

Andrew W Miller

Email: Andrew.w.miller@duke.edu Cell: 949-275-6477

EDUCATION

Duke University Durham, NC
Graduate Student in Biomedical Engineering Ph.D. Program Expected graduation: 2023
Mentor: Dr. Tatiana Segura
GPA: 3.65 (cumulative)
Select Courses: Biology by Design, Mathematical Modelling

University of California, Los Angeles Los Angeles, CA
M.S., Chemical and Biomolecular Engineering Graduation: August 2018
Advisor: Dr. Tatiana Segura
GPA: 3.51 (cumulative)
Select Courses: Molecular Biotechnology, Biochemical Reaction Engr., Polymer Chemistry

University of Colorado at Boulder Boulder, CO
B. S., Chemical and Biological Engineering Graduated: May 2015
GPA: 3.317 (cumulative)
Select Courses: Fluid Dynamics, Separations Processes, Chemical Process Design, Process Control

TECHNICAL SKILLS

Software Applications: Matlab, ImageJ, GraphPad Prism, Pro II, JMP, Minitab, Microsoft Office
Lab Techniques: NMR, SEM, Light Microscopy, Confocal Microscopy, Rheology, DNA electrophoresis, Laser Imaging, Laser Diffraction Analysis (LDA), Cell Culture

RESEARCH EXPERIENCE

Graduate Student Researcher September 2018 – Present
Duke University Durham, NC

- Optimize nonporous and porous gel partial degradation for optimal non-viral gene delivery
- Evaluate different methods of porous gel creation including sacrificial porogen (PMMA, alginate microbeads) and cryogels accompanied with thorough void fraction analysis
- Develop novel protein fusions to enable native TSG-6 function to covalently modify hyaluronic acid hydrogels *in situ*

Graduate Student Researcher September 2016 – September 2018
University of California, Los Angeles Los Angeles, CA

- Thesis: Optimization of therapeutic loaded hydrogels with finely tuned degradation and release profiles for localized wound healing
- Optimization processes including rigorous troubleshooting and stepwise verification
- Design of experiment and data collection/entry/analysis using statistical analysis (GraphPad, JMP) to determine significance
- *in vitro* study provided DNA amplification/quantification, bacterial/mammalian cell (D1, HDF) culture skills including aseptic practices (passaging, cryopreservation, transfection, staining)

Email: Andrew.w.miller@duke.edu Cell: 949-275-6477

Intern

Entrogen, Inc.

June 2017 – September 2017
Woodland Hills, CA

- Repeated laboratory procedures: DNA extraction from patient samples, DNA concentration measurements, sectioning with a microtome, various lab maintenance
- Wrote the company's SOP for safe and efficient microtome operation
- Intuitively organized large amounts of data culminating in an internal sample database
- cGMP experience including clean room etiquette, tracking lot numbers, and adhering to strict SOPs for FDA regulated products

Particle Cohesion Research Assistant

University of Colorado at Boulder

August 2013 – October 2015
Boulder, CO

- Personally scripted MATLAB code converted raw analog data to practical values
- Code calculated confidence intervals and probability distribution functions among parallel experiments on a medium scale (400,000 data points per experiment)
- Led experimental technician that facilitated cooperation with simulations
- Co-managed, trained, and provided protocols to undergraduate research assistants

PUBLICATION

LaMarche, C. Q., Miller, A. W., Liu, P. and Hrenya, C. M. (2016), Linking micro-scale predictions of capillary forces to macro-scale fluidization experiments in humid environments. *AIChE J.*, 62: 3585–3597. doi:10.1002/aic.15281

CONFERENCES & POSTERS

Regenerative Medicine Conference

Wild Dunes, NC

March 2019

Poster: Improving Hydrogel Transfection Efficiency via Partial Degradation

TEACHING EXPERIENCE

Teaching Assistant (TA) - University of California, Los Angeles

Biochemical Methods II

September 2017 – March 2018

- Guide students through previously designed experiments Los Angeles, CA
- Enhance and reinforce topics learned in class and ensure proper laboratory techniques
- Cooperatively graded lab reports with other teaching assistants

Separations Processes

March 2017 – June 2017

- Secretarial duties – copies, printing, emailing students, grade entry, etc. Los Angeles, CA
- Lead weekly discussion sessions and office hours to enhance/clarify important lecture topics
- Co-lectured a class session that outlines Pro II software operation and uses
- Cooperatively graded and coordinated with other teaching assistants

AFFILIATIONS

Undergraduate Research Opportunity Program (UROP)

February 2013 – 2015

American Institute for Chemical Engineers (AIChE)

April 2012 – Present

Engineers Without Borders (EWB)

September 2015 – Present