

Erik V. Munsell

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EXECUTIVE SUMMARY

- Chemical engineering PhD with 5 years experience in drug and gene delivery, with a focus on designing, characterizing, and evaluating *in vitro* the efficacy of novel polymer-based delivery systems
- Expert in peptide synthesis, mammalian cell culture, gene delivery/formulation, and stem cell differentiation
- Collaborated with multi-disciplinary research teams as an NIH doctoral trainee at the University of Delaware; resulted in 1 co-author publication in PNAS
- Results-oriented leader: supervised 3 student researchers; co-founded the first graduate student career development program within the American Chemical Society's Biochemical Technology Division

EDUCATION

Ph.D. Chemical & Biomolecular Engineering

University of Delaware (UD) – Newark, DE

Thesis Advisor: Dr. Millicent O. Sullivan

Anticipated 2017

B.S. Chemical Engineering / Minor: Biology

Rensselaer Polytechnic Institute (RPI) – Troy, NY

GPA: 3.84/4.00 | *Magna cum Laude*

May 2012

RESEARCH & EDUCATIONAL EXPERIENCE

Graduate Student Researcher Scientist – UD

2013-present

Thesis Title: Histone-Targeted Gene Nanocarriers for Bone Regenerative Applications

- Designed, characterized, and assessed novel bio-mimetic nanomaterials to enhance the delivery and expression of osteogenic growth factor genes and induce mesenchymal stem cell differentiation *in vitro*
- Developed mechanistic insight and understanding of intracellular trafficking routes that enhance gene transfer, to further guide the design of more effective gene delivery systems

NIH Chemistry-Biology Interface Doctoral Traineeship – UD

2013

Advisor: Dr. David W. Colby

- Investigated membrane effects on the formation of abnormal prion protein conformations to develop an effective model for analyzing prion disease and propagation

Advisor: Dr. Millicent O. Sullivan

- Analyzed synergistic effects between histone H4 tail peptides and PEI in enhancing non-viral gene delivery

Advisor: Dr. K. Eric Wommack

- Established a novel bioinformatics approach to characterize marine viral diversity using ribonucleotide reductase

Undergraduate Research Associate – RPI

2011-12

Advisor: Dr. Peter M. Tessier

- Analyzed reversible protein interaction characteristics to elucidate the mechanisms behind protein stability and aggregation in Alzheimer's disease patients.
- Assessed the utility of gold nanoparticles as effective drug delivery vectors to improve antibody therapeutics.

RESEARCH SKILLS

Laboratory: Bacterial & Mammalian cell culture; peptide synthesis; gene delivery; confocal microscopy; electron microscopy; chromatography (liquid, column, affinity); transfection; transduction; stem cell differentiation; immunochemistry; histology; dynamic light scattering; mass spectrometry (ESI, MALDI); organic synthesis; inorganic nanoparticle synthesis; qRT-PCR; gel electrophoresis; Western blot; fermentation; protein production & purification; bioinformatics

Computer: Matlab; Simulink; statistical analysis; ImageJ; Basic; Microsoft Office

Languages: Intermediate Spanish