

# Asa M. Budnick

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## *Education:*

**North Carolina State University**  
Pursuing a PhD in Plant Biology

**Raleigh, NC**

**Northeastern University**

Bachelor of Science Degree in Biology      Graduated: May, 2018

**Boston, MA**

**GPA: 3.93**

## *Skills:*

*Laboratory:* Skilled in pipetting and confident in essential molecular biology lab skills: PCR; bacterial culture; bacterial transformation; recombinant DNA assembly and design (Gibson and Golden Gate); plant culture, callus induction and regeneration, *Agrobacterium* mediated transformation, protein purification; SDS-PAGE; SPRI purification; capillary electrophoresis; Illumina sequencing library design and preparation for DNA and RNA sequencing; RNA synthesis.

*Computational:* Google Drive and Microsoft Office applications; Inkscape; Benchling molecular biology tools and notebook; Geneious; Jmol and PyMOL; R; Python; Linux Bash; Amazon Web Services, Github, Docker

## *Professional Experience:*

**Inari Agriculture**

**Cambridge, MA**

Research Associate, January 2018 to July 2021

- Collaborated with multidisciplinary team members to develop appropriate analysis pipelines for complex amplicon sequences.
- Designed and built over 100 DNA vectors for testing of various gene editing technologies in plant tissue
- Analyzed and visualized NGS and other data and reported results to team members and the company
- Developed analytical methods for the characterization of Cas proteins and trained others in executing these assays
- Engaged in planning and strategy at experiment and project levels in a start-up environment.
- Earned two promotions in three years accepting more responsibility and ownership over experiment and project planning.
- Organized and moderated weekly project presentation meetings for all science personnel (>90 people)

**Dr. Lee-Parsons Lab at Northeastern University**

**Boston, MA**

Volunteer, January 2017 to May 2018

- Collaborated with researchers to investigate and develop novel approaches and techniques for *Catharanthus roseus* transformation and regeneration
- Secured research funding through a Northeastern University Creative Research and Endeavour Award - \$3000
- Cultured *Catharanthus roseus* seedlings and explants
- Generated callus lines for transformation experiments and investigated various regeneration approaches
- Helped develop an improved seed sterilization and germination protocol
- Worked to develop a novel *Agrobacterium* mediated transformation approach for *C. roseus*. Collected, analyzed, and reported data as a poster at the 2018 Northeastern Section of the ASPB.

### **Editas Medicine**

**Cambridge, MA**

Directed Evolution Co-op, January 2017 to August 2017

- Designed and carried out microbial biology experiments for directed protein evolution
- Designed and executed experiments to engineer and understand CRISPR/Cas systems
- Produced and purified proteins in both batch and high-throughput formats
- Engaged in discussion and decision making concerning new directions, literature, and data analysis in a start-up environment
- Successfully onboarded RNA-sequencing protocol: identified viable protocol from literature, assisted with ordering and oligo design, conducted and optimized wet-lab workflow
- Used *in silico* prediction platforms and developed scripts to model and analyze RNA folding

### **Northeastern University's Peer Tutoring Program**

**Boston, MA**

Peer Tutor, September 2015 to January 2017

- Supported >20 fellow students in their study of organic chemistry
- Provided dedicated tutoring to a pair of students working with them multiple times per week for 2 semesters, helping them achieve high final grades

### **MIT's BioMicroCenter, DNA Sequencing Core Facility**

**Cambridge, MA**

DNA Library Prep Co-op, January 2016 to July 2016

- Processed DNA samples into purified and size selected Illumina libraries using manual and semi-automated techniques
- Coordinated with a team of specialists to ensure rapid and accurate high throughput sequencing in a fast-paced high-pressure environment
- Evaluated new reagents and protocols and presented findings to optimize lab practices
- Analyzed quality of DNA samples and libraries using capillary electrophoresis

### *Other Experience:*

#### **Northeastern University's 2016 iGEM Team**

**Boston, MA**

Club Member, October 2015 to December 2017, Club President starting August 2016

- Researched, designed, planned, budgeted, carried out, and presented a bacterial plasmid based synthetic biology project concerning Microbial Electrolysis Cells alongside team members
- Collaborated with Northeastern faculty, staff, and EHS, as well as other teams and private organizations
- As President, facilitated communication between team members, set team goals and deadlines, and began a knowledgebase of important contacts and goals for future years.

### *Fellowships, Awards, Honors, Grants and Scholarship:*

- North Carolina State University AgBioFEWS Fellow 2022-2023
- North Carolina State University Genetics and Genomics Scholar 2021
- Northeastern University Dean's Scholarship 2014-2018
- Advanced Research and Creative Endeavor Grant for undergraduate research \$3,000
- Northeastern University Dean's List every semester 2014-2018
- Graduated from Northeastern University *summa cum laude*

### *Posters and Presentations:*

- Collaborative Crop Resilience Program (CCRP) Annual Conference 2022: *Discovering circRNAs Involved in Lotus Symbiosis*
- North East section American Society of Plant Biologists (NEASPB) Conference 2018: *Investigation of Agrobacterium-mediated Stable Transformation Methods for Catharanthus roseus*. Won Runner-up Best Undergraduate Poster.
- International Genetically Engineered Machine (iGEM) 2017 Giant Jamboree. Poster and presentation: *Expansion of Cell-Free Manufacturing with Post-Translational Modification*
- International Genetically Engineered Machine (iGEM) 2016 Giant Jamboree. Poster and presentation: *Wastewater Treatment: Energy and Innovation*

### *Professional Organizations:*

- Member of American Society of Plant Biologists 2019-Present