

## Jason Orr Brant, PhD

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### **EXPERIENCE**

**Research Assistant Professor** **2020 – Present**

**University of Florida Health Cancer Center**

**University of Florida Department of Biostatistics**

- Performing collaborative research as a computational biologist in support of UF Health Cancer Center's researchers
- Developing computational pipelines and visualization tools

**Research Assistant Scientist (*laboratory of Dr. Todd Brusko*)** **2019 – 2020**

**University of Florida, Department of Pathology, Immunology and Laboratory Medicine**

- Analyzed single cell sequencing data sets
- Developed R Shiny apps for the visualization of integrated single cell data as part of the HUBMAP consortium
- Data management of large data sets from multiple project groups
- Investigated the immunological aspects of type-1 diabetes

**Adjunct Assistant Scientist (*laboratory of Dr. Mike Kladde*)** **2019 – 2019**

**University of Florida, Department of Biochemistry and Molecular Biology**

- Utilized computational biology methodologies to analyze sequencing data, including DNA methylation and chromatin accessibility
- Performed data analyses of multiple types of sequencing data, including ATAC-Seq and MAPit-RRBS

**Adjunct Assistant Scientist (*laboratory of Dr. Malcolm Maden*)** **2018 – 2019**

**University of Florida, Department of Biology**

- Worked on generation of a genome sequence and assembly of the African spiny mouse, *Acomys cahirinus*, using long-read (Pac-Bio) sequencing
- Investigated *de novo* muscle regeneration in *Acomys*
- Investigated the role of Wnt signaling during wound healing by modulation of specific Wnts in *Acomys* and *Mus*

**Postdoctoral Associate (*laboratory of Dr. Malcolm Maden*)** **2014 – 2018**

**University of Florida, Department of Biology**

- Investigated the scar-free wound healing and tissue regeneration in the African spiny mouse, through gene expression profiling and immunohistological assays.
- Generated a *de novo* transcriptome assembly of normal and wounded skin of the unsequenced *Acomys* genome using short-read (Illumina) RNA sequencing.
- Discovered that wounding in *Acomys* does not initiate a strong inflammatory response, allowing for scar-free healing and regeneration to occur

**Postdoctoral Associate (*laboratory of Dr. Thomas P. Yang*)** **2009 – 2014**

**University of Florida, Department of Biochemistry and Molecular Biology**

- Established genome-scale technologies for the investigation of DNA methylation in a cost and time efficient manner.
- Implemented bioinformatics workflows for the analysis of large next-generation sequencing datasets.
- Developed an epigenetics facility to enable epigenetic profiling collaborations with outside departments.
- Investigated the effect of prenatal ethanol exposure on genome-wide gene expression and DNA methylation in the frontal cortex of mouse brains exposed to ethanol *in utero*.
- Discovered that deletion of the Prader-Willi Syndrome Imprinting Center, on either the paternally or maternally inherited allele, has effects on DNA methylation outside of the Angelman Syndrome/Prader-Willi Syndrome Imprinted Domain, which could help to explain the observed phenotypes of these two clinically distinct syndromes.
- Mentored high school students in Student Science Training Program in summer research experiments involving sodium bisulfite genomic sequencing.

**Graduate Student (laboratory of Dr. Thomas P. Yang) 2003 – 2009**  
**University of Florida, Department of Biochemistry and Molecular Biology**

- Established research protocols for the investigation of environmental and nutritional insults *in utero* on DNA methylation levels.
- Investigated the role of DNA methylation in changes of gene expression in offspring exposed to a low protein diet *in utero* in a mouse model of intrauterine growth retardation.
- Investigated DNA methylation levels in human blood samples from a folic acid supplementation study in collaboration with the Centers for Disease Control and Prevention and Peking University.
- Trained undergraduate research assistants and mentored Howard Hughes Medical Institute honors research projects in tissue culture and sodium bisulfite genomic sequencing experiments.
- Supervised research technicians in screening autoimmune serum for Barr body (Inactive X Chromosome) associated proteins using immunofluorescence microscopy.

## **EXPERIMENTAL APPROACHES**

*Computational Biology:* Proficient with Windows, OS and Linux platforms. R, python and bash. Experienced with an array of open-source bioinformatics software packages.

*Molecular Biology:* Nucleic acid extraction; PCR; Quantitative Real-Time PCR; Reverse-Transcriptase PCR; Affymetrix gene-expression microarrays; Illumina library construction and sequencing; RNA-Seq; Transcriptome and Genome Assembly and Annotation; Next-generation sequence data analysis; Sodium bisulfite genomic sequencing; Reduced Representation Bisulfite Sequencing (RRBS); DNA labeling reactions; Pyrosequencing; Methylation-Specific PCR (MSP); methylated DNA immunoprecipitation assay (MeDIP); Affymetrix Promoter Arrays

*Cell Biology:* Mammalian tissue culture techniques (primary and transformed cell lines); Transfection and viral transduction of primary cells

## **EDUCATION**

**Ph.D. Biochemistry and Molecular Biology** **2002 – 2009**

Interdisciplinary Program in Biomedical Sciences  
Department of Biochemistry and Molecular Biology  
University of Florida  
Advisor: Thomas P. Yang

Thesis title: *Epigenetic effects of dietary supplementation and nutrition*

**B.S. Environmental Forest Biology** **2000 - 2002**

State University of New York, Environmental Science and Forestry, Syracuse, New York

**A.S. Environmental Science** **1997 - 2000**

Hudson Valley Community College, Troy, New York

**A.A. Culinary Arts** **1992 – 1994**

Florida Culinary Institute, Palm Beach, Florida

**MANUSCRIPTS IN PREPARATION**

1. **Jason O. Brant**, Russell P. Darst, Carolina E. Pardo, Irina Haecker, Mayank Talwar, Thomas P. Yang, Rolf Renne, Alberto Riva and Michael P Kladde. *Dynamic and epigenetic chromatin variation discovered by molecular imaging with DNA methyltransferase probes* (manuscript under revision for *Nucleic Acids Research*)
2. **Jason O. Brant**, Alberto Riva; Cecilia M. Lopez; Michael Paiva; Henry V. Baker; Marieta B. Heaton; Thomas P. Yang. *Epigenetic Effects of Prenatal Ethanol Exposure: Genome-Wide DNA Methylation Profiling in a Mouse Model for Fetal Alcohol Syndrome* (manuscript in revision for *Epigenetics & Chromatin.*).
3. YanFei Qi, Avinash Singh Mandloi, Ruby Goel, Juan Zhang, Lei Wang, Ashok Kumar, Ravneet Vohra, Glenn Walter, Yarrow F Joshua, **Jason O. Brant**, Michael J Katovich, Juan M Aranda Jr, Malcolm Maden, Mohan K Raizada, Carl J Pepine. *Functional heart regeneration in an adult mammal, the spiny mouse*. (Manuscript submitted to *AJP – Heart and Circulatory Physiology*)

**RESEARCH PUBLICATIONS**

1. Kevin O Murray, **Jason O Brant**, John L Iwaniec, Laila H. Sheikh, Lucas de Carvalho, Christian K Garcia, Gerard P Robinson, Jamal Alzahrani, Alberto Riva, Orlando Laitano, Michael P Kladde, Thomas L Clanton. *Exertional heat stroke leads to concurrent long-term epigenetic memory, immunosuppression and altered heat shock response in female mice*. *The Journal of Physiology*, 10/09/2020 <https://doi.org/10.1113/JP280518>
2. John D. Murray, Bharani Krishna Mynampati, **Jason Brant**, Abby Sheffield, Marie Crandall, Edward W. Scott. *Assembly of Size Selective Multicellular Spheroids of Adipose-Derived Stem/Stromal Cells for Use in Regenerative Tissue Engineering: A Methods and Morphologic Study*. *Journal of Stem Cell Reports*, 1:1-9 (2019)
3. K.A. Streeter, M.D. Sunshine, **J.O. Brant**, Jorgenson M. L.B. Wollman, E.J. Gonzalez-Rothi, M. Maden, D.D. Fuller. *Molecular and histologic outcomes following spinal cord*

*injury in spiny mice, Acomys cahirinus*. The Journal of Comparative Neurology 2019 (doi: 10.1002/cne.24836)

4. **Jason O. Brant\***, J. Lucas Boatwright\*, Ruth Davenport, Aaron Gabriel W. Sandoval, W. Brad Barbazuk, Malcolm Maden. *Comparative Transcriptomic Analysis of Dermal Wound Healing Reveals De Novo Skeletal Muscle Regeneration in Acomys cahirinus.*, PLOS ONE (2019); doi: 10.1371/journal.pone.0216228. eCollection 2019
5. Daniel C Stewart; P. Nicole Serrano; Andres Rubiano; Ryosuke Yokosawa; Justin Sandler; **Jason O Brant**; Malcolm Maden; Chelsey Simmons. *Unique behavior of dermal cells from regenerative mammal, the African Spiny Mouse, in response to substrate stiffness*. *Journal of Biomechanics* (2018); doi:10.1016/j.jbiomech.2018.10.005
6. Malcolm Maden, **Jason Orr Brant**, Andres Rubiano, Aaron Gabriel W. Sandoval, Chelsey Simmons, Robert Mitchell, Henry Collin-Hooper, Jason Jacobson, Saleh Omairi, Ketan Patel. *Perfect chronic skeletal muscle regeneration in adult spiny mice, Acomys cahirinus*. *Scientific Reports* 8, Article number: 8920 (2018) June 11<sup>th</sup>, 2018.
7. **Jason O. Brant**, Maria-Cecilia Lopez, Henry V. Baker, W. Brad Barbazuk, Malcolm Madden. *A Comparative Analysis of Gene Expression Profiles During Skin Regeneration in Mus and Acomys*. *PLoS One*. November 25<sup>th</sup>, 2015; 10(11): e0142931. doi:0.1371/journal.pone.0142931. eCollection 2015.
8. **Jason O. Brant**, Jung H. Yoon, Trey Polvadore, W. Brad Barbazuk, Malcolm Maden. *Cellular and molecular events during scar-free healing in the spiny mouse, Acomys cahirinus*. *Wound Repair and Regeneration*. November 25<sup>th</sup>, 2015 doi: 10.1111/wrr.12385.
9. **Jason O. Brant**, Alberto Riva, James L. Resnick, Thomas P. Yang. *Influence of the Prader-Willi Syndrome Imprinting Center on the DNA Methylation Landscape in the Mouse Brain*. *Epigenetics*; December 2014, 9:11, 1540-1556.
10. Michael W. Lewis, **Jason O. Brant**, Joseph M. Kramer, James I. Moss, Thomas P. Yang, Peter Hansen, R. Stan Williams, and James L. Resnick. *Angelman syndrome imprinting center encodes a transcriptional promoter*. *Proceedings of the National Academy of Sciences*. November 5, 2014, doi:10.10773
11. Ewa Wroclawska, **Jason O. Brant**, Thomas P. Yang, and Karen Moore. *Improving efficiencies of locus-specific DNA methylation assessment for bovine in vitro produced embryos*. *Systems Biology in Reproductive Medicine*. February 2010, Vol. 56, No. 1, Pages 96-105
12. Nan Su; Michelle M. Thiaville; Keytam Awad; Altin Gjymishka; **Jason O. Brant**; Thomas P. Yang and Michael S. Kilberg. *Protein or Amino Acid Deprivation Differentially Regulates the Hepatic Forkhead Box Protein A (FOXA) Genes Through an Activating Transcription Factor-4–Independent Pathway*. *Journal of Hepatology*. Jul;50(1):282-90 2009

## **REVIEW ARTICLE AND BOOK CHAPTERS**

1. Malcolm Maden and **Jason Orr Brant**. *Insights into the regeneration of skin from Acomys, the spiny mouse*. *Experimental Dermatology*. November 20, 2018 doi: 10.1111/exd.1384
2. **Jason O. Brant**, Thomas P. Yang. *Epigenetic effects of environment and diet. Epigenetic Gene Expression and Regulation, 1<sup>st</sup> Edition*. November 20, 2015, ISBN: 9780127999586
3. **Jason Orr Brant**, Thomas P. Yang. *Spreading of X-chromosome inactivation. Encyclopedia of Genetics, Genomics, Proteomics and Bioinformatics*. November 15, 2005

## **TEACHING**

Guest Lecturer: Molecular Pathology and Histology of Disease – University of South Florida  
Guest Lecturer: *Evolutionary Developmental Biology* – ZOO3603C  
Guest Lecturer: *Genomics and Biotechnology* – ZOO4926

## **ORAL PRESENTATIONS**

**Jason Orr Brant** - Full thickness skin regeneration in a non-scarring mammal, the spiny mouse (*Acomys*). Medical Health System Research Symposium – Skin Regeneration and Scar Reduction breakout session, August 28<sup>th</sup> 2017.

## **SELECTED ABSTRACTS**

1. **Jason Brant**, Andres Rubiano, Nicole Serrano, Malcolm Maden, Chelsey Simmons. Full thickness skin regeneration in a non-scarring mammal, the spiny mouse (*Acomys*). *Military Health System Research Symposium – 2017* (Abstract # 0935)
2. **Jason O. Brant**; Alberto Riva; Cecilia M. Lopez; Michael Paiva; Henry V. Baker; Marieta B. Heaton; Thomas P. Yang. Epigenetic Effects of Prenatal Ethanol Exposure: Genome-Wide DNA Methylation Profiling in a Mouse Model for Fetal Alcohol Syndrome. *University of Florida College of Medicine Research Day 2013* (Poster #219)
3. **Jason O. Brant**; Alberto Riva; James Resnick; Thomas P. Yang. (2012) Influence of the Prader-Willi Syndrome Imprinting Center on the DNA Methylation Landscape in the Mouse Brain. *University of Florida College of Medicine Research Day 2014*
4. **Jason O. Brant**; Jianghui Zhu; Krista Crider; R.J. Berry; Hao Ling; Li Zhu; David Maneval; Lynn B. Bailey; Thomas P. Yang (2009) Analysis of Locus-Specific DNA Methylation in Response to Chronic Folic Acid Supplementation and Withdrawal in Chinese Women. *Experimental Biology 2009 Symposia*

## **PROFESSIONAL REFERENCES:**

Mike Kladde  
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