

Terrence Sylvester

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ACADEMIC BIOGRAPHY

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

Oct. 2022 – present Postdoctoral fellow in Genomics
The University of Memphis, Memphis, TN
Advisor: Dr Duane McKenna

Key responsibilities:

- Lead research on genome assembly, annotation, and comparative genomics of beetles, with a focus on Cerambycidae (long horned beetles).
- Collaborate with national and international consortia (e.g., i5k) on large-scale insect genome initiatives.
- Mentor undergraduate and graduate students in wet-lab protocols and computational genomics.
- Contribute to grant writing, manuscript preparation, and cross-disciplinary collaborations in evolutionary biology and bioinformatics.
- Disseminate research findings presented at national conferences (e.g., ESA, PAG, Biodiversity Genomics).

EDUCATION

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

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

PUBLICATIONS

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., Hjelmen, 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.*, Hjelmen, 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

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), Welcome 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., Hjelmen, 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., Hjelmen, 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.*, Hjelmen, 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.*, Hjelmen, 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.*, Hjelmen, 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.*, Hjelmen, 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.*, Hjelmen, 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.*, Hjelmen, 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.*, Hjelmen, 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

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

2025 – 2026	NSF-DEB Title: Tentative - Dietary specialization and convergent evolution of milkweed herbivores. Role: Data Generation. Status: In preparation
2025 – 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: Writing and Data Generation. Status: In preparation

TEACHING SUMMARY

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

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

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

2023 – 2024	University of Memphis, USA			
	Evolution	G/U	18 Students	
	Entomology	G/U	12 Students	
2017 – 2022	Texas A and M University, USA			
	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	Postgraduate Institute of Science, University of Peradeniya, Sri Lanka			
	Bioinformatics	G	35 Students	
2015 – 2016	University of Peradeniya, Sri Lanka			
	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

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

Texas A&M University

- Chandler Kassel (U) – Mentored on an independent research project on chromosome number evolution in Amphibia.

- Kate Saenz (U) – Mentored on a project exploring chromosome number evolution in Coleoptera
- Paulina Serra Rossi (U) – Provided wet-lab training in DNA and RNA extraction protocols.

University of Memphis

- Soo-Hyun Jeong (G) – Mentored in high-quality DNA and RNA extraction techniques for genomic applications and trained in computational workflows for analyzing high-throughput sequencing data.
- Michael Alexander Charles (G) – Trained in core wet-lab workflows for molecular biology, including DNA/RNA extraction protocols and sample preparation for sequencing.
- Yihang Li (G) – Trained in core wet-lab workflows for molecular biology, including DNA/RNA extraction protocols and sample preparation for sequencing.
- RongRong Shen (PD) - Trained in molecular biology workflows and high-throughput sequencing data analysis.

SKILLS AND EXPERTISE

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 short read sequencing
 Hi-C based genome Scaffolding
 Genome Annotation
 Population and Comparative Genomics
 Phylogenomics

PROFESSIONAL DEVELOPMENT & WORKSHOPS

2018 Open Source for Open Science workshop

2021 Workshop on Landscape genomics

- 2021 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

OUTREACH, SERVICE, AND COMMUNITY ENGAGEMENT

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

REVIEWER SERVICES

Ad Hoc Reviewer – Journals

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