Terrence Sylvester

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ACADEMIC POSITIONS

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

EDUCATION

PhD, Biology 2017-2022
Texas A&M University, College Station, TX
Dissertation: Broad-scale structural evolution in invertebrate genomes and the population genomics of jewel scarabs in the southwestern US
Advisor: Dr Heath Blackmon

B.S, Molecular Biology and Biotechnology 2011-2015
University of Peradeniya, Sri Lanka
Thesis: Phylogenetic relationships and species boundaries of a clade of diminutive shrub frogs (Rhacophoridae: *Pseudophilautus*)
Advisor: Dr Madhava Meegaskumbura

RESEARCH INTERESTS

Genome Evolution, Phylogeny, Population Genetics, Landscape Genetics, Conservation, Insects

MANUSCRIPTS IN PREPARATION

- Copeland, M., Landa, S., Owoyemi, A., Jonika, M.M., Alfieri, J., **Sylvester, T.**, Hoover, Z., Hjelmen, C.E., Johnston, S.J., Kyre, B.R., Rieske, L.K., Blackmon, H. and Casola, C. Genome assembly of the southern pine beetle (*Dendroctonus frontalis* Zimmerman) reveal the origins of gene content reduction in Dendroctonus (accepted – Proceedings of the Royal Society B).
- **Sylvester, T.**, & Blackmon, H. The perils and promises of models of chromosome evolution.
- **Sylvester, T.**, Hjelmen, C., Jonika, M., Blackmon, L., Alfieri, J. Hoover, Z., & Blackmon, H. Population structure of *Chrysina gloriosa.*
- **Sylvester, T.**, Adams, R., Hanks, L.M., Mitchell, R.F., Ray, A., Shen, R., Shin, N.R. and McKenna, D.D. A chromosome-scale genome assembly of the red-headed ash borer (*Neoclytus acuminatus*) illuminates adaptations to xylophagy and patterns of synteny and colinearity among longhorn beetle (Cerambycidae) genomes.
- Adams, R., **Sylvester, T.**, Shen, R., Shin, N.R., Chown, S. and McKenna, D.D. Fifty million years of innovation and adaptation to life at the extreme: Insights from whole genome sequencing of the Antarctic beetles *Bothrometopus randi* and *Palirhoeus eatoni*.
- **Sylvester, T.**, Adams, R., Haddad, S., Hanks, L.M., Millar, J.G., Mitchell, R.F., Ray, R., Shen, R., Shin, N.R., and McKenna, D.D. Genome of the pole borer beetle, *Neandra brunnea* (Cerambycidae: Parandrinae)

PUBLICATIONS

Journals

2024 **9** Adams, R., **Sylvester, T.**, Mitchell, R.F., Price, M.A., Shen, R. and McKenna, D.D., 2024. Functional and evolutionary insights into chemosensation and specialized herbivory from the genome of the red milkweed beetle, *Tetraopes tetrophthalmus* (Cerambycidae: Lamiinae). Journal of Heredity, p.esae049.

8 **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.

7 **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.

6 **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.

2022 **5** Jonika, M. M., Alfieri, J. M., **Sylvester, T**., Buhrow, A. R., & Blackmon, H. (2022). Why not Y naught. *Heredity*, 1-4.

2020 **4** **Sylvester, T.**, Hjelmen, C. E., Hanrahan, S. J., Lenhart, P. A., Johnston, J. S., & 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.

2017 **3** Sendanayake, L., **Sylvester, T.**, De Silva, U. H. A. J., Dissanayake, D. R. R. P., Daundasekera, D. M. K. C., & 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)

2 Gunarathne, W. A. L. N., **Sylvester, T.P.**, Madhukalpani, O. V. S., Dissanayake, D. R. R. P., Chamikara, M. D. M., & & 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

2016 **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

TALKS AND POSTER PRESENTATIONS

2024
- The current status of beetle (Coleoptera) genome sequencing: illuminating genome architecture and the evolution of beetle diversity. Entomological Society Meeting, Pheonix, Arizona – **Talk**
- 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**

2023
- Patterns of gene and genome evolution in longhorn beetles (Coleoptera: Cerambycidae). Entomological Society Meeting, National Habor, Maryland – **Talk**
- Chromosomes, Genomes and Populations (Beetles). Center for Biodiversity meeting, University of Memphis, Memphis, Tennessee – **Talk**

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**
- The perils and promises of models of chromosome evolution. Texas Genetic Society Meeting, Texas A&M University, College Station, Texas – **Poster**
- Genome Assembly and the population structure of *Chrysina gloriosa*. Life Sciences Graduate Recruitment Symposium Texas A&M University, College Station, Texas – **Talk & Poster**
- 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**

2021
- The perils and promises of models of chromosome evolution. Texas Genetic Society Meeting, Texas A&M University, College Station, Texas – **Poster**
- The perils and promises of models of chromosome evolution. Student and Postdoc Research Conference, Texas A&M University, College Station, Texas – **Talk**

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**
- 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**

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**
- Evolution of chromosome numbers in the insect clade Polyneoptera. Student Research Week, Texas A&M University, College Station, Texas – **Poster**
- Evolution of chromosome numbers in the insect clade Polyneoptera. Texas Genetic Society Meeting, Texas A&M University, College Station, Texas – **Poster**
- Evolution of chromosome numbers in the insect clade Polyneoptera. Society for Study of Evolution, Providence, Rhode Island – **Poster**

TEACHING EXPERIENCE

Teaching substitute – University of Memphis, USA – 2023 to 2024
- Assist in conducting lectures.

Teaching assistant – Texas A and M University, USA – 2017 to 2022
- Design course materials and conduct lab classes.
- Facilitate student-led experiments and discussions.
- Prepare and grade quizzes and exams.

Teaching assistant – University of Peradeniya, Sri Lanka – 2015 to 2016
- Conduct lab classes.
- facilitate curriculum development.
- Facilitate student-led experiments and discussions.
- Prepare and grade assignments.

- Assist in grading and exams.

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

- Conduct lab classes.
- Facilitate student experiments.

Courses Facilitated (*U – Undergraduate; G – Graduate)

University of Memphis, USA			
2023,2024	Evolution	U	18 Students
2024	Entomology	U	12 Students
Texas A and M University, USA			
2017,2022	Introduction to Biology I	U	24 Students
2018	Introduction to Biology II	U	24 Students
2019-2020	Introduction to Biology for non-majors II	U	24 Students
2021	Introduction to Biology (honours) I	U	14 Students
2020	Anatomy and Physiology I	U	24 Students
University of Peradeniya, Sri Lanka			
2016	Biological Chemistry	U	60 Students
2016	Enzymology	U	80 Students
2016	Biochemistry and Molecular Biology Laboratory	U	40 Students
2016	Molecular Genetics	U	40 Students
2016	Molecular Immunology	U	15 Students
2016	Bioinformatics	U	15 Students
Postgraduate Institute of Science, University of Peradeniya, Sri Lanka			
2016	Bioinformatics	G	35 Students

STUDENT MENTORING AND TRAINING

U – Undergraduate; G – Graduate

- Chandler Kassel (U); Topic – Chromosome number evolution in Amphibia
- Kate Saenz (U); Topic – Chromosome number evolution in Coleoptera
- Paulina Serra Rossi (U) – Wet lab training – DNA extraction

SKILLS

Languages: Proficient in English, both spoken and written, as a second language

Programming: R, Python, Bash (Linux/Unix), CMD (Windows), LaTeX, Conda, NGS analysis and pipeline development, version control (Git/GitHub)

Genomics: Assembly (Canu, Flye, HiFiasm and NextDeNovo), Scaffolding (Hicstuff, Juicer, 3d-DNA, YAHS and instaGRAAL), Annotation (RepeatModeler, RepeatMasker, EDTA and BRAKER2)

Genetics: Read mapping (BWA and Minimap2), Variant calling and filtering (SAMtools, BAMtools, VCFtools, BCFtools and PLINK), species distribution modelling, population genetics, and phylogenetics

Molecular biology: DNA and RNA extraction, protocol development and optimization for HMW DNA extraction, PCR, gel electrophoresis, Target capture

ADDITIONAL TRAINING

- 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
- Open Source for Open Science workshop – 2018
- Ad hoc reviewer for the following journals:
    - Genome, Welcome Open Research, Systematic Entomology, Journal of Heredity, Scientific Data

OUTREACH AND WORKSHOPS FACILITATED

Outreach events

- Darvin Day interactive booth on *Chrysina gloriosa* population genomics, Texas A&M University, 2020
- BioGSA outreach, Texas A&M University, 2020
- Highschool student workshop on Introduction to Entomology, The University of Memphis, 2024
- Boys and Girls Club of Greater Memphis Workshop on introduction to Entomology, The University of Memphis, 2024
- 4-H club workshop on starting an insect collection, The University of Memphis, 2024

Workshops facilitated

- Texas Genetics Society Meeting R workshop, 2022
- Open Source for Open Science workshop, 2019
- R Hack Day, 2019