

Shivam Bhardwaj, PhD

Research Scientist · Program Manager · Lab Operations

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RESEARCH INTERESTS

Phenotypic plasticity · Sexual dimorphism · Wing pattern evolution · CRISPR and functional genomics · Transcriptomics · Evolutionary developmental mechanisms

EDUCATION

Doctor of Philosophy · Life Sciences · National University of Singapore · Singapore 2013 – 2018
Thesis: *The Evolution of Phenotypic Plasticity in Butterflies* Advisor: Prof. Antónia Monteiro

Master of Science (Integrated BS-MS) · Life Sciences · IISER Mohali · India 2008 – 2013
Thesis: *Molecular Mechanism of Learning and Memory in C. elegans* Advisor: Prof. Kavita Babu

PEER-REVIEWED PUBLICATIONS

2021 Rodriguez-Caro F, Fenner J, **Bhardwaj S** et al. Novel *Doublesex* duplication associated with sexually dimorphic development of dogface butterfly wings. *Molecular Biology and Evolution* 38(11): 5021–5033. [doi](#)

2020 **Bhardwaj S**, Lim SHJ, Wenk MR, Oliver JC, Nijhout HF, Monteiro A. Origin of the mechanism of phenotypic plasticity in satyrid butterfly eyespots. *eLife* 9. ★ Cover article of the month. [doi](#)

2019 Dahiya Y, Rose S, Thapliyal S, **Bhardwaj S**, Prasad S, Babu K. Differential regulation of innate and learned behavior by *creb1/crh-1* in *Caenorhabditis elegans*. *Journal of Neuroscience* 39(40): 7934–7946. [doi](#)

2019 Huq M, **Bhardwaj S**, Monteiro A. Male *Bicyclus anynana* butterflies choose females on the basis of ventral UV-reflective eyespot centers. *Journal of Insect Science* 19(1): 25. Featured in Entomology Today, Feb 2019. [doi](#)

2018 **Bhardwaj S**, Prudic KL, Bear A, Das Gupta M, Wasik BR, Tong X, Cheong WF, Wenk MR, Monteiro A. Sex differences in 20-hydroxyecdysone hormone levels control sexual dimorphism in butterfly wing patterns. *Molecular Biology and Evolution* 35(2): 465–472. ★ Year in Review Cover, Jan 2019. [doi](#)

2017 Ng SY*, **Bhardwaj S***, Monteiro A. (*equal first author) Males become choosier in response to manipulations of female wing ornaments in dry season *Bicyclus anynana* butterflies. *Journal of Insect Science* 17(4): 81. Featured in Entomology Today, Jul 2017. [doi](#)

2015 Monteiro A, Tong X, Bear A, Liew SF, **Bhardwaj S** et al. Differential expression of ecdysone receptor leads to variation in phenotypic plasticity across serial homologs. *PLoS Genetics* 11(9). ★ Cover article of the month; featured in PLoS Biologue, Oct 2015. [doi](#)

(Full list at: [Google Scholar Profile](#))

THESES & OTHER PUBLICATIONS

2018 Bhardwaj S. *The Evolution of Phenotypic Plasticity in Butterflies*. PhD Thesis, NUS ScholarBank.

2013 Bhardwaj S. *Molecular Mechanism of Learning and Memory in C. elegans*. MS Thesis, DSpace at IISER Mohali.

2017 Bhardwaj S, Monteiro A. Origin and evolution of phenotypic plasticity in butterfly eyespot size. *Mechanisms of Development* 145, S104–S105. [Conference proceedings]

2015 Bhardwaj S, Monteiro A. Understanding Images: How Butterflies 'Wink' Only Some of their Eyespots in Response to Temperature. *PLoS Biologue*, Oct 2015. [Outreach article]

PROFESSIONAL EXPERIENCE

Subject Matter Expert · AI Consultant (Contractor) · Mercor Intelligence · San Francisco, CA

January 2026 – Present

- Partnered with a top AI lab to advance model reasoning in life sciences; authored high-complexity SFT datasets, exceeding accuracy and volume benchmarks for LLM deployment pipelines.

Program Manager · Research Infrastructure & Lab Operations · King's College London · London, UK

June 2024 – July 2025

- Managed **\$5M+ annual research infrastructure fund**; achieved **\$2.2M+ cost savings (25%+)** within the first year through PowerBI-driven procurement analytics and vendor negotiations.
- Oversaw strategic planning, contract management, and procurement of scientific equipment and services across 20+ departments.
- Led cross-functional projects with academics, suppliers, regulatory bodies, and estates teams; delivered 10+ complex facility upgrades on time and within budget.

Technical Manager · Lab Operations · Biomedical Engineering & Imaging Sciences (BMEIS) · King's College London · London, UK

November 2022 – June 2024

- Led daily operations for **100+ scientists** across BSL-2 molecular biology, tissue culture, chemistry, histology, and radioisotope labs in a cancer research centre; **99%+ audit readiness** with zero safety incidents.
- Implemented LIMS (FreezerPro) managing **10,000+ human tissue and blood samples**; ensured full data integrity. Authored and validated 20+ SOPs for core facility equipment and complex assays; trained 50+ scientists and technicians.
- Certified Biological Safety Supervisor, HTA & Radiation Protection Advisor; designed and implemented all EHS programs (Chemical Hygiene Plan, BBP, hazardous waste) meeting UK/EU/USA regulatory standards.
- Led facility upgrades, equipment validation; coordinated with external auditors & regulatory bodies.

Freelance Content Researcher · Nexus Consulting India · Mumbai, India

July – September 2022

- Consultant content researcher for *Kaun Banega Crorepati* (KBC) 2022 — question construction and accuracy verification for a highly popular English/Hindi bilingual TV quiz show.

Scientific Editor · Medical Writing · Cactus Communications · Mumbai, India

January – June 2022

- Scientific and technical editorial reviewer for publication-quality medical writing documents including manuscripts, thesis drafts, and books.

Staff Research Associate II · DNA Sequencing Core · University of California, Berkeley · CA, USA

August – September 2021

- Managed high-throughput DNA/RNA sequencing workflows serving 50+ researchers; expert in Beckman Coulter Biomek (NX/FX) and ABI 3730XL; maintained **95%+ facility uptime**.
- Performed QC, demultiplexing, de novo assembly; consulted 50+ researchers on experimental design, genotyping, and sequencing strategies.

Postdoctoral Research Scientist · Lab Operations Lead · Auburn University & Mississippi State University · USA

December 2018 – July 2021

Auburn University, Auburn AL (Aug 2020 – Jul 2021) · Mississippi State University, Starkville MS (Dec 2018 – Aug 2020)

- Co-led design, setup, and launch of a new NSF-funded research lab from scratch; procured, installed, and validated **\$500K+ in equipment** (microscopy, imaging, molecular biology); established inventory, chemical safety, and workflow systems.
- Led CRISPR-Cas9 research program: performed **2,000+ microinjections**, designed KO experiments across **15+ genes in 3 insect species**; optimised protocols improving efficiency and reproducibility.
- Assembled de novo transcripts and conducted differential gene expression analysis using R bioinformatics pipelines. Conducted advanced confocal microscopy and immunostaining to identify developmental targets; generated publication-quality data.
- Peer-reviewed manuscripts for *Nature Communications* and *Journal of Experimental Biology*. Mentored 6 undergraduate researchers.
- Participated in NCGAS Supercomputing Workshop, Indiana University.

Research Scholar · PhD Candidate, Monteiro Lab · National University of Singapore · Singapore

August 2013 – Jun 2018

- Designed, led, and conducted morphological evolution experiments in butterflies → **4 first-author publications** in MBE (×2), eLife, and Journal of Insect Science.
- Managed and mentored 3 senior undergraduate students during honours projects, contributing to 2 peer-reviewed publications.
- Presented research and established collaborations at international conferences across Asia and Europe.

MS Candidate · Babu Lab · IISER Mohali · India

May 2012 – June 2013

- Designed and tested a learning-based behavioural assay in *C. elegans*; preliminary results contributed to a USD 600,000 research grant and one peer-reviewed publication.

Research Intern · Sonawane Lab · Tata Institute of Fundamental Research · Mumbai, India

May – July 2011

- Designed and developed annexin mutant transgenic lines in zebrafish to understand epithelial development.

TEACHING & MENTORING

Teaching Assistant · Life Sciences (4 UG + 1 Graduate module) · National University of Singapore · Singapore. August 2013 – June 2018

Student feedback: **4.5 / 5.0**

- *Evolutionary Biology* (LSM1105) — A/P Antónia Monteiro, A/P Ryan Chisolm (Fall 2016)
- *Writing in Biological Sciences* (BL5231) — Assoc. Prof. David Kellogg (Summer 2015)
- *General Physiology* (LSM1104) — Prof. Alex Ip Yuen Kwong (Spring 2015, Fall 2014)
- *Biodiversity* (LSM1103) — Dr Ng Ngan Kee (Spring 2014)

Honours Student Supervisor · National University of Singapore · Singapore 2014 – 2017

- Manizah Huq (2016–17) — Project contributed to Huq, Bhardwaj and Monteiro 2019, *J Insect Sci*
- Swit Yee Ng (2015–16) — Project contributed to Ng, Bhardwaj and Monteiro 2017, *J Insect Sci*
- Melissa Teo Hui Jing (2014–15)

Research Mentor · Undergraduate Supervision · Auburn University & Mississippi State University · USA December 2018 – July 2021

- Trained and mentored 6 undergraduate students in experimental design, data analysis, scientific writing, and conference-style presentations.

ORAL PRESENTATIONS

Conference Talks

Jul 2016 Bhardwaj S. *Evolution of Phenotypic Plasticity in Butterflies*. Euro Evo-Devo, Uppsala, Sweden.

Dec 2015 Bhardwaj S. 20th Biological Sciences Graduate Congress, Bangkok, Thailand.

Dec 2014 Bhardwaj S. 19th Biological Sciences Graduate Congress, Singapore.

Jul 2014 Bhardwaj S. Insect-Spider Symposium, National University of Singapore.

Invited Public Talks & Outreach

2019 Bhardwaj S. *How do butterfly wings get their colour?* School outreach talk, Starkville, MS, USA.

2017 Bhardwaj S. *Biology of Butterflies*. Entopia — Penang Butterfly Farm, Malaysia. Also created demonstration videos for general audiences (Feb 2017).

POSTER PRESENTATIONS

Sep 2017 TLL-NAIST Joint Symposium 2017, TLL Singapore.

Jun 2017 ISDB 2017, Singapore.

Dec 2016 21st BSGC, University of Malaya, Kuala Lumpur, Malaysia.

Mar 2016 CDB Symposium 2016: Size in Development, RIKEN Centre for Developmental Biology, Kobe, Japan.

GRANTS, AWARDS & FELLOWSHIPS

Research Grants & Fellowships

2020 Texas EcoLab Research Grant, co-PI. USD 21,000. Declined due to COVID-19 travel restrictions.

Sep 2017 Fellowship, Molecular Biosystems Conference, Chile. Declined due to scheduling conflicts.

Dec 2016 Travel Award, 21st BSGC, University of Malaya, Kuala Lumpur, Malaysia.
Jul 2016 DBS Conference Travel Grant, Euro Evo-Devo 2016, Uppsala, Sweden.
Mar 2016 Asia-Pacific Developmental Biology Network Grant, CDB Symposium, Kobe, Japan.
Dec 2015 Travel Grant, 20th Biological Sciences Graduate Congress, Bangkok, Thailand.
Sep 2014 Travel Grant, International Summer School on Phenotypic Plasticity, Germany. Declined due to visa.
2013–2018 NUS Research Scholarship, Ministry of Education, Singapore. Total: USD 165,000.
2008–2013 KVPY Scholarship, Govt. of India — Top 15 of 50,000+ applicants.

Awards & Honors

2024, 2023 Nominated, Outstanding Technical Services Support Award — FoLSM Staff Awards, King's College London.
2018 Finalist, Schmidt Science Fellowship — among the 100 most promising PhD graduates across top 25 universities.
2013–2018 International quiz champion: Tata Crucible (2016), TAPMI Quiz on The Beach (2017, 2018), Tata Crucible Singapore (2013–2018) among 10,000+ teams.
2016 Gold Medal, Science — Asian Quizzing Championship.
2011 Academic Excellence Award for best academic performance, IISER Mohali.

LEADERSHIP & SERVICE

2022–2024 Led team of research technicians and interns to train and integrate new hires at King's College London.
2018–2020 Led outreach efforts teaching school students about nature, butterflies, and conservation through workshops and lab sessions.
2015–2018 Secretary, DBS Graduate Students' Society, NUS : led faculty dialogues; organised invited colloquium series. Coordinator, Colloquium Committee (2016); Core Member (2014).
2009–2013 Co-founder, IISER Mohali Quiz Club : built operational frameworks and a self-sustained competitive quizzing and learning ecosystem.
2011–2013 Volunteer, Youths' Attempt to Nurture (YATN), Mohali, India : education and healthcare for children.

TECHNICAL SKILLS

Molecular & Cell Biology: DNA/RNA Manipulation & QC, PCR, qPCR, Cloning, Molecular Evolution, ChIP-Seq, CRISPR-Cas9, Transgenic Lines (Zebrafish, Butterflies), ISH/FISH, Immunostaining, Mammalian Tissue Culture

Biochemistry & Assays: Protein Chemistry, Lipid Analysis, Hormone Assays, Assay Design & Optimisation (DOE), Behavioural Assays (*C. elegans*),

Genomics & Sequencing: High-Throughput Sequencing (ABI 3730XL), NGS Data Analysis, de novo Assembly, Transcriptomics, RNA-Seq, Library Preparation

Microscopy & Instrumentation: Confocal (Leica/Zeiss), Keyence, EVOS, Fluorescence Microscopy, Lab Automation & Robotics (Beckman Coulter Biomek (NX/FX), Opentrons, Hamilton)

Data Analysis: R, Python, SPSS, PowerBI, GraphPad Prism, FIJI/ImageJ, IMARIS, Adobe Photoshop/Illustrator, Biostatistics, Phylogenetic Comparative Methods

Lab Operations: LIMS/ELN (FreezerPro), Equipment Procurement & Validation, SOP Development, EHS (BSL-2, Radiation Safety, Hazardous Waste), Budget Management (\$10M+)

CERTIFICATIONS

Certified Biological Safety Supervisor (UK/EU/USA) · · Biological Safety : Management & Practice
Radiation Safety Officer · Chemical Safety & Hazardous Waste Management