

Progress Report

What did I do last year?

- Lab Work and Data Analyses

- Chapter 1 and Chapter 2

- Bulk RNA-Seq of 20 samples and Data Analyses.
 - Analysis Pipeline development and testing.

- Chapter 3

- Figured out single cell preparation from *Tribolium castaneum* Testes.
 - scRNA-Seq and Preliminary data analyses.

- Writing/ Publications

- Matthew N. B., Emily C., ...(many other authors...)... ,Balan R., Tommer S., John R. S., Daniel S., Allissa D., Ben B. RNAMunger: A toolset for public RNA-seq data analysis. F1000Research. (Submitted)
 - Drew R. Schield, ...(many other authors) ..., Balan R., Jeffery P. Demuth, Esther Betran, Marc Tollis, Jesse M. Meik, Stephen P. Mackessy, and Todd A. Castoe. The origins and evolution of chromosomes, dosage compensation, and mechanisms underlying venom regulation in snakes. Genome Research. 29 (4): pp 590-601
 - Firreno, T.J. Jr., Ramesh, B., Emery, A.H., Roelke, C.E., Fujita, M.K. (in prep). Characterization of the parotoid gland transcriptome to explore the evolution of synthesized chemical defenses in true toads (Bufonidae).
 - Firreno, T.J. Jr., Ramesh, B., Fujita, M.K. (in prep). Exploring convergent evolution of cardiac glycoside biosynthesis between highly disparate taxa.
 - Balan R., Indumathi P., Gokhul V., Muthukumaran P., Yuvapriya S., Sathishkumar T. Extraction process optimization of flavonoid and in vitro amylase inhibitory effect of purified quercetin derivative from *Amorphophallus paeoniifolius* tubers. Journal of Applied Research on Medicinal and Aromatic Plants. (under revision) — UG

Progress Report

What I still need to do?

- Data Analyses
 - Finish Phylogenetic Tree Construction.
 - Finish Data Analyses of scRNA-seq.
- Writing
 - Paper 1: Dosage Compensation in Neo-X - Chapter 1
 - Paper 2: Phylogeny of *Tribolium* species with divergence time estimates - Chapter 2.
 - Paper 3: MSCI in *T.castaneum* - Chapter 3.