

Anna Marie Taylor, Ph.D.

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EDUCATION

- 2008-2013 **Ph.D.** in Basic Science from the Graduate School of Biomedical Science at the University of Texas Southwestern Medical Center in Dallas, TX:
- Cell Regulation Graduate Program
 - Emphasis in Pharmacological Sciences
- 2004-2008 **B.S.** from Louisiana Tech University in Ruston, LA:
- Majored in Biology with a Concentration in Cell and Molecular Biology
 - Minored in Chemistry and Technical Writing

POSITIONS

- 2018-now *Assistant Professor of Instruction* (previously titled *Senior Lecturer*) in the Department of Neuroscience, School of Behavioral & Brain Sciences, The University of Texas at Dallas in Richardson, TX
- 2013-2018 *Postdoctoral Fellow* under Manzoor Bhat, Ph.D., Department of Cellular and Integrative Physiology, University of Texas Health Science Center at San Antonio, TX
- 2008-2013 *Graduate Student* under Joyce Repa, Ph.D., Department of Physiology, University of Texas Southwestern Medical Center in Dallas, TX
- 2007-2008 *Student Teaching Assistant* in Microbiology under Daphne Jewell, M.S, Louisiana Tech University in Ruston, LA
- 2005-2007 *Student Research Assistant* in Genetics under Mark Swanson, Ph.D. and in Microbiology under Wendy Trzyna, Ph.D., Louisiana Tech University in Ruston, LA

TEACHING AND MENTORSHIP EXPERIENCE

- 2007-2008 **Teaching Assistant** for a Microbiology Lab at Louisiana Tech: graded papers, administered exams, and setup labs
- 2009-2010 **Small Group Leader** for first-year graduate students at UT Southwestern.
- 2009-2012 **“Big Sibling”** for incoming graduate students at UT Southwestern.
- 2009-now **Mentor** for summer and rotating students in the lab: taught basic lab skills and techniques, supervised summer research projects, assisted and edited posters/presentations/publications (2 high school students, 4 undergraduate

- students, 1 rotating graduate student, 2 MD/PhD rotation students, 1 visiting medical student)
- 2011 **Mentor** for local High School students interested in careers in health sciences during a 5-week Health Professionals Recruitment and Exposure Program
- 2015-2017 **Group Leader/Presenter** for the Summer Physiology Undergraduate Research Program Series at UTHSCSA
- 2017-2018 **Co-instructor** for F-Troop Grant Writing Workshop (a 12-week course): prepared and gave lectures for each class, help to lead discussion, provided feedback for grant sections prepared by graduate students and postdoctoral fellows at UTHSCSA
- 2018 **Guest Lecturer** for Gross Anatomy Course: prepared and gave Neuroanatomy lectures, lead group activities, and provided exam questions for Occupational Therapy students at UTHSCSA
- 2018-now **Assistant Professor of Instruction** in Neuroscience: Courses taught include Developmental Neurobiology, Introduction to Neuroscience, Neuroanatomy, Medical Neuropathology, and Neuroscience Laboratory Methods for undergraduates at UT Dallas

SELECT AWARDS AND HONORS

- 2006-2007 **Summer Undergraduate Research Fellowship**, Louisiana Biomedical Research Network, Louisiana State University, Baton Rouge, LA
- 2008 **Summa Cum Laude**, Bachelor of Science, Louisiana Tech University
- 2010 **Best Abstract**, Cell Regulation Annual Symposium, UT Southwestern, Dallas, TX
- 2012 **Poster Award**, Graduate Student Poster Session, UT Southwestern, Dallas, TX
- 2014, 2016 **Poster Award**, Physiology Department Annual Symposium, UTHSCSA
- 2017 **Invited Platform Presentations**, Physiology Department Annual Symposium and the San Antonio Postdoctoral Research Forum, UTHSCSA

RESEARCH SUPPORT

- 2006 **Applied & Natural Science Mini-Grant**, Louisiana Tech University, Ruston, LA: "The Yeast Two Hybrid Screen of *Acanthamoeba castellanii* with Metacaspase."
- 2010-2013 **Institutional National Research Service Award**, Pharmacology Training Grant, NIH T32 GM007062: Mechanisms of Drug Action and Disposition, David Mangelsdorf, Ph.D. (director), UT Southwestern, Dallas, TX
- 2015-2018 **Individual Postdoctoral National Research Service Award**, NIH NINDS F32NS092448: Maintenance and Reorganization of Molecular Domains in Myelinated Axons

RESEARCH EXPERIENCE

- 2005-2007 ***Undergraduate Research***, Louisiana Tech University in Ruston, LA - with Mark Swanson, Ph.D. and Wendy Trzyna, Ph.D.
- Research projects were 1) to isolate and identify genes which could allow for bacteria to thrive in high salt concentrations from environmental samples collected at a local brine spill site and 2) to prepare constructs in order to perform a yeast two-hybrid screen to identify metacaspase-associated gene products from *Acanthamoeba castellanii*, which served as a model for other disease causing *Acanthamoeba*.
- Research techniques: molecular cloning and microbiological techniques.
- 2006-2007 ***Summer Undergraduate Research***, Louisiana State University in Baton Rouge, LA- with Kirsten Prüfer, Ph.D., project was funded through the Louisiana Biomedical (LBRN) Summer Research Program.
- Research project focused on understanding, which importins were required for the nuclear import of the Liver X Receptor (LXR) α and β , as well as their obligate heterodimer, Retinoid X Receptor (RXR).
- Research techniques: cell culture, molecular cloning, GST pulldowns, protein quantification, Western Blots, and fluorescent microscopy.
- 2008-2013 ***Doctoral Research***, University of Texas Southwestern Medical Center of Dallas- with Joyce J. Repa, Ph.D., Associate Professor in the Departments of Physiology and Internal Medicine.
- Dissertation: Evaluating the Mechanisms of 2-Hydroxypropyl- β -Cyclodextrin and Liver X Receptor agonists as Potential Therapies for Niemann Pick Type C Disease***
- Projects focused on evaluating the physiologic effects and molecular mechanisms by which potential therapeutic agents (cyclodextrins, LXR agonists, HDAC inhibitors) restore lipid balance, delay neurodegeneration, and extend lifespan in the mouse model for Niemann Pick type C (NPC) disease. In addition, projects have investigated potential side effects of cyclodextrin in the NPC mouse model such as hearing loss and reduced pulmonary function.
- Novel research techniques: maintaining mouse models, injections, *in vivo* cholesterol absorption assays, immunohistochemistry, quantitative real-time PCR methods, and primary macrophage, microglia, alveolar type II epithelial cells, fibroblasts, and cortical neurons cell culture.
- 2008-2013 ***Postdoctoral Research***, University of Texas Health Science Center at San Antonio, TX- with Manzoor A. Bhat, Ph.D., Professor and Chair of the Department of Cellular and Integrative Physiology.
- The Bhat Lab specializes in studying neural-glia interactions utilizing both the *Drosophila* and mouse models. My research is focused on determining which proteins are critical to maintain and/or restore molecular domains (including

nodes of Ranvier, paranodes, and Axon Initial Segments) in myelinated axons using inducible mouse models as well as primary myelinating co-culture systems.

Novel research techniques: creating novel mouse models, *in vivo* nerve conduction recordings, inducible conditional Cre/Lox-P knockout models, electron microscopy of axons, confocal microscopy, primary oligodendrocyte and DRG neuron myelinating co-cultures and hippocampal neurons.

PEER-REVIEWED PUBLICATIONS

- Miller, A. M.***, C. Crumbley, and K. Prüfer. 2009. N-terminal nuclear localization sequences of liver X receptors alpha and beta bind to importin alpha and are essential for both nuclear import and transactivating functions. *Int. J. Biochem. Cell Biol.* 41: 834-843. PMID: 18773967
- Liu, B., S. D. Turley, D. K. Burns, **A. M. Miller***, J. J. Repa and J. M. Dietschy. 2009. Reversal of defective lysosomal transport in NPC disease ameliorates the liver dysfunction and neurodegeneration in npc1^{-/-} mouse. *Proc. Natl. Acad. Sci. USA* 106: 2377-2382. PMID: 19171898
- Liu, B., C. M. Ramirez, **A. M. Miller***, J. J. Repa, S. D. Turley and J. M. Dietschy. 2010. Cyclodextrin reverses the transport defect in the NPC1 mouse at any age and in nearly every organ leading to excretion of sequestered cholesterol as bile acid. *J. Lipid Res.* 51:933-944. PMID: 19965601
- Ramirez, C. M., B. Liu, **A. M. Taylor**, J. J. Repa, D. K. Burns, A. G. Weinberg, S. D. Turley and J. M. Dietschy. 2010. Weekly cyclodextrin administration normalizes cholesterol metabolism in nearly every organ of the Niemann-Pick Type C1 mouse and markedly prolongs life. *Pediatr. Res.* 68: 309-15. PMID: 20581737
- Ramirez, C.M., B. Liu, A. Aqul, **A.M. Taylor**, J. J. Repa, S. D. Turley and J. M. Dietschy. 2011. Quantitative role of LAL, NPC2, and NPC1 in lysosomal cholesterol processing defined by genetic and pharmacological manipulations. *J. Lipid Res.* 52(4):688-98. PMID: 21289032
- Taylor, A. M.**, B. Liu, Y. Mari, B. Liu, and J.J. Repa. 2012. Cyclodextrin mediates rapid changes in lipid balance in Npc1^{-/-} mice without carrying cholesterol through the bloodstream. *J. Lipid Res.* 53(11):2331-42. PMID: 22892156
- Jones, R. D., **A. M. Taylor**, E. Tong, and J. J. Repa. 2013. Carboxylesterases are uniquely expressed among tissues and regulated by nuclear hormone receptors in the mouse. *Drug Metab. Dispos.* 41(1):40-9. PMID: 23011759
- King, K. A., S. Gordon-Salant, K. S. Pawlowski, **A. M. Taylor**, A. J. Griffith, A. Houser, K. Kurima, C. A. Wassif, C. G. Wright, F. D. Porter, J. J. Repa, and C. C. Brewer. 2014. Hearing Loss is an Early Consequence of NPC1 Gene Deletion in the Mouse Model of Niemann-Pick Disease, Type C. *J. Assoc. Res. Otolaryngol.* 15(4):529-41. PMID: 24839095

*Anna M. Miller married in 2009, becoming Anna M. Taylor.

- Aqul, A., A. Lopez, K. Posey, **A. M. Taylor**, J. J. Repa, D. Burns, and S. D. Turley. 2014. Hepatic entrapment of esterified cholesterol drives continual expansion of whole-body sterol pool in lysosomal acid lipase-deficient mice. *Am. J. Physiol. Renal Physiol.* 307(8):G836-47. PMID: 25147230
- Taylor, A. M.**, J. Saifetyarova, and M. A. Bhat. 2017. Postnatal Loss of Neuronal and Glial Neurofascins Differentially Affects Node of Ranvier Maintenance and Myelinated Axon Function. *Front. Cell. Neurosci.* 11:11. PMID: 28217083
- Saifetiarova, J., **A. M. Taylor**, and M. A. Bhat. 2017. Early and Late Loss of the Cytoskeletal Scaffolding Protein, Ankyrin G Reveals its Role in Maturation and Maintenance of Nodes of Ranvier in Myelinated Axons. *J Neurosci.* 37(10):2661-16. PMID: 28148727
- Saifetiarova, J., X. Liu, **A. M. Taylor**, J. Li and M.A. Bhat. 2017. Axonal Domain Disorganization in Caspr1 and Caspr2 Mutant Myelinated Axons Affects Neuromuscular Junction Integrity Leading to Muscle Atrophy. *J Neurosci Res.* 95(7):1373-1390. PMID: 28370195
- Taylor, A. M.**, Q. Shi, and M. A. Bhat. 2018. Simultaneous Ablation of Neuronal Neurofascin and Ankyrin G in Young and Adult Mice Reveals Age-Dependent Increase in Nodal Stability in Myelinated Axons and Differential Effects on the Lifespan. *eNeuro* 0138-18.2018. PMID: 29963618
- Shi, Q., J. Saifetiarova, **A. M. Taylor**, and M. A. Bhat. 2018. mTORC1 Activation by Loss of Tsc1 in Myelinating Glia Causes Downregulation of Quaking and Neurofascin 155 Leading to Paranodal Domain Disorganization. *Front. Cell. Neurosci.* 12:12. PMID: 30050412
- Kunisawa, K., T. Shimizu, I. Kushima, B. Aleksic, D. Mori, , Y. Osanai, K. Kobayashi, **A. M. Taylor**, M. A. Bhat, A. Hayashi, H. Baba, N. Ozaki and K. Ikenaka. 2018. Dysregulation of schizophrenia-related aquaporin 3 through disruption of paranode influences neuronal viability. *J Neurochem.* 10.1111. PMID: 30025158
- Lopez, A.M., C.M. Ramirez, **A. M. Taylor**, R.D. Jones, J.J. Repa, S.D. Turley. 2019. Ontogenesis and Modulation of Intestinal Unesterified Cholesterol Sequestration in a Mouse Model of Niemann–Pick C1 Disease. *Dig. Dis. Sci.* 65 (2020): 158. PMID: 31312996
- Ramirez, C.M., **A. M. Taylor**, A.M. Lopez, J.J. Repa, S.D. Turley. 2020. Delineation of Metabolic Responses of Npc1^{-/-} Mice Lacking the Cholesterol-Esterifying Enzyme SOAT2 to Acute Treatment with 2-Hydroxypropyl- β -Cyclodextrin. *Steroids* 164 (2020): 108725. PMID: 32890578

MEETING ATTENDANCE AND ABSTRACTS

- 2008 Attended the Keystone Symposium: *Nuclear Receptors: Orphan Brothers*, Whistler BC. March 30-April 4, 2008. Presented abstract #225.

- Miller, A.M.*** and Prufer, K.: LXR α is imported into the nucleus by binding to importin α /importin β via an N-terminal nuclear localization sequence and dominates the nuclear import of the retinoid X receptor/liver X receptor heterodimer. (poster)
- 2009 Attended the 2009 *Scientific Conference on Niemann-Pick Type C Disease*, sponsored and hosted by the Ara Parseghian Medical Research Foundation, Tucson AZ, May 27-31.
 Liu, B., **A. M. Miller***, S. D. Turley, B. Liu, J. M. Dietschy and **J. J. Repa**.
 Evaluating the role of inflammation in the progression of NPC disease.
Ramirez, C. M., B. Liu, **A. M. Miller***, J. J. Repa, S. D. Turley and J. M. Dietschy.
 Serial weekly injection of cyclodextrin essentially prevent hepatic and neurological disease but not pulmonary macrophage infiltration in Niemann-Pick Type C disease.
Liu, B., C. Ramirez, **A. M. Miller***, J. J. Repa, S. D. Turley and J. M. Dietschy.
 Cyclo administration acutely reverses the cholesterol transport defect in liver, spleen and adrenal gland of mature NPC mice.
- 2010 Attended the UT Southwestern Cell Regulation Graduate Program 1st Annual Symposium, held at Lonesome Dove Ranch, Grapevine TX. Oct. 22, 2010.
Taylor, A. M. and J. J. Repa. The role of ABCG1 in the progression of Niemann-Pick type C disease. (poster) *Won 1st place for best abstract.*
- 2010 Attended the 2010 *Scientific Conference on Niemann-Pick Type C Disease*, sponsored and hosted by the Ara Parseghian Medical Research Foundation, Tucson AZ, Sept. 23-25.
Taylor, A. M., Y. Mari, B. Liu, and J. J. Repa. Evaluating the Acute Effects of Cyclodextrin in *Npc1^{-/-}* Mice. (poster)
 Y. Mari, **A. M. Taylor**, P. Helquist, O. Wiest, L. Kjalarsdottir, and **J.J. Repa**.
 Comparing the molecular mechanisms of novel therapies for Niemann Pick Type C disease.
Ramirez, C. M., M. Chang, B. Liu, A. Aqul, **A. M. Taylor**, A. G. Weinberg, J. J. Repa, S. D. Turley, and J. M. Dietschy. Pulmonary Disease in the Niemann-Pick Type C Mouse.
- 2011 Attended the UT Southwestern Cell Regulation Graduate Program Symposium, held at the Dallas Arboretum, Dallas TX. Oct. 14, 2011.
Taylor, A. M. and J. J. Repa. The Effect of Dual Cyclodextrin and LXR Agonist Therapy on the Progression of Niemann Pick Type C Disease. (poster)
- 2012 Attended the *Michael, Marcia, and Christa Parseghian Scientific Conference for Niemann-Pick Type C Research* at Notre Dame University, June 7-9, 2012.
Taylor, A. M., Y. Mari, and J. J. Repa. Combining cyclodextrin and LXR agonist therapies as treatment for Niemann-Pick Type C disease. (talk)
Taylor, A. M., Y. Mari, P. Helquist, O. Wiest, and **J.J. Repa**. Comparing the molecular mechanisms of novel therapies for Niemann Pick Type C disease.
- 2012 Attended the 2012 Society for Neuroscience meeting held in New Orleans, LA. Oct. 13-17, 2012. *Presented poster 653.30 (I11).*

- Taylor, A. M.**, B. Liu, Y. Mari, and J. J. Repa. Evaluating the mechanism of 2-hydroxypropyl- β -cyclodextrin therapy for Niemann Pick Type C Disease. (poster)
- Mari, Y.**, **A. M. Taylor**, B. Liu, and J.J. Repa. Histone deacetylase inhibitors affect cholesterol metabolism, but do not halt Niemann Pick Type C disease progression.
- 2012 Attended the UT Southwestern Cell Regulation Graduate Program Symposium, held at the Dallas Arboretum, Dallas TX. Oct. 19, 2012.
- Taylor, A. M.** and J. J. Repa. Evaluating the mechanism of 2-hydroxypropyl- β -cyclodextrin therapy for Niemann Pick Type C disease. (talk and poster)
- 2014 Attended the UTHSCSA Physiology Department Annual Symposium, held at the La Quinta Inn, San Antonio, TX. May 2, 2014.
- Taylor, A. M.**, M. D. Delcont, and M. A. Bhat. Elucidating the role of Neurofascin in Nodal maintenance utilizing inducible transgenic mouse models.
- 2015 Attended the UTHSCSA Physiology Department Symposium, held at the La Quinta Inn, San Antonio, TX. April 17, 2015.
- Taylor, A. M.** and M. A. Bhat. Neuronal and Glial Loss of Neurofascin Causes Degeneration of Myelinated Axons
- 2016 Attended the UTHSCSA Physiology Department Symposium, held at the La Quinta Inn, San Antonio, TX. May 27, 2016.
- Taylor, A. M.** and M. A. Bhat. Simultaneous Loss of Neurofascin and Ankyrin-G at Nodes of Ranvier and Axon Initial Segments. *Won poster award.*
- 2016 Attended the Texas Fresh AIR (Academia Industry Roundtable) Neuroscience Conference held in Austin, TX. October 6-7, 2016.
- Taylor, A. M.** and M. A. Bhat. The Stability of Neuron-Specific Neurofascin is Central to the Long-term Maintenance of Nodes of Ranvier in Myelinated Axons.
- 2017 Attended the UTHSCSA Cellular and Integrative Physiology Department Symposium, held at the Hilton Hill Country Hotel and Spa, San Antonio, TX. April 7, 2017.
- Taylor, A. M.** and M. A. Bhat. Neuronal Ankyrin and Neurofascin Act Synergistically to Maintain Nodes of Ranvier and Myelinated Axons (poster and talk)
- 2018 Attended the UTHSCSA Cellular and Integrative Physiology Department Symposium, held at the Hilton Hill Country Hotel and Spa, San Antonio, TX. April 19-20, 2018.
- Taylor, A. M.**, Q. Shi, and M. A. Bhat. Simultaneous Ablation of Neuronal Neurofascin and Ankyrin G Reveals An Age-Dependent Increase in Nodal Stability (poster)
- 2019 Attended the *Michael, Marcia, and Christa Parseghian Scientific Conference for Niemann-Pick Type C Research*, Tucson AZ, June 1-4, 2019.
- 2020 Attended the *Michael, Marcia, and Christa Parseghian Scientific Conference for Niemann-Pick Type C Research*, – Virtual Symposiums, May-June, 2020.

SELECTED PRESENTATIONS

Invited Talks:

- Michael, Marcia, and Christa Parseghian Scientific Conference for Niemann-Pick Type C Research (June 9, 2012)
- Division for Hypothalamic Research, UT Southwestern (Sept. 25, 2012)
- UT Southwestern Cell Regulation Graduate Program Symposium (Oct. 19, 2012)
- UTHSCSA Cellular and Integrative Physiology Symposium (April 7, 2017)
- San Antonio Postdoctoral Research Forum at UTHSCSA (September 21, 2017)

Posters:

- Keystone Symposium for *Nuclear Receptors: Orphan Brothers* (April 2008)
- Scientific Conference on Niemann-Pick Type C Disease (Sept. 2010)
- UT Southwestern Cell Regulation Graduate Program Symposium (Oct. 2010, 2011)
- UT Southwestern Graduate Student Organization Poster Session (2010-2012)
- UTHSCSA Cellular and Integrative Physiology Symposium (2014-2018)
- Center for Biomedical Neuroscience Annual Retreat (2015)
- San Antonio Postdoctoral Research Forum at UTHSCSA (2015, 2017)
- Mikiten Graduate Research Forum (2016)

PROFESSIONAL MEMBERSHIPS

2012-now	Society for Neuroscience: <i>Member</i>
2013-2015	Neuroscience Journal Club, UTHSCSA: <i>Presented current papers related to research</i>
2014-2018	Member of local Synapse Club, UTHSCSA: <i>Presented current works-in-progress.</i>

PROFESSIONAL LEADERSHIP SERVICES

2010-2012	Student Advisor Committee, Cell Regulation Graduate Program, UT Southwestern: <i>Planned research symposium, judged student abstracts, and organized a fair to help first-year graduate students choose graduate programs.</i>
2011-2012	Outreach Co-Chair, Graduate Student Organization, UT Southwestern (<i>elected</i>): <i>In addition to serving as a member of the student government, planned and executed several events for graduate students to donate goods/volunteer their time include campus-wide blood drives, food collections for the North Dallas Food Bank, feeding the homeless, and events for the Ronald McDonald House.</i>
2012-now	Judge for Science Fairs and Posters: <i>judge for local and regional science fairs for elementary to high school students and for poster presentation for graduate students</i>
2014-2015	Professional Development Committee, Postdoctoral Association, UTHSCSA: <i>Organized career planning seminars for graduate students and fellows.</i>
2015-2016	Co-Chair, Physiology Trainee Series, UTHSCSA: <i>Planned events to promote networking and career development among Physiology students and fellows.</i>

- 2016, 2018 Study Session for Internal Training Grant Applications, UTHSCSA: *Reviewed proposal for training grant applicants and served on study session.*
- 2018-now Task force for Neuroscience Undergraduate Research Program: *Planned a research program for undergraduate students to enhance diversity in Neuroscience and co-authored an R25 grant to fund the program. Currently drafting a T34 proposal.*
- 2019-now Neuroscience Program Curriculum Committee, UTD: *Revised course catalog to include career tracts for both Neuroscience majors and minors.*
- 2021-now Neuroscience Faculty Search Committee, UTD: *Recruit and screen candidates for a tenure-system position at the rank of Assistant Professor in the Department of Neuroscience*

SELECTED TRAINING

- 2009 Signal Transduction, UT Southwestern
- 2010 Mechanisms of Drug Action, UT Southwestern
- 2010 Heritable Neurological Diseases of Mice and Man, UT Southwestern
- 2014 F-Troop Grant-Writing Workshop, UTHSCSA
- 2015 Entering Mentoring Workshop, UTHSCSA
- 2015-2018 Spotlight on Research Integrity Workshop, UTHSCSA
- 2016 Fundamentals of Neuroethics, UTHSCSA
- 2018 Successful Starts, Evidence-Based Tools for Teaching and Research at Undergraduate STEM Programs, Trinity University
- 2019 Team-Based Learning Workshops, UTD and Collin College
- 2020 Virtual Workshops on Remote Teaching and Equity in the Classroom, UTD