

# Terrence Sylvester

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## ACADEMIC BIOGRAPHY

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I am an evolutionary genomicist whose research centers on the generation and comparative analysis of insect genomes. My work combines genome assembly, annotation, phylogenomics, and population genomics to study gene family evolution, structural variation, and the genomic mechanisms underlying insect diversification. I contribute to international community sequencing initiatives and building reproducible computational pipelines that enable large-scale comparative analyses. Through collaborative projects spanning multiple institutions, I focus on producing genomic resources for non-model taxa and advancing the use of integrative genomics in evolutionary biology.

## CURRENT POSITIONS

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Oct. 2022 – present	Postdoctoral fellow in Genomics The University of Memphis, Memphis, TN Advisor: Dr Duane McKenna
Key responsibilities	<ul style="list-style-type: none"><li>• Lead research on genome assembly, annotation, and comparative genomics of beetles, with a focus on Cerambycidae (long horned beetles).</li><li>• Collaborate with national and international consortia (e.g., i5k) on large-scale insect genome initiatives.</li><li>• Mentor undergraduate and graduate students in wet-lab protocols and computational genomics.</li><li>• Contribute to grant writing, manuscript preparation, and cross-disciplinary collaborations in evolutionary biology and bioinformatics.</li><li>• Disseminate research findings at national conferences (e.g., ESA, PAG, Biodiversity Genomics).</li></ul>

## EDUCATION

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2017 – 2022	PhD in Biology Texas A&M University, College Station, TX Advisor: Dr Heath Blackmon
2011 – 2015	B.Sc. in Molecular Biology and Biotechnology University of Peradeniya, Sri Lanka Advisor: Dr Madhava Meegaskumbura

## RESEARCH INTERESTS

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Comparative Genomics • Genome Evolution • Population and Landscape Genetics • Insect Phylogeny • Conservation

## PUBLICATIONS

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### Peer-Reviewed Articles

14. [Sylvester, T.](#), Adams, R., Mitchell, R.F., Shen, R. and McKenna, D.D., Genomic Architecture of the Pole Borer, *Neandra brunnea* (Cerambycidae: Parandrinae), Sheds Light on the Evolution of Wood-Feeding in Longhorn Beetles. *The Journal of heredity*, p.esaf080.
13. Shen, R., [Sylvester, T.](#), Ding, Q., Yang, X., Tong, Y., Liu, N., Wang, C., Xiao, Y., Huang, C., Wu, S. and Bai, M., 2025. Chromosome-level genome of the shining chafers *Kibakoganea tamdaoensis* (Coleoptera: Scarabaeidae: Rutelinae). *Scientific Data*, 12(1), p.1345.
12. Lian, Q., Lu, Y., Xu, M., Huang, C., Ding, Q., Yang, X., [Sylvester, T.](#), Shen, R., Miao, P. and Bai, M., 2025. Three mitochondrial genomes of *Kibakoganea* Nagai, 1984 (Coleoptera: Scarabaeidae: Rutelinae) and phylogenetic relationship of Rutelini. *Journal of Asia-Pacific Entomology*, 28(1), p.102369.
11. [Sylvester, T.](#), Adams, R., Mitchell, R.F., Ray, A.M., Shen, R., Shin, N.R., Daundasekara, K.C. and McKenna, D.D., 2025. Insights into longhorn beetle (Cerambycidae) evolution from comparative analyses of the red-headed ash borer (*Neoclytus acuminatus acuminatus*) genome. *Journal of Heredity*, p.esaf016.
10. Adams, R., [Sylvester, T.](#), Mitchell, R.F., Price, M.A., Shen, R. and McKenna, D.D., 2025. Functional and evolutionary insights into chemosensation and specialized herbivory from the genome of the red milkweed beetle, *Tetraopes tetraphthalmus* (Cerambycidae: Lamiinae). *Journal of Heredity*, 116(3), pp.303-314.
9. Copeland, M., Landa, S., Owoyemi, A.O., Jonika, M.M., Alfieri, J.M., Johnston, J.S., [Sylvester, T.P.](#), Kyre, B.R., Hoover, Z., Hjelmen, C.E. and Rieske, L.K., 2024. Genome assembly of the southern pine beetle (*Dendroctonus frontalis* Zimmerman) reveals the origins of gene content reduction in *Dendroctonus*. *Royal Society Open Science*, 11(12), p.240755.
8. Shen, R., [Sylvester, T.](#), Shin, N.R., Zhan, Z., Jin, J., Yang, D., McKenna, D.D. and Liu, X., 2024. Chromosome-level genome assembly of the snakefly *Mongoloraphidia duomilia* (Raphidioptera: Raphidiidae). *Scientific Data*, 11(1), p.579.

7. [Sylvester, T.](#), Adams, R., Mitchell, R.F., Ray, A.M., Shen, R., Shin, N.R. and McKenna, D.D., 2024. Comparative analyses of the banded alder borer (*Rosalia funebris*) and Asian longhorned beetle (*Anoplophora glabripennis*) genomes reveal significant differences in genome architecture and gene content among these and other Cerambycidae. *Journal of Heredity*, p.esae021.
6. [Sylvester, T.](#), Hoover, Z., Hjelman, C.E., Jonika, M.M., Blackmon, L.T., Alfieri, J.M., Johnston, J.S., Chien, S., Esfandani, T. and Blackmon, H., 2024. A reference quality genome assembly for the Jewel scarab *Chrysina gloriosa*. *G3: Genes, Genomes, Genetics*, p.jkae084.
5. Sylvester, [T.](#), Adams, R., Hunter, W.B., Li, X., Rivera-Marchand, B., Shen, R., Shin, N.R. and McKenna, D.D., 2024. The genome of the invasive and broadly polyphagous Diaprepes root weevil, *Diaprepes abbreviatus* (Coleoptera), reveals an arsenal of putative polysaccharide-degrading enzymes. *Journal of Heredity*, 115(1), pp.94-102.
4. Jonika, M. M., Alfieri, J. M., [Sylvester, T.](#), Buhrow, A. R. and Blackmon, H. (2022). Why not Y naught. *Heredity*, 1-4.
3. [Sylvester, T.](#), Hjelman, C. E., Hanrahan, S. J., Lenhart, P. A., Johnston, J. S. and Blackmon, H. (2020). Lineage-specific patterns of chromosome evolution are the rule not the exception in Polyneoptera insects. *Proceedings of the Royal Society B*, 287(1935), 20201388.
2. Sendanayake, L., [Sylvester, T.](#), De Silva, U. H. A. J., Dissanayake, D. R. R. P., Daundasekera, D. M. K. C. and Sooriyapathirana, S. D. S. S. (2017). Consumer preference, antibacterial activity, and genetic diversity of ginger (*Zingiber officinale* Roscoe) cultivars grown in Sri Lanka. *Journal of Agricultural Sciences*, 12(3)
1. Gunarathne, W. A. L. N., [Sylvester, T.P.](#), Madhukalpani, O. V. S., Dissanayake, D. R. R. P., Chamikara, M. D. M. and Sooriyapathirana, S. D. S. S. (2017). Characterization of lead and vine morphological diversity, phytochemical composition, and antibacterial activity in the lead extracts of six *Piper betle* L. cultivars in Sri Lanka. *Rajarata University Journal*, 4(2)

## Books

1. Daundasekara, K., De Silva, A., Kularathna, T., Madhukalpani, S., Ranawaka, B., [Sylvester, T.](#), Tennakoon, M. (2016). Sinhala Glossary in Molecular Biology and Biotechnology, Volume 2. Sooriyapathirana, S., Dissanayake, R., Rajapakse, S. (Eds.) ISBN 978-955-41753-4-1

## CONFERENCE PRESENTATIONS

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18. [Sylvester, T.](#), Adams, R. Mitchell, R.F. and McKenna D. D (2026 January). Comparative genomics of Cerambycidae: insights into genome architecture and evolutionary dynamics of long horned beetles. Plant and Animal Genomics conference, San Diego, California – Talk
17. [Sylvester, T.](#), Adams, R. Mitchell, R.F. and McKenna D. D (2025 November). Comparative genomics of Cerambycidae: insights into genome architecture and evolutionary dynamics of long horned beetles. Entomological Society Meeting, Portland, Oregon – Talk
16. [Sylvester, T.](#) and McKenna D. D (2024 November). The current status of beetle (Coleoptera) genome sequencing: illuminating genome architecture and the evolution of beetle diversity. Entomological Society Meeting, Phoenix, Arizona – Talk
15. [Sylvester, T.](#) and McKenna D. D (2024). The current status of beetle (Coleoptera) genome sequencing: illuminating genome architecture and the evolution of beetle diversity. Biodiversity Genomics Conference (Online), Wellcome Sanger Institute – Talk
14. [Sylvester, T.](#) and McKenna D. D (2023 November). Patterns of gene and genome evolution in longhorn beetles (Coleoptera: Cerambycidae). Entomological Society Meeting, National Harbor, Maryland – Talk
13. [Sylvester, T.](#) (2023). Chromosomes, Genomes and Populations (Beetles). Center for Biodiversity meeting, University of Memphis, Memphis, Tennessee – Talk
12. [Sylvester, T.](#), Hoover, Z., Hjelman, C.E., Jonika, M.M., Blackmon, L.T., Alfieri, J.M., Johnston, J.S., Chien, S., Esfandani, T. and Blackmon, H. (2022). Genome Assembly and the population structure of *Chrysina gloriosa*. Southeast Texas Evolutionary Genetics & Genomics Symposium, University of Houston, Houston, Texas – Poster – Award for best poster
11. [Sylvester, T.](#) and Blackmon, H. (2021). The perils and promises of models of chromosome evolution. Texas Genetic Society Meeting, Texas A&M University, College Station, Texas – Poster
10. [Sylvester, T.](#), Hoover, Z., Hjelman, C.E., Jonika, M.M., Blackmon, L.T., Alfieri, J.M., Johnston, J.S., Chien, S., Esfandani, T. and Blackmon, H. (2022). Genome Assembly and the population structure of *Chrysina gloriosa*. Life Sciences Graduate Recruitment Symposium Texas A&M University, College Station, Texas – Talk & Poster

9. [Sylvester, T.](#), Hjelman, C. E., Hanrahan, S. J., Lenhart, P. A., Johnston, J. S. and Blackmon, H. (2022). Idiosyncratic patterns of chromosome evolution are the rule, not the exception. Proceedings of the 2022 ESA Organized Meeting, "Small Orders, Big Ideas (Polyneoptera)", Vancouver, Canada – Talk
8. [Sylvester, T.](#) and Blackmon, H. (2021). The perils and promises of models of chromosome evolution. Texas Genetic Society Meeting, Texas A&M University, College Station, Texas – Poster
7. [Sylvester, T.](#) and Blackmon, H. (2021). The perils and promises of models of chromosome evolution. Student and Postdoc Research Conference, Texas A&M University, College Station, Texas – Talk
6. [Sylvester, T.](#), Hjelman, C. E., Hanrahan, S. J., Lenhart, P. A., Johnston, J. S. and Blackmon, H. (2020). Idiosyncratic patterns of chromosome evolution are the rule not the exception. Department of Biology seminar series, Texas A&M University, College Station, Texas – Talk
5. [Sylvester, T.](#), Hjelman, C. E., Hanrahan, S. J., Lenhart, P. A., Johnston, J. S. and Blackmon, H. (2020). Lineage-specific patterns of chromosome evolution are the rule not the exception in Polyneoptera insects. Student and Postdoc Research Conference, Texas A&M University, College Station, Texas – Poster
4. [Sylvester, T.](#), Hjelman, C. E., Hanrahan, S. J., Lenhart, P. A., Johnston, J. S. and Blackmon, H. (2019). Idiosyncratic patterns of chromosome evolution are the rule, not the exception. Student and Postdoc Research Conference, Texas A&M University, College Station, Texas – Poster
3. [Sylvester, T.](#), Hjelman, C. E., Hanrahan, S. J., Lenhart, P. A., Johnston, J. S. and Blackmon, H. (2019). Evolution of chromosome numbers in the insect clade Polyneoptera. Student Research Week, Texas A&M University, College Station, Texas – Poster
2. [Sylvester, T.](#), Hjelman, C. E., Hanrahan, S. J., Lenhart, P. A., Johnston, J. S. and Blackmon, H. (2019). Evolution of chromosome numbers in the insect clade Polyneoptera. Texas Genetic Society Meeting, Texas A&M University, College Station, Texas – Poster
1. [Sylvester, T.](#), Hjelman, C. E., Hanrahan, S. J., Lenhart, P. A., Johnston, J. S. and Blackmon, H. (2019 June). Evolution of chromosome numbers in the insect clade Polyneoptera. Society for Study of Evolution, Providence, Rhode Island – Poster

## GRANTS AND FUNDING CONTRIBUTIONS

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2022 – 2025	NSF-ANT
Title	Illuminating 50 million years of genome evolution in Antarctic weevils (Ectemnorhinini): functional innovation, adaptation and biotechnological potential.
Role	Conceptualization, Writing, and Data Generation.
Status	Submitted – 2025 June
2024 – 2026	NSF-DEB
Title	Tentative - Dietary specialization and convergent evolution of milkweed herbivores.
Role	Data Generation.
Status	In preparation
2024 – 2026	NSF-DEB
Title	Tentative - Dietary specialization and convergent evolution of red milkweed beetles.
Role	Writing and Data Generation.
Status	In preparation
2025 – 2026	NSF-DEB
Title	Tentative – Genomic Origins and Evolution of Plant Cell Wall Digestion in Plant-Feeding Beetles.
Role	Conceptualization, Writing and Data Generation.
Status	In preparation

## TEACHING SUMMARY

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Teaching experience spans undergraduate instruction, curriculum development, and research mentoring in genomics, evolution, and bioinformatics. I emphasize inclusive, research-integrated learning and provide students with hands-on experience in computational and molecular approaches. I have mentored undergraduate researchers and contributed to training initiatives across diverse institutional settings.

## TEACHING EXPERIENCE

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2023 – 2026	Substitute Instructor University of Memphis, USA
2017 – 2022	Graduate Teaching assistant Texas A and M University, USA

2016 Graduate Teaching assistant  
Postgraduate Institute of Science, University of Peradeniya, Sri Lanka

2015 – 2016 Graduate Teaching assistant  
University of Peradeniya, Sri Lanka

Key responsibilities

- Deliver guest lectures and full course sessions.
- Conduct laboratory classes and facilitate student-led experiments.
- Apply active-learning strategies and facilitate in-class discussions.
- Design laboratory materials and lead undergraduate lab sections.
- Support curriculum development and instructional planning.
- Grade assignments, quizzes, and exams and provide individualized feedback.
- Assist in teaching graduate-level courses and computing labs.
- Support project-based and practical bioinformatics training.

## COURSES TAUGHT

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Level (U – Undergraduate; G – Graduate) and Per-Class Enrollment

2023 – 2024	<a href="#">University of Memphis, USA</a>		
	Evolution	G/U	18 Students
	Entomology	G/U	12 Students
2017 – 2022	<a href="#">Texas A and M University, USA</a>		
	Introduction to Biology I	U	24 Students
	Introduction to Biology II	U	24 Students
	Introduction to Biology (non-majors) II	U	24 Students
	Introduction to Biology (honors) I	U	14 Students
	Anatomy and Physiology I	U	24 Students
2016	<a href="#">Postgraduate Institute of Science, University of Peradeniya, Sri Lanka</a>		
	Bioinformatics	G	35 Students
2015 – 2016	<a href="#">University of Peradeniya, Sri Lanka</a>		
	Biological Chemistry	U	60 Students
	Enzymology	U	80 Students
	Biochemistry and Molecular Biology Lab	U	40 Students
	Molecular Genetics	U	40 Students
	Molecular Immunology	U	15 Students
	Bioinformatics	U	15 Students

## STUDENT MENTORING AND TRAINING

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Level (U – Undergraduate; G – Graduate, PD – Post doctoral)

### Texas A&M University

Chandler Kassel (U)	R Coding • Computational modelling.
Kate Saenz (U)	R Coding • Computational modelling.
Paulina Serra Rossi (U)	DNA/RNA extraction.

### University of Memphis

Sophie Dismukes (U)	DNA extraction.
Soo-Hyun Jeong (G)	DNA/RNA extraction • High-throughput sequencing analysis.
Michael Charles (G)	DNA extraction • Sequencing sample preparation.
Yihang Li (G)	DNA extraction • Sequencing sample preparation • Bioinformatics • Phylogenetics
RongRong Shen (PD)	High-throughput sequencing data analysis.

## SKILLS AND EXPERTISE

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Languages	Native: Sinhalese Other languages: English (spoken and written)
Computational	Operating systems: Windows, Unix, Linux Languages: R, Python, Bash Tools: Git/GitHub Conda, LaTeX Other: Command line, HPC computing
Wet lab	High-molecular-weight DNA/RNA extraction NGS Library preparation Target enrichment PCR, gel electrophoresis, and NGS sample QC
Dry lab	Genome Assembly with long and shot read sequencing Hi-C based genome Scaffolding Genome Annotation Population and Comparative Genomics Phylogenomics

## PROFESSIONAL DEVELOPMENT AND WORKSHOPS

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2018 August	Open Source for Open Science workshop
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- 2021 March            Short courses Texas A&M High-Performance Research Computing Centre:
- Introduction to Julia
  - Introduction to ADA and TERRA clusters
  - Introduction to Scientific Python
  - Introduction to Next Generation Sequencing Assembly
- 2021 June            Workshop on Landscape genomics – Physalia Courses

## OUTREACH, SERVICE, AND COMMUNITY ENGAGEMENT

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- 2019            Texas A&M University  
Open Source for Open Science workshop - Facilitate
- 2020            Texas A&M University  
Darvin Day interactive booth – Organizer and Lead  
Biology Graduate Student Association outreach event – Facilitate
- 2022            Texas Genetics Society Meeting R Workshop – Facilitate
- 2024            The University of Memphis Highschool Student Summer Workshop  
Introduction to Entomology – Organizer and Lead
- Boys and Girls Club of Greater Memphis  
Workshop on introduction to Entomology – Facilitate
- 4-H club  
Workshop on starting an insect collection – Organizer and Lead

## REVIEWER SERVICES

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### Ad Hoc Reviewer – Journals

Nature communications • Scientific Data • BMC Genomics • Ecology and Evolution Genome  
• Welcome Open Research • Systematic Entomology • Journal of Heredity