

Kurt Taylor Ash, Ph.D.

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EDUCATION

Ph.D. Biology, August 2015, University of South Carolina, Columbia, SC
Dissertation: Extensive genome rearrangements of *Caulobacter* K31 and Genomic diversity of type B3 bacteriophages of *Caulobacter Crescentus*

B.S. Microbiology, August 2005, University of Oklahoma, Norman, OK

Post-Doctoral Experience

Postdoctoral Research Associate, **University of Tennessee**, Knoxville, TN (06/20 – Present)

- Led all diagnostic analyses for Sars-Cov-2 surveillance program at the University of Tennessee-Knoxville campus.

Research Specialist II, **University of Tennessee**, Institute of Agriculture, Center for Wildlife Health, Knoxville, TN (01/19 – 04/20)

- Led all diagnostic analyses for NSF grant on the fungal pathogen, *Batrachochytrium salamandrivorans* (Bsal). Responsibilities included extracting genomic DNA from animal tissues, swabs, and water using a Qiagen DNeasy kit, quantifying DNA using a Qubit fluorometer and Quant-iT dsDNA BR Assay Kit, performing quantitative polymerase chain reaction (qPCR) and analyzing qPCR results using Quantstudio software. Experience also developed in flow cytometry, fungal culturing, serum protein electrophoresis, and MTT assays.
- Led independent research and produced manuscript on optimization of qPCR to detect Bsal in extracted DNA samples.

Postdoctoral Research Associate, **University of Illinois**, Champaign, IL (01/17 – 12/18)

- Led Environmental DNA (eDNA) research for detecting various organisms in water samples collected from freshwater systems.

Research Specialist, **Medical University of South Carolina**, Charleston, SC (10/15 – 9/16)

- Assisted and contributed to research on:
 - Chemo-RT resistance of colorectal cancer cells.
 - Pulmonary fibrosis associated with Systemic Sclerosis.

RESEARCH EXPERIENCE

Graduate (PhD) Student, **University of South Carolina**, Columbia, SC (8/07 – 8/15)

Characterized *Caulobacter* K31 and identified genome rearrangements by comparing the genomes of other *Caulobacter* genera. Also, determined the nucleotide sequence of 10 *Caulobacter crescentus* type B3 bacteriophage genomes, identified insertion sites, and studied mutational patterns. This project was NSF supported research.

Research Assistant, **University of South Carolina**, Columbia, SC (8/05 – 7/07)

Research on population genetics of African and African American populations to discern if HV1 regions of mitochondrial DNA could be used as a genealogy tool relative to African ancestry.

Pathogen Diagnostic Techniques

- Bacteria and bacteriophage culturing
- Mammalian Cell-line culturing
- DNA extraction (PCI, CTAB, Qiagen)
- Pulsed Field Gel Electrophoresis
- qPCR (QuantStudio)
- Transmission Electron Microscope
- DNA Sequence analysis and annotation, Primer design, and genome assembly
- Western Blot
- Serum Protein Electrophoresis
- Mouse subcutaneous injections and tumor harvesting
- General handling of experimental animals

PUBLICATIONS

• Published

- Kessler, EJ, **Ash, KT**, Barratt, SN, Larson, ER, Davis, MA. Radiotelemetry reveals effects of upstream biomass and UV exposure on environmental DNA occupancy and detection for a large freshwater turtle. *Environmental DNA*. (2020); 2: 13– 23.
- Baker, S. J., M. L. Niemiller, A. J. Stites, **K.T. Ash**, M. A. Davis, M. J. Dreslik and C. A. Phillips (2018). "Evaluation of environmental DNA to detect *Sistrurus catenatus* and *Ophidiomyces ophiodiicola* in crayfish burrows." [Conservation Genetics Resources](#).
- **Ash KT**, Drake KM, Gibbs WS, Ely B (2017) Genomic Diversity of Type B3 Bacteriophages of *Caulobacter crescentus*. *Current Microbiology* 74 (7):779-786. doi:10.1007/s00284-017-1248-4
- Atanelishvili I, Shirai Y, Akter T, Noguchi A, **Ash KT**, Misra S, Ghatak S, Silver RM, Bogatkevich GS (2016) D1398G Variant of MET Is Associated with Impaired Signaling of Hepatocyte Growth Factor in Alveolar Epithelial Cells and Lung Fibroblasts. *PLoS One* 11 (9).
- Ely B, Gibbs W, Diez S, **Ash K** (2015) The *Caulobacter crescentus* Transducing Phage Cr30 is a Unique Member of the T4-Like Family of Myophages. *Curr Microbiol* 70 (6):854-858.
- **Ash K**, Brown T, Watford T, Scott LE, Stephens C, Ely B (2014) A comparison of the *Caulobacter* NA1000 and K31 genomes reveals extensive genome rearrangements and differences in metabolic potential. *Open Biol* 4 (10).
- In Preparation
 - **Kurt T. Ash**, E. Davis Carter, Markese Bohanon, Matthew J. Gray. qPCR inhibition potential of Qiagen Buffer AL. (In preparation)
 - Principe, N., **KT Ash**, R.M. Egly, C.A. Taylor and E.R. Larson. Morphological and molecular comparisons of the endemic western crayfish *Pacifastacus connectens* and *Pacifastacus gambelii* to inform conservation and management. (In preparation)
 - Curtis, A.N., **KT Ash**, L.S. de Souza, J.C. Godwin and E.R. Larson. Environmental DNA records for the hellbender *Cryptobranchus alleganiensis*. (In preparation)

- Larson, E.R., **KT Ash**, J. Sherwood, J.S. Tiemann and P. Willink. Molecular data supports eastern banded killifish *Fundulus diaphanus* as a spreading introduced species in the Lake Michigan and upper Illinois River basin. (In preparation)
- Anastasia E. Towe, Matthew J. Gray, E. Davis Carter, **Kurt T. Ash**, Markese Bohanon, Brittany A. Bajo, Robert J. Ossiboff, Debra L. Miller. Batrachochytrium salamandrivorans in the Cuban treefrog (*Osteopilus septentrionalis*). (In preparation)

Honors

- GAANN Fellow, U.S. Department of Education: Graduate Assistance in Areas of National Need (GAANN) Fellowship Program, University of South Carolina, Columbia, SC
 - August 2011 – August 2015
- SEAGEP Scholar, South East Alliance for Graduate Education & The Professoriate (SEAGEP), University of South Carolina, Columbia, SC
 - August 2008 – August 2015
- Sloan Scholar, Alfred P. Sloan Foundation Minority PhD Program, University of South Carolina, Columbia, SC
 - August 2008 – August 2015
- SEAGEP Scholar, SEAGEP: Science & Engineering in the Global Context Program/Study Abroad Course, Pretoria, South Africa
 - June 2011
- PREP Scholar, Post-baccalaureate Research Education Program (PREP), University of South Carolina, Columbia, SC
 - August 2005 – July 2007
- Dean's Honor Roll, College of Arts and Sciences, University of Oklahoma, Norman, OK
 - Spring 2001

Other Relevant Experience

- Computational Genomics Course – June 18 – 22, 2018, University of Illinois – Institute for Genomic Biology, Urbana, IL.
- Microbiome rRNA Amplicon Analysis Workshop - Fall 2017, University of Illinois - HPCBio, Urbana, IL.
 - Topics covered included: Introduction to Linux (w/ a dash of QIIME2), Preprocessing & Upstream Analyses, Downstream Analyses, and Statistical Analyses.
- Substitute Teacher, Sumter School District – Sumter, SC (10/16 – 1/17)
- University of South Carolina & Eau Claire High School Science Club (8/06 – 5/12)
 - Instructed high school students two Saturdays per month and two months per summer. High school students were instructed in methods of media preparation, bacterial laboratory methods, bacteriophage isolation and enrichment, genome sequence annotation.
- Student Assistant, University of Oklahoma, Media Prep center (8/03 – 8/05)
 - Prepared media and bacterial inoculations for Microbiology laboratory courses

- Summer Research Intern, Washington Internships for Native Students, summer 2002, Washington D.C.
 - Worked as a summer intern at the Environmental Protection Agency (EPA), Fort Meade, MD. Assisted senior scientists in media preparation, bacterial inoculations, equipment monitoring.

Community Service

- Judge, University of South Carolina - Science and Engineering Fair, Columbia, S.C.
- Volunteer, Harvest Hope Food bank, Columbia, S.C.

Poster Presentations

- Stalked alpha-proteobacteria and relatives: from genes to structure, Marburg, Germany
 - April 2014
- 4th ASM Conference on Prokaryotic Cell Biology and Development
 - May 2012
- 4th International Caulobacter Meeting, McGill University, Montreal, Canada
 - May 2012
- SEAGEP Conference, University of Florida, Gainesville, FL
 - September 2011
- SEAGEP Conference, Georgia Tech University, Atlanta, GA
 - May 2010
- 3rd International Caulobacter Meeting, Massachusetts Institute of Technology, Cambridge, MA
 - June 2009
- SEAGEP Conference, College of Charleston, Charleston, SC
 - May 2009

References

Matthew Gray, PhD and Debra Miller, DVM, PhD
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