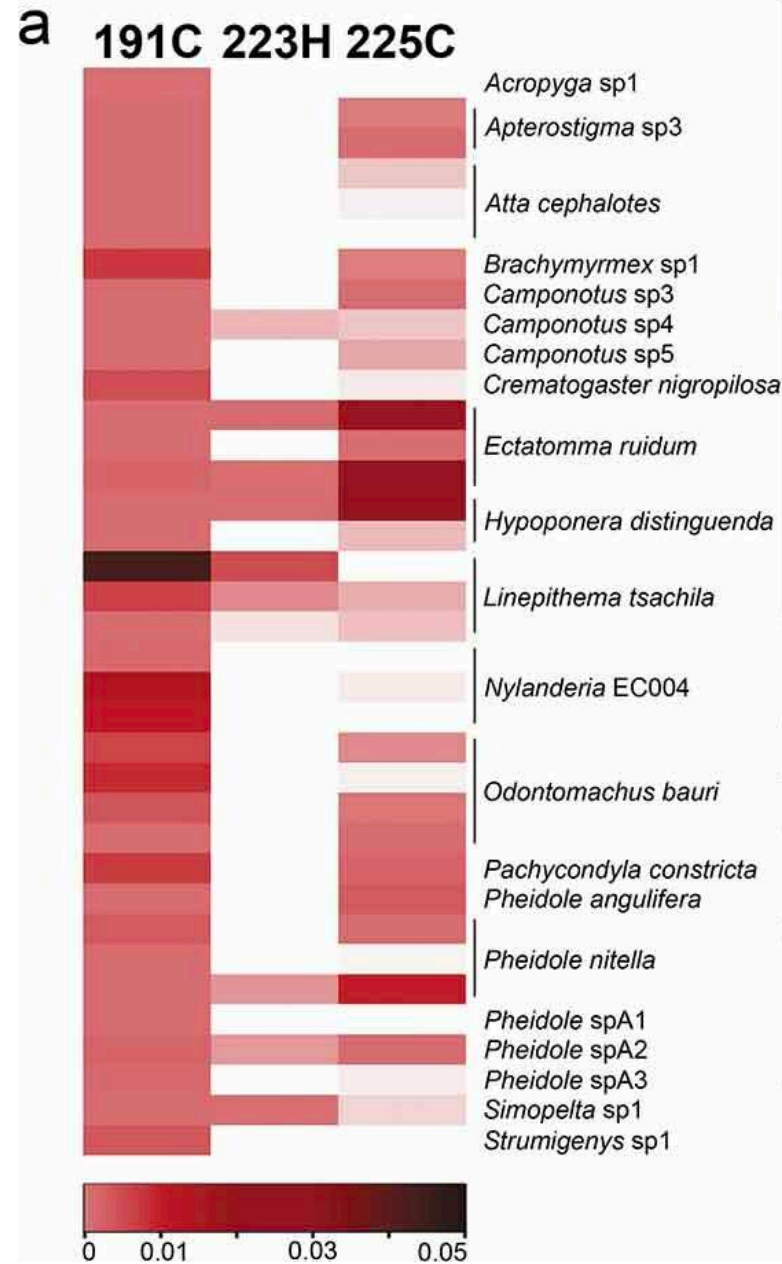


CHEMICAL DEFENSES IN AMPHIBIANS

DIETARY ORIGIN



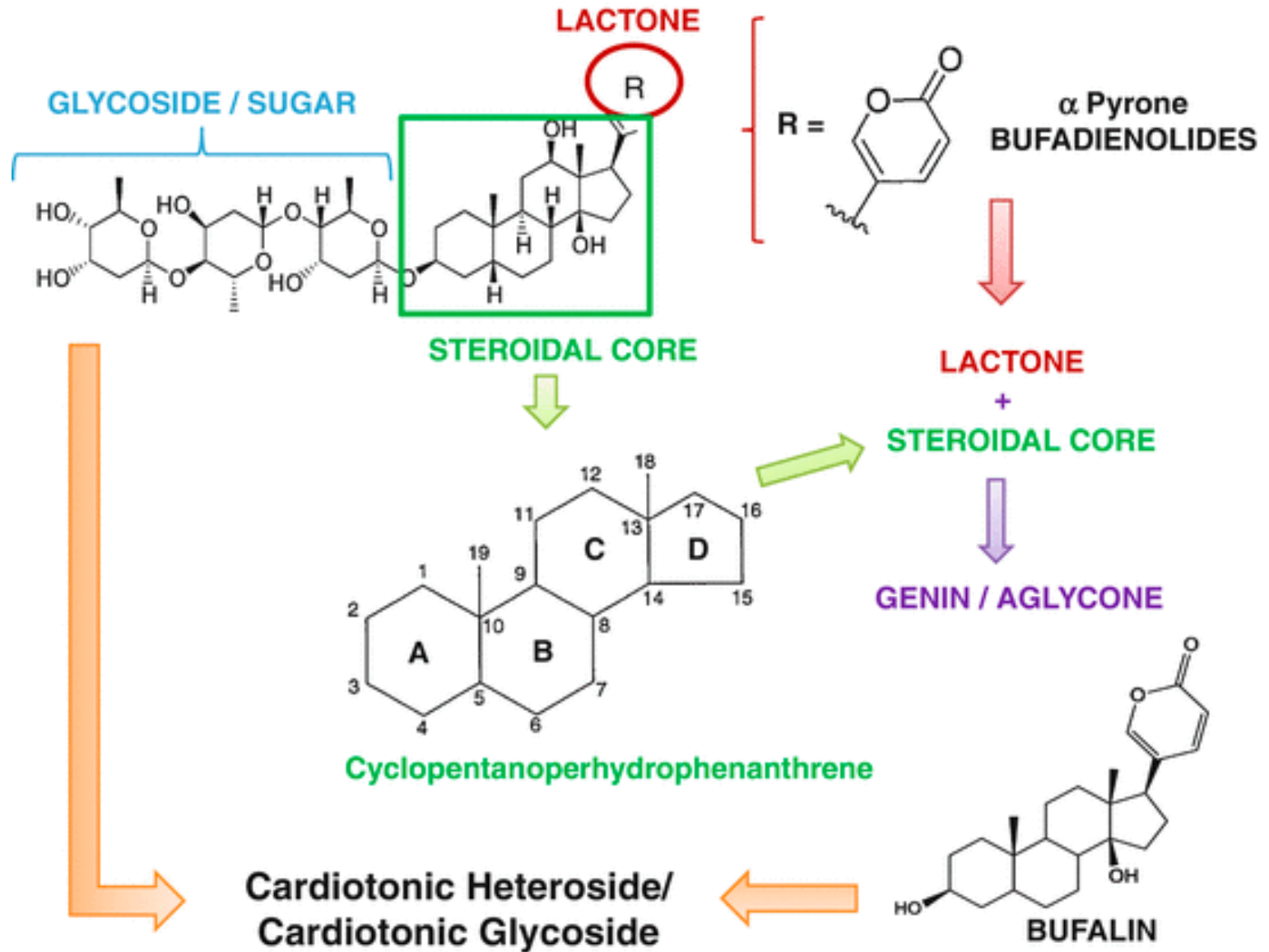
O. sylvatica
Photo: Joel Sartore



BIOSYNTHESIS



Rhinella marina

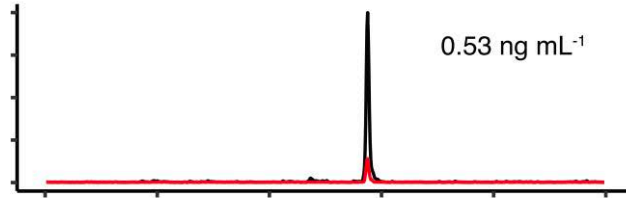


SYMBIOTIC ORIGIN

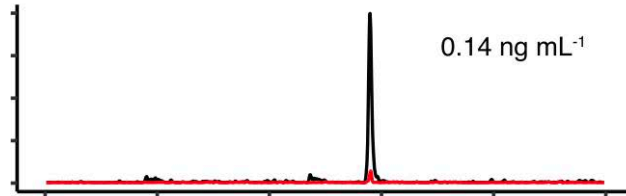


Taricha granulosa

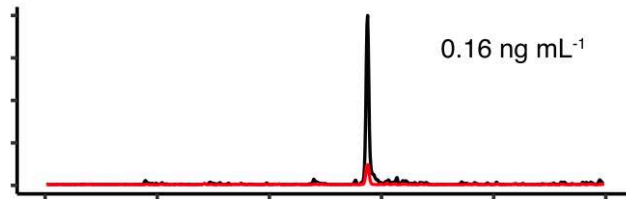
Pseudomonas (strain ID: TX111008)



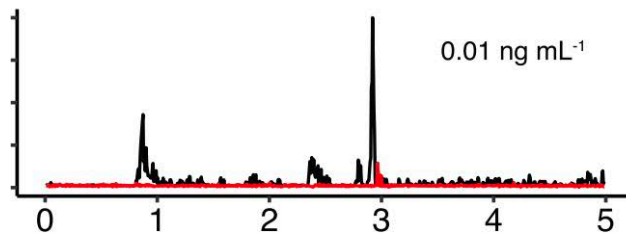
Pseudomonas (strain ID: TX111003)



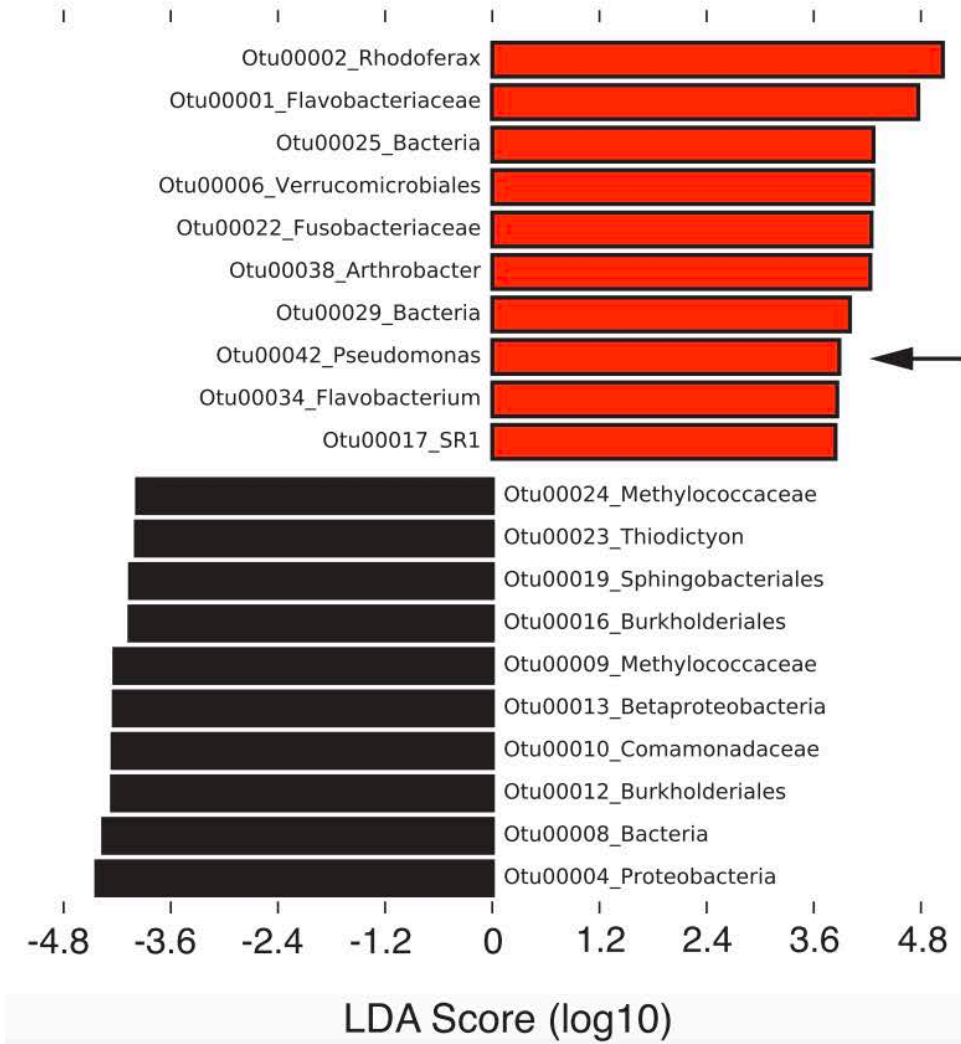
Shewanella (strain ID: TX140004)



Sphingopyxis (strain ID: TX150006)



■ Idaho (TTX-) ■ Oregon (TTX+)



Modified from Vaelli et al. 2020



HERPETOLOGISTS

Tetrodotoxin is
also present in
Atelopus
(Bufonidae)



Species clockwise:

A. hoogmoedi, *A. zeteki*, *A. varius*

© Jaime Culebras | Photo Wild

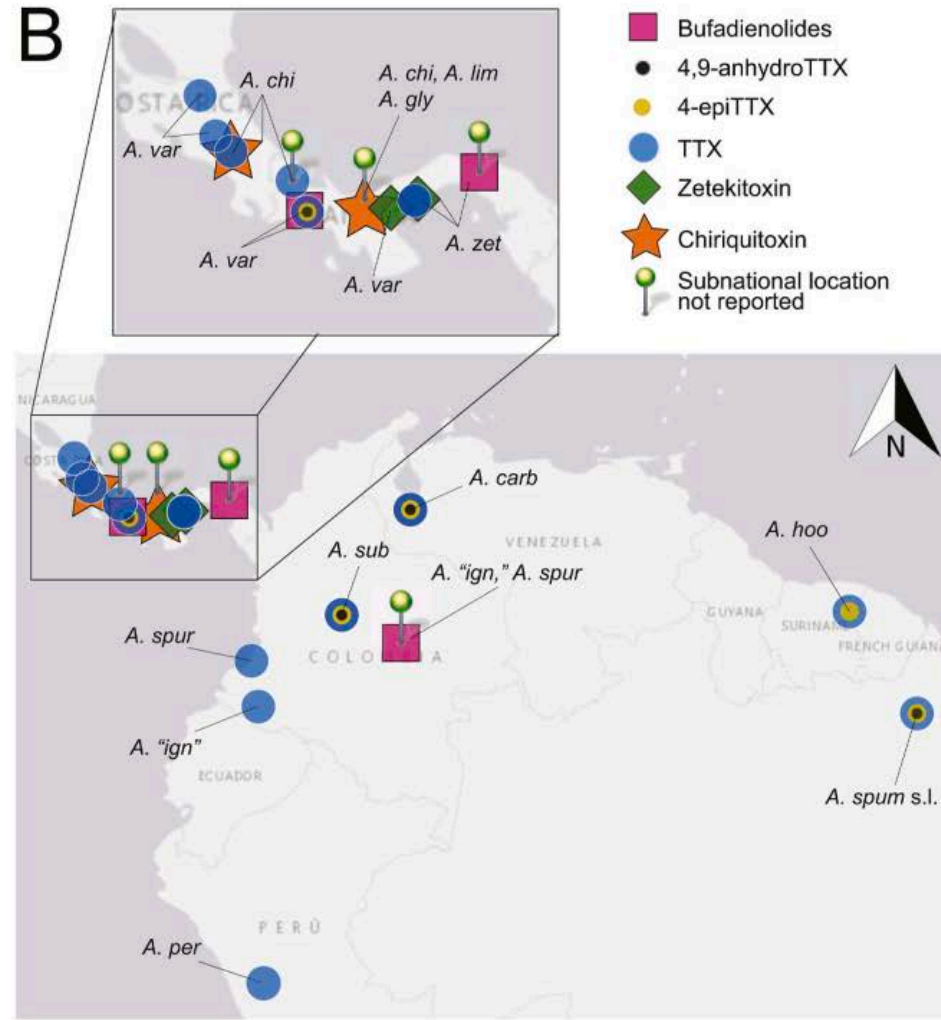
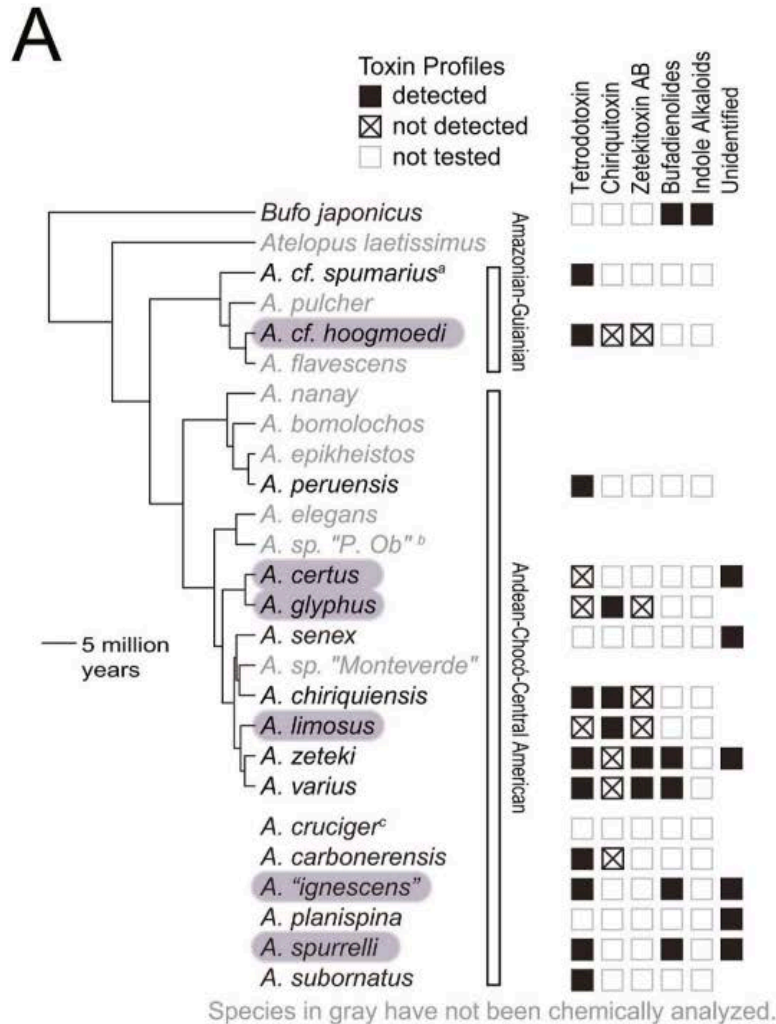


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PHYLOGENETIC AND GEOGRAPHIC DISTRIBUTION OF TTX AND TTX-ANALOGUES IN *ATELOPUS*



A. chiriquiensis



A. glyphus

photos: Brian Gratwicke

99 SPECIES
PLUS MORE UNDESCRIBED

0-4800
meters above sea level

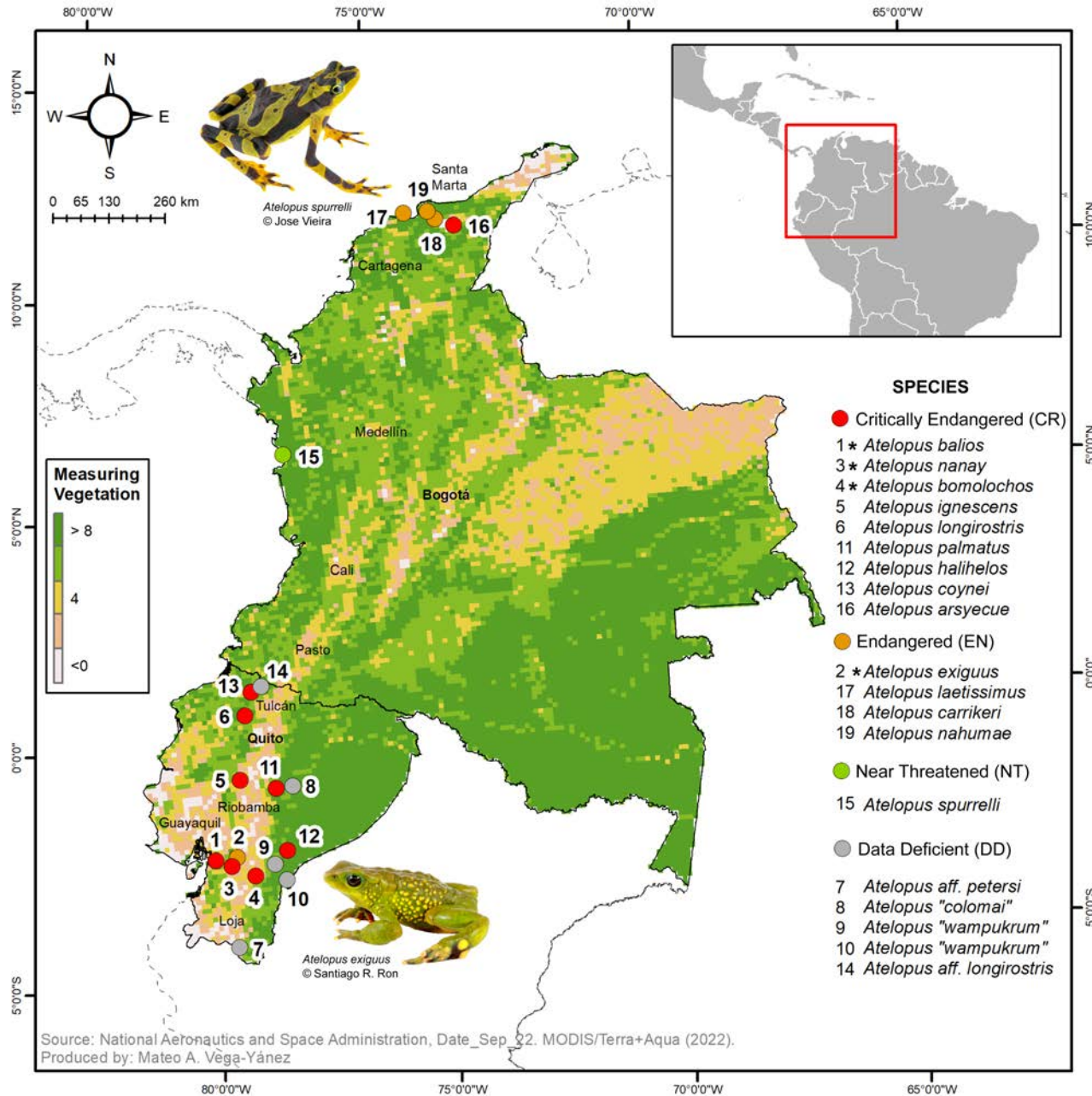
MORE THAN 75%
live in high-elevation ecosystems

CONTRASTING WITH DISTRIBUTION OF SPECIES DIVERSITY



Source: *Atelopus* survival initiative

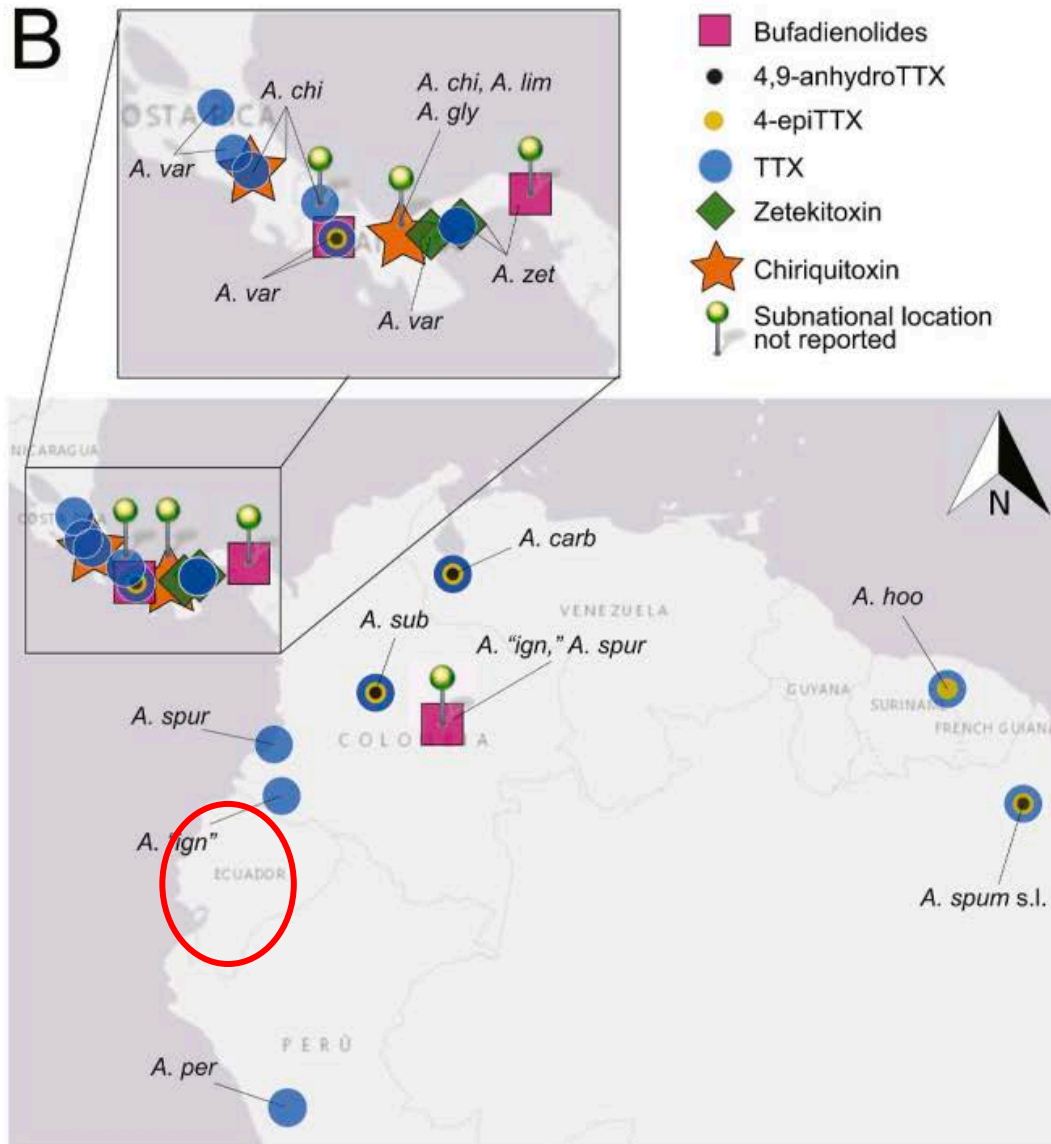
SAMPLING COLLECTION



SAMPLING COLLECTION



CHEMICAL ANALYSIS



Four new reports for the presence of Guanidinium alkaloids in amphibians

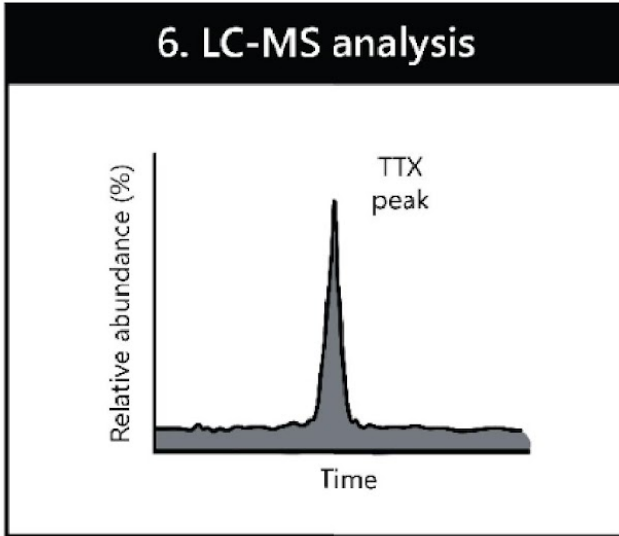
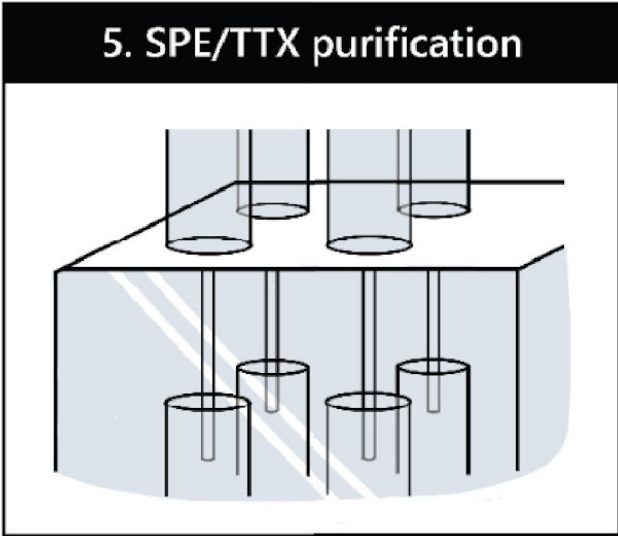
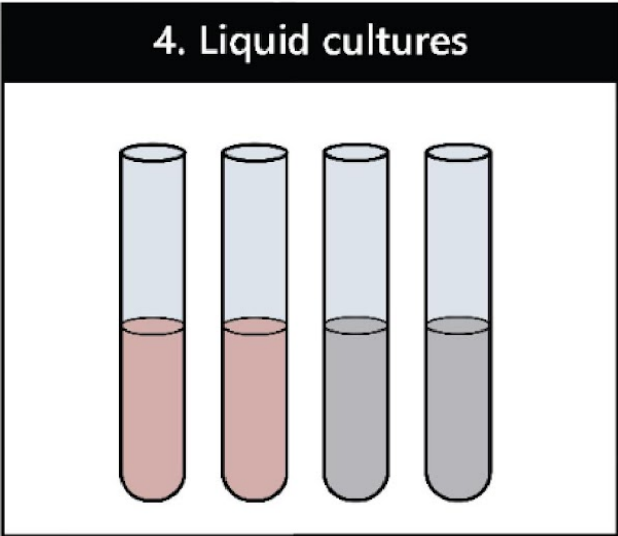
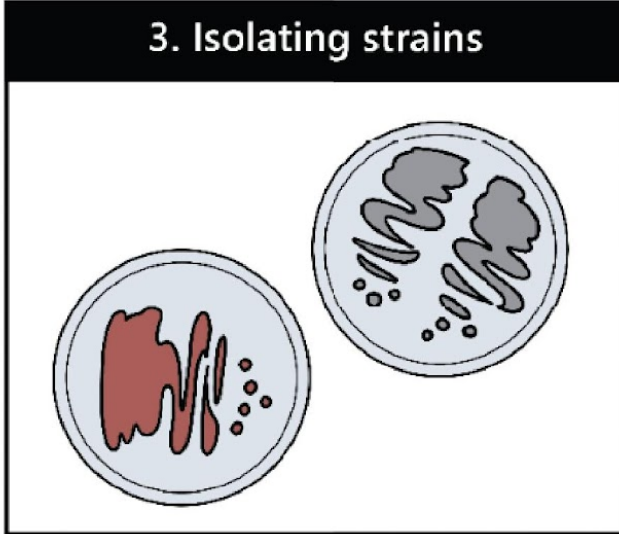
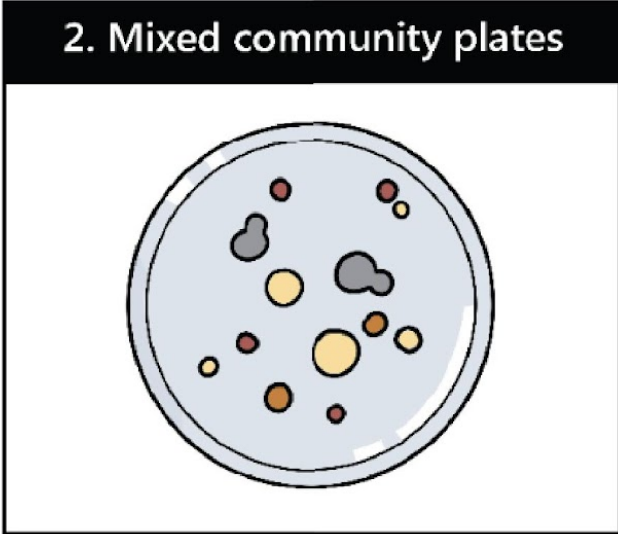
- *Atelopus coynei*
- *Atelopus bomolochos*
- *Atelopus aff. spumarius*
- *Atelopus aff. palmatus*

Confirmed identity of guanidinium alkaloids

- Tetrodotoxin
- Chiriquitoxin



BACTERIA CULTURING AND TOXIN DETECTION









A scenic view of a forest with a misty valley and a tall tree in the foreground. The text "Thank you! Questions?" is overlaid in the top left corner.

Thank you!
Questions?

Majo Navarrete
January 15, 2024