

Christine (Nykyforchyn) Goldfarb, Ph.D.

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Personal Statement

While in the Department of Biomedical Engineering at Boston University, my thesis focused on understanding the role that long non-coding RNAs play in the mouse liver, specifically in regulating sex-biased and xenobiotic responsive genes. In addition to my thesis work which revolves around genetics, genomics and utilizing bioengineering tools and techniques, I expanded my training through an appointment to the Joint Training Program in Pharmacology and two internships with Pfizer. Through leading the Student Association of Graduate Engineers and serving on the Associate Provost's Graduate Advisory Committee, I have developed my communication and interpersonal skills outside of the lab. As a senior lab member, I worked with a cross-disciplinary team, mentoring junior lab members, contributing to scientific discussions and producing high-quality results.

Education

Ph.D., Biomedical Engineering <i>Boston University, Boston MA</i> Joint Training Program in Pharmacology	Sept. 2013 – Jan. 2021
M.S., Biomedical Engineering <i>Boston University, Boston MA</i>	Sept. 2013 – Sept. 2016
B.S.E., Chemical Engineering <i>University of Connecticut, Storrs, CT</i> Graduated Magna Cum Laude and an Honors Scholar	Sept. 2009 – May 2013

Experience

Genomic Technologist III: Genome Technologies <i>The Jackson Laboratory, Farmington, CT</i> <ul style="list-style-type: none">• Core facility roles providing end-to-end sequencing services including nucleic acid extractions, library preparation, sample QCs and sequencing for Illumina sequencing.• Perform high molecular weight DNA extractions for use generating ultra-long read sequencing data using the Oxford Nanopore platform.• Experience with liquid handlers to aid in automated library prep of Illumina libraries and serial dilutions necessary for library QCs	March 2021-Present
Graduate Research Assistant: Dr. David Waxman, Advisor <i>Department of Biology, Boston University</i> <ul style="list-style-type: none">• Identify lncRNAs most likely to be influencing gene expression in the mouse liver• Investigate the mechanisms through which lncRNAs control gene expression in sex-biased and xenobiotic responsive manners through the regulation of chromatin structure and promoter/repressor actions• Use nuclei fractionation studies and single nuclei RNA-Seq to identify the sub-cellular localization and liver cell populations that express certain lncRNAs• Carry out CRISPR-Cas9 design and implementation to knockdown lncRNAs in mouse liver	May 2015 – Jan. 2021
Graduate Research Assistant: Dr. Anurag Singh, Advisor <i>Department of Pharmacology, Boston University School of Medicine</i> <ul style="list-style-type: none">• Investigated the role miRNAs play in influencing cancer susceptibility to chemotherapeutics• Attempted to utilize nanoparticles to deliver miRNAs to target cancer cells	May 2014 – May 2015

Summer Research Intern: Inflammation and Remodeling June 2014 – July 2014
Pfizer, Inc., Cambridge, MA

- Developed cell-based functional assays relevant to chronic inflammatory disorders and ROS
- Optimized Heme Oxygenase 1 (HO-1) assay for high throughput screening of compounds

Research Assistant: Rachel O'Neill, Advisor Sept. 2011 – May 2013
Department of Molecular and Cell Biology, University of Connecticut

- Genetically Engineered inducible mammalian cell line to express a specific retrotransposon
- Studied the effect of this element on the stability of the cell, chromosome and centromere

Summer Engineer May 2011 – August 2011
General Dynamics – Electric Boat, Groton, CT

- Supported the team managing the development of new components for the next submarine class for the US Navy
- Tracked developmental, financial and time dependent aspects for program status update presentations

Summer Research Intern: Investigative Toxicology May 2010 – August 2010
Pfizer, Inc., Groton, CT

- Studied the effects nephrotoxic agents had on the lateral line hair cells of zebrafish
- Localized the protein Megalin to the lateral line zebrafish hair cells

Publications and Posters:

Goldfarb, C. N. et al. "Global analysis of expression, maturation and subcellular localization of mouse liver transcriptome identifies novel sex-biased and TCPOBOP-responsive long non-coding RNAs," *BMC Genomics*, 2021.

Goldfarb, C, et al. "Functional impact of CRISPRi knockdown of TCPOBOP-responsive long non-coding RNA Inc5998 in mouse liver evaluated by single nuclei (sn)RNA-seq," Boston University Genome Science Institute Research Symposium, Boston, MA (2019)

Aquino, P, et al. "Coordinated regulation of acid resistance in *Escherichia coli*," *BMC Syst. Biol.*, 2017.

Nykyforchyn, C, et al. "Mouse liver lncRNAs as candidate regulators of sex-biased gene expression in *cis* and in *trans*," Boston University Genome Science Institute Research Symposium, Boston, MA (2016)

Nykyforchyn, C, et al. "Sex-biased mouse liver lincRNAs co-localize to Topologically Associating Domains (TADs) with sex-biased protein-coding genes," Boston University Genome Science Institute Research Symposium, Boston, MA (2015)

Nykyforchyn, C., "Establishing a Genetically Engineered Cell Line to Study the Function of the Non-Coding RNA SINE28," University of Connecticut Honors Thesis, Department of Molecular and Cell Biology, Storrs, CT (2013)

Honors

Pharmacology Training Grant, Boston University 2015 – 2016
XTNC Graduate Student Fellowship, Boston University 2014 – 2015

Leadership Roles

Associate Provost's Graduate Advisory Committee, Member 2017 – 2020
Student Association of Graduate Engineers, President 2016 – 2018
Student Association of Graduate Engineers, Executive Board Member 2014 – 2016

Skills

Laboratory: RNA-Seq, Library Preparation, AAV Production, snRNA-Seq, CRISPR-Cas9, CHIP, Nuclei Fractionation, qPCR, smFISH, Confocal Microscopy, Cell Culture, *in vivo* Mouse Studies, Western Blot, IHC

Technical/Computational: Image Processing (FIJI), Running Pipelines & Simple Scripts for RNA-Seq Data Processing (Command Line), Data Analysis (Excel/Online Tools), Graphing & Statistics (PRISM)

Soft Skills: Project Management (Trello), Leadership Training & Teambuilding Experience, Organization (Lab Stock Room Manager), Strong Written and Verbal Communication, Teaching & Mentorship Experience