Pavani Ponnimbaduge Perera

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EDUCATION

University of Nevada, Reno — Reno, NV
Ph.D., Cellular and Molecular Biology (*Reading*) — 2021 - present

Dissertation: Evolution and development of gastrointestinal tract in *Astyanax mexicanus*
Advisor: Dr. Misty Riddle

University of Colombo — Colombo, Sri Lanka
B.Sc., (Hons) Zoology — February 2019

RESEARCH EXPERIENCE

PhD Candidate, Cellular and Molecular Biology
University of Nevada, Reno | 2021 – present

- Investigating enteric neural crest development in *Astyanax mexicanus* (surface fish and cavefish) to understand the evolutionary adaptations in gut innervation.
- Understanding the evolution of gut morphology and homeostasis in *Astyanax mexicanus*, focusing on physiological and molecular mechanisms regulating intestinal function.
- Analyzing the gastrointestinal cell type diversity and composition in *Astyanax mexicanus* to uncover evolutionary shift in gut architecture.

Undergraduate research
University of Colombo, Sri Lanka
2018 – 2019

Final-year research thesis: Assessment of the effect of bat guano on water quality and composition of aquatic insects in Waulpane, a natural cave of Sri Lanka.
Advisor: Prof. Wipula Yapa Bandara

- Conducted field-based water quality assessments and biodiversity surveys to evaluate the ecological impact of Sri Lanka's largest bat roost on freshwater ecosystem.
- Sampled and analyzed *Escherichia coli (E. coli)* contamination in water samples to assess potential microbial pollution and its ecological implications.

- Utilized physicochemical water analysis and aquatic insect sampling to determine ecosystem health and nutrient dynamic.

TEACHING EXPERIENCE

University of Nevada, Reno — Reno, NV
Graduate Teaching Assistant, Biology — August 2024 – present
- BIOL 415.615 Evolution

Royal Institute International School — Nugegoda, Sri Lanka
High school teacher — 2020 - 2021
- *Cambridge International AS & A Level Biology*

University of Colombo — Colombo, Sri Lanka
Assistant lecturer, Zoology — 2019 – 2020
- *ZL 1008 – Variety of Animal Life*
- *ZL 1009 – Evolution and Biogeography*
- *ZL 1010 – Animal Behavior*
- *EN 1008 – Introduction to Environment Science*

PUBLICATIONS

JOURNAL ARTICLES

***Perera, P. P**., Webster, K. & Riddle, M. R. Enteric neural crest development in *Astyanax mexicanus* surface fish and cavefish. Differentiation 144, 100881 (2025). https://doi.org/10.1016/j.diff.2025.100881

Ponnimbaduge Perera P, Perez Guerra D, Riddle MR. The Mexican Tetra, *Astyanax mexicanus*, as a Model System in Cell and Developmental Biology. Annu Rev Cell Dev Biol. 2023 Oct 16;39:23-44. doi: 10.1146/annurev-cellbio-012023-014003. Epub 2023 Jul 12. PMID: 37437210.

***** *selected for Differentiation Editor's Pick for virtual seminar series entitled: "Biological Differentiation Across the Scales." 2025*
https://www.isdifferentiation.org/Events/Seminars/Pages/default.aspx

CONFERENCE PROCEEDINGS

Ponnimbaduge Perera, Pavani., Riddle, Misty. Developmental timing and evolution of the enteric nervous system in the Mexican tetra, *Astyanax mexicanus* in the 7th International Enteric nervous system development meeting, Philadelphia, PA. March 2024.

Ponnimbaduge Perera, Pavani., Riddle, Misty. Investigating the role of endothelin gene mutations in *Astyanax mexicanus* cavefish enteric nervous system

development in the 8th Astyanax International Meeting, Fort Lauderdale, FL. February 2024.

Perera, P.P.D., Yapa, W.B., Dangalle, C.D., Manage, Pathmalal.M. The effect of releasing bat guano on water quality in the Halwinne stream; A pilot study in the Association for Tropical Biology and Conservation, Asia-Pacific Conference, Thulhiriya, Sri Lanka 2019.

Perera, P.P.D., Yapa, W.B., Dangalle, C.D., Manage, Pathmalal.M. Bat guano; a resource or a contaminant? in the 24th International Forestry and Environment Symposium, Negambo, Sri Lanka 2019.

PROFESSIONAL SERVICE

- Reviewer (2026): Heredity (official journal of the Genetics Society) Nature Publishing Group
- Ad hoc reviewer (2025): Proceedings of the Royal Society B: Biological Sciences

SCHOLARSHIPS AND AWARDS

The Kevin D. Freeman scholarship ($1200)	2025 - 2026
Graduate IM Access Grant ($3000)	2022 – 2025
GSA Travel award ($500)	2024
Raymond H. Berner Graduate Scholarship ($3000)	2022 - 2023
Gulamhussein A. J. Noorbhai gold medal for the highest competence at the special degree examination in Zoology University of Colombo, Sri Lanka	2019
Gulamhussein A. J. Noorbhai gold medal for the best undergraduate research project in Zoology University of Colombo, Sri Lanka	2019
P. B. Karunaratne memorial gold medal for the best performance in Ornithology University of Colombo, Sri Lanka	2019
Best oral presentation winner at the waste management and pollution control session	2019

24th International Forestry and Environment Symposium,
Sri Lanka

SERVICES AND LEADERSHIP EXPERIENCE

Mentorship & Outreach

- **Public outreach (2025-2026)**
  - **2025-2026 UNR Natural History Museum Outreach**
    Event - 2025 Day at the Museum
    Cavefish station – Present live exhibits of surface fish and cavefish; led an immersive (VR) tour of habitat ecology; designed and facilitated word-based activities for children.

- **Scientific outreach**
  - **Guest lecture (2025 Fall): "**Using *A. mexicanus* as a model organism to study evolutionary genetics" – course BIOL 415 evolution

- **Graduate Mentor, Riddle Lab, University of Nevada, Reno (2022 - 2025)**
  - Mentoring **undergraduate researcher Dasha Yu** (Fall 2025) on gut tissue sectioning and staining including cryosectioning, H&E staining, immunostaining/HCR and widefield fluorescence microscopy.
  - Mentored **undergraduate researcher May Hill** (Summer 2024) on data analysis and data presentation.
  - Mentored **undergraduate researcher Salvador Fernandez** (Fall 2023 – Spring 2024) in gut single-cell isolation and flow cytometry techniques to support his research.
  - Mentored **High School Researcher - Sky Sanner** (The Davidson Academy, Summer 2022) in independent research investigating the natural mutations in *endothelin receptor B* and *endothelin-3* mutations in *Astyanax mexicanus* (surface fish and cavefish) using DNA extraction, PCR, sequencing sample preparation and analyzing.

- **Mentor, Royal Institute International School, Sri Lanka (2020 – 2021)**
  - Guided high school students in scientific inquiry and environmental research for the Young Environmentalists' Challenge (YEC) competition.

Volunteer

- **Volunteer**, UNR ScienceFIT (2023, 2024)
  - Assisted with science outreach programs to engage incoming college students in STEM education.
- **Volunteer,** ASUN Pack Provision (2021)

- Supported university initiatives to address student food insecurity through resource distribution.

REFERENCES

Misty Riddle,
Assistant Professor,
Department of Biology,
University of Nevada, Reno, NV.
mistyriddle@unr.edu

Caroline Cobine,
Associate Professor,
Department of Physiology and Cell Biology,
University of Nevada, Reno, NV.
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Professor,
Department of Biology,
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