

## Health Science Research

# BAHS Faculty



**Kate A. Beishline, Ph.D.**

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### **Research Interests**

My current research interests are focusing on pathways which regulate the transcription and replication of eukaryotic telomeres. More specifically I am focused on the mechanism by which the genome binding factor CTCF, and its only paralog BORIS are participating in the maintenance of telomere structures and how these functions may be important in cancer and normal cellular aging. I am currently working on two main projects with students. First we are interested in identifying the mechanism by which CTCF binding at the telomere is regulating telomere replication. Two undergraduate honors students, Lauren Bunnell (Junior HS/BS) and Kyle Mausteller (Junior Bio/BS), addressing different experimental aspects of this question. A former student, Justin Salak began this work in the laboratory in the summer of 2018. In addition, a graduate student, Ian Whiteside and several other undergraduates, including Tara Full (Chem/BS), will be continuing work on addressing the role of BORIS in telomere regulation beginning this summer.



## **Abby Hare-Harris, Ph.D.**

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### **Research Interests**

Genetics of Neurodevelopmental Disorders, Human Genetics, Bioinformatics .



## **Angela Hess, Ph.D.**

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### **Research Interests**

My lab explores the molecular mechanisms that promote melanoma development and progression to a metastatic phenotype. I focus specifically on the receptor tyrosine kinase, EphA2, whose expression is increased in highly aggressive melanomas. Current research projects are aimed at investigating the role of melanoma tumor cell plasticity and EphA2 in mediating resistance to the clinical inhibitors vemurafenib and dabrafenib.



## John Hranitz, Ph.D.

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### Research Interests

My research expertise is in the ecological genetics and physiological ecology of animals. I study amphibians, reptiles and bees, but I also collaborate to study other taxa, providing expertise in ecological genetics or physiological ecology. I use numerous techniques (allozyme genetics, microsatellite DNA genotyping, mtDNA sequencing, western blotting, ELISA, and skeletochronology) to study heterozygosity-fitness relationships, population genetic structure, and the abundance, distribution, and the physiological ecology of animals. Currently, studies by my students and I investigate island dwarfism and coastal ecology of amphibians, island pollination systems, host-vector relationships for West Nile Virus, and stress responses in bees.



## **Candace Klingerman, Ph.D.**

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### **Research Interests**

My research laboratory is dedicated to understanding the neuroendocrine mechanisms underlying diseases of energy dysregulation (e.g. obesity, anorexia). These mechanisms are studied from an evolutionary perspective – traits evolve if they increase reproductive success. Therefore, we examine both ingestive as well as reproductive behaviors simultaneously, using zebrafish as our animal model.



## **William Schwindinger, Ph.D.**

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### **Research Interests**

My research interest is in G-protein coupled signal transduction. G-proteins initiate the cellular response to activation of cell surface receptors for numerous signals including hormones, neurotransmitters, paracrine factors, odorants, and light. G-proteins are composed of three subunits, an  $\alpha$ -subunit and a  $\beta\gamma$ dimer; each of these subunits is encoded by a gene family. My aim is discover the specific roles of individual G-protein  $\gamma$ -subunits in signal transduction.



## **Cynthia Surmacz, Ph.D.**

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### **Research Interests**

Pesticides have been shown to cause sublethal effects in honey bees, impairing memory, mobility, and foraging behavior that may affect hive health and contribute to the decline of honey bee populations. We are collaborating with Dr. Hranitz to investigate the effects of commonly used neonicotinoid pesticides as indicators of sublethal stress in honey bees. This year's work has investigated the potential use of oxidative enzymes to gauge oxidative stress in bees exposed to neonicotinoids. This research has involved BAHS undergraduates Erin Smith and Andrew Cross. Graduate student Heather Llewellyn has continued her thesis research on the effects of pesticides on the honey bee transcriptome.



## **Jennifer Venditti, Ph.D.**

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### **Research Interests**

Andrology, fertilization, and sperm architecture/morphology.

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## Other Departments



**Kevin T. Ball, Ph.D.**

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### **Research Interests**

I changed my major from Business Administration to Psychology after my sophomore year because I imagined that I would be miserable if I pursued a career in business. I enjoy training young researchers who might someday pursue important lines of research in a health-related field.



## **Toni Trumbo Bell, Ph.D.**

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### **Research Topics**

*Graduate research with Professor Muriel Maurer:* Compared activation and substrate specificity of thrombin for a common polymorphism of Factor XIII and other mutants versus the wild-type Factor XIII by HPLC kinetic, 1-D proton line broadening NMR, 2-D TOCSY NMR, and 2-D transferred NOESY NMR techniques. Peptide purification and analysis by RP-HPLC and MALDI-TOF mass spectrometry. Activation and purification of thrombin utilizing HPLC, size exclusion chromatography, cation exchange chromatography, SDS-PAGE, and MALDI-TOF mass spectrometry. Expression of FXIII in *S. cerevisiae* and purification, further using the methods mentioned for thrombin plus Western blotting.