

**Michelle Ellis Anderson**

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## **Skills and Experience**

Laboratory Management: Procurement, budget management, manuscript and grant application preparation, compliance with safety requirements, training graduate and undergraduate students, technicians and post-docs in various procedures, highly proficient in Windows/Mac OS including MS Office Suite

Molecular Biology techniques: Extensive experience in all aspects including: Plasmid cloning, mammalian, human and insect cell culture and transfection, PCR, Quantitative real-time and RT-PCR, SDS-PAGE, Western Blotting, Northern and Southern blotting utilizing radioactive <sup>32</sup>P probes, DNA, RNA and protein extraction and analysis

Specialized techniques: Design, development and employment of CRISPR/Cas9, TALEN and Homing Endonuclease based techniques to achieve gene editing in *Aedes aegypti*, mutation detection and tracking by direct PCR followed by High Resolution Meltcurve Analysis (HRMA), Gibson cloning, viral culturing of BSL2 pathogens, titering and mosquito inoculation, digital droplet PCR, immunoprecipitation (IP) and Co-IP, yeast two-hybrid screening, RNA-Seq and small RNA library preparation, *in situ* hybridization on tissues and *Aedes aegypti* embryos, colony and transgenic mosquito husbandry, dissection and maintenance. Extensive use of online genomic databases (Vectorbase, Flybase, NCBI) as well as DNASTAR-Lasergene suite. ResearchGate impact factor: 25.2, impact points: 115.36

## **Work History**

December 2006 - Current: Lab manager and Research Technician, VPI & SU, Dr. Zach Adelman

Duties include all aspects of lab management including ordering supplies, training of personnel; conducting molecular biology experiments often on behalf of PI, molecular cloning, transgenic and gene knockout experiments with *Ae. aegypti* mosquitoes, use of the Sindbis viral vector expression system, manuscript writing and contributing (also editing and checking), rearing and colony maintenance of *Ae. aegypti*, *Ae. albopictus*, *An. stephensi*, *Toxorhynchites* and other *Aedes* species. Serve as direct supervisor for undergraduate students within the lab for course credit (projects) and as lab assistants (mainly insectary tasks and small sub-cloning projects).

August 2002 – December 2006: Laboratory Specialist, Virginia Commonwealth University, Dr. Sumitra Deb and Dr. Swati Palit Deb

Duties included independently performing molecular biology experiments using human tumor cell lines, general management and maintenance of the laboratories of two investigators, training and supervision of new personnel, maintaining supplies

August 1999 - May 2002: Undergraduate Student Worker, VPI & SU, Dr. Glenda Gillaspy

Duties included care of transgenic *Arabidopsis thaliana* and tomato plants, harvest of tissue samples, maintenance of seed inventories, and a small research project

## Education

2002: Virginia Polytechnic Institute and State University, B.Sc. Biology, Overall Final GPA 3.06

Coursework included: Ecology (Field and Lab), Mammalogy, Evolutionary Biology, Zoology, Cell and Molecular Biology, Genetics, Ethology, Animal Physiology, Microbiology, Organic and General Chemistry with laboratories, Physics, Calculus

## Certifications and Training

- Virginia Tech's Office of Environmental Health and Safety office: use of radioactive materials (registered user), Biosafety Level 2 agents (Biological Safety Cabinets), Bloodborne Pathogens, OSHA Requirements For Lab Personnel, Dry Ice shipping and Autoclaves
- Collaborative Institutional Review Board Training Initiative (CITI) to conduct research with human subjects, 2002-2006, Biosafety and Biosecurity Tier II, (2006-current)
- Virginia Commonwealth University's Institutional Animal Care and Use Committee (IACUC) to conduct research on animal subjects, 2002-2006

## Publications

- 1) Hall AB, Basu S, Jiang X, Qi Y, Timoshevskiy VA, Biedler JK, Sharakhova MV, Elahi R, **Anderson MA**, Chen XG, Sharakhov IV, Adelman ZN, Tu Z. SEX DETERMINATION. A male-determining factor in the mosquito *Aedes aegypti*. Science. 2015 Jun 12;348(6240):1268-70.
- 2) Haac ME, **Anderson MA**, Eggleston H, Myles KM, Adelman ZN. The hub protein loquacious connects the microRNA and short interfering RNA pathways in mosquitoes. Nucleic Acids Res. 2015 Apr 20;43(7):3688-700.
- 3) Basu S, Aryan A, Overcash JM, Samuel GH, **Anderson MA**, Dahlem TJ, Myles KM, Adelman ZN. Silencing of end-joining repair for efficient site-specific gene insertion after TALEN/CRISPR mutagenesis in *Aedes aegypti*. Proc Natl Acad Sci U S A. 2015 Mar 31;112(13):4038-43.
- 4) Aryan A, **Anderson MA**, Myles KM, Adelman ZN. Targeted gene editing in *Aedes aegypti* using TALENs. Methods. 2014. Elsevier 69(1):38-45.
- 5) Hall AB, Timoshevskiy VA, Sharakhova MV, Jiang X, Basu S, **Anderson MA**, Hu W, Sharakhov IV, Adelman ZN, Tu Z. Insights into the preservation of the homomorphic

- sex-determining chromosome of *Aedes aegypti* from the discovery of a male-biased gene tightly linked to the M-locus. Genome Biol Evol. 2014 Jan;6(1):179-91.
- 6) Adelman ZN, **Anderson MA**, Wiley MR, Murreddu MG, Samuel GH, Morazzani EM, Myles KM. Cooler temperatures destabilize RNA interference and increase susceptibility of disease vector mosquitoes to viral infection. PLoS Negl Trop Dis. 2013 May 30;7(5):e2239.
  - 7) Aryan A, **Anderson MA**, Myles KM, Adelman ZN. TALEN-based gene disruption in the dengue vector *Aedes aegypti*. PLoS One. 2013;8(3):e60082.
  - 8) Aryan A, **Anderson MA**, Myles KM, Adelman ZN. Germline excision of transgenes in *Aedes aegypti* by homing endonucleases. Sci Rep. 2013;3:1603.
  - 9) Adelman ZN, **Anderson MA**, Liu M, Zhang L, Myles KM. Sindbis virus induces the production of a novel class of endogenous siRNAs in *Aedes aegypti* mosquitoes. Insect Mol Biol. 2012 Jun;21(3):357-68.
  - 10) Adelman ZN, Kilcullen KA, Koganemaru R, **Anderson MA**, Anderson TD, Miller DM. Deep sequencing of pyrethroid-resistant bed bugs reveals multiple mechanisms of resistance within a single population. PLoS One. 2011;6(10):e26228.
  - 11) **Anderson MAE**, Gross TL, Myles KM, Adelman ZA. Validation of novel promoter sequences derived from two endogenous ubiquitin genes in transgenic *Aedes aegypti*. Insect Mol Biol. 2010 Apr 26.
  - 12) Traver BE, **Anderson MAE**, Adelman ZA. Homing endonucleases catalyze double-stranded DNA breaks and somatic transgene excision in *Aedes aegypti*. Insect Mol Biol. 2009 Oct;(5):623-33.
  - 13) Adelman ZN, **Anderson MAE**, Morazzani EM, Myles KM. A transgenic sensor strain for monitoring the RNAi pathway in the yellow fever mosquito, *Aedes aegypti*. Insect Biochem Mol Biol. 2008 Jul;38(7):705-13.
  - 14) Scian MJ, Carchman EH, Mohanraj L, Stagliano KER, **Anderson MAE**, Deb D, Crane BM, Kiyono T, Windle B, Deb SP, Deb S. Wild-type p53 and p73 negatively regulate expression of proliferation related genes. Oncogene. 2008 Apr 17;27(18):2583-93.
  - 15) Scian MJ, Stagliano KE, **Anderson MAE**, Hassan S, Bowman M, Miles MF, Deb SP, Deb S. Tumor-derived p53 mutants induce NF-kappaB2 gene expression. Mol Cell Biol. 2005 Nov;25(22):10097-110.
  - 16) Scian MJ, Stagliano KE, **Ellis MA**, Hassan S, Bowman M, Miles MF, Deb SP, Deb S. Modulation of gene expression by tumor-derived p53 mutants. Cancer Res. 2004 Oct 15;64(20):7447-54.
  - 17) Scian MJ, Stagliano KE, Deb D, **Ellis MA**, Carchman EH, Das A, Valerie K, Deb SP, Deb S. Tumor-derived p53 mutants induce oncogenesis by transactivating growth-promoting genes. Oncogene. 2004 May 27;23(25):4430-43.

## References

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