Keith Garcia

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EDUCATION

-The University of Iowa, Iowa City, IA **Completed AUGUST 2022**

Cancer Biology PhD Program

-Texas State University, San Marcos, TX **2015-2017**

Master of Science in Biology (2yrs completed)

-The University of Texas at Austin, Austin, TX **Completed DECEMBER 2013**

Bachelor of Science in Biology

- Concentration in Microbiology

-The University of Texas at San Antonio, San Antonio, TX **2009-2010**

College of Sciences: Undeclared

GRANTS AND AWARDS

- **NCI Diversity Supplement** **2020 -present**

  Candidate: Mr. Keith Garcia
  Mentor: Munir Tanas, MD
  Parent grant: 1R01 CA237031-01: Epigenetic modulation of the TAZ-CAMTA1 transcriptional program by the Ada2a-containing histone acetyltransferase complex

- **EHE Foundation Fellowship Travel Grant** **2021**
- **University of Iowa Sloan Center Mini Grant** **2019**
- **Carver College of Medicine Inclusive Excellence Recruitment Fellowship** **2019**

  (post-comprehensive exam)
- **Carver College of Medicine Inclusive Excellence Recruitment Fellowship** **2017**

  (pre-comprehensive exam)
- **South Texas Doctoral Bridge Scholar (NIGMS R25GM102783)** **2016- 2017**

PUBLICATIONS

1. Merritt N*, **Garcia K***, Rajendran D, Lin ZY, Zhang X, Mitchell KA, Borcherding N, Fullenkamp C, Chimenti MS, Gingras AC, Harvey KF, Tanas MR. TAZ-CAMTA1 and YAP-TFE3 alter the TAZ/YAP transcriptome by recruiting the ATAC histone acetyltransferase

complex. Elife. 2021 Apr 29;10:e62857. doi: 10.7554/eLife.62857. PMID: 33913810; PMCID: PMC8143797.
*Denotes equal contribution

2. Rytlewski JD, Scalora N, **Garcia K**, Tanas M, Toor F, Miller B, Allen B, Milhem M, Monga V. Photodynamic Therapy Using Hippo Pathway Inhibitor Verteporfin: A Potential Dual Mechanistic Approach in Treatment of Soft Tissue Sarcomas. Cancers (Basel). 2021 Feb 8;13(4):675. doi: 10.3390/cancers13040675. PMID: 33567506; PMCID: PMC7915813.

RESEARCH EXPERIENCE AND EMPLOYMENT

University of Iowa, Department of Pathology

Graduate Research Assistant, under Dr. Munir Tanas **2017-2022**

- This project focused on two disease defining chimeric transcription factors, TAZ-CAMTA1 (TC) and YAP-TFE3 (YT). We observed that:

  1. YT relies on the binding of TEAD transcription factors to promote cellular transformation
  2. YT evades negative regulation of the Hippo kinases and is primarily localized in the nucleus
  3. Both TC and YT promote tumorigenesis in a mouse xenograft model
  4. Determined convergent functions for TC and YT. Specifically, we observed that their newly acquired c-termini confer altered DNA binding properties and mediate interactions with chromatin associated factors such as the reader proteins YEATS2 and ZZZ3 of the ATAC complex
  5. Knockdown of *YEATS2* and *ZZZ3* in TC/YT expressing cells abrogates the fusion's ability to promote anchorage independent growth
  6. *YEATS2*/*ZZZ3* knockdown impacts the TC/YT transcriptome resulting in differential regulation of genes such as those involved in the PI3K-AKT signaling pathway

- My second ongoing project is primarily focused on full-length TAZ and YAP and how PI3K signaling positively regulates their activity *in vitro* and in an *in vivo*, $Trp53^{fl/fl}/Pten^{fl/fl}$, mouse model of sarcomagenesis. Additionally, I have observed that TAZ/YAP are regulated via a PI3K signaling axis in sarcoma cell lines. Specifically, inhibition of PI3K kinase activity promotes the reactivation of the LATS1 tumor suppressor to disrupt TAZ/YAP signaling.

Texas State University, Department of Biology

M.S. Thesis Project, under Dr. Robert J.C. McLean **2015-2017**

- Utilize a metagenomic approach to identify microorganisms in local lake water that may initiate biofilm formation in the presence or absence of N-acyl homoserine lactones from *Pseudomonas aeruginosa*

Texas State University, Department of Biology

Immunology Lab Instructional Assistant, under Dr. Kelly Woytek **2016**

- Lectured students about immunological techniques
- Supervised the students while they performed experiments
- Graded lab reports, quizzes, and exams
- Developed questions for the midterm and final exams with the final approval of the lab instructor

Texas State University, Department of Biology

Virology Lab Instructional Assistant, under Dr. Kelly Woytek **2016**

- Lectured students about virology techniques
- Supervised the students while they performed virology experiments
- Graded lab reports, quizzes, and exams
- Developed questions for the midterm and final exams with the final approval of the laboratory instructor

University of Texas at Austin, Department of Molecular Biosciences
Lab Research Assistant, under Dr. Marvin Whiteley **2014-2015**

- Managing the laboratory and chemical inventory
- Keeping track of grant money for laboratory purchases
- Ordering laboratory supplies and reagents
- Setting up laboratory meetings and seminars for visiting researchers
- Assisted Postdoctoral Fellow who developed a bar coding system using a site-specific Tn7 transposon with a unique 10 nucleotide identifier. The purpose of the project was to barcode multiple clinical isolates of *Pseudomonas aeruginosa* to study them in a burn wound infection model to ultimately identify key genes responsible for their fitness in a polymicrobial infection

University of Texas at Austin, Department of Molecular Biosciences, under Dr.Whiteley **2013**
Undergraduate Research Assistant

- Conducted experiments growing strains of E.*coli* and strains of the oral commensal A.*actinomycetemcomitans* in antibiotic selective environments
- Performed bacterial conjugation experiments, using the above mentioned strains to develop transposon mutants of A.*actinomycetemcomitans* to be used to study essential genes required for fitness in polymicrobial infections

ACADEMIC AND COMMUNITY SERVICE

- **HCCC Career Enhancement Advisory Board (member)** **2019-present**
  Meetings occur twice per year to discuss challenges focused on education of faculty, staff, and students at the Holden Comprehensive Cancer Center (HCCC). The committee also discusses how we mentor students and trainees, how we can better integrate training programs, best practices for seminars and other educational programs, and how to handle future research and clinical practice retreats.

- **CURE Summer Cancer Research Training program** (University of Iowa) **2019-present**
  I have mentored ("Big Brother") summer undergraduate students from an underrepresented ethnic background in cancer biology techniques focusing on cloning, transformation, transduction, and western blot analysis

- **Mentor for students in South Texas Bridges to Biomedicine Program** **2016**
  (Texas State University)

  Mentored and taught two students from an underrepresented ethnic background about microbiological techniques used in lab that will assist them in their own independent research.

PRESENTATIONS

2022 Holden Comprehensive Cancer Center Grand Rounds

Title: TAZ and YAP dysregulation in sarcomas

2022 Cancer Biology Program Seminar

Title: TAZ and YAP dysregulation in sarcomas

2022 EHE (Epithelioid Hemangioendothelioma) 360 International Conference (short talk)

Title: TAZ-CAMTA1 and YAP-TFE3 modulate the basal TAZ/YAP transcriptional program by recruiting the ATAC histone acetyltransferase complex

2021 NCI CRCHD Professional Development Workshop and Mentored Mock Review (3min poster video recording)

Title: TAZ-CAMTA1 and YAP-TFE3 modulate the basal TAZ/YAP transcriptional program by recruiting the ATAC histone acetyltransferase complex

2021 Holden Comprehensive Cancer Center Retreat (short talk)

Title: TAZ/YAP are key effectors of PI3K signaling in sarcomas

2021 Telluride Science and Research Center (TSRC)- YAP/TAZ and TEAD: At the Crossroads of Cancer

Title: TAZ-CAMTA1 and YAP-TFE3 modulate the basal TAZ/YAP transcriptional program by recruiting the ATAC histone acetyltransferase complex

2021 Emerging leaders in Cancer Biology Seminar Series -Roswell Park Cancer Institute (Invited speaker)

Title: TAZ-CAMTA1 and YAP-TFE3 modulate the basal TAZ/YAP transcriptional program by recruiting the ATAC histone acetyltransferase complex

2021 Cancer Biology Program Seminar

Title: TAZ and YAP dysregulation in sarcomas

2020 Holden Comprehensive Cancer Center Retreat (short talk)

Title: TAZ-CAMTA1 and YAP-TFE3 modulate the basal TAZ/YAP transcriptional program by recruiting the ATAC histone acetyltransferase complex

2020 Cancer Biology Program Seminar

Title: TAZ-CAMTA1 and YAP-TFE3 modulate the basal TAZ/YAP transcriptional program by recruiting the ATAC histone acetyltransferase complex

2020 University of Iowa Biomedical Science Program Graduate recruitment (poster)

Title: TAZ-CAMTA1 and YAP-TFE3 modulate the basal TAZ/YAP transcriptional program by recruiting the ATAC histone acetyltransferase complex

2020 Keystone symposia: Cancer epigenetics: New mechanisms and therapeutic opportunities (poster)

Title: TAZ-CAMTA1 and YAP-TFE3 modulate the basal TAZ/YAP transcriptional program by recruiting the ATAC histone acetyltransferase complex

2019 Holden Comprehensive Cancer Center Retreat (poster)

Title: TAZ-CAMTA1 and YAP-TFE3 modulate the basal TAZ/YAP transcriptional program by recruiting the ATAC histone acetyltransferase complex

2019 Cancer Biology Program Seminar

Title: TAZ-CAMTA1 and YAP-TFE3 modulate the basal TAZ/YAP transcriptional program by recruiting the ATAC histone acetyltransferase complex

2019 University of Iowa Biomedical Science Program Graduate recruitment (poster)

Title: TAZ-CAMTA1 and YAP-TFE3 modulate the basal TAZ/YAP transcriptional program by recruiting the ATAC histone acetyltransferase complex

Texas State NIH Bridges to Doctorate oral presentation

Keith Garcia, Marvin Whiteley, David Rodriguez, and Robert JC McLean. Impact of *Pseudomonas aeruginosa* quorum signals on polymicrobial biofilm development. NIH Bridges Committee oral presentation at Texas State University, San Marcos, TX, October 21, 2016.

CONFERENCES

- EHE 360 International Conference (Virtual) **2022**
- NCI CRCHD Professional Development Workshop and Mentored Mock Review **2021**
- Telluride Science and Research Center (TSRC) **2021**
  YAP/TAZ and TEAD: At the Crossroads of Cancer
- Hippo 2020 Virtual Conference **2020**
- 2020 Keystone Symposia Cancer Epigenetics: New Mechanisms and Therapeutic Opportunities (Keystone, CO) **2020**
- Annual Biomedical Research Conference for Minority Students (Tampa, FL) **2016**