

VARUN BHAMIDIPATI DWARAKA

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PROFESSIONAL SUMMARY

I am a Ph.D. candidate whose research interests focus within the intersection of appendage regeneration, transcriptomics, and epigenomics. I have published peer-reviewed manuscripts and presented at international meetings on the topics of the evolution of limb regeneration, transcriptional/epigenomic regulation of gene expression, and the development of next-generation sequencing resources. Upon graduation of my PhD, I plan to pursue a post-doctoral fellowship in the hopes of developing and utilizing computational tools to understand the regulation of gene expression in tissue regeneration and wound healing, while further understanding the evolutionary basis of these mechanisms. My current demonstrated skills include: R/Python/Bash programming in the HPC environment, developing and utilizing bioinformatics pipelines for the analysis of Agilent Microarray/ChIP-Seq/RNA-Seq/Bisulfite sequencing (RRBS/WGBS) datasets, and validating results by using specialized and standard molecular biology bench techniques (Bisulfite-PCR, DNA/RNA extractions, gel electrophoresis). I have utilized these skills on bulk tissue datasets, but I am also knowledgeable on how to apply them in a single-cell context. I also mentor undergraduates and first year graduate students.

EDUCATION

- **Ph.D in Biology**, University of Kentucky
Dissertation Title: *Transcriptional and Epigenetic Analyses of Salamander Tissue Regeneration*.
Aug. 2015 - Present
- **B.S. in Molecular, Cellular, and Developmental Biology**, University of California at Santa Cruz
Concentration: Bioinformatics.
September 2012 - June 2014
- **General Biology**, Foothill College & De Anza College
Transferred to University of California at Santa Cruz
September 2010 - June 2012

RESEARCH EXPERIENCE

- **Graduate Research Assistant**, University of Kentucky, Lexington, KY
(Aug. 2015 – Present): PI – S. Randal Voss, PhD
- **Bioinformatics Analyst**, University of California, San Francisco, San Francisco, CA
(June 2014 – July 2015): PI – Sarah T. Arron, MD, PhD
- **Research Assistant**, Carnegie Institution of Science, Department of Plant Biology, Stanford, CA
(June 2013 – Sept. 2013; Jan. 2014 – Aug. 2014): PI – Jose R. Dinneny, PhD; Mentor – Shahram Emami, PhD
- **Undergraduate Researcher**, UCSC Paleogenomics Lab, University of California, Santa Cruz
Department of Ecology and Evolutionary Biology, Santa Cruz, CA
(Sept. 2013 – Dec. 2013): PI – Beth Shapiro, PhD, Richard Edward Green, PhD; Mentor – Peter Heintzman, PhD
- **Intern**, UCSC Human Genome Browser, University of California, Santa Cruz, Santa Cruz, CA
(April 2013 – June 2013): Advisor – Robert Kuhn
- **NSF REU Fellow**, Carnegie Institution of Science, Department of Plant Biology, Stanford, CA

(July 2012 – Sept. 2012): PI – Sue Rhee, PhD; Mentor – Kate Dreher, PhD

PUBLICATIONS (*Corresponding author)

PEER-REVIEWED JOURNAL ARTICLES

In-prep/Submitted

- Voss, S. R., **Dwaraka, V. B.**, Ponomareva, L. V., Thorson, J.S. (2020). Chemical Genetics of Regeneration: Contrasting Temporal Effects of CoCl₂ on Axolotl Tail Regeneration. (*Submitted to Developmental Dynamics*)

Published

- **Dwaraka, V. B.**, & Voss, S. R. (2019). Towards comparative analyses of salamander limb regeneration. *Journal of Experimental Zoology Part B: Molecular and Developmental Evolution*.
- Voss, S. R., Ponomareva, L. V., **Dwaraka, V. B.**, Pardue, K. E., Baddar, N. W. A. H., Rodgers, A. K., ... & Khatri, S. (2019). HDAC Regulates transcription at the outset of Axolotl tail Regeneration. *Scientific reports*, 9(1), 1-11.
- **Dwaraka, V. B.**, Smith, J. J., Woodcock, M. R., & Voss, S. R. (2019). Comparative transcriptomics of limb regeneration: Identification of conserved expression changes among three species of *Ambystoma*. *Genomics*, 111(6), 1216-1225.

MISCELLANEOUS

- **Dwaraka VB** Compound Class: a chromenone. *MetaCyc, member of the BioCyc Database Collection*. 2012. <<http://biocyc.org/META/NEW-IMAGE?object=Chromenones>>

SCIENTIFIC PRESENTATIONS

TALKS

- **Dwaraka VB**: *The initial characterization of CpG methylation changes during axolotl tail regeneration*. Department of Biology, Student Research Seminar Series (BIO 770). 2020, Mar. 10th. University of Kentucky. (Graduate Research Talk).
- **Dwaraka VB**: *Transcriptional and Epigenetic Analyses of Salamander Limb Regeneration*. Department of Biology, 4th year Graduate Student Symposium. 2019, April 20th. University of Kentucky (Graduate Research Talk).
- **Dwaraka VB**: *Identification of conserved expression changes among three species of Ambystoma*. Department of Biology, Student Research Seminar Series (BIO 770). 2019, Feb. 4th. University of Kentucky. (Graduate Research Talk).
- **Dwaraka VB**: *Comparative Transcriptomics of Limb Regeneration: Identification of Conserved Gene Expression Changes Among Three Species of Ambystoma*. Department of Biology, Student Research Seminar Series (BIO 770). 2018, April 23rd. University of Kentucky. (Graduate Research Talk).
- **Dwaraka VB**: *Comparative Transcriptomics of Limb Regeneration: Identification of Conserved Gene Expression Changes Among Three Species of Ambystoma*. Systems Biology and Omics Integration seminar series. 2017, Mar. 27th. University of Kentucky. (Graduate Research Talk).
- **Dwaraka VB**: *Discovery and validation of cis-regulatory elements in the root tissue of Arabidopsis thaliana*. 2013, Sept. 3rd. Carnegie Institution for Science, Department of Plant Biology. Stanford, CA. (Undergraduate Research Talk).

POSTER

- **Dwaraka VB**, Smith JJ, Voss SR: *Genome-wide analysis of the axolotl methylome reveals a changing CpG methylation landscape during embryo tail regeneration*. 3rd annual Commonwealth Computational Summit, Oct. 15th. University of Kentucky, Lexington, KY.
 - **Awarded First Place in the Student Poster Competition**

- **Dwaraka VB**, Smith JJ, Voss SR: *Global DNA methylation analysis reveals a changing CpG methylation landscape during axolotl embryo tail regeneration*. Salamander Models in Cross-Disciplinary Biological Research. 2019, July 23rd-25th. Northeastern University, Boston, MA.
- **Dwaraka VB**, Woodcock RM, Smith JJ, Voss SR: *Comparative Transcriptomics of Limb Regeneration: Identification of Conserved Gene Expression Changes Among Three Species of Ambystoma*. 9th annual Aquatic Models for Human Diseases Conference. 2018, Sept. 27th – Oct. 3rd. Marine Biological Laboratory, Woods Hole, MA.
- **Dwaraka VB**, Woodcock RM, Smith JJ, Voss SR: *Comparative Transcriptomics of Limb Regeneration: Identification of Conserved Gene Expression Changes Among Three Species of Ambystoma*. 16th Annual UT-KBRIN Bioinformatics Summit. 2017, April 21st - April 23rd. Burns, TN.
- **Dwaraka VB**, Woodcock RM, Smith JJ, Voss SR: *Comparative Transcriptomics of Limb Regeneration: Identification of Conserved Gene Expression Changes Among Three Species of Ambystoma*. Gordon Research Conference: Quantitative Genetics and Genomics. 2017, Feb. 26th – Mar. 3rd. Hotel Galvèz, Galveston, TX.
- **Dwaraka VB**, Woodcock RM, Smith JJ, Voss SR: *Comparative Transcriptomics of Limb Regeneration: Identification of Conserved Gene Expression Changes Among Three Species of Ambystoma*. Regenerative Mechanisms and Therapeutic Interventions Meeting. 2016, Sept 16-17th. Indiana University–Purdue University at Indianapolis, IN.

HONORS/FELLOWSHIPS/SCHOLARSHIPS/AWARDS

Summary: \$2,800 Travel, \$30,000 Fellowships, \$3,900 Scholarship, \$2,914.80 research competition

- **The Morgan Graduate Fellowship**, awarded by the Department of Biology at the University of Kentucky; \$12,000 stipend + tuition for the Fall 2020 semester (August – December 2020)
- **Presidential Graduate Fellowship**, Nominee, University of Kentucky (Spring 2020)
- **Nominated and inducted to the Sigma Xi Scientific Research Honor Society**, Full Member
- **1st place Poster Award**, awarded by the College of Engineering at the University of Kentucky to attend the Supercomputing 2019 conference in Denver, CO - \$2,914.80
- **Travel award**, awarded by the College of Arts and Sciences at the University of Kentucky to attend the Salamander Models in Cross-Disciplinary Biological Research meeting - \$449 (July 2019)
- **Travel award**, awarded by the College of Arts and Sciences at the University of Kentucky to attend the 9th Aquatic Models of Human Disease Conference - \$681 (Sept. 2018)
- **Travel award**, awarded by conference organizers to attend the 9th Aquatic Models of Human Disease Conference - \$250 (Sept. 2018).
- **AAAS/Science Program for Excellence in Science**, nominated by the Dean of College of Arts and Science (Dr. Mark Kornbluh) at the University of Kentucky (July 2017-2018)
- **Biology Graduate Merit Fellowship**, awarded by Department of Biology at the University of Kentucky; \$11,000 stipend + tuition for the Fall 2017 semester (Aug. – Dec. 2017)
- **Full course scholarship**, awarded by the course organizers of the Comparative Regenerative Biology course at Mount Desert Biological Laboratory - \$3,900 (April 2017 – did not attend)
- **Travel award**, awarded by the Gordon Research Conference in Quantitative Genetics and Genomics organization committee - \$1,020 (Feb. 2017)
- **Travel award**, awarded by the University of Kentucky Graduate School to attend the Gordon Research Conference in Quantitative Genetics and Genomics - \$400 (Jan. 2017)
- **Gertrude Flora Ribble Graduate Fellowship** - \$2,000 (Feb. 2015)
- **NSF REU Fellowship** – *Arabidopsis* metabolomics research project conducted by the Iowa State University (Nikolau Research Group) and the Carnegie Institute for Science, Department of Plant Biology (Rhee Lab) – \$5,000 (June – Aug. 2012)

SCIENTIFIC MEMBERSHIPS

- **Sigma Xi Scientific Research Honor Society**, Full member, Dec. 2019 – Present
- **Society for Developmental Biology**, May 2018 – Present

- **Kentucky Academy of Science (KAS)**, Aug. 2017 – Present
- **American Academy of Arts and Sciences (AAAS)**, July 2017-Present

ACADEMIC SERVICE

AD HOC REVIEWER: *Scientific Reports*

MENTORING

- Ali Khan (Undergraduate, University of Kentucky) – Nov. 2017 – Aug. 2018

TEACHING

- **Cellular Biology Lab (BIO 314) – Teaching Assistant**, University of Kentucky, Lexington, KY (Spring 2019)
- **Microbiology Lab (BIO 309) – Teaching Assistant**, University of Kentucky, Lexington, KY (Fall 2018)
- **Principles of Genetics Lab (BIO 304) – Teaching Assistant**, University of Kentucky, Lexington, KY (Fall 2016)
- **Introduction to Biology Lab (BIO 155) - Teaching Assistant**, University of Kentucky, Lexington, KY (Fall 2015, Spring 2016)
- **Intro to Molecular and Plant Biology Tutor**, Foothill College, Los Altos, CA (Spring 2015)
- **High School Biology Tutor**, Monta Vista High School, Cupertino, CA (Fall 2014, Spring 2015)

COMMUNITY

- **Inclusion and Diversity Committee**, Department of Biology, University of Kentucky
 - Graduate Student representative (June 2020 – Present)
- **Community Seminar**, Suds and Science Seminar series at West Sixth Brewing, “Regeneration and what the salamander teaches us about it”. (Feb. 24th, 2020).
- **Biology Graduate Student Association Officer**, Department of Biology, University of Kentucky
 - **President (Jan. 2020 – Present)**
 - Ribble Biology Seminar Committee student representative (Jan. 2019 – Dec. 2020)
 - Treasurer (Jan. – Dec. 2017)
- **Bugs & Salamanders with UK Biologists (STEM Saturday)**, Presenter “Life Stages of Salamanders”, The Family Center, Wilmore, Kentucky (Sept. 21st, 2019)
- **Community Seminar**, Tri-Beta Biological Honors Society at the University of Kentucky, “My Path to Graduate School”. November 24, 2018.
- **Biobonanza 2018 Planning Committee**, member (Jan. – Oct. 2018).
- **Biobonanza**, Booth presenter: “*Amazing Axolotls*”. Don and Cathy Jacobs Science Building, University of Kentucky. (2 consecutive years: Oct. 13th, 2018; Oct. 14th, 2017).
- **Weird Science Night**, Booth presenter: “*Amazing Axolotls*”. Maxwell Elementary School. (Oct. 27th, 2018).
- **Invasive Species Removal**, Ecological Research and Education Center. (Mar. 11th, 2017)
- **Science Fair**, Judge. Ashland Elementary (Jan. 19th, 2017)

MISCELLANEOUS SKILLS/INTERESTS

Musician and Record Producer

- Artist credits as **K.Ave**
- Artist credits as **Circadian**

Multi-instrumentalist (Guitar, Bass Guitar, Piano, Synthesizer keyboard, MPC and Programmable drums)

Mixing and Mastering Engineer

- Production credits as **K.Ave**
- Production credits as **Circadian**

Experience in using Digital Audio Workstation tools and associated native VST plugins in Ableton Live, Presonus Studio One, Reason

Working knowledge of EQ, Side-chain, compression, and other audio sound design skills using Waves, Soundtoys, Synthmaster One, and Sektor VST plugins

YouTube content creator