

Andrew Scott Paige

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Education

New College of Florida, Sarasota, FL

Bachelor of Arts, Biology

Graduated **May 2018**

Honors Graduate

Harriet L. Wilkes Honors College of FAU

2014-2015

Bachelor of Arts, Biology

Publications

Paige, A. S., Bellamy, S., Dean, C., Yee, D. and B. W. Alto. Linking nutrient stoichiometry to pathogen transmission of an invasive vector. (**Manuscript Under Review**, *Oecologia*)

Bellamy, S., **Paige, A. S.** and B. W. Alto. Effects of trait- and density- mediated interactions of predation on fertility, fecundity, and transgenerational life history traits in *Aedes aegypti*. (**Manuscript in Process**)

Posters and Presentations

March 9-12, 2019. Student Ten Minute Paper Competition. Eastern Branch Meeting of **Entomological Society of America**. Blacksburg, VA

April 25, 2018. Poster Presentation. **Science and Environmental Council of Southwest Florida Environmental Summit**. Sarasota, FL

April 14, 2018. Invited Speaker. **Council of Public Liberal Arts Colleges Conference 2018**. Aikens, SC

November 16, 2017. Invited Speaker. **Florida Mosquito Control Association 2017**. Kissimmee, FL

November 8, 2017. Poster Presentation. **American Society of Tropical Medicine and Hygiene 2017**. Baltimore, MD

Research Experience

National Institute of Allergy and Infection Disease, Laboratory of Malaria and Vector Research Rockville, MD

Research Fellow, Post-Baccalaureate IRTA – Eric Calvo, PhD

February 2019 to Present

Major Projects: Genetic modification of female specific salivary proteins in mosquito *Aedes aegypti*, Evolution of Salivary Proteins of *Uranotaenia sapphirina*, the first known mosquito to feed on non-vertebrates

- Creating genetically modified mosquitoes using CRISPR-Cas9 via embryo microinjection
- Designing genetic knockouts of salivary proteins implicated in pathogen transmission
- Using RNA-seq to uncover the transcriptome and genetics of the first known annelid feeding mosquito

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National Institute of Allergy and Infection Disease, Laboratory of Malaria and Vector Research
Rockville, MD

Research Fellow, Post-Baccalaureate IRTA – Sanjay Desai, MD, PhD

2018-2019

Major Projects: Uncovering the molecular mechanisms of calcium uptake in asexual malaria parasites, Identifying the molecular targets of STAD-2 stapled peptide lysis in blood parasites

- Designed preliminary high-throughput screen to identify specific inhibitors of parasite induced calcium uptake of a >50,000 chemical compound library
- Quantifying the pharmacokinetics of stapled peptide induced lysis of parasite infected erythrocytes for drug discovery
- Culturing asexual stage of *Plasmodium falciparum* parasite lines for quantitative trait loci (QTL) mapping to identify calcium uptake

University of Florida Medical Entomology Lab

Vero Beach, FL

Research Assistant– Barry Alto, PhD

2016-2018

Major Projects: Linking nutrient stoichiometry to pathogen transmission of an invasive vector (**Manuscript Under Review**), Effects of trait- and density-mediated interactions of predation on fertility, fecundity, and transgenerational life history traits in *Aedes aegypti* (**Manuscript in Process**)

- Reared over 20,000 mosquitoes and counted nearly 25,000 eggs throughout the course of two projects
- Provided mosquitoes with Zika infected blood meals in BSL3 laboratory
- Isolated Zika and Chikungunya RNA and quantified transmission across barriers using RT-qPCR
- Analyzed statistical differences in Adult Mosquito Life History Traits in response to ecological treatments
- Extended project design to uncover plastic or epigenetic effects on transgenerational effects of predation

Biology Department, New College of Florida

Cayos Cochinos, Honduras & Sarasota, FL

Undergraduate Researcher – Sandra Gilchrist, PhD

2016-2018

Major Projects: Regenerative ability of *Nereis* of Cayos Cochinos, Honduras, Microinjecting dipteran models, Gene editing: Using plasmid free CRISPR reagents

- Collected polychaetes from reefs in Cayos Cochinos and maintained aquacultures one month
- Dissected worms and quantified regenerative capacity by monitoring regrowth of cephalized regions using light microscopy
- Identified developmental gene of interest to edit using CRISPR ribonucleoprotein complex
- Pulled pipettes and performed thoracic microinjection of dsRNA in *C. pipiens quinquefasciatus* under supervision of Dr. Smartt

Cellular Biology Department, New College of Florida

Sarasota, FL

Undergraduate Researcher – Amy Clore, PhD

2016-2018

Major Projects: Morphological analysis of *Talitroides alluaudi* using scanning electron microscopy (SEM), Polypharmacy and comorbidity in patients with severe mental illness: Drug interactions, tolerance, and tachyphylaxis – A critical review

- Reviewed the role of overmedication and Cytochrome P450 enzymes in drug failure in patients with severe mental illness
- Developed an improved method of collecting amphipods in bay shore environments
- Adapted a drying protocol for arthropod specimen preparation using hexamethyldisilazane (HMDS)
- Sputter-coated samples and visualized morphological ultra-structures using Scanning Electron Microscopy

Biology Department, New College of Florida

Sarasota, FL

Undergraduate Researcher – Tyrone Ryba, PhD

2017

Major Projects: Analysis of biological data sets in R Studio

- Performed ANOVA, MANOVA, and Post-hoc statistical tests of vector competence and developmental data sets
- Organized thousands of data points into visual figures and graphs to emphasis trends of treatment groups
- Created graphs of target site mutations and changes in metabolic resistance in malaria vector data from Guatemala

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University of Florida Medical Entomology Lab

Vero Beach, FL

Research Assistant – Roxanne Rutledge-Connelly, PhD

2017

Major Projects: GIS mapping of invasive vector populations in the Florida Keys, Monitoring insecticide resistance in Florida

- Compiled coordinate data from over 3,000 collection sites of *Aedes aegypti* and *Aedes albopictus* eggs in the Florida Keys
- Counted eggs and performed CDC biobottle assay on adult mosquitoes from nearly every county in Florida

Roskamp Institute

Sarasota, FL

Research Assistant – Radouil Tzekov

2017

Major Projects: 3-Dimensional visualization and quantification of optic nerve degeneration after traumatic brain injury (TBI) in clear, unobstructed brain imaging cocktails and computational analysis (CUBIC) cleared tissue

- Developed Confocal Microscopy protocol for imaging 3-Dimensional CUBIC “cleared” mouse brain tissue
- Quantified differences in cellular bodies in optic nerve images using ImageJ (FIJI) to demonstrate morphological changes
- Visualized the localization of cell organelles and proteins using immunohistochemistry and fluorescent stains
- Discovered a reduction in Adenomatous Polyposis Coli protein proximal to lesion sites in tissue with traumatic brain injury

Biochemistry Department, New College of Florida

Sarasota, FL

Undergraduate Researcher – Katherine Walstrom, PhD

2017

Major Projects: Developing CRISPR reagents for genomic editing of *C. elegans*

- Designed homology arms and sgRNA sequences for homology directed repair (HDR) editing of the RHA-1 gene
- Cloned the sgRNA and homology arms into plasmids to edit the RHA-1 gene
- Used colony PCR and Sanger sequencing to verify cloning result

University of Florida Medical Entomology Lab

Vero Beach, FL

Laboratory Intern – Chelsea Smartt, PhD

2015

Major Projects: The Role of mosquito gene CQ G1A1 on West Nile Virus infection in *Culex pipiens quinquefasciatus*

- Extracted deactivated West Nile Viral RNA from mosquito tissues using Trizol to quantify reduced infection by targeting CQ G1A1, a candidate for a West Nile transmission blocking vaccine
- Quantified RNA samples using Nanodrop spectroscopy and compiled data for analysis

Centro de Estudios en Salud (CDC Partner), Universidad de Valle de Guatemala

Guatemala City, Guatemala

Laboratory Intern – Norma Padilla, PhD

2015

Major Projects: Insecticide susceptibility profile of malaria vectors from Guatemala before and after two years of mass distribution of long-lasting insecticidal nets (PermaNet 2.0)

- Isolated DNA from 10 populations of mosquitoes from Guatemala using Phenol-chloroform-isoamyl alcohol (PCI) protocol to monitor pyrethroid insecticide resistance
- Quantified enhanced metabolic insecticide resistance via altered activity of eight types of enzymes such non-specific esterases, mixed function oxidases, etc. using biochemical microarrays
- Quantified target site insensitivity using CDC biobottle assays verified by Sanger sequencing

El Colegio de la Frontera Sur (ECOSUR)

San Cristóbal de las Casas, Chiapas, Mexico

Field Intern –Remy Vandame, PhD

2015

Major Projects: La utilidad de los abejorros para los cultivos de tomate

- Classified native pollinator specimens using dichotomous key and stereomicroscope
- Identified location of bumble bee nests in Chuatroj, Guatemala
- Presented on and introduced integrated agricultural practices using temporary bumble bee nests in tomato green houses to the local Mayan agricultural community

Intern – Kathryn Klaas

2015

Major Projects: El poder de la educación

- Raised over half of all scholarship funds of 2015 for Mayan children to attend secondary school through the sale of homemade artificial nests for native pollinators in Florida
- Handled travel of scholarship documentation from the United States to Mexico and into Guatemala
- Presented to scholarship committee the importance of second chances in higher education in the pueblo community

Awards & Honors

- Presidential Gold Merit Scholarship 2014-2018
- Florida Bright Futures Merit Scholarship 2014-2018
- Council of Academic Affairs Grant Recipient 2015-2017
- Student Research and Travel Grant Recipient 2015-2017
- Clayton Feig Youth Award of Epilepsy Foundation of Florida 2014

Teaching and Leadership Experience

- Entomology Society of America Local Arrangements Committee Member March 2019-Present
- Malaria and Other Intracellular Pathogens Journal Club Organizer August 2018-Present
- AMPs Lab Safety Liaison August 2018-Present
- Epilepsy Foundation of Florida Fundraising Organizer 2014-Present
- Classical Genetics Laboratory Teaching Assistant 2017-2018
- MadScienceK-5 Afterschool Science Enrichment Teacher 2014-2015
- El Sol Volunteer English Teacher 2014-2015

Skills

- High containment laboratory: BSL-3 clearance, Radiation clearance, *in vitro* malaria parasite culturing
- Molecular Biology: RT-qPCR, DNA-RNA-Viral Nucleic Acid Isolation and Quantification, Agarose Gel Electrophoresis, SDS-PAGE, Plasmid Minipreps, Restriction Digestion
- Microscopy: Scanning Electron, Confocal, Fluorescent, Light
- Entomology: Mosquito Rearing, Arthropod Rearing, Field Collection, Tissue Dissection, Saliva Collection, CDC Biobottle Assay
- Pathology: Immunohistochemistry, Brain Dissection, Microtomy
- Spectroscopy: Nanodrop, UV-Vis Spectrophotometry
- Computer: Microsoft Office, iWork, R Studio, GraphPad Prism, SigmaPlot, ImageJ (FIJI)
- Languages: English, Spanish