

## Alexis Tapanes-Castillo, Ph.D.

St. Thomas University  
College of Health Sciences and Technology  
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### EDUCATION

#### **Doctor of Philosophy in Molecular Biology: 2004**

##### **Cornell University**

Biochemistry, Structural Biology, Cell Biology, Developmental Biology and Molecular Biology (BCMB) Allied Program  
Weill Graduate School of Medical Sciences  
New York, NY

#### **Bachelor of Science: 1998**

##### **University of Miami**

Coral Gables, FL  
Major: Biology, Minor: Chemistry  
Magna Cum Laude, General Honors, Departmental Honors in Biology, Phi Beta Kappa, Senior Thesis in Ecology

##### *Additional Training:*

##### **Marine Biological Laboratory**

Woods Hole, MA

*Embryology: Concepts and Techniques in Modern Developmental Biology Course, 2004*

### POSITIONS AND EMPLOYMENT

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| <b>Associate Professor of Biology:</b> August 2022-present<br><b>Lab Director and Science Safety Officer:</b> 2014-present<br><b>Assistant Professor of Biology:</b> August 2016-July 2022<br><b>Research Assistant Professor of Biology:</b> 2009-2016 | <b>St. Thomas University (STU)</b><br>College of Health Sciences<br>and Technology<br>Miami Gardens, FL |
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### RESEARCH

#### Awards

- *Faculty Fellow Award*, Galatea Bio., 2022
- *The Dr. Gary Feinberg Award for Faculty Excellence in Research*, STU 2021
- Under my directorship, STU's Summer Research Institute was awarded the "Inspiring Programs in STEM Award" by *Insight into Diversity* magazine in 2021 and 2020

#### Current Research Projects

- Characterizing potential anticancer properties of medicinal plants, Collaborators: Dr. Maria Pina, Dr. Pilar Maul (STU), 2016-present.
- Molecular biology for human genomics and precision health, Collaborators: Galatea Bio., Dr. Carlos Bustamante, Dr. Nicholas Katsansis, Dr. Michael Lee, (2021-present)

#### Professional Memberships

- American Association for Cancer Research: 2022

## Previous Research Projects

- Bioinformatics and modeling of coronavirus sequences, protein structure, gene regulation, and epidemiology, Collaborator: Dr. Sean Mondesire (STU), 2020-2021
- Identifying candidate Autism Spectrum Disorder genes through gene expression data analysis, Collaborator: Dr. Sean Mondesire (STU), 2020
- Studying the molecular and cellular biology of autism using human neural progenitor cells, Collaborator: Dr. Derek Dykxhoorn (Univ. of Miami Miller School of Medicine, Hussman Institute for Human Genomics), 2016-2020.
- Evaluating plant-based nanoparticles for antibacterial activity, Collaborator: Dr. Luis Fernandez-Torres (STU), 2019
- The effect of Hedgehog signaling on *in vivo* neuronal morphogenesis in *Drosophila melanogaster* fruit flies, 2014-2018
- The effect of sialyltransferase expression levels on the invasive behavior of breast cancer cells, Collaborator: Dr. Séverine Van Slambrouck (STU), 2014-2016
- Axon growth and regeneration in zebrafish, PI: Dr. Jeffery Plunkett (STU), 2009-2014

## TEACHING

### Courses Taught

- Biochemistry I lecture and writing in the discipline experiential learning Laboratory course
- Biochemistry II lecture and Laboratory course
- Cell Biology lecture and Laboratory course
- Principles of Biology I lecture and Laboratory course
- Principles of Biology II lecture and Laboratory course
- Genetics Laboratory
- Microbiology Laboratory
- Microbiology for Nursing lecture
- Research Courses: Introduction to Research, Directed Readings, STEM Summer Research Internship, Research I and II, Advanced Research I and II, Undergraduate Senior Thesis
- Special Topics: Advanced Physiology (graduate course)
- Neuroscience (graduate course)
- Chemistry for Allied Health Sciences lecture
- General Chemistry 1 Laboratory
- Teaching Strategies for Hands-On STEM Education
- Miami Dade County Public School Youth Internship Program at STU

### Curriculum Development

- Virtual Lab Development/Implementation: As Lab Director, I collaborated with Instructors to develop and implement virtual labs during the pandemic for biology, chemistry, and physics labs using numerous virtual lab platforms. I also trained Instructors and helped their classes to trouble-shoot computer issues related to the virtual platforms.
- Recorded video for STU “Top Three Tips for Teaching Virtual Lab Simulations Online”, Spring 2020: <https://youtu.be/78kt0DGAcJ8>.

- Virtual Summer Research Institute (SRI), STEM Summer Internship, Pandemic Workshop Series:2020. Done in collaboration with other SRI faculty.
- Master of Science in STEM Teaching Program Director: 2016-2017

### GRANTS MANAGEMENT

- Director of U.S. Dept. of Education Subcontract STEM grants P03C1160161 and P031C210035 for Undergraduate STEM research (in collaboration with Miami Dade College): 2017-present.
- Director of Galatea Bio Faculty Fellow STU grant: 2022

### SERVICE

- STU Faculty Committees: Educational Policy Committee Co-chair 2022; Academic Policy Committee Member 2022; Faculty Relations Committee Chair 2021; Institutional Review Board Committee Member 2017-present; Quality Enhancement Plan (QEP) Committee Member 2012-2017
- Life Sciences South Florida (LSSF) Executive Committee member: 2015-present  
Planning Committee Member for 2021 Undergraduate Symposium and 2020 COVID-19 Undergraduate Research Symposium; Moderator/Session Chair for 2020 COVID-19 Symposium; Judge for 2018 and 2017 Undergraduate Symposia
- STEM Education Outreach Programs for K-12 students and teachers: 2010-present  
University lab field trip visits; Visits to Miami-Dade County Public Schools (MDCPS) and Msgr. Pace High School; Teacher training for hands-on labs, Science fair mentoring, consulting, and judging; MDCSPS Science Expo/ Society for Neuroscience Brain Fair lab activities; Girl Scouts and BSA (Boy Scouts of America) science activities, including being the current Cubmaster of BSA Cub Scout Pack 529
- Judge for Miami Dade College Science Research Symposium: 2017-present
- Director of STU Summer Research Institute: 2017-2021

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| <b>Postdoctoral Associate:</b> 2004-2009<br><i>Laboratories of Dr. Vance Lemmon and Dr. John Bixby</i> | <b>Miami Project to Cure Paralysis</b><br>University of Miami<br>Miller School of Medicine<br>Miami, FL |
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#### Research Projects

- Mapping modifier loci that contribute to L1 cell adhesion molecule (CAM) X-linked hydrocephalus
- High content screening of bioactive compounds that regulate cell adhesion molecule-mediated neuronal morphogenesis

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| <b>Graduate Research Assistant:</b> 1998-2004<br><i>Laboratory of Dr. Mary Baylies</i> | <b>Sloan-Kettering Institute</b><br>Memorial Sloan-Kettering<br>Cancer Center<br>New York, NY |
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- Doctoral Thesis: *Notch signaling and the patterning of Drosophila mesodermal segments.*

## PUBLICATIONS

### Conference Papers

- Trokhymchuk, V., Planchart, C., Peterson, A., Reytor, A., Maul, D.P., Pina, M., Fernandez-Torres, L., Tapanes-Castillo, A. (2017) Evaluating medicinal plants for anticancer properties: testing plant extracts for cytotoxicity. *Proceedings of the MOL2NET International Conference on Multidisciplinary Sciences; Sciforum Electronic Conference Series* (3) 05095. <http://sciforum.net/conference/mol2net-03/paper/5095>.
- Tapanes-Castillo, A., Mulero, M., Ramos, L., Pierre, R., Genao, J., Canales, C., Rodriguez, Y., Dykxhoorn, D.M. (2016) Studying the role of DLGAP1 transcripts in autism using human neural progenitor stem cells. *Proceedings of the MOL2NET International Conference on Multidisciplinary Sciences; Sciforum Electronic Conference Series* (2) 07008, <http://sciforum.net/conference/mol2net-02/paper/3802>.
- Ramos, L., Tapanes-Castillo, A. (2016) The effect of Hedgehog signaling on *in vivo* neuronal morphogenesis. *Proceedings of the MOL2NET International Conference on Multidisciplinary Sciences; Sciforum Electronic Conference Series* (2) 07005, <http://sciforum.net/conference/mol2net-02/paper/3774>.
- Russo, D., Balisteri C., Tapanes-Castillo, A., Maul, D., Pina, M. (2016) Analysis of Oyster plant (*Tradescantia spathacea*) extracts via maceration, Soxhlet extraction, thin layer chromatography, and cytotoxicity assays. *Proceedings of the MOL2NET International Conference on Multidisciplinary Sciences; Sciforum Electronic Conference Series* (2) 07007, <http://sciforum.net/conference/mol2net-02/paper/3801>.

### Peer-reviewed Journal Articles

- Tapanes-Castillo, A., Shabazz, F., M'boge, M., Vajn, K., Oudega, M., and Plunkett, J.A. (2014) Characterization of a novel primary culture of adult zebrafish brainstem cells. *Journal of Neuroscience Methods* 223, 11-19.
- Vajn, K., Plunkett, J.A., Tapanes-Castillo, A., Oudega, M. (2013) Axonal regeneration after spinal cord injury in zebrafish and mammals: differences, similarities, translation. *Neuroscience Bulletin* 29 (4) 402-410.
- Tapanes-Castillo, A., Weaver, E.J., Smith, R.P., Kamei, Y., Caspary, T., Hamilton-Nelson, K.L., Slifer, S.H., Martin, E.R., Bixby, J.L. and Lemmon, V.P. (2010) A modifier locus on chromosome 5 contributes to *L1 cell adhesion molecule* X-linked hydrocephalus in mice. *Neurogenetics* 11 (1), 53-71.
- Tapanes-Castillo, A. and Baylies, M.K. (2004) Notch signaling patterns *Drosophila* mesodermal segments by regulating the bHLH transcription factor Twist. *Development* 131, 2359-2372.

### Book Chapter

- Tapanes-Castillo, A., Cox, V. and Baylies, M.K. (2004) Conserved and divergent roles of Twist in gastrulation. In: *Gastrulation: From Cells to Embryos*, (ed. C.D. Stern), New York: Cold Spring Harbor Laboratory Press, 619-629.

## **LECTURES AND INTERVIEWS**

- PDQ Cuatro Speaker. (2020) STU Center for Pandemic, Disaster and Quarantine Research: <https://youtu.be/EpZvzENlrhQ>
- *Induction Ceremony Keynote Lecture*. (2018) Barbara Goleman High School Science National Honor Society, Miami Lakes, FL.
- *A molecular approach to study autism biology in human neural progenitor cells*. (2017) Barry University, Dept. of Biology, Sigma Xi Guest Speaker, Miami Shores, FL.

## **SELECTED PRESENTATIONS**

### **National Conferences**

- Di Santi, M., Sousa, A., Brown, J., Gonzalez, P.M., Trokhymchuk, V., Soto Chumpitaz, L., Peterson, A., Gutierrez S., Petit, R., Planchart, C., Nazaire, V., Pina, M., Tapanes-Castillo, A. (2021) *Schinus terebinthifolius* extracts inhibit migration of triple negative BT549 breast cancer cells. American Chemical Society National Meeting and Exposition, *Virtual pre-recorded poster and presentation*.
- Pina, M., Brown, J., Tapanes-Castillo, A. (2019) Chromatography and fractionation of *Schinus terebinthifolius* extracts which inhibit breast cancer cell migration *in vitro*. American Chemical Society National Meeting, *Medicinal Chemistry poster MEDI 94*, Orlando, FL. <https://tpa.acs.org/abstract/acsnm257-3110024/chromatography-and-fractionation-of-schinus-terebinthifolius-extracts-which-inhibit-breast-cancer-cell-migration-in-vitro>
- Tapanes-Castillo, A., Mulero, M., Ramos, L., Cotto-Gonzalez, G., Peterson, A., Dykxhoorn, D.M. Evaluating the role of DLGAP1 antisense RNAs in autism biology. *Posters*. (2019) *Sunposium*, organized by Max Planck Florida Institute for Neuroscience, West Palm Beach, FL.  
(2018) *Molecular Mechanisms of Neuronal Connectivity Cold Spring Harbor Laboratory Meeting*, poster 148, Cold Spring Harbor, NY. <https://meetings.cshl.edu/abstracts.aspx?meet=AXON&year=18>

### **Regional Conferences**

- Saladrigas, L., Nascimento-Gouveia, C., Demps, D., Sousa, A., Soto-Chumpitaz, L. DiSanti, M., Pina, M. Tapanes-Castillo, A. Evaluating the effects of Malabar spinach and yellow alder extracts on breast cancer cells *in vitro*. (2021) Life Sciences South Florida Undergraduate Research Symposium, *oral, live "3 Minute Thesis" presentation*, Virtual.
- Life Sciences South Florida COVID-19 Undergraduate Research Symposium (2020), *pre-recorded presentation with live discussion*, Virtual.
  - Di Santi, M., Tapanes-Castillo, A. Modeling SARS-CoV-2 mutant Spike proteins and reviewing mild to moderate COVID-19 symptoms.
  - Alvarez, R., Tapanes-Castillo, A. A review of COVID19 and sequence analysis of SARS-CoV-2 in the animal kingdom.
  - Leal, T. Mondesire, S., Tapanes-Castillo, A. *In silico* analysis of the effect of SARS-CoV-2 infection on the expression of genes related to cardiac processes.

- Perez, A., Pina, M., Tapanes-Castillo, A. Novel vaccine design for SARS-CoV-2 and a review of the immune response to COVID-19 as well as potential therapies that target the immune system.
- Peterson, A., Cotto Gonzalez, G., Di Santi, M., Roa Forster, V., Gutierrez, S., Petit, R., Mulero, M., Ramos, L., Valls, A., Dykxhoorn, D., Tapanes-Castillo, A. (2019) Quantifying DLGAP1 antisense levels in neural progenitor cells derived from patients with Autism Spectrum Disorder. Florida Academy of Sciences Annual Meeting, *poster*, Melbourne, FL.
- Mulero, M., Tapanes-Castillo, A., Dykxhoorn, D. (2018) Evaluating the role of DLGAP1 antisense 1 RNA in autism biology. Life Sciences South Florida, *oral presentation*, Miami, FL.
- Mulero, M., Ramos L., Trokymchuk, V., Tapanes-Castillo, A., Dykxhoorn, D. (2017) Using human neural progenitor stem cells and gene silencing to study the role of DLGAP1 transcripts in autism. Florida Academy of Sciences Annual Meeting, *poster*, Lakeland, FL. **Award: Outstanding Undergraduate Poster Presentation in the Medical Sciences.**
- Planchart, C., Trokymchuk, V., Peterson, A., Reytor, A., Maul, D.M., Pina, M., Fernandez-Torres, L., Tapanes-Castillo, A. (2017) Evaluating medicinal plants for anticancer properties: testing plant extracts for cytotoxicity. Southeastern Regional Meeting of the American Chemical Society, *poster*, Charlotte, NC.
- Ramos, L., Tapanes-Castillo, A. (2017) The effect of Hedgehog signaling on *in vivo* neuronal morphogenesis and circuit formation. Max Planck Florida Institute Neural Circuits Sunposium Research Conference, *poster*, West Palm Beach, FL.

### **Local Conferences**

#### **St. Thomas University Undergraduate Research Symposia: 2016-2021**

PI for numerous research presentations, Student awards include:

- 2021 Summer Research Institute Symposium
  - Outstanding Oral Presentation: Leticia Saladrigas
  - Outstanding Poster Presentation: Christian Del Corro
  - Honorable Mention (Second Place) Poster Presentation: Thiago Leal
- 2020 Summer Research Institute Symposium
  - Honorable Mention (Second Place) Oral Presentation: Abel Sousa
- 2017 Undergraduate Research Symposium
  - Provost Award: Vadym Trokhymchuk

#### **Miami Dade College STEM Symposia: 2016-2021**

- Demps, D., Mondesire, S., Tapanes-Castillo, A. (2020) Analysis of gene expression Differences in human cardiomyocytes infected with SARS-CoV-2. *Pre-recorded poster and presentation*, Virtual.
- Menendez, H., Tapanes-Castillo, A. (2020) COVID-19 respiratory symptoms, respiratory treatments, and epidemiological data analysis of Florida cases. *Pre-recorded poster and presentation*, Virtual.
- Quiroga, K., Calzadilla, S., Carballo, J., Tapanes-Castillo, A., Mondesire, S. (2020) Identifying genes for autism classification. *Pre-recorded poster and presentation*, Virtual.