**­­­Mardelle R. Atkins, PhD**

Roland Black Endowed Assistant Professor of Cellular and Molecular Biology

Department of Biological Sciences

Sam Houston State University

Huntsville, TX 77340

**Prior Education and Training**

**Postdoctoral Fellow** March 2011-2018

PI: Dr. Georg Halder University of Texas MDAnderson Cancer Center/

KU Leuven/Vlaams Institute for Biotechnologie

*Research summary: Combined traditional genetic approaches and transcriptome based analyses to 1) ) identify and characterize a gene network for tumor growth and invasion, 2) redefine functions of the Hippo pathway in normal growth, 3) characterize new members of the Hippo pathway, and 4) discover new regulators of organ growth*

**Graduate Study - Developmental Biology** August 2003-2010 PI: Dr. Graeme Mardon Baylor College of Medicine

**Ph.D. December 30, 2010**

*Dissertation: Navigating the transition from determination to differentiation in the Drosophila retina: A mechanism for eyeless repression in the morphogenetic furrow*

**Research Assistant** December 2001-July 2003

PI: Dr. Craig Coates Texas A&M University

Project: Transgenesis methods for pest insect management.

**Technician** March-November 2001 PI: Dr. Katrin Hinrichs Texas A&M University

Project: Equine Cloning Project

**Undergraduate Studies** 1996 – 2000

**B.S in Genetics** Texas A&M University

PI: Dr. Suma Datta

*Undergraduate Thesis****:*** *Effects of the trol4 and trolsd mutations on neural stem cell development and proliferation in Drosophila melanogaster embryos*

**Research**

(Orcid ID0000-0002-0245-2452)

**Peer Reviewed Publications**

Vicente, C, Stirparo, R, Demeyer, S, de Bock, C, Gielen, O, Atkins, M, Yan, J, Halder, G, Hassan, B, Cools, J. The CCR4-NOT complex is a tumor suppressor in *Drosophila melanogaster* eye cancer models. *Submitted 2018 Leukemia*.

Romanelli, L, Atkins, M, Jacobs, J, Verhulst, S, Verboven, E, Moya, I, de Waegeneer, M, Soheily, S, Sansores-Garcia, L, van Huffel, L, Johnson, R, van Grunsven, LA, Aerts, S, Halder, G. Organ growth control in the absence of Hippo signaling. *Under Revision.*

Mach, J\*, Atkins M\*, Gajewski, KM, Mottier-Pavie, V, Sansores-Garcia, L, Mills, RA, Mills, GB, Halder, G. Modulation of the Hippo pathway and organ growth by RNA binding proteins. *under revision for PNAS*. (\*equal contribution)

Jacobs, J, Atkins, M, Davie, K, Romanelli, L, Christiaens, V, Hulselmans, G, Potier, D, Taskiran, II, Paciello, G, González-Blas, CB, Koldere, D, Imrichova, H, Aibar, S, Halder, G, and Aerts, S. Developmental lineage factors potentiate thousands of spatiotemporal enhancers by displacing nucleosomes. Nature Genetics. **2018** Jun 4, epub ahead of print.

Atkins, M\*, Potier, D\*, Romanelli, L, Jacobs, J, Mach, J, Aerts, S§, and Halder, G§. An ectopic network of transcription factors regulated by Hippo signaling drives growth and invasion of a malignant tumor model**.** Current Biology. **2016** Aug 22; 26 (16):2101-13 \*equal contribution, § equal contribution.

Davie, K.\*, Jacobs, J.\*, Atkins, M., Potier, D., Christiaens, V., Halder, G., and Aerts, S. Discovery of transcription factors and enhancers driving *in vivo* tumor development by ATAC-seq and FAIRE-seq open chromatin profiling. PLoS Genet. **2015** Feb:11(2): e1004994. \*equal contribution

Atkins M\*, Jiang Y\*, Sansores-Garcia L, Jusiak B, Halder G, Mardon G. Dynamic

rewiring of the Drosophila retinal determination network switches its function

from selector to differentiation. PLoS Genet. **2013** Aug;9(8):e1003731. \*equal contribution

Sansores-Garcia L\*, Atkins M\*, Moya IM, Shahmoradgoli M, Tao C, Mills GB, Halder

G. Mask is required for the activity of the Hippo pathway effector Yki/YAP. Curr

Biol. **2013** Feb 4;23(3):229-35. \*equal contribution

Atkins, M and Mardon, G. Signaling in the third Dimension: The Peripodial Epithelium in Eye Disc Development. Review. *Developmental Dynamics,* **2009** Sep; 238(9): 2139-2148

Pepple KL, Atkins MR, Venken K, Wellnitz K, Harding M, Frankfort B, Mardon G. Two-Step Selection a single R8 Photoreceptor: a Bistable Loop Between *senseless* and *rough* Locks in R8 Fate. *Development*, **2008** Dec; 135 (24): 4071-9

Pappu KS, Ostrin EJ, Middlebrooks BW, Sili BT, Chen R, Atkins MR, Gibbs R, Mardon G. Dual regulation and redundant function of two eye-specific enhancers of the Drosophila retinal determination gene dachshund. *Development*. **2005** Jun; 132(12): 2895-905.

**Invited Oral Presentations**

VIB Seminar (Blankenberge, Belgium). 2015A novel transcription factor network drives Ras tumor development. Atkins, M, Potier, D, Romanelli, L, Jacobs, J, Gotalskaja, J, Aerts, S, and Halder, G

Regional Drosophila Meeting (Heidelberg, Germany). 2014 Ras activation cooperates with *scribbled* mutation to reprogram the transcriptome during tumor development. Atkins, M, Potier, D, Romanelli, L, Aerts, S, Halder, G

VIB Seminar (Blankenberge, Belgium) 2014 A highly integrated transcription factor network directs formation of Ras-dependent tumors in *Drosophila* Atkins, M, Potier, D, Romanelli, L, Aerts, S, Halder, G

Society for Dev. Bio. Southwest-Gulf Regional Meeting (Austin, TX) 2010

*eyeless* repression in the *Drosophila* retina is mediated by Notch and the retinal determination network. Atkins, M., Jiang, Y, Mardon, G.

**Poster Presentations**

European Drosophila Research Conference 2017

The RNA binding protein Hrb27c is an essential regulator of the Hippo pathway. Atkins, M., Mach, J., Gajewski, K, Mottier, V., Sansores-Garcia, L, Mills, RA, Mills, GB, Halder, G.

Genetics Society of America - Drosophila Research Conference 2010

Dual regulation of eyeless is mediated by Sine oculis in the third instar eye imaginal disc. Atkins, M., Jiang,Y., Mardon, G.

NSF Gk-12 Annual Meeting 2009

Understanding the regulation of the gene "eyeless" in the developing eye. Atkins. M., Jiang, Y., Mardon, G.

Society for Developmental Biology Southwest-Gulf Regional Meeting 2008

Negative regulation of the PAX6 homolog eyeless during retinal differentiation. Atkins, M., Jiang,Y., Mardon, G.

Gordon Research Conference -Visual Systems Development 2006

Identifying novel genes involved in Drosophila retinal development*.* Atkins, M.,and Mardon, G.

**Teaching and Mentoring Experience**

**Teaching Experience**

**Teaching assistant** - Project Practicum II 2015-18

This is an inquiry based practical molecular biology course for senior undergraduate students. In 2017 I participated in the assessment of students via oral examination. In 2015-2017, I instructed students in fixation, staining and mounting of transfected cells for fluorescence imaging. I introduced the students to confocal laser scanning microscopy to image their samples and discussed the limitations and interpretation of their data. (approximately 60 contact hours total, approximately 70 students lab, 40 students assessment). Certificate awarded, **Golden chalk teaching award 2017**

**NSF Graduate Teaching fellow in K-12 Education** Fall 2007-Spring 2009

Teaching and curriculum development for a high school senior research experience course at DeBakey High School for Health Science Professions (Houston, TX). I collaborated with faculty in curriculum development and advised students who selected a research problem, designed, and executed experiments using Drosophila as a model. Students presented their results in both oral and written form, which I helped to assess. (6 contact hours per week, 2 academic years).

**Teaching Assistant** – Graduate level Fall 2006

Core Curriculum graduate course in developmental biology (<10 contact hours)

**Training – Science Pedagogy**

Designing an undergraduate STEM course (AAAS –Certificate Awarded) 2017

This training provided an intellectual framework for practical course design using evidence based approaches.

Learn to Teach (KU Leuven- Certificate awarded) 2016

This training is an integrated introduction to student centered learning techniques and the use of technology (such as instant polling) in the classroom. (Certificate awarded)

Training in Inquiry based learning methods 2007- 2008

As a training component of the NSF GK-12 fellowship I had in graduate school I received a structured introduction to evidence based teaching methods, tools, classroom management, age appropriate teaching styles, and inquiry based learning.

**Trainee supervision**

**Doctoral Students**

*I have mentored students in fundamentals of science communication and project management. I have successfully trained students in confocal and light microscopy, Drosophila genetics and husbandry, and microdissection.**For Lucia Romanelli, Jana Mach, and Weida Zhou I have been directly involved in the intellectual development and experimental progress of their thesis projects.*

Weronika Kowaczyk (2018, Poland)

Weida Zhao (2016-present, China)

Ruchan Karaman (2014 – present, Turkey)

Lucia Romanelli (2012 – 2018, Italy) PhD awarded

Jana Mach (2012 – 2017, Lithuania) PhD Awarded

Jelle Jacobs (2012 – 2018, Belgium) *Thesis in preparation*

Patty DiMarco (2012, USA)

Yalda Moayedi (Rotation student 2006, USA)

Erin Haase (Rotation student 2005, USA)

Edward Miranda (Rotation student, 2004, India)

**Medical Students**

Sebastian Nasrallah 2011 (*visiting scholar from Lebanon, M.D. 2010 American University of Beirut*)

**Masters Students**

Weronika Kowalczyk (2017, Poland)

Thesis: *The Hippo pathway in cancer and regeneration: differential transcriptional regulation of Cyclin E isoforms.*

**Undergraduate Students**

Sevgi Ciraci (Erasmus fellow, July-September 2017, Turkey)

*Sevgi just completed her second year of undergraduate study. Over seven weeks, she continued the mapping and identification of new mutations isolated in the lab, and performed stainings to help characterize a new tumor model. She also created a new fly line and used it to set and begin screening approx. 200 crosses for a RNAi based mini screen to discover new regulators of growth. We have discovered 3 new candidate Hippo pathway components thusfar. She successfully performed genetic complementation tests, fly husbandry, mitotic clonal analysis, microdissection, fluorescent immunohistochemistry and confocal microscopy.*

Deniz Altunsu (June-August 2016, Turkey)

Melike Kiziltug (July-September 2016, Turkey)

Sezgi Canaslan (July-September 2016, Turkey)

*Deniz, Melike and Sezgi identified and mapped mutations from a mutagenesis screen performed by myself and another postdoc in the lab. They successfully performed genetic complementation tests, fly husbandry, mitotic clonal analysis, microdissection and fluorescent immunohistochemistry which produced publication quality data.*

Theodore Pham (2011-12 academic year, *volunteer experience*)

*Theo worked with me to characterize new mutants from a genetic screen done in the lab the previous year. He imaged fixed and stained samples by conventional fluorescence microscopy and helped us to build a catalog of phenotypic data for approximately 100 mutants. Theo has completed his M.D. degree and hopes to incorporate research into his future clinical practice.*

Jeffrey Jones (Summer 2008, USA, Summer Medical and Research Training Fellow) *I was Jeff's direct supervisor for a full time undergraduate research experience lasting 9 weeks and taught him Drosophila husbandry, microdissection, fluorescent immunohistochemistry and confocal microscopy. Jeff is now a postdoctoral fellow at Washington University in St. Louis.*

**High school Students**

Theodore Pham and Paul Nguyen (Summer 2008, USA) *Bioscience Inspiration and Opportunity for Students (BIOS). I designed a small project and over 6 weeks the two students performed experiments in Drosophila and prepared and presented a poster and short talk at the end of the summer. (Interviewed for Click2 Houston News Report on the program and the role of mentorship in science)*

**Professional Development**

**Service activities**

KU Leuven Masters Thesis committee External jury member

Jens Rummens 2017 Pham Tue Hung Tran 2016

KU Leuven CME-VIB Postdoctoral Association 2014-Present

**President** 2015-16, Welcome committee 2014-15, Social Media 2016-17

Ad hoc reviewer PLoS One and Current Biology 2012-Present *First Year Initiative* Program Mentor (Baylor College of Medicine) 2007

**Training**

Self Leadership for Women Scientists (VIB) 2017

Introduction to the Analysis of NGS Data (VIB) 2016

Basic Statistics (VIB) 2015

Choosing and applying appropriate analyses for biological experiments.

Project Management for Postdocs (VIB) 2014

Understand and apply principles of Project Management to increase scientific productivity.

Research Ethics Training (MD Anderson Cancer Center) 2011-12

(NIH compliant)

**Science Outreach Activities**

KU Leuven and VIB Biotechday 2015

I co-created and presented an interactive booth to describe model organism research in cancer and neurologic disease to the general public (>5000 participants)

DeBakey High School for Health Science Professionals Scientific Symposium 2010

Invited talk: *How model organisms and basic research drive medicine, OR, Can staring at fruit flies really help treat cancer?*

Invited Lecture at DeBakey High School for Health Science Professionals 2009

*Introduction to Scientific Writing and Proposals.*

Career Day Speaker at William S. Holland Middle School 2008, 2009

(October 7, 2008 and November 17, 2009). *What does a scientist do and how can I become one?*

DeBakey High School for Health Science Professionals Scientific Symposium 2008

*What do we learn from model organism research?*

**Honors, Scholarships and Awards**

*Scholarships and Funding:*

STEM Center Mini-Grant (SHSU) 2018-19

NSF Graduate Teaching fellow in K-12 Education (Baylor) 2007-2009

Gordon Research Conference Travel Award 2006

Academic Achievement Award (Texas A&M) 2000

President’s Endowed Scholarship (Texas A&M) 1996-2000

National Merit Scholar 1996

*Honors and Awards:*

Golden Chalk Teaching Award for Project Practicum II Teaching Team 2017

National Science Foundation Graduate Research Fellowship 2003 Honorable Mention

Undergraduate Research Fellow (Texas A&M) 1999-2000

Biochemistry Research Scholar (Texas A&M) 1999-2000

University Honors (Texas A&M) 2000

Foundation Honors (Texas A&M) 2000

**Professional Memberships**

Sigma Xi, Genetics Society of America, AAAS