

John J Wilson

207-322-5333 (cell)

John.wilson@jax.org

Professional Experience

Research Assistant II to Dr. Chih-Hao Chang fall 2018-present

The Chang lab at JAX focuses its research on the immune system and, more specifically, the metabolic processes that lead to the dysregulation of exhausted immune cells in the tumor microenvironment and overactive cells in autoimmune syndromes. My primary role in this lab is to look at multiple mouse models of lupus, treat with various drugs and monitor disease progression or regression, managing multiple projects simultaneously. I maintain many diverse strains of mice, devise appropriate breeding schemes to create additional strains, and perform a variety of tests on the mice and resulting cells and tissues. I also screen new drugs in *in vitro* culture conditions before testing those with promising results on mouse models. In addition I aid in, training new people, performing literature searches, data analysis as well as aiding in manuscript and grant preparation.

Technical Skills: Mouse husbandry, colony management, experimental design, dissection, PCR, quantitative PCR, agarose gel electrophoresis, DNA extraction, manuscript preparation, oral and poster preparations, microscopy and histological interpretations, reagent preparation, ELISA, Seahorse extracellular flux analysis, flow cytometry, cell sorting, drug dosing and toxicity monitoring, various mouse biometrics (retro orbital bleeding, urine collection, ear notching, tail tipping, Sub cutaneous injections, IP injections, etc.), cell culture, public speaking and various computer skills (JCMS, Microsoft Word, Excel Outlook etc.)

Research Assistant II to Dr. Derry Roopenian fall 2017-2018

The Roopenian lab at Jax focuses its research on the immune system and, more specifically, the study and treatment of autoimmune diseases with a focus on systemic lupus erythematosus. My primary role in this lab is to look at multiple mouse models of lupus, treat with various drugs and monitor disease progression or regression, managing multiple projects simultaneously. I maintain many diverse strains of mice, devise appropriate breeding schemes to create additional strains, and perform a variety of tests on the mice and resulting cells and tissues. In addition I aid in managing the lab, training new people, ordering supplies, performing literature searches and aiding in data analysis and manuscript preparation.

Technical Skills: Mouse husbandry, colony management, experimental design, dissection, PCR, quantitative PCR, primer design, agarose gel electrophoresis, DNA extraction, manuscript preparation, oral and poster preparations, microscopy and histological interpretations, reagent preparation, ELISA, flow cytometry, drug dosing and toxicity monitoring, various mouse biometrics (retro orbital bleeding, urine collection, ear notching, tail tipping, Sub cutaneous injections, IP injections, foot pad injections etc.), minor mouse implant surgery, public speaking and various computer skills (JCMS, Microsoft Word, Excel Outlook etc.)

Research Assistant I to Dr. Derry Roopenian fall 2015-fall 2017

The Roopenian lab at Jax focuses its research on the immune system and, more specifically, the study and treatment of autoimmune diseases with a focus on systemic lupus erythematosus. My primary role as an RA I in this lab was to look at multiple mouse models of lupus, treat with various drugs and monitor disease progression or regression, managing multiple projects simultaneously. I maintained many diverse strains of mice, and performed a variety of tests on the mice and resulting cells and tissues.

Technical Skills: Mouse husbandry, colony management, dissection, PCR, quantitative PCR, primer design, agarose gel electrophoresis, DNA extraction, poster preparations, reagent preparation, ELISA, flow cytometry, drug dosing, various mouse biomethods (retro orbital bleeding, urine collection, ear notching, tail tipping, IP injections, foot pad injections etc.), various computer skills (JCMS, Microsoft Word, Excel Outlook etc.)

Production Associate I at Bar Harbor BioTechnology 2014-2015

BHB was a small start-up company with the goal of advancing life sciences research with gene expression tools and technologies. My role was to design, build and test qPCR assays in the StellarRay® product line, including predefined, custom and specialty arrays, often managing multiple projects simultaneously. In addition, I performed gene expression experiments for clients from RNA extraction through to data analysis and write-ups of results.

Skills: quantitative PCR, DNA extraction, RNA extraction, cDNA synthesis, reagent preparation, use of robotic liquid handling systems, primer design, experimental design, various computer skills (Microsoft Word, Excel etc.), laboratory safety experience, mouse xenograft primer design for human only gene amplification, protocol development and Agilent BioAnalyzer usage.

Post-baccalaureate research assistant to Dr. Shallee Page 2013-2014

The page lab was located at the University of Maine at Machias. My role was to analyze and annotate select genes in the *Mya arenaria* genome from the p53 pathway in addition to several opsin genes, perform phylogenetic analysis on annotated genes, design primers, extract RNA/DNA, run qPCRs or PCRs, analyze data and aid in manuscript preparation. This position also required various other laboratory techniques such as media preparation, experimental design skills and the ability to manage multiple projects simultaneously.

Skills: Dissection, PCR, quantitative PCR, agarose gel electrophoresis, TOPO-TA cloning, DNA extraction, RNA extraction, cDNA synthesis, manuscript preparation, oral and poster preparations, microscopy, reagent preparation, web-based bioinformatics (using BLAST, MIT GenScan, Clustal, NCBI ORF Finder, Expasy, CLC Bio Genomics Workbench, DNA Master, UniProt), sterile technique, primer design, experimental design and basic computer skills (Microsoft Word, Excel etc.).

Undergraduate research assistant to Dr. Shallee Page 2011-2013

The page lab was located at the University of Maine at Machias. My role was to analyze and annotate select genes in the *Mya arenaria* genome from the p53 pathway, design primers, extract RNA/DNA, run qPCRs or PCRs and analyze and write up the subsequent results. I also annotated the Little Skate (*Leucoraja erinacea*) mitochondrial genome. This position also

required various other laboratory techniques such as media preparation, experimental design skills and the ability to manage multiple projects simultaneously.

Skills: Dissection, PCR, quantitative PCR, agarose gel electrophoresis, DNA extraction, RNA extraction, cDNA synthesis, reagent preparation, web-based bioinformatics (using BLAST, MIT GenScan, Clustal, NCBI ORF Finder, Expasy, CLC Bio Genomics Workbench, DNA Master, UniProt), sterile technique, primer design, experimental design, oral and poster preparations and basic computer skills (Microsoft Word, Excel etc.).

Glucose oxidation-dependent survival of activated B cells provides a putative novel therapeutic target for lupus treatment

Education

B.A., *cum laude*, Biology major, 2013, University of Maine at Machias

B.S., *cum laude*, Marine Biology major, 2013, University of Maine at Machias

Overall GPA: 3.48/4.00

GPA in Major Fields: 3.65/4.00

Publications

Wilson, JJ, Wei, J, Daamen, AR, Sears, JD, Bechtel, E, Mayberry, CL, Stafford, GA, Bechtold, L, Grammer, AC, Lipsky, PE, Roopenian, DC, and Chang, C-H. (2023). Glucose oxidation-dependent survival of activated B cells provides a putative novel therapeutic target for lupus treatment. *iScience*. 26 (9). <https://doi.org/10.1016/j.isci.2023.107487>

Wells, AE, **Wilson, JJ**, Heuer, SE, Sears, JD, Wei, J, Pandey, R, Costa, MW, Kaczorowski CC, Roopenian, DC, Chang, CH and Carter, GW. (2023). Transcriptome Analysis Reveals Organ-Specific Effects of 2-Deoxyglucose Treatment in Healthy Mice. In review EMBOJ. Available as a preprint on BioRxiv, 2023.04.24.537717

Mayberry CL, Logan NA, **Wilson JJ**, and Chang C-H (2022) Providing a Helping Hand: Metabolic Regulation of T Follicular Helper Cells and Their Association With Disease. *Front. Immunol.* 13:864949.doi: 10.3389/fimmu.2022.864949

Zhu, J, Hay, AN, Potter, AA, Richwine, MA, Sproule, T, LeRoith, T, **Wilson, J**, Hasham, MG, Roopenian, DC, and Leeth, CM. Abrogated AID Function Prolongs Survival and Diminishes Renal Pathology in the BXSB Mouse Model of Systemic Lupus Erythematosus. *J Immunol* (2020) 204 (5): 1091–1100.

Bern, M., Nilsen, J., Ferrarese, M. *et al.* An engineered human albumin enhances half-life

and transmucosal delivery when fused to protein-based biologics. *Sci. Transl. Med* 12, 565 (2020). DOI: 10.1126/scitranslmed.abb0580

Nilsen, J., Trabjerg, E., Grevys, A. *et al.* An intact C-terminal end of albumin is required for its long half-life in humans. *Commun Biol* 3, 181 (2020).
<https://doi.org/10.1038/s42003-020-0903-7>

John P. Sundberg, Kathleen A. Silva, Victoria E. Kennedy, **John J. Wilson**, Nicholas E. Gott, Beth A. Sundberg, Derry C. Roopenian, (2019) 2-deoxy D-glucose treatment does not elicit a hair growth response in alopecia areata. *Experimental dermatology*,
<https://doi.org/10.1111/exd.14008>

John J. Wilson, Kin-hoe Chow, Nathan J. Labrie, Jane A. Branca, Thomas J. Sproule, Bryant R. A. Perkins, Elise E. Wolf, Mauro Costa, Grace Stafford, Christine Rosales, Kevin D. Mills, Derry C. Roopenian & Muneer G. Hasham (2018): Enhancing the efficacy of glycolytic blockade in cancer cells via RAD51 inhibition, *Cancer Biology & Therapy*,
DOI:10.1080/15384047.2018.1507666

John J. Wilson, Janelle Grendler, Azaline Dunlap-Smith, Brian F. Beal, and Shallee T. Page, “Analysis of Gene Expression in an Inbred Line of Soft-Shell Clams (*Mya arenaria*) Displaying Growth Heterosis: Regulation of Structural Genes and the NOD2 Pathway,” *International Journal of Genomics*, vol. 2016, Article ID 6720947, 10 pages, 2016.
doi:10.1155/2016/6720947

John J. Wilson, Morgan Hefner, Charles W. Walker & Shallee T. Page (2015) Complete mitochondrial genome of the soft-shell clam *Mya arenaria*, *Mitochondrial DNA Part A*, 27:5, 3553-3554, DOI: [10.3109/19401736.2015.1074214](https://doi.org/10.3109/19401736.2015.1074214)

Pope, W., et al. Whole genome comparison of a large collection of mycobacteriophages reveals a continuum of phage genetic diversity. Published in *eLife* 2015;4:306416. As part of the SEA-Phages consortium(over 100 authors).

Wang, Q., Arighi, C.N., King, B.L., Polson, S.W., Vincent, J., Chen, C., Huang, H., Kingham, B., Page, S. T., Rendino, M.F., Thomas, W. K., Udway, D.W., Wu, C. H., and the North East Bioinformatics Collaborative Curation Team* Daniel Nasko, Chandran Sabanayagam, Liang Sun and Yue Wang at University of Delaware; ME: Jacob Berninger, Stevey Mahar, Eric Tan and **John J. Wilson** at University of Maine at Machias; and twenty others.2012. Community annotation and bioinformatics workforce development in concert — Little skate genome annotation workshops and jamborees. *Database*. *Database* Vol. 2012, bar064; doi:10.1093/database/bar064.

Manuscripts in Preparation

John Wilson, Thomas Sproule, Porcia Manandhar, Elisabeth Marnik, Laurence Morel, and Derry Roopenian, Efficacy of intermittent 2-Deoxyglucose therapy in mouse models of lupus.

John Wilson, Thomas Sproule, Porcia Manandhar, Laurence Morel, and Derry Roopenian, Safety of intermittent 2-Deoxyglucose therapy in mouse models of lupus.

Meeting Abstracts

John Wilson, Thomas Sproule, Porcia Manandhar, Elisabeth Marnik, Laurence Morel, and Derry Roopenian. Efficacy and safety of intermittent 2-Deoxyglucose therapy in mouse models of lupus. *Lupus*, *Lupus* 21st Century, Armonk NY September 2018.

Muneer G. Hasham, Kin-hoe Chow, **John Wilson**, Nathan LaBrie, Bryant Perkins, Jane Branca, Thomas Sproule and Derry Roopenian. Abstract A115: Targeting glycolysis and RAD51-dependent repair in B-lymphoid cancers. *Mol Cancer Ther* January 1 2018 (17) (1 Supplement) A115; DOI: 10.1158/1535-7163.TARG-17-A115

GenBank Submissions (not peer-reviewed)

Wilson, J.J., Hefner, M., Walker, C.W. Page, S.T Mya arenaria mitochondria, complete genome Accession # NC_024738.1 2014.

Wilson, J.J., Dunlap-Smith, A.I., Grendler, J.E., Walker, C.W. and Page, S.T. "Mya arenaria mitogen-activated protein kinase 14 (MAPK14)" ACCESSION #KJ210324. 2014.

Wilson, J.J., Dunlap-Smith, A.I., Grendler, J.E., Walker, C.W. and Page, S.T. "Mya arenaria casein kinase I isoform alpha-like protein (CSNK1A1)" ACCESSION #KJ210323. 2014.

Bragg, J., Chandler, A. Y., Dehn, A., Hefner, M., Petersen, P., **Wilson, J.**, Zeba, F., Zegers, G.P., Page, S.T., Bradley, K. W., Clarke, D.Q., Lewis, M.F., Barker, L.P., Bailey, C., Asai, D.J., Garber, M.L., Bowman, C.A., Russell, D.A., Pope, W.H., Jacobs- Sera, D., Hendrix, R.W. and Hatfull, G.F. "Mycobacterium phage HH92, complete genome" Accession # KJ538722.1 2014.

Abrams, C., Dunlap-Smith, A., Frias, Y., Grendler, J., Hostert, E., Martin, P., **Wilson, J.**, Croft, D.G., Zegers, G., Page, S.T., Bradley, K.W., Khaja, R., Lewis, M.F., Barker, L.P., Asai, D.J., Bowman, C.A., Russell, D.A., Pope, W.H., Jacobs-Sera, D., Hendrix, R.W. and Hatfull, G.F. "Mycobacteriophage Marcell" Accession #JX307705.1 <http://www.ncbi.nlm.nih.gov/nuccore/JX307705.1>. 2012.

Wang, Q., Arighi, C.N., King, B.L., Polson, S.W., Vincent, J., Chen, C., Huang, H., Kingham, B.F., Page, S.T., Rendino, M.F., Thomas, W.K., Udworthy, D.W., Wu, C.H., Nasko, D., Sabanayagam, C., Sun, L., Wang, Y., Berninger, J., Mahar, S., Tan, E., **Wilson, J.J.**, Coats, V., Congdon, C.B., Thompson, J.A., Gagne, D.J., Adediran, J., Bregnard, T., Cleary, A.C., Grandpre, S., Jenkins, B., Killea, L., Lefoley, B., Mccusker, K., Mokszycki, M., O'Brien, M., Oceau, J.C., Shelales, S., Spinard, E., Stupalski, J., Tran, L.,

Wallace, J. and Cunniff, B. Genbank submission –Leucoraja erinacea mitochondrion, complete genome. ACCESSION#JQ034406. 2010.

Korber, J., Page, S.T., Zegers, G., **Wilson, J.J.** and 81 others. Genbank submission Mycobacterium phage Spartacus, complete genome. ACCESSION#JQ300538. 2010.

Presentations/Scholarly Activity

(underlined names indicate presenters)

John J. Wilson, Jian Wei, Andrea R. Daamen, John D. Sears, Elaine Bechtel, Colleen L. Mayberry, Grace A. Stafford, Amrie C. Grammer, Peter E. Lipsky, Derry C. Roopenian, Chih-Hao Chang. Augmented glucose dependency of autoreactive B cells provides a treatment target for lupus. Lupus 21st Century meeting 2022.

Mendoza, A, **Wilson, JJ**, Mayberry, CL, and Chang, C. Metabolic Control of T Follicular Helper Cell Polarization. Annual Summer Student Symposium. The Jackson Laboratory, Bar Harbor, Maine.

Logan, N, Wei, J, **Wilson, JJ**, Mayberry, CL, Chang, C. T Cell-derived IL-3 Enhances Anti-tumor Immunity. Academic Year Fellow Symposium. The Jackson Laboratory, Bar Harbor, Maine.

Logan, N, Wei, J, **Wilson, JJ**, Mayberry, CL, Chang, C. T Cell-derived IL-3 Enhances Anti-tumor Immunity. Maine State Science Fair. Colby College, Waterville, Maine.

Smart, M, Mayberry, CL, **Wilson, JJ**, Chang, C. Advancing Metabolic Flux Analysis in the Single-Cell Era. Annual Summer Student Symposium. The Jackson Laboratory, Bar Harbor, Maine.

John J. Wilson, Thomas J. Sproule and Derry C. Roopenian. 2-Deoxyglucose and Autoimmunity. Jackson Aging Center External Advisory Board Meeting 2018.

Muneer G. Hasham, **John J. Wilson**, Kin-how Chow, Nathan J. Labrie, Bryant R. A. Perkins, Jane A. ^[SEP]Branca, Thomas J. Sproule, and Derry Roopenian. Targeting glycolysis and RAD51 dependent repair in B-lymphoid cancers. AACR-NCI-EORTC meeting 2017.

^[SEP]Jeannette Nilsen, **John Wilson**, Malin Bern, Kine Marita Knudsen Sand, Algirdas Grevys, Greg ^[SEP]Christianson, Tom Sproule, Inger Sandlie, Derry Roopenian, Jan Terje Andersen ^[SEP] Application of a novel mouse model for evaluation of ^[SEP]engineered albumin variants and albumin-based therapeutics. 2016

John J. Wilson, Janelle Grendler, Azaline Dunlap-Smith, Brian Beal, Benjamin King, Shallee T. Page “Transcriptional Control of Growth in the Soft-Shell Clam Mya arenaria” Society for Molecular Biology and Evolution. Puerto Rico 2014.

Janelle Grendler, John J. Wilson, Taylor Roos, Jud Bragg, Shallee T. Page. "Analysis of expression of opsins 4 and 5 in the mollusk *Mya arenaria*" New England Undergraduate Research and Development Symposium, U. New England, Biddeford, ME., March 2014.

John J. Wilson, Azaline Dunlap-Smith, Charles W. Walker, Shallee T. Page. "Preliminary Annotation of the *Mya Arenaria* p53 Pathway". Presented at New England Undergraduate Research and Development Symposium, U. New England, Biddeford, ME., March 2013.

Colton Abrams, Janelle Grendler, Azaline Dunlap-Smith, Yesenia Frias, Ellen E. Hostert, John J. Wilson, Paige P. Martin, Dominique G. Croft, Gerard Zegers, Shallee T. Page. "Isolation, Characterization and Annotation of Novel Bacteriophage Marcell". Howard Hughes Medical Institute SEA Phages Symposium, Janelia Farms, VA., May, 2012.

John J. Wilson. "Annotation of the Little Skate Genome." Independent research student presented at UMM Division Research Roundtable, April 2012.

John J. Wilson, Jake Berninger, Stevey Mahar, Shallee T. Page. Annotation of the Little Skate Genome" U. Delaware Bioinformatics Symposium, May 2012.

Professional development activities

- Judge at the Maine State Science Fair 2018
- Frequently attend lectures at the Jackson Laboratory 2015-present
- Attended HHMI Science Education Alliance in silico training. December, 2011.
- Participated in Little Skate Annotation Jamboree. May 2011.
- Participated in a workshop in Orono, ME on Ensembl Genome Browser. November 2011.

Teaching Experience

Teaching assistant, January 2011-May 2011, U. Maine at Machias

- Introduction to Bioinformatics (lab)

Tutor, U. Maine Machias. 2011-2013.

- Introduction to Bioinformatics
- Introduction to Zoology
- General Microbiology
- Introduction to Marine Biology
- Genetics
- General Organic Chemistry I
- General Organic Chemistry II
- General Chemistry II

Honors and Awards

- Senior watch award recipient U. of Maine Machias. 2013
(Presented annually to two graduating seniors selected by the faculty for their citizenship, leadership, and service to the U. of Maine at Machias community)

Club and Organizational Activities

- Member of Water polo organization 2008-2012
- Member of Science Club 2010-2013
- Member of Fencing Club 2013
- Student Senator 2012
- President of Student Senate/Student body President 2012-2013
- Vice President of Sigma Chi Lambda Sports and Leadership Fraternity 2011-2012
- President of Sigma Chi Lambda Sports and Leadership Fraternity 2012-2013
- Vice President of Greek Council 2012
- President of Greek Council 2013
- President of Residence Hall Association 2011-2012

Other work experience

- Student tutor 2011-2013
- Lifeguard at Center for Lifelong Learning Pool 2008-2013
- Laboratory assistant for UMM chemistry labs 2010-2012
- Teaching assistant spring 2011