

**Education**

- M.S. in Biochemistry, Texas State University, San Marcos, TX 12/2007
- B.S. in Biology, Texas State University, San Marcos, TX 05/2005

**Professional Experience**

- Program Coordinator, Texas State University- Molecular Biosciences Research Group & *Xiphophorus* Genetic Stock Center 06/2016- Present
- Grant Coordinator, Texas State University- Molecular Biosciences Research Group & *Xiphophorus* Genetic Stock Center 08/2012- 06/2016
- Lab Manager, Texas State University- Molecular Biosciences Research Group 01/2012-08/2012
- Ph.D. Lab Training, Georgetown University, Chiral Sensor & Drug Design Laboratory 09/2008-12/2012
- Research Technician, Texas State University- Molecular Biosciences Research Group 01/2008-07/2008
- Research Assistant, Texas State University- Chiral Calix Research Group 08/2003-05/2005

**Teaching Experience**

- Teaching Assistant, Georgetown University, Advanced Synthesis Lab, Organic Chemistry Lab 09/2008-12/2009
- Organic Chemistry I Lecturer, Texas State University 01/2008-05/2008
- Teaching Assistant, Texas State University, Advanced Biochemistry Lab, Junior Biochemistry Lab, Organic Chemistry I & II Lab, Analytical Chemistry & Quantitative Analysis Lab 01/2006-12/2007
- Teaching Assistant, Texas State University, Analytical Chemistry & Quantitative Analysis Lab 01/2004-05/2005

**Affiliations/Memberships**

- American Chemical Society 09/2008-01/2012
- American Society for Biochemistry & Molecular Biology 01/2006-12/2007
- Welch Fellow 05/2007
- National Honor Society 01/2003-05/2005
- Who's Who Among College Students 05/2005

## Selected Presentations/Meetings

- 4<sup>th</sup> Strategic Meeting for Medaka Research, Heidelberg, Germany, 04/2018  
Attendee and Poster Presenter- “Deconvoluting the genetic disruptions of broad spectrum fluorescent light into specific wavebands in three vertebrate human disease models”
- 8<sup>th</sup> Aquatic Animal Models of Human Disease, Birmingham, AL, 01/2017  
Attendee and Sponsor, Presenter- “Fluorescent light genetic effects in the skin of three commonly used aquatic animal models”
- SBIR/STTR Grant Symposium, Workshop and Exhibition, 05/2016  
Washington, DC, Attendee and Presenter- “Fluorescent light effects key genetic pathways in vertebrate animal models”
- 7<sup>th</sup> Aquatic Animal Models of Human Disease, Austin, TX, Planning Committee & Meeting Organizer, Poster Presentation- “Sex specific genetic response to UVB exposure in *Xiphophorus maculatus* skin” 12/2014
- 6<sup>th</sup> Aquatic Animal Models of Human Disease, Milwaukee, WI, 07/2013  
Poster Presentation- “Characterization and differential expression of CPD and 6-4 DNA photolyases in *Xiphophorus* species and interspecies hybrids”
- 4<sup>th</sup> Annual Synthesis Symposium, Washington, DC, Selected Speaker- “Copper Catalyzed Amines” 06/2010
- ASBMB, Washington, DC, Poster Presentation- “Isolation of Glutaminyl Cyclase from *Saccharomyces cerevisiae*” 07/2007

## Publications

- Boswell, M., Lu, Y., Boswell, W., Hildreth, K., Salinas, R., Walter, C.A. and Walter, R.B., 2019. Fluorescent light incites a conserved immune and inflammatory genetic response within vertebrate organs (*Danio rerio*, *Oryzias latipes* and *Mus musculus*). *Genes*, 10(4), 271. Doi:10.3390/genes10040271
- Lu, Y., Boswell, W., Boswell, M., Klotz, B., Kneitz, S., Regneri, J., Savage, M., Mendoza, C., Postlethwait, J., Warren, W., Scharl, M. and Walter, R.B., 2019. Application of the transcriptional disease signature (TDSs) to screen melanoma-effective compounds in a small fish model. *Sci. Rep.*, 9(1), 530. doi: 10.1038/s41598-018-36656-x
- Lu, Y., Boswell, M., Boswell, W., Kneitz, S., Hausmann, M., Klotz, B., Regneri, J., Savage, M., Amores, A., Postlethwait, J., Warren, W., Scharl, M., Walter, R., 2018. Comparison of *Xiphophorus* and human melanoma transcriptome reveals conserved pathway interactions. *Pigment Cell Melanoma Res.* 31(4), 496-508. doi: 10.1111/pcmr.12686

- Walter, R.B., Boswell, M., Chang, J., Boswell, W.T., Lu, Y., Navarro, K., Walter, S.M., Walter, D.J., Salinas, R., Savage, M., 2018. Waveband specific transcriptional control of select genetic pathways in vertebrate skin (*Xiphophorus maculatus*). *BMC Genomics*. 19(1), 355. doi: 10.1186/s12864.018.4735.5
- Lu, Y., Reyes, J., Walter, S., Gonzalez, T., Medrano, G., Boswell, M., Boswell, W., Savage, M., Walter, R., 2018. Characterization of basal gene expression trends over a diurnal cycle in *Xiphophorus maculatus* skin, brain and liver. *Comp. Biochem. Physiol. Part C*. 208, 2-11. doi: 10.1016/j.cbpc.2017.11.013
- Boswell, M., Boswell, W., Lu, Y., Savage, M., Mazurek, Z., Chang, J., Muster, J., Walter, R., 2018. The transcriptional response of skin to fluorescent light exposure in viviparous (*Xiphophorus*) and oviparous (*Danio, Oryzias*) fishes. *Comp. Biochem. Physiol. Part C*. 208, 77-86. doi: 10.1016/j.cbpc.2017.10.003
- Gonzalez, T., Lu, Y., Boswell, M., Boswell, W., Medrano, G., Walter, S., Ellis, S., Savage, M., Varga, Z.M., Lawrence, C., Sanders, G., Walter, R.B., 2018. Fluorescent light exposure incites acute and prolonged immune responses in zebrafish (*Danio rerio*) skin. *Comp. Biochem. Physiol. Part C*. 208, 87-95. doi: 10.1016/j.cbpc.2017.09.009
- Boswell, W.T., Boswell, M., Walter, D.J., Navarro, K.L., Chang, J., Lu, Y., Savage, M.G., Shen, J., Walter, R.B., 2018. Exposure to 1400K fluorescent light elicits sex specific transcriptional responses in *Xiphophorus maculatus* skin. *Comp. Biochem. Physiol. Part C*. 208, 96-104. doi: 10.1016/j.cbpc.2017.09.008
- Wise, J.P. Jr., Wise, J.T.F., Wise, C.F., Wise, S.S., Gianios, C. Jr., Xie, H., Walter, R., Boswell, M., Zhu, C., Zheng, T., Perkins, C., Wise J.P. Sr., 2017. A three year study of metal levels in skin biopsies of whales in the Gulf of Mexico after the Deepwater Horizon oil crisis. *Comp. Biochem. Physiol. Part C*. 205, 15-25. doi: 10.1016/j.cbpc.2017.12.003
- Lu, Y., Boswell, M., Boswell, W., Kneitz, S., Hausmann, M., Klotz, B., Regneri, J., Savage, M., Amores, A., Postlethwait, J., Warren, W., Schartl, M., Walter, R., 2017. Molecular genetic analysis of the melanoma regulatory locus in *Xiphophorus* interspecies hybrids. *Mol. Carcinog.*, 56(8), 1935-1944. doi: 10.1002/mc.22651
- Shen, Y., Chalopin, D., Garcia, T., Boswell, M., Boswell, W., Shirayayev, S., Agarwala, R., Volff, J-N., Postlethwait, J.H., Schartl, M., Minx, P., Warren, W.C., Walter, R.B., 2016. *X. couchianus* and *X. hellerii* genome models provide genomic variation insight among *Xiphophorus* species, *BMC Genomics*, 17, 37-40. doi: 10.1186/s12864-015-2361-z
- Lu, Y., Boswell, M., Boswell, W.T., Yang, K., Schartl, M., Walter, R.B., 2015. Molecular genetic response of *Xiphophorus maculatus*-*X. couchianus* interspecies hybrid skin to UVB exposure. *Comp. Biochem. Physiol. Part C*. 178, 86-92. doi: 10.1016/j.cbpc.2015.07.011

- Walter, R.B., Walter, D.J., Boswell, W.T., Caballero, K.L. Boswell, M., Lu, Y., Chang, J., Savage, M.G., 2015. Exposure to fluorescent light triggers down regulation of genes involved with mitotic progression in *Xiphophorus* skin. *Comp. Biochem. Physiol. Part C.* 178, 93-103. doi: 10.1016/j.cbpc.2015.10.006
- Boswell, W., Boswell, M., Titus, J., Savage, M., Lu, Y., Shen, J., Walter, R.B., 2015. Sex Specific Molecular Genetic Response to UVB Exposure in *Xiphophorus maculatus* Skin. *Comp. Biochem. Physiol. Part C.* 178, 76-85. doi: 10.1016/j.cbpc.2015.10.007
- Lu, Y., Boswell, M., Boswell, W., Yang, K., Scharl, M., Walter, R.B., 2015. UVB Induced Gene Modulation in *Xiphophorus maculatus*, *Xiphophorus couchianus* and Interspecies Hybrid. *Comp. Biochem. Physiol. Part C.* 178, 86-92. doi: 10.1016/j.cbpc.2015.10.011
- Chang, J., Yuan L., Boswell, W., Boswell, M., Caballero, K.L., Walter, R.B., 2015. Molecular genetic response to varied wavelengths of light in *Xiphophorus maculatus* skin. *Comp. Biochem. Physiol. Part C.* 178, 104-115. doi: 10.1016/j.cbpc.2015.10.002
- Walter, D.J., Boswell, M., Boswell, W., Walter, R.B., 2014. Characterization and Differential Expression of CPD and 6-4 DNA Photolyases in *Xiphophorus* Species and Interspecies Hybrids. *Comp. Biochem. Physiol. Part C.* 163, 77-85. doi: 10.1016/j.cbpc.2014.01.006
- Yang, K., Boswell, M., Walter, D.J., Downs, K.P., Gaston-Pravia, K., Garcia, T., Shen, Y., Mitchell, D.L., Walter, R.B., 2014. UVB-Induced Gene Expression in the Skin of *Xiphophorus maculatus* Jp 163 B. *Comp. Biochem. Physiol. Part C.* 163, 86-94. doi: 10.1016/j.cbpc.2014.01.008
- Contreras, A., Boswell, M., Downs, K.P., Pasquali, A., Walter, R.B., 2014. Cortisol Release in Response to UVB Exposure in *Xiphophorus* Fish. *Comp. Biochem. Physiol. Part C.* 163, 95-101. doi: 10.1016/j.cbpc.2014.02.004
- Shen, Y., Garcia, T., Pabuwal, V., Boswell, M., Pasquali, A., Beldorth, I., Warren, W., Scharl, M., Cresko, W.A., Walter, R.B., 2013. Alternative Strategies for Development of a Reference Transcriptome for Quantification of Allele Specific Expression in Organisms Having Sparse Genomic Resources. *Comp. Biochem. Physiol. Part D.* 8, 11-16. doi: 10.1016/j.cbd.2012.10.006
- Pabuwal, V., Boswell, M., Pasquali, A., Wise, S.S., Kumar, S., Shen, Y., Garcia, T., LaCere, C., Wise Jr, J.P., Wise Sr, J.P., Warren, W., Walter, R.B., 2013. Transcriptomic Analysis of Cultured Whale Skin Cells Exposed to Hexavalent Chromium [Cr(VI)]. *Aquatic Toxicol.* 134-135C, 74-81. doi: 10.1016/j.aquatox.2013.03.003
- Boswell, M.G., Yeung, F.G., Wolf, C., 2012. Copper-Catalyzed C-N Bond Formation with *N*-Heterocycles and Aryl Halides. *Synlett.* 23(08), 1240-1244. doi: 10.1021/ol203452f
- Bishwajit, P., Butterfoss, G.L., Boswell, M.G., Huang, M.L., Bonneau, R., Wolf, C., Kirshenbaum, K., 2011. *N*-Naphthyl Peptoid Foldamers Exhibiting Atropisomerism. *Org. Lett.* 14(3), 926-929. doi: 10.1021/ol203452f

- Bishwajit, P., Butterfoss, G.L., Boswell, M.G., Renfrew, P.D., Yeung, F.G., Shah, N.H., Wolf, C., Bonneau, R., Kirshenbaum, K., 2011. Peptoid Atropisomers. *JACS*. 133(28), 10910-10919. doi: 10.1021/ja2028684
- Zhang, Z., Wells, M.C., Boswell, M.G., Beldorth, I., Kirk, L.M., Wang, Y., Wang, S., Savage, M., Walter, R.B., Booth, R.E., 2011. Identification of Robust Hypoxia Biomarker Candidates from Fin of medaka (*Oryzias latipes*). *Comp. Biochem. Physiol. Part C*. 155, 11-17. doi: 10.1016/j.cbpc.2011.05.015
- Boswell, M.G., Wells, M.C., Kirk, L.M., Ju, Z., Zhang, Z., Booth, R.E., Walter, R.B., 2008. Comparison of Gene Expression Responses to Hypoxia in Viviparous (*Xiphophorus*) and Oviparous (*Oryzias*) Fishes Using a medaka Microarray. *Comp. Biochem. Physiol. Part C*. 149, 258-265. doi: 10.1016/j.cbpc.2008.11.005
- Boswell, M.G., Booth, R.E., 2008. Cloning and Expression of Epithelial Sodium Channels (ENaC) in *Saccharomyces cerevisiae*. *FASEB J.*, 22, 813. doi: 10.1096/fj.1530-6860
- Boswell, M., Terrell, D., Booth, R.E., 2007. Isolation of Glutaminyl Cylcase from *Saccharomyces cerevisiae*. *FASEB J.* 21, 1022. doi: 10.1096/fj.1530-6860
- Blanda, M.T., Edwards, L., Salazar, R., Boswell, M., 2006. Synthesis and Characterization of an Inherently Chiral Calix[6]Arene in the 1,4-Alternate Confirmation. *Tetrahedron Lett.* 47(39), 7081-7084. doi: 10.1016/j.tetlet.2006.07.087

## Technical Experience/Techniques

- **Biochemistry Techniques-** PCR; qRT-PCR; Nucleotide Isolation (RNA & DNA), Purification & Quantification from Bacteria, Yeast & Tissue; Protein Isolation, Purification, & Quantification from Bacteria, Yeast & Tissue; Gene Cloning; Vector Insertion; Enzyme Digestion; Immunoprecipitation & Western Blot; Cell Culture; Fluorescence Microscopy; High Throughput Sequencing Sample Preparation; NanoString Sample Preparation; HTG Molecular Edge Sample Preparation; Tissue Dissection & Preservation; Dissection Microscopy
- **Synthetic Techniques-** Microwave Synthesis; Pressure Reactor Synthesis; Organic & Inorganic Catalysis; Large & Small Scale Column Chromatography; Powder & Single Crystal Isolation, Purification & Characterization; HPLC; GCMS; Circular Dichroism; IR; UV-Vis; NMR; 2D NMR; TLC; 2D TLC; Schlenk Line Synthesis; Sample Lyophilization
- **Next Generation Sequencing Techniques-** R-Bioconductor; RNA-Seq Data Analysis & Data QC; Custom Perl Script Pipeline Application and Manipulation; Gene Differential Expression Determination & Analysis; Gene Ontology, Pathway & Functional Annotation; NanoString Software Differential Expression Software; NanoString assay design and protocol execution, 7500 Fast qRT-PCR Software; HTG Molecular Edge Data Processing; Microsoft Office, Photoshop, Adobe Pro, Numbers & Geneious Applications

- **Program Management-** Grants Accounting, Writing & Submission; State and Private Fund Accounting; Meeting & Conference Planning, Organizing, Accounting & Execution; Application Review for New Hires; Hiring Interview Committee; Hiring Processing; Effort Reporting for Staff, Grant Participants, Faculty and Students; Departmental Head Role for Accounting & HR; Supervise 4-6 Staff, 7-10 Students (undergraduate and graduate) & 2-4 Post Docs; Website Design & Maintenance; Scientific Program Planning & Execution including Experimental Plans, Training, Lecturing, Grant Construction, Budgeting, Grant Progress Reporting and Personnel Reports