

BIOGRAPHICAL SKETCH

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NAME: Schisler, Jonathan

eRA COMMONS USER NAME (agency login):

POSITION TITLE: Research Assistant Professor

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
The University of Toledo, Toledo, OH	BS	06/1997	Biology
The University of Toledo, Toledo, OH	MS	06/2000	Bioengineering
University of Texas Southwestern Medical Center at Dallas, Dallas, TX	PHD	05/2006	Biological Chemistry
Duke University, Durham, NC	Postdoctoral Fellow	06/2006	Diabetes
The University of North Carolina at Chapel Hill, Chapel Hill, NC	NIH training grant	06/2008	Cardiovascular disease (CVD)
The University of North Carolina at Chapel Hill, Chapel Hill, NC	Postdoctoral Fellow	06/2010	CVD

A. Personal Statement

I have experience in studying metabolism, gene expression signatures, and ubiquitin ligases over past 14 years. My expertise lies in integration of complex genomic-biologic data to elucidate risk relationships in both murine and human systems with a focus on cardiovascular disease and protein quality control mechanisms. My primary focus is to develop models to integrate datasets derived from clinical genomics, transcriptomics, and metabolomics allowing our lab to further interrogate gene and protein function in health and disease using molecular, cellular and biochemical approaches.

1. Willis MS, Schisler JC, Li L, Rodríguez JE, Hilliard EG, Charles PC, Patterson C. Cardiac muscle ring finger-1 increases susceptibility to heart failure in vivo. *Circ Res*. 2009 Jul 2;105(1):80-8. PubMed PMID: [19498199](#); PubMed Central PMCID: [PMC2737442](#).
2. Schisler JC, Rubel CE, Zhang C, Lockyer P, Cyr DM, Patterson C. CHIP protects against cardiac pressure overload through regulation of AMPK. *J Clin Invest*. 2013 Aug;123(8):3588-99. PubMed PMID: [23863712](#); PubMed Central PMCID: [PMC3726173](#).
3. Rubel CE, Schisler JC, Hamlett ED, DeKroon RM, Gautel M, Alzate O, Patterson C. Diggin' on u(biquitin): a novel method for the identification of physiological E3 ubiquitin ligase substrates. *Cell Biochem Biophys*. 2013 Sep;67(1):127-38. PubMed PMID: [23695782](#); PubMed Central PMCID: [PMC3758785](#).
4. Xie L, Pi X, Townley-Tilson WH, Li N, Wehrens XH, Entman ML, Taffet GE, Mishra A, Peng J, Schisler JC, Meissner G, Patterson C. PHD2/3-dependent hydroxylation tunes cardiac response to β -adrenergic stress via phospholamban. *J Clin Invest*. 2015 Jul 1;125(7):2759-71. PubMed PMID: [26075818](#).

B. Positions and Honors**Positions and Employment**

- | | |
|-------------|---|
| 1996 - 1997 | Undergraduate honors research student (Advisor: Scott Lesiner, Ph.D) Plant Biology, The University of Toledo, Toledo, OH |
| 1997 - 1998 | Post-baccalaureate research fellow (Advisor: Levy Ulanovsky, Ph.D.) DNA Sequencing Technology, Argonne National Laboratory, US Department of Energy, Lemont, IL |

- 1998 - 2000 Graduate teaching assistant (Advisor: Patricia Relue, Ph.D) Bioengineering, The University of Toledo, Toledo, OH
- 2000 - 2005 Pre-doctoral research fellow (Advisor: Chris Newgard, Ph.D.) Biological Chemistry, The University of Texas Southwestern Medical Center at Dallas, Dallas, TX
- 2006 - 2008 Postdoctoral trainee (Advisor: Cam Patterson, M.D.), Carolina Cardiovascular Biology Center, The University of North Carolina at Chapel Hill, Chapel Hill, NC
- 2008 - Associate Faculty Member, Faculty of 1000
- 2008 - 2010 AHA postdoctoral fellow (Advisor: Cam Patterson, M.D.), McAllister Heart Institute, The University of North Carolina at Chapel Hill, Chapel Hill, NC
- 2011 - 2014 Research Instructor, Department of Medicine, The University of North Carolina at Chapel Hill, Chapel Hill, NC
- 2014 - Research Assistant Professor, Department of Pharmacology, The University of North Carolina at Chapel Hill, Chapel Hill, NC

Other Experience and Professional Memberships

- 2008 - Member, American Heart Association
- 2010 - Member, American Society for Investigative Pathology
- 2011 - 2015 Chair, Biomarkers and Genetics Workgroup for 10 NIH P50-funded initiatives for health disparities
- 2012 - Member, North American Vascular Biology Organization
- 2014 - Member, American Physiological Society

Honors

- 1997 Honors in Biology, Cum Laude Graduate with Honors, The University of Toledo
- 1997 Undergraduate Research Fellowship, Argonne National Laboratory
- 2000 Graduate School Organization poster session winner, UT Southwestern Medical Center
- 2003 Symposia scholarship, Keystone Symposia
- 2004 Scholarship award, Beta Cell Biology Consortium
- 2006 Symposia scholarship, Keystone Symposia
- 2008 Postdoctoral Fellowship Award, American Heart Association
- 2009 Early Investigator Career Award, Society for Heart and Vascular Metabolism

C. Contribution to Science

1. My early research as a graduate student focused on beta cell biology and the ability to stimulate beta cell proliferation while at the same time preserving the capacity of these cells to secrete insulin in response to glucose. I focused on transcription factors and their genetic targets as therapeutic tools to expand functional beta cell mass ex vivo that in turn could be used for islet transplantation therapies. Dr. Chris Newgard continues to build upon my work performed in his laboratory and the techniques and methodology I developed in his lab are widely used throughout the field of islet biology.
 - a. Bain JR, Schisler JC, Takeuchi K, Newgard CB, Becker TC. An adenovirus vector for efficient RNA interference-mediated suppression of target genes in insulinoma cells and pancreatic islets of langerhans. *Diabetes*. 2004 Sep;53(9):2190-4. PubMed PMID: [15331526](#).
 - b. Schisler JC, Jensen PB, Taylor DG, Becker TC, Knop FK, Takekawa S, German M, Weir GC, Lu D, Mirmira RG, Newgard CB. The Nkx6.1 homeodomain transcription factor suppresses glucagon expression and regulates glucose-stimulated insulin secretion in islet beta cells. *Proc Natl Acad Sci U S A*. 2005 May 17;102(20):7297-302. PubMed PMID: [15883383](#); PubMed Central PMCID: [PMC1091752](#).
 - c. Schisler JC, Fueger PT, Babu DA, Hohmeier HE, Tessem JS, Lu D, Becker TC, Naziruddin B, Levy M, Mirmira RG, Newgard CB. Stimulation of human and rat islet beta-cell proliferation with retention of function by the homeodomain transcription factor Nkx6.1. *Mol Cell Biol*. 2008 May;28(10):3465-76. PubMed PMID: [18347054](#); PubMed Central PMCID: [PMC2423154](#).

- d. Stephens SB, Schisler JC, Hohmeier HE, An J, Sun AY, Pitt GS, Newgard CB. A VGF-derived peptide attenuates development of type 2 diabetes via enhancement of islet β -cell survival and function. *Cell Metab.* 2012 Jul 3;16(1):33-43. PubMed PMID: [22768837](#); PubMed Central PMCID: [PMC3695697](#).
2. As a result of my seminal research in islet beta cell proliferation with a focus on transcriptional regulation, I became keenly interested in other cellular regulatory mechanisms including post-translational regulation, such as protein quality control, in both health in disease. E3 ligases are enzymes that modify substrate proteins via ubiquitination, the addition of a small ubiquitin protein, that can either alter protein function or target the substrate protein to the proteasome for degradation. My research in this field initially focused on the role of the E3 ligases CHIP and MuRF1 in cardiovascular function. Recently I identified the first human causal mutation in CHIP that results in cerebellar ataxia and hypogonadism; as such, my laboratory expanded its ability to include neuro and neuro-endocrine approaches in our mouse and cell-based models to complement my cardiovascular research program.
 - a. Willis MS, Schisler JC, Li L, Rodríguez JE, Hilliard EG, Charles PC, Patterson C. Cardiac muscle ring finger-1 increases susceptibility to heart failure in vivo. *Circ Res.* 2009 Jul 2;105(1):80-8. PubMed PMID: [19498199](#); PubMed Central PMCID: [PMC2737442](#).
 - b. Schisler JC, Rubel CE, Zhang C, Lockyer P, Cyr DM, Patterson C. CHIP protects against cardiac pressure overload through regulation of AMPK. *J Clin Invest.* 2013 Aug;123(8):3588-99. PubMed PMID: [23863712](#); PubMed Central PMCID: [PMC3726173](#).
 - c. Shi CH, Schisler JC, Rubel CE, Tan S, Song B, McDonough H, Xu L, Portbury AL, Mao CY, True C, Wang RH, Wang QZ, Sun SL, Seminara SB, Patterson C, Xu YM. Ataxia and hypogonadism caused by the loss of ubiquitin ligase activity of the U box protein CHIP. *Hum Mol Genet.* 2014 Feb 15;23(4):1013-24. PubMed PMID: [24113144](#); PubMed Central PMCID: [PMC3900109](#).
 - d. Rodríguez JE, Liao JY, He J, Schisler JC, Newgard CB, Drujan D, Glass DJ, Frederick CB, Yoder BC, Lalush DS, Patterson C, Willis MS. The ubiquitin ligase MuRF1 regulates PPAR α activity in the heart by enhancing nuclear export via monoubiquitination. *Mol Cell Endocrinol.* 2015 Jun 25;PubMed PMID: [26116825](#).
 3. In addition to animal and cell-based models of health and disease, I am keenly interested in utilizing clinically-derived datasets to model human disease and to complement work done in basic research models. Through the use and often combination of multiple 'omic' platforms, I lead several important studies on human diseases including a study that identified specific genetic variation between Caucasian and African Americans that modifies sugar metabolism genes contributing to diabetes and increased cardiovascular risk. I continue to expand my translational-based research program into other inflammatory diseases and actively collaborate with colleagues in public health to focus on extending translational research to at-risk populations where health disparities are prevalent and underrepresented in the literature.
 - a. Charles PC, Alder BD, Hilliard EG, Schisler JC, Lineberger RE, Parker JS, Mapara S, Wu SS, Portbury A, Patterson C, Stouffer GA. Tobacco use induces anti-apoptotic, proliferative patterns of gene expression in circulating leukocytes of Caucasian males. *BMC Med Genomics.* 2008 Aug 18;1:38. PubMed PMID: [18710571](#); PubMed Central PMCID: [PMC2531187](#).
 - b. Schisler JC, Charles PC, Parker JS, Hilliard EG, Mapara S, Meredith D, Lineberger RE, Wu SS, Alder BD, Stouffer GA, Patterson C. Stable patterns of gene expression regulating carbohydrate metabolism determined by geographic ancestry. *PLoS One.* 2009 Dec 9;4(12):e8183. PubMed PMID: [20016837](#); PubMed Central PMCID: [PMC2790609](#).
 - c. Skinner HG, Calancie L, Vu MB, Garcia B, DeMarco M, Patterson C, Ammerman A, Schisler JC. Using community-based participatory research principles to develop more understandable recruitment and informed consent documents in genomic research. *PLoS One.* 2015;10(5):e0125466. PubMed PMID: [25938669](#); PubMed Central PMCID: [PMC4418607](#).
 - d. Schisler JC, Ronnebaum SM, Madden M, Channell M, Campen M, Willis MS. Endothelial inflammatory transcriptional responses to an altered plasma exposome following inhalation of diesel emissions. *Inhal Toxicol.* 2015 Apr;27(5):272-80. PubMed PMID: [25942053](#).