Amy N. Hicks, PhD

Bar Harbor, ME 04609

Amouse3000@yahoo.com (personal) | amy.hicks@jax.org (work)

PROFESSIONAL SUMMARY

Molecular biologist with 10 years' experience in mouse genetics, model development and biochemical techniques. Research has centered on investigating how pathogenic mutations underlying rare diseases lead to the development of neuropathies and myopathies with a focus on translating discoveries to the patient population. Team player and results-oriented scientist that has extensive background in study design, execution, communications, teaching, and implementing interdisciplinary projects.

WORK EXPERIENCE

2016-present **DR. GREG COX RESEARCH GROUP** Bar Harbor, ME
THE JACKSON LABORATORY
Postdoctoral Associate

- Development of the RIPK1 kinase-dead mouse model using CRISPR/Cas9 for target validation in spinal muscular atrophy with respiratory distress type 1 (SMARD1).
- Utilize transcriptomics to identify pathways dysregulated in the spinal cord and heart of the SMARD1 *nmd* mouse model, for identification of new therapeutic targets.
- Characterization of the development of cardiac and skeletal myopathies, respiratory dysfunction, and adipose loss in tissue-specific rescued *nmd* mouse models with a wide range in phenotype severity.
- Evaluating a primary mouse cardiomyocyte cell model and a human iPSC model with inducible knockout of *Ighmbp2* for differences in cellular responses to stress both with and without mutations in *Ighmbp2*.

2013-2016 **DR. SUSAN ACKERMAN RESEARCH GROUP** Bar Harbor, ME
THE JACKSON LABORATORY
Postdoctoral Associate

- Identified the spatiotemporal mechanisms of U2 snRNA gene expression in mouse and humans.
- Determined how single-exon circRNA levels are upregulated in the cerebellum of the ataxia NMF291 mouse model, which has a five-nucleotide deletion in one of the U2 snRNA genes.

2008-2012 **DR. COLIN BISHOP RESEARCH GROUP** Winton Salem, NC
WAKE FOREST INSTITUTE *FOR* REGENERATIVE MEDICINE
Graduate Student

- Identified that *Nmnat2* is the endogenous factor involved in axon growth and maintenance responsible for neuronal and bladder defects, using the Nicotinamide mononucleotide adenylyltransferase 2-deficient mouse mutant (*Nmnat2/Blad*) .

2005-2007 **DR. PHILIP LAZARUS & DR. JOSHUA MUSCAT RESEARCH GROUP** Hershey, PA
PENN STATE CANCER INSTITUTE: DIVISION OF POPULATION SCIENCES
Research Technician I

- Investigated the UGT1A4 and UGT2B7 coding region SNPs and their effect on an *in vivo* human model.

2003-2004 **DR. MICHAEL VAYDA'S RESEARCH LAB** Orono, ME
THE UNIVERSITY OF MAINE
Undergraduate Research Assistant

- Assisted in the identification of new strains of positive single-stranded RNA potato mop- top viruses.

EDUCATION

2007-2012 **WAKE FOREST UNIVERSITY** Winston-Salem, NC
PhD in Molecular Medicine &Translation Sciences program

2000-2005 **UNIVERSITY OF MAINE** Orono, ME
Bachelors of Science in both Biochemistry and Molecular & Cellular Biology

RESEARCH SKILLS

- ***Lab skills:*** *In vivo* – Genetic mouse models with CRISPR/Cas9, vector design, AAVs, strain generation, phenotyping, microCT for anatomical evaluation, functional characterization (including nerve conduction velocities, plethysmography and muscle strength), pharmacology, *ex vivo* isolated organ bath analysis, rodent dosing techniques, vivarium operations and authoring of SOPs for IACUC approval. *In vitro* – RNAseq, Sanger sequencing, rtPCR, cell culture (primary cells, iPSCs, and immortalized cell lines), Northern blots, cloning, RNase protection assays, Western Blots, Southern Blots, ELISA, microscopy (light, fluorescent, and confocal), histology, and immunohistochemistry.
- ***Organ systems:*** peripheral and central nervous system, heart, skeletal muscle, bladder, and pulmonary
- ***Computer Expertise:*** MS Office, GraphPad, Ingenuity Pathway Analysis, Integrative Genomics Viewer, and R.

SELECTED PUBLICATIONS

Hicks AN, Martin PB, Holbrook SE, Schroeder DG, Cox GA. *Different Susceptibility of Secondary Cardiac and Respiratory phenotypes in mouse models of SMARD1*. (in preparation)

Kent T, Snyder E, McKernan M, and **Hicks AN***. *Incorporating science communication into a novel journal club format that facilitates higher level thinking in a diverse student background.* (in preparation)
***corresponding author**

Martin PB, Holbrook SE, **Hicks AN**, Schroeder DG, Cox, GA. *Generation of new SMARD1 mouse models with distinct respiratory symptoms.* (in preparation)

Zani A, Cananzi M, Fascetti-Leon F, Lauriti G, Smith VV, Bollini S, Ghionzoli M, D'Arrigo A, Pozzobon M, Piccoli M, **Hicks A**, Wells J, Siow B, Sebire NJ, Bishop C, Leon A, Atala A, Lythgoe MF, Pierro A, Eaton S, De Coppi P. *Amniotic fluid stem cells improve survival and enhance repair of damaged intestine in necrotising enterocolitis via a COX-2 dependent mechanism.* 2014 Feb;63(2):300-9. doi: 10.1136/gutjnl-2012-303735. Epub 2013 Mar 24. PMID: 23525603

Hicks AN*, Campeau L, Burmeister D, Bishop CE, Andersson KE. *Lack of Nicotinamide mononucleotide adenylyltransferase 2 (Nmnat2) - consequences for mouse bladder development and function.* Neurourol Urodyn. 2013 Nov;32(8):1130-6. doi: 10.1002/nau.22372. Epub 2013 Jan 31. PMID: 23371862
***corresponding author**

Hicks AN*, Lorenzetti D, Gilley J, Lu B, Andersson KE, Milligan C, Overbeek PA, Oppenheim R, Bishop CE. *Nicotinamide Mononucleotide Adenylyltransferase 2 (Nmnat2) Regulates Axon Integrity in the Mouse Embryo.* PLoS One. 2012;7(10):e47869. Epub 2012 Oct 17. PMID: 23082226
***corresponding author**

Pan C, **Hicks A**, Guan X, Chen H, Bishop CE. *SNL fibroblast feeder layers support derivation and maintenance of human induced pluripotent stem cells*. ßJ Genet Genomics. 2010 Apr;37(4):241-8. PMID: 20439100

SELECT ACHIEVEMENTS & ACTIVITIES

- ***Mentoring Experience***: 1 summer student, 1 high school academic year intern, and 1 post-baccalaureate student
- ***Talks/Presentations***: Invited to give talks at scientific conferences, as well as a talk to the Bar Harbor community about interpreting scientific coverage in the media. Presented scientific posters at different national and international conferences.
- ***Grants and Fellowships***: Awarded 2 internal training grants during graduate school and as a postdoc, and received a SigmaXI Grant in Aid of Research during graduate studies.
- ***Honors and Awards***: Received 8 travel awards during graduate school, along with an award for the best oral presentation at the 2010 Wake Forest Institute for Regenerative Medicine annual retreat
- ***Teaching Experience***: More than two years of experience in course design and teaching at both an undergraduate level and in a mixed undergraduate/high school setting as well as some experience in online course content design
- ***Volunteer Work***: Maine State Science Fair Judge 2014-2019, Science outreach in the form of DNA Day activities both in NC and ME, and organizing teams for several different charitable organization events over the years
- An avid cook and baker with a love for trying new things as well as an active participant in many outdoor and recreational activities including: whitewater rafting, downhill skiing, hiking, and running
- References available upon request