

# Hao Chen

PHD STUDENT

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## Education

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### Department of Zoology, University of Cambridge

Cambridge, UK

PhD in Zoology | In progress

2025-present

Supervisor: Prof. Christine Miller

### Institute of Ecology and Evolutionary Biology, National Taiwan University

Taipei, Taiwan

MS in Ecology and Evolution | GPA: 4.1/4.3

Sep. 2022

Supervisor: Prof. Sheng-Feng Shen

### Department of Life Science, National Taiwan Normal University

Taipei, Taiwan

BS in Biology | GPA: 3.7/4.3

Jun. 2019

Supervisor: Prof. Yuying Hsu

## Publications

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† Shared first authorship

- Hsu, Y., **Chen, H.**, Huang, S.P., Lin, C.P., Chen, Z.Y. (2025). Response to Packard (2025): Energetic costs of large weapons could constrain their size in large male stag beetles *Cyclommatus mniszechi*. *Journal of Zoology*. <https://doi.org/10.1111/jzo.70063>
- **Chen, H.**, Rubenstein, D.R., Mai, G.S., Chang, C.F., Shen, S.F. (2025). Circadian activity predicts breeding phenology in the Asian burying beetle *Nicrophorus nepalensis*. *Royal Society Open Science*. <https://doi.org/10.1098/rsos.250624>
- **Chen, H.**†, Huang, S.P.†, Lin, C.P., Chen, Z.Y., Hsu, Y. (2024). Energetically costly weaponry in the large morph of male stag beetles. *Journal of Zoology*. <https://doi.org/10.1111/jzo.13222> (cover story)

## Research Experiences

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### International Institute of Tropical Agriculture (IITA)-Benin

Cotonou, Benin

Visiting PhD Student

Oct. 2025–Dec. 2025

Advisor: Dr. Manuele Tamò

- Established field cages in agricultural settings with different host crops (cowpea vs. pigeon pea), to examine how plant nutrition affects biopesticide susceptibility in African pod bugs (*Clavigralla tomentosicollis*), collaborating closely with local fieldworkers and students.

### Biodiversity Research Center, Academia Sinica

Taipei, Taiwan

Master Student & Research Assistant

Feb. 2020–Sep. 2025

Advisor: Prof. Sheng-Feng Shen

- Manipulated photoperiod in the lab to measure diapause induction timing in three burying beetle (*Nicrophorus nepalensis*) populations.
- Used machine learning to predict reproductive states from circadian activity patterns in beetles, recorded by LAM25 monitors.
- Led a team of three researchers conducting fieldwork for extended time periods (2-3 months per year) across subtropical forests in Okinawa and Amami-Oshima Island, Japan, and northern Taiwan, including (1) hanging traps for density surveys and (2) setting up equipment and video systems along environmental gradients to quantify the reproductive behavior and phenology of burying beetles.

### Department of Life Science, National Taiwan Normal University

Taipei, Taiwan

Undergraduate Researcher

Feb. 2017–Feb. 2020

Advisor: Prof. Yuying Hsu

- Designed and conducted behavioral experiments on stag beetles (*Cyclommatus mniszechi*) and mangrove killifish (*Kryptolebias marmoratus*), including dyadic contests in terrestrial and aquatic arenas, mirror tests for aggression, and treadmill assessments of locomotor endurance; quantified behaviors using BORIS software.
- Measured standard metabolic rate via flow-through respirometry to evaluate the energetic costs of exaggerated weapons in stag beetles.

### Department of Biological Sciences, National Sun Yat-sen University

Kaohsiung, Taiwan

Summer Research Intern

Jul. 2017–Sep. 2017

Advisor: Dr. Shu-Ping Huang

- Measured evaporative water loss in two lizard species (*Plestiodon elegans* & *Sphenomorphus indicus*) using a Li-7000 CO<sub>2</sub>/H<sub>2</sub>O analyzer and Expedata software. Assessed behavioral sensitivity to dehydration by recording exploration time in behavior cages.
- Set pitfall traps and used long fishing poles with slip nooses to capture lizards in the field.

## Grants & Fellowships

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**Zoology Fieldwork Fund**, Department of Zoology, University of Cambridge.

2026

- Fieldwork grant supporting research on agricultural pest insects in Benin, West Africa (**£600**)

**Taiwan Cambridge Scholarship**, Ministry of Education Taiwan & Cambridge Trust.

2025-2028

- Three-year fully funded PhD scholarship covering tuition and living costs (**£183,840**)

## Conference Presentations

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- **Chen, H.**, Mai, G.S., Chang, C.F., Shen, S.F. | **The 40<sup>th</sup> Annual Meeting of the Society of Population Ecology.**

Okinawa, Japan

“Using circadian activity patterns to predict insect reproductive states: a machine learning approach” (Poster).

2024

- **Chen, H.**, Huang, S.P., Chen, Z.Y., Lin, C.P., Hsu, Y. | **The 2<sup>nd</sup> CUHK-BRCAS Joint Annual Biological Science Colloquium.**

Taipei, Taiwan

“Energetically costly weaponry in the large morph of male stag beetles” (Oral).

2024

- **Chen, H.**, Shen, S.F. | **NTU IEEB Student Academic Presentation.**

Virtual

“Locally adaptive photoperiodic reproductive diapause in burying beetle *Nicrophorus nepalensis* populations” (**Merit Poster Award**).

2022

- Pan, C.Y., Sun, Y.J., **Chen, H.**, Hsu, Y. | **The 31<sup>st</sup> Congress of Animal Behavior and Ecology.**

Penghu, Taiwan

“The importance of maternal contest experiences to offspring’s responsiveness to contest experiences in *Kryptolebias marmoratus*” (Poster).

2020

- **Chen, H.**, Huang, S.P., Chen, Z.Y., Lin, C.P., Hsu, Y. | **The 30<sup>th</sup> Congress of Animal Behavior and Ecology.**

Taipei, Taiwan

“Exaggerated weapons in stag beetles (*Cyclommatus mniszeczii*): energetic costs” (**Best Poster Award**).

2019

- Sun, Y.J., Pan, C.Y., **Chen, H.**, Hsu, Y. | **The 56<sup>th</sup> Annual Meeting of the Animal Behavior Society.**

Chicago, USA

“Whether individuals respond consistently to winning and losing experiences” (Poster).

2019

- **Chen, H.**, Pan, C.Y., Sun, Y.J., Chen, Y.H., Hsu, C.H., Hsu, Y. | **NTU & NTNU Joint Symposium on Ecology and Evolution.**

Taipei, Taiwan

“The influence of contest experience on reproductive effort in *Kryptolebias marmoratus*” (Poster).

2018

- **Chen, H.**, Hsu, Y. | **The 29<sup>th</sup> Congress of Animal Behavior and Ecology.**

Hsinchu, Taiwan

“Whether *Kryptolebias marmoratus* can visually recognize individuals and display different aggression toward familiar/unfamiliar opponents” (Poster). 2018

- **Chen, H.**, Huang, S.P. | **The 5<sup>th</sup> Taiwanese Conference of Herpetologist.**

Chiayi, Taiwan

“Evaporative water loss and behavioral response to dehydration in two skinks from different microhabitats” (Poster).

2017

## Workshops

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**Avian Taxidermist Training Workshop** | Held by Taiwan Ornithological Society

Nantou, Taiwan

High Altitude Experimental Station of Endemic Species Research Institute.

Aug. 2019

- Completed a week-long workshop creating stick and standing mount specimens, donated to the museum for educational use.

**Behavioral Ecology and Adaptation to Changing Climates Workshop**

Sichuan, China

Taught by Dr. Sheng-Feng Shen (Academia Sinica) and Dr. Dustin Rubenstein (Columbia University).

Jul. 2019

- Completed a three-week field internship in Jiajin Mountain, Sichuan: (1) assisted in setting up experiments on insect social behavior; (2) led a class project studying the impact of deforestation on interspecies competition in burying beetles.

## Teaching, Mentoring & Outreach Activities

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**Teaching Assistant** | General Biology Lab. (undergraduate course), National Taiwan University

Mar. 2020–Jun. 2020

- Led labs; wrote and graded quizzes; graded assignments; delivered lectures on “Frog Anatomy” & “Respiration and Blood Circulation”.

**Research Mentor** | Biological Programs for Selected Senior High School Students in Academia Sinica

Feb. 2018–Jun. 2018

- Mentored 2 high school students through experimental design, conducting experiments, data analysis, literature review and writing the final report.

**Volunteer Docent** | National Taiwan Science Education Center

Dec. 2016–Jan. 2017

- Provided guided tours of the “Inspired by Nature: Biomimicry” exhibition, explaining the concepts and applications of biomimicry to visitors

## Referee Contact

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**Prof. Sheng-Feng Shen**

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