

# Elizabeth Bender

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## EDUCATION

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- The University of Texas at Austin – Biomedical Engineering** **August 2023**  
*Doctor of Philosophy* *Austin, TX*  
**Achievements:** University Graduate Continuing Fellowship, Graduate Student Society Finance and Social Chair
- The University of Texas at Austin – Biomedical Engineering** **May 2020**  
*Master of Science in Engineering* *Austin, TX*
- Tufts University – Biomedical Engineering** **May 2018**  
*Bachelor of Science in Biomedical Engineering* *Medford, MA*  
**Achievements:** BME Senior Scholar Prize, BME Best Research Project, Engineers Without Borders President, Women's Club Lacrosse Captain

## SKILLS

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**In vitro assays:** murine bone marrow isolation, mammalian cell culture, primary immune cell culture, macrophage stimulation, RT-qPCR, ELISA, cytokine analysis, cytotoxicity, small molecule inhibition, Incucyte live cell imaging  
**Biomaterials:** polymer nanoparticles, liposomes, hydrogels, sponges, dialysis, ultracentrifugation, lyophilization, DLS, zeta potential, Nanosight, spectroscopy, TEM, TLC, rheometry  
**Data analysis:** R, ImageJ, statistics, design of experiments (DOE), data visualization

## EXPERIENCE

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- The University of Texas at Austin – Biomedical Engineering** **Austin, TX**  
*Graduate Research Assistant – Suggs Lab* *August 2018 – August 2023*
- Designed, optimized, and characterized 8 unique lipid-polymer nanoparticle formulations to understand the importance of nanoparticle physicochemical properties in the treatment of chronic inflammatory conditions.
  - Cultured primary macrophages and executed cell-based assays to measure nanoparticle uptake, protein expression, cytokine release, and cytotoxicity, using biochemical techniques including qPCR, ELISA, and MTS.
  - Co-authored 5 peer-reviewed manuscripts and presented work at 3 academic conferences.
  - Trained two undergraduate research assistants to perform independent experiments and draw impactful conclusions resulting in a co-authorship on a manuscript and 3<sup>rd</sup> place in a department poster competition.
  - Taught discussion and lab sections for 100+ undergraduate biomedical engineering students and received an average 4.5/5 on student evaluations.
- Tufts University – Biomedical Engineering** **Medford, MA**  
*Undergraduate Research Assistant – Kaplan and Black Labs* *January 2016 – May 2018*
- Conducted research on vascularization and immune cell infiltration in lyophilized silk-based sponges for tissue engineering applications.
  - Designed *in vitro* studies on biomaterial stability and growth factor release and analyzed 100+ *ex vivo* samples with histology and IHC.

## VASERA

- Co-founder* **Medford, MA**  
*December 2016 – May 2018*
- Designed a reversible, non-hormonal, and injectable hydrogel for use as a male contraceptive device.
  - Won 3 awards and over \$50K in funding from the Tufts University Gordon Institute entrepreneurial competitions.

## Massachusetts General Hospital – Center for Engineering in Medicine

- Research Intern* **Boston, MA**  
*May 2017 – August 2017*
- Conducted research on pre-vascularization of dermal skin substitutes for pediatric burn patients.
  - Optimized biomaterial and cellular conditions for *in vitro* capillary tube formation.