# Anthony L. Dellinger, PhD

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## Biographical Brief

Nano scientist, entrepreneur and inventor, Dr. Dellinger has held positions in enterprise leadership, academic instruction, and led Federal grant programs. He holds an AS.c. in Biology from Northern Virginia Community College, a BS.c. in Forensic Science, with minors in Biology, Chemistry and Criminal Justice from Virginia Commonwealth University, and a PhD in Nanoscience from the Joint School of Nanoscience and Nanoengineering (JSNN, a collaboration between University of North Carolina at Greensboro and North Carolina Agriculture and Technical State University).

Dellinger focused his graduate research on the effect of carboxyfullerene nanomaterials on biological systems. Fullerenes are carbon spheres with unique electrical properties and biological function, with potential for an array of therapeutic, diagnostic and theranostic applications. His dissertation examined the synthesis and characterization of zero-dimensional (0D) nanoparticles with modified side chain chemical moieties and elucidated anti-inflammatory cellular mechanisms to prevent or inhibit the release of chemical mediators. Dellinger has authored more than 20 peer-reviewed publications that have contributed to the global body of fullerene research.

In 2015, Dellinger was named the inaugural Entrepreneur of the Year at the University of North Carolina at Greensboro. He is dedicated to improving public, societal, ecological, and economic outcomes through research, innovation and enterprise. He has led multiple National Science Foundation Small Business Innovation Research grants and applied his academic publishing philosophy to enterprise development. In addition to serving as President to Kepley BioSystems, he is a board member of the International Union for Conservation of Nature, Horseshoe Crab Species Specialist Group and has served as a special topic editor for Frontiers *Journal of Marine Science* and JoVE for emerging and sustainable oceanic research. Recently, Dellinger was selected as a TED$_x$Greensboro speaker (2020) and presented emerging sustainable horseshoe crab research at Kepley BioSystems (Saving the horseshoe crab and fighting the virus with nanoscience). Dellinger is also dedicated to shaping future STEM experts through scholarship and invention. Upon Covid 19 onset, AT Research Partners was formed specific to the USPTO outreach to inventors for pandemic innovations. Two inventions were filed and granted, pro se. The partners have continued an aggressive IP program under an "invent first" philosophy.

## Education

**PhD Nanoscience** — **May 2014**
Joint School of Nanoscience and Nanoengineering — Summa Cum Laude
North Carolina University at Greensboro

**BS.c. Forensic Biology (Minor: Chemistry and Criminal Justice)** — **May 2006**
Virginia Commonwealth University — Magna Cum Laude

**AS.c. Biology** — **May 2004**
Northern Virginia Community College — Summa Cum Laude

## Professional & Research Experience

**AT Research Partners**
Principle & Co-founder 2021 (Present)

**Joint School of Nanoscience & Nanoengineering**
Adjunct Professor, Department of Nanoscience 2015 (Present)

Classes: Nanomedicine (Graduate – NAN-750) and Advanced Topics in Molecular Biology (Graduate – NAN-776). Instruct and advise graduate students in highly acclaimed courses. Selection Committee membership and serve as thesis advisor.

**Kepley BioSystems, Inc**
President, Co-founder & Chief Scientist 2013 (Present)

**Joint School of Nanoscience & Nanoengineering**
PhD Thesis, Fullerenes and their potential in nanomedicine 2010 – 2014
PI: Christopher L. Kepley, PhD

**Luna Innovations, Inc**
Lab Manager/Senior Scientist, Nanoscience & Immunology 2007 – 2010
Grant Writing/Research Consultant
Supervisor: Christopher L. Kepley, PhD

**Medical College of Virginia, Virginia Commonwealth University** 2006 – 2007
Research Assistant, Dept. Rheumatology, Allergy, & Immunology
PI(s): Drs. Lawrence B. Schwartz, Yoshiro Fukuoka, & Christopher L. Kepley

**Virginia Commonwealth University**
Laboratory Technician, Department of Genetics 2004 – 2006
PI: Rodney J. Dyer, PhD

## Patents Awarded & Pending

### Patents Awarded (11)

- *Bioactive/Antimicrobial, Non-Disposable Personal Protection Equipment that Safely Kills Viral, Bacterial, and Fungal Matter Upon Contact.* (#10,934,168) Issued: Mar. 3, 2021.
- *Self-Contained, Mobile Breathing Apparatus or Appliance that Supplies Pathogen and Endotoxin Free, Rhythmically Breathable Air to the Wearer or Treated Space through Active, Continuous Bio-Deactivation and Destruction of Bacteria, Fungi, Viral and Allergenic/Antigenic Matter Safely when Using Benign, Household, Rechargeable Filtration Media.* (#11,219,255) Issued: Jan. 11, 2022.
- *Halogenated Fullerene Functionalized as a Biocidal and Chemotactic Spermicide to Vaginally Harbor and Neutralize Spermatozoa for Use as a Safe and Effective Contraceptive.* (# 11,298,375) Issued: Apr. 12, 2022.
- *Innocuous Sterilant using Hemocyanin and Functionalized Fullerenes with Broad-Spectrum Intracellular and Interstitial Microbiocidal and Radical Scavenging Effects for Packaged Matter, Biologics and Organics including Liquids, Gases, Tissue, Organs, Cells, and Limbs with Copper Mediated Oxygenation for Viability and Preservation.* (#11,452,288) Issued: Sept. 27, 2022.
- *Risk Mitigation of Infectious Disease Transmission from Incidental and Intimate Contact Using Atomic Scale Molecular Disruption and Biocidial Halo-fullerenes Delivery via Topical, Flushing and Enteral Mechanisms.* (# 11,638,720) Issued: May 2, 2023.
- *Unassisted Robotic Surgery Employing Paramagnetic Halo Metallofullerenes as Minimally Invasive, Precision Scalpels or Micronization Particles through Magnetic Field Manipulation and Targeted Exenteration Patterned by Programmed 3D Imaging Using Needle or Magnetic Energy Access and Microelectronic Semiconducting in Non-stationary Wafer-less Space.* (# 11,653,984). Issue: May 23, 2023.

- *Concentrated Nutritional or Supplemental Compound for Intestinal, Gut-Brain Axis and Neurobiological Homeostasis through Calibrated Absorption Including Neurotransmitter or Any Equilibrating Compound Release to Treat or Mitigate Disease and Co-morbidities, Particularly Obesity and Malnourishment.* (# 11,771,125). Issue: Oct. 3, 2023.
- *Concentrated Nutritional or Supplemental Compound for Intestinal, Gut-Brain Axis and Neurobiological Homeostasis through Calibrated Absorption Including Neurotransmitter or Any Equilibrating Compound Release to Treat or Mitigate Disease and Co-morbidities, Particularly Obesity and Malnourishment.* (Continuation-in-Part; Patent # 11,813,363). Issue: Nov 14, 2023.
- *Customized Ear Compression Device for Keloid Management.* (# 11,872,109). Issue: Jan 16, 2024.
- *Atomic Scale Topical Composition with Enhanced Interstitial Cellular Uptake for Increased Moisturizing, Fluidity, Antioxidant and Radiation Protection, Antimicrobial Cleansing and Therapeutics for Optimal Dermal Integrity and Homeostasis.* (# 12,005,132). Issue: June 11, 2024.
- *Broad-Spectrum Antimicrobial, Biocompatible and Preservative-Free Functionalized Fullerene Ophthalmic Solution with Reactive Oxygen Species Scavenging and Advanced Targeting, Penetration, and Hydration.* (# 12,005,077). Issue: June 11, 2024.

### Patents Pending (8)

- *Portable or Stationary Magnetic Antenna for Bidirectional Transmission of Undiminished Communications and Radio Frequency (RF) Signals between Exterior and Interior Spaces.* (#18/088,688) Filed: Dec. 26, 2022.
- *Use of a Sustainable, Modified and Enhanced Aquaculture Limulus Amebocyte Lysate Protein for Detection and Characterization of Infectious Pathogens in Biologic Samples for Patient Screening, Diagnosis and Therapeutic Management.* (#18/131,558). Filed: Apr. 6, 2023.
- *Use of Sustainable, Modified and Enhanced Aquaculture Limulus Amebocyte Lysate Protein and Hemolymph Compounds as a Biologic Broad Spectrum Antimicrobial Therapeutic.* (#18/198,312) Filed: May 17, 2023.
- *Optimized Sustainable Formulation and Manufacturing Process for Animal and Aquaculture Feed for Enhanced Species Health and Longevity.* (#18/380,541) Filed Oct. 16, 2023.
- *Atomic Scale Topical Composition with Enhanced Interstitial Cellular Uptake for Increased Moisturizing, Fluidity, Antioxidant and Radiation Protection, Antimicrobial Cleansing and Therapeutics for Optimal Dermal Integrity and Homeostasis.* (Continuation-in-Part; #18/636,721). Filed: Apr. 16, 2024.
- *Atomic Scale Paired Electron Bonding, Adsorption and Chelation for Removing Preservative Biocidal Agents from Rx and OTC Ophthalmic Therapeutics and Other Medical Solutions.* (#18/675,650). Filed: May. 28, 2024.
- *Pathogenic Affinity Pathway of Infectious or Parasitic Organisms for Nanogram and Picogram Dosimetry Prophylaxis or Cure.* (#18/897,019) Filed Sept. 26, 2024.
- *Oral Delivery System for Satiety and Weight Loss through Intragastric Effervescence and Cellular-Neural Signaling.* (#18/920,451) Filed Oct. 18, 2024.

## Research Grants

- National Science Foundation (NSF) Phase II Small Business Innovation Research (SBIR) Grant. Award #: 2212920. Role: Co-PI. Amount: $999,980. (2022; ongoing)
- National Science Foundation (NSF) Research Education for Undergraduates (REU) Grant. Role: PI. Amount: $16,000. (2023)
- National Science Foundation (NSF) Research Experience for Teachers (RET) Grant. Role: PI. Amount: $10,000. (2023)
- National Science Foundation (NSF) Phase I Small Business Innovation Research (SBIR) Grant. Award #: 2101278. Role: Co-PI. Amount: $255,000. (2021-2022)
- National Science Foundation (NSF) Phase I Small Business Innovation Research (SBIR) Grant. Award #: 1819562. Role: Co-PI. Amount: $250,000. (2018-2019)
- North Carolina Secretary of State, One Fund North Carolina Economic Development Award. Amount: $50,000. (2018)
- National Science Foundation (NSF) Phase II Small Business Innovation Research (SBIR) Grant. Award #: 1655896. Role: PI. Amount: $750,000. (2016-2018)

- National Science Foundation (NSF) Technology Enhancement for Commercial Partnerships (TECP) Grant. Role: PI. Amount: $150,000. (2016-2018)
- North Carolina and NOAA Sea Grant Agency. Role: PI. Amount: $5,000. (2017-2018)
- North Carolina Biotechnology Center (NCBC) – Industrial Intern Partnership (IIP) Grant. Role: PI. Amount: $5,000. (2017)
- National Science Foundation (NSF) Research Education for Undergraduates (REU) Grant. Role: PI. Amount: $16,000. (2016)
- National Science Foundation (NSF) Research Assistantship for High School Students (RAHSS) Grant. Role: PI. Amount: $12,000. (2016)
- National Science Foundation (NSF) Commercialization Assistance Program (CAP) Grant. Role: PI. Amount: $10,000. (2016)
- National Science Foundation (NSF) Phase I Small Business Innovation Research (SBIR) Grant. Award #: 1555752. Role: PI. Amount: $150,000. (2015)
- National Science Foundation (NSF) Phase IB Small Business Innovation Research (SBIR) Supplemental Research Grant. Role: PI. Amount: $18,750. (2015)
- North Carolina Secretary of State, One Fund North Carolina Economic Development Award. Amount: $50,000. (2015)

## Publications (41)

- Ibrahim A.A**., Dellinger A.**, Coscarelly J., Pathiraja G., Obare S.O., and LaJeunesse D. (2024). "Enhanced Thermal and Structural Properties of Bacterial Cellulose via $MgAl_2O_4$ Nanoparticle Integration." *Journal of Materials Chemistry B*. Pending.
- Nsairat H., Lafi Z., Al-Najjar B.O., Al-Samydai A., Saqallah F.G., El-Tanani M., Oriquat G.A., Sa'abi B., Ibrahim A.A., Walhan A., and **Dellinger A.** (2024). "Drug Based Self-Assembled Nanostructures for Targeted Delivery." *International Journal of Nanomedicine*. Pending.
- Ibrahim A.A., Khan T., LaJeunesse D., Obare S.O., and **Dellinger A.** (2024). "Nanoscience Systematic Review Methodology Standardization (NSRMS)." *Nanotechnology Reviews*. Pending.
- **Dellinger A.L.,** Hughes L., Griffith L., Brady T.E., Ibrahim A.A., and Goddard M.K.M. (2024). "A Natural Serotonin Stimulant for Appetite Suppression and Targeted Eating as an Alternative to Conventional Obesity Treatments." *Recent Progress in Nutrition*, 4(4). *doi:10.21926/rpn.2404018*.
- Ibrahim A.A., Khan T., Nowlin K., Averitt J., Pathiraja G., LaJeunesse D., Obare S.O., and **Dellinger A.** (2024). "A Rapid One-Step Synthesis of Silver and Copper Coordinated Chlorine Functionalized Fullerene Nanoparticles with Enhanced Antibacterial Activity." *Nanoscale Advances*. Accepted.
- Al-Hatamleh M.A.I., Alshaer W., Hatmal M.M., Ibrahim A.A., **Dellinger A.**, Nsairat H., Abdaljaleel M., Mustafa M.Z., and Mohamud R. (2024). "Synthesis, characterization, and wound healing activity of alginate-based polymeric nanoparticles loaded with stingless bee honey." *Biocatalysis and Agricultural Biotechnology*, 103329.
- Bahadorani M., Reed M.B., Anele A., Webster L., Nowlin K., Crawford S., **Dellinger A.**, Dellinger K., Wei J., and Zadegan R. (2024). "Rapid Elimination Hindering Exosome-Assisted Carbon Dot Delivery." *SuRE Biennial'24*.
- Ibrahim A., Khan T., LaJeunesse D., and **Dellinger A.** (2024). "Nanoscience Systematic Review Methodology Standardization (NSRMS)." *Nanotechnology Reviews.* In review.
- Tinker-Kulberg, R., **Dellinger, A.**, Brady, T., Robertson, L., Goddard, M., Bowzer, J., Abood, S., Kepley, C., and Dellinger K. (2020). "Effects of Diet on the Biochemical Properties of Amebocyte Lysates from *Limulus Polyphemus* in an Aquaculture Setting." *Frontiers in Marine Science, 7:541604. doi: 10.3389/fmars.2020.541604.*

- Tinker-Kulberg, R., **Dellinger, A.**, Gentit, L., Fluech, B., Wilder, C., Spratling, I., Stasek, D., Kepley, C., Robertson, L., Goddard, M., Brady, T., Tōland, L. and Dellinger K. (2020). "Evaluation of Indoor and Outdoor Aquaculture Systems as Alternatives to Harvesting Hemolymph from Random Wild Capture of Horseshoe Crabs." *Frontiers in Marine Science, 7:568628. doi: 10.3389/fmars.2020.568628.*
- Tinker-Kulberg, R., Dellinger, K., Brady, T., Robertson, L., Levy, J., Abood, S., LaDuca, F., Kepley, C., and **Dellinger A.** (2020). "Horseshoe Crab Aquaculture as a Sustainable Endotoxin Testing Source." *Frontiers in Marine Science, 7:153. doi: 10.3389/fmars.2020.00153.*
- Williams, A., Cunningham, I., Brady T., Abood, S., Tinker-Kulberg, R., Dellinger, K., Goddard, M., Robertson, L., **Dellinger, A.** (2019). "Use of a Canine Gastrointestinal Olfactory Stimulant in a Shelter Setting." *Journal of Animal Health and Behavioural Science*, 3(1).
- Brady, T., Abood, S., Tinker-Kulberg, R., Dellinger, K., Robertson, L., and **Dellinger A.** (2019). "Initial Report: Canine Gastrointestinal Neurobiology Triggered by Olfaction." *Journal of Animal Health and Behavioural Science*, 3(1).
- Tedla, G., Plotkin, J., **Dellinger, A.**, and Kepley C. (2019). "Design and Testing of Dual-Targeted $Gd+_3$ N@C80-Containing Glioblastoma Theranostics." *Journal of Nanomaterials*, vol. 2019, Article ID 1242930. *doi: 10.1155/2019/1242930.*
- Plotkin, J., Elias, M., Fereydouni, M., Daniels-Wells, T., **Dellinger, A.**, Penichet, M. and Kepley C. (2019). "Human Mast Cells from Adipose Tissue Target and Induce Apoptosis of Breast Cancer Cells." *Frontiers in Immunology, 10:138. doi: 10.3389/fimmu.2019.00138.*
- Krisfalusi-Gannon, J., Ali, W., Dellinger, K., Robertson, L., Brady, T., Goddard, M., and **Dellinger, A.** (2018). **"**The Role of Horseshoe Crabs in the Biomedical Industry and Recent Trends Impacting Species Sustainability." *Frontiers in Marine Science, 5:185. doi: 10.3389/ fmars.2018.00185.*
- Plotkin, J., Elias, M., **Dellinger, A.**, and Kepley, C. (2017). "NF-*κ*B Inhibitors that Prevent Foam Cell Formation and Atherosclerotic Plaque Accumulation." *Nanomedicine: Nanotechnology, Biology, and Medicine, 13*(6), pp.2037-2048. *doi: 10.1016/j.nano.2017.04.013.*
- **Dellinger, A.**, Nigrovic, P., Duncan, B., Turner, A., Lee, D., Kung, A., Zhou, Z., and Kepley, C. (2015). "Inhibition of Inflammatory Arthritis using Fullerene Nanomaterials." *PLOS One*, *10*(4), p.e0126290. *doi: 10.1371/journal.pone.0126290.*
- **Highlighted Research: Nature Reviews Rheumatology. "**Fullerene Nanoparticles Ameliorate Disease in Arthritis Mouse Model**."** Author: João H. Duarte. Published in *Nature Reviews Rheumatology*, 11, 319 (2015).
- **Dellinger, A.**, Duncan, B., Robertson, L., Plotkin, J., Brady, T., and Kepley, C. (2014). "A Synthetic Crustacean Bait to Stem Forage Fish Depletion." *Global Ecology and Conservation*, *7*, pp.238-244. *doi: 10.1016/j.gecco.2016.07.001.*
- **Dellinger, A.** and Kepley, C. (2014). "Study Examining Fullerene Toxicity Raises Questions as to the Purity of the Nanomaterials and Erroneous Experimental Conclusions." *Toxicological Sciences*, *141*(2), pp.326-327. *doi: 10.1093/toxsci/kfu182.*
- **Dellinger, A.**, Zhou, Z., and Kepley, C. (2014). "A New Steroid-Mimicking Nanomaterial that Mediates Inhibition of Human Lung Mast Cells Responses." *Nanomedicine*, *10*(6), pp.1185-1193. *doi: 10.1016/j.nano.2014.02.006.*
- Wang, J., Ameri, S., Fishgal, N., Dwyer, D., **Dellinger, A.**, Kepley, C., Gurish, M., and Nigrovic, P. (2014). "The IL-33/ST2 Axis Supports Mast Cell Survival via BCLXL." *PNAS*, *111*(28), pp.10281-10286. *doi: 10.1073/pnas.1404182111.*
- Kepley, C. and **Dellinger, A.** (2014). "Fullerenes and Their Potential in Nanomedicine" *A.D. Kelkar, D.J. Herr, & J.G. Ryan, Nanoscience and Nanoengineering Advances and Applications*, 147-164.
- Fukuoka, Y., Hite, M., **Dellinger, A.**, and Schwartz, L. (2013). "Human Skin Mast Cells Express Complement Factors C3 and C5." *Journal of Immunology*, *191*(4), pp.1827-1834. *doi: 10.4049/jimmunol.1202889.*

- **Dellinger, A.**, Zhou, Z., Connor, J., Madhankumar, A., Pamujula, S., Sayes, C., and Kepley, C. (2013). "Application of Fullerenes in Nanomedicine: An Update." *Nanomedicine*, *8*(7), pp.1191-1208. *doi: 10.2217/nnm.13.99*.
- Adiseshaiah, P., **Dellinger, A**., MacFarland, D., Stern, S., Dobrovolskaia, M., Ileva, L., Clogston, J., Patri, A., Bernardo, M., Zhou, Z., McNeil, S., and Kepley, C. (2013). "A Novel Gadolinium-Based Trimetasphere® Metallofullerene for Application as an MRI Contrast Agent." *Investigative Radiology*, *48*(11), pp.745-754. *doi: 10.1097/RLI.0b013e318294de5d.*
- **Dellinger, A.**, Olson, J., Zhou, Z., Link, K., Vance, S., Sandros, M., Yang, J., and Kepley, C. (2013). "Functionalization of Gadolinium Metallofullerenes for Detecting Atherosclerotic Plaque Lesions by Cardiovascular Magnetic Resonance." *Journal of Cardiovascular Magnetic Resonance*, *15*(1), p.7. *doi: 10.1186/1532-429X-15-7*.
- **Dellinger, A.**, Brooks, D., Plunkett, B., Vonakis, B., Sandros, M., Zhou, Z., and Kepley, C. (2012). "Effects of Novel Nanomaterials on Allergic Mediator Release from Human Mast Cells and Basophils through Non-IgE Mediated Pathways." *Journal of Nanomedicine and Nanotechnology*, *3*(153), p.2. *doi: 10.4172/2157-7439.1000153*.
- Norton, S., Wijesinghe, D., **Dellinger, A.**, Sturgill, J., Zhou, Z., Barbour, S., Chalfant, C., Conrad, D., and Kepley, C. (2012). "Epoxyeicosatrienoic Acids are Involved in the $C_{70}$ Fullerene Derivative Induced Control of Allergic Asthma." *Journal of Allergy and Clinical Immunology*, *130*(3), pp.761-769. *doi: 10.1016/j.jaci.2012.04.023*.
- **Dellinger, A.**, Zhou, Z., Macfarland, D., and Kepley, C. (2011). "Fullerene Derivatives as a Novel Approach to Controlling Asthma via Induction of the Dual-Specificity Phophatase-1 Gene in Mast Cells." *Journal of Immunology, 186(1).*
- **Dellinger, A.**, Zhou, Z., MacFarland, D., Sandros, M., Sawafta, A., Qabja, G., and Kepley, C. (2011). "Molecular Interactions of Fullerene Derivatives in Human Serum and Inflammatory Cells." *Inscience: Nanotechnology*, *1*(3), pp.102-114. *doi: 10.5640/insc.0103102*.
- Mathews, J., Ford, J., Norton, S., Kang, D., **Dellinger, A.**, Gibb, D., Ford, A., Massay, H., Kepley, C., Scherle, P., Keegan, A., and Conrad, D. (2011). "A Potential New Target for Asthma Therapy: A Disintegrin and Metalloprotease 10 (ADAM10) Involvement in Murine Experimental Asthma." *Allergy*, *66*(9), pp.1193-1200. *doi: 10.1111/j.1398-9995.2011.02614.x*.
- **Dellinger, A.**, Norton, S., Zhou, Z., Lenk, R., MacFarland, D., Vonakis, B., Conrad, D., and Kepley C. (2010). "A New Class of Human Mast Cell and Peripheral Blood Basophil Stabilizers Which Differentially Control Allergic Mediator Release." *Clinical and Translational Science*, *3*(4), pp.158-169. *doi: 10.1111/j.1752-8062.2010.00212.x*.
- Zhou, Z., Joslin, S., **Dellinger, A.**, Ehrich, M., Brooks, D., Ren, Q., Rodeck, U., Lenk, R., and Kepley C. (2010). "A Novel Class of Compounds with Cutaneous Wound Healing Properties." *Journal of Biomedical Nanotechnology, 6*(5), pp.605-611. *doi: 10.1166/jbn.2010.1157*.
- Zhou, Z., Lenk, R., **Dellinger, A.**, MacFarland, D., Kumar, K., Wilson, S., and Kepley C. (2010). "Liposomal Formulation of Amphiphilic Fullerene Antioxidants." *Bioconjugate Chemistry*, *21*(9), pp.1656-1661. *doi: 10.1021/bc1001664*.
- **Dellinger, A.**, Zhou, Z., Norton, S., Lenk, R., Conrad, D., and Kepley C. (2010). "Uptake and Distribution of Fullerenes in Human Mast Cells." *Nanomedicine: The Official Journal of the American Academy of Nanomedicine*, 6(4), pp.575-82. *doi: 10.1016/j.nano.2010.01.008*.
- Zhou, Z., Lenk, R., **Dellinger, A.**, MacFarland, D., Kumar, K., Wilson, S., and Kepley C. (2009). "Fullerene Nanomaterials Potentiate Hair Growth." *Nanomedicine*, *5*(2), pp.202-207. *doi: 10.1016/j.nano.2008.09.005*.
- **Dellinger, A.**, Zhou, Z., Lenk, R., Collins, S., MacFarland, D., Kennedy-Norton, S., Conrad, D., and Kepley C. (2009). "A Novel Nanomedicine Platform for Controlling Mast Cell Activation." *Journal of Immunology. 182(1).*

- **Dellinger, A.**, Zhou, Z., Lenk, R., MacFarland, D., and Kepley, C. (2009). "Fullerene Nanomaterials Inhibit Phorbol Myristate Acetate-Induced Inflammation." *Experimental Dermatology, 18*(12), pp.1079-1081. *doi: 10.1111/j.1600-0625.2009.00904.x.*
- Fukuoka, Y., Xia, H., Sanchez-Muñoz, L., **Dellinger, A.**, Escribano, L., and Schwartz, L. (2008). "Generation of Anaphylatoxins by Human Beta-Tryptase from C3, C4, and C5." *The Journal of Immunology,* 180(9), pp.6307-6316. *doi: 10.4049/jimmunol.180.9.6307.*

## Symposia & Conferences

- University of North Carolina at Greensboro. 2024 Doctoral and Masters Graduation. (Keynote/Commencement Speaker. Greensboro, NC, May 2024). Link: https://www.youtube.com/live/JRPRPxCU1ew?si=GEMkfI4fWvQ0jGkH&t=937.
- Joint School of Nanoscience and Nanoengineering. Nanoscience and Nanoengineering Departmental Graduation Commencement. (Invited Speaker. Greensboro, NC, May 2024).
- "West Indies Originated USPTO Invention with *Pro Se* Prosecution are a Competitive Missing Link in Regional and Global Science and Industry." Frontiers of Research in Caribbean Science and Technology Conference 2022 – Science and Technology: A Driver of Transformation. (Invited Speaker. Webinar, Aug. 2022).
- North Carolina BIONEER Finalist and Award Winner. Kepley BioSystems, Inc. Award: $10,000. (Invited Company, Awardee. Kernersville, NC, Mar. 2022).
- "University-Industry Demonstration Partnership (UIDP)." Joint School of Nanoscience and Nanoengineering, Greensboro, NC. (Invited Speaker. Webinar, Oct. 2022; COVID-19).
- "Nanoscience with Big Impacts: An Entrepreneurs Perspective." Nano-Impacts 2021 Symposium, Joint School of Nanoscience and Nanoengineering. (Invited Speaker. Greensboro, NC, Oct. 2022).
- "Beyond Biomedical Sterility Testing: A New Paradigm for Horseshoe Crab and Human Health." Fall 2020 Duke Marine Medicine Symposium: Oceans and Human Health, Duke Oncology, Duke University, Durham, NC. (Invited Speaker. Webinar, Oct. 2020; COVID-19).
- "Your Not-So-Cuddly Buddy: The Horseshoe Crab." North Caroline Museum of Natural Sciences Annual Darwin Days Events, Raleigh, NC. (Invited Speaker. Webinar, Nov. 2020; COVID-19).
- "Saving the Horseshoe Crab; Fighting the Virus with Nanoscience." The 8th Annual TED$_x$Greensboro Event. Theme: Risk, Greensboro, NC. (Invited Speaker. Webinar, Sept. 2020; COVID-19).
- "Your Dog's Nose Knows: Learn About a New Scent Product to Help "Inspire" Your Dog for Faster "Walks" Every Day!" Triangle SciTech Expo. (Distinguished Speaker and Exhibitor. Raleigh, NC, Apr. 2019).
- "Unravelling the Role of Olfaction and Palatants in Aquaculture." Annual Future of Fish Feed Meeting. (Expert Panelist. San Francisco, CA, Feb. 2019).
- "Who's Your Crawdaddy? Capturing Crayfish While Saving the World's Baitfish." North Carolina Museum of Natural Sciences Annual BugFest. (Distinguished Speaker and Exhibitor. Raleigh, NC, Oct. 2018).
- "Navigation Federal SBIR Funding in a Start-Up Enterprise." VentureLabs, Georgia Institute of Technology, Scheller College of Business. (Invited Speaker. Atlanta, GA, Oct. 2018).
- "The Role of Horseshoe Crabs in the Biomedical Industry and Recent Trends Impacting Species Sustainability." Atlantic Fisheries Society Annual Meeting. (Invited Speaker. Atlantic City, NJ, Aug. 2018).
- "The Future of Horseshoe Crabs and Crustaceans through Innovation at Kepley BioSystems." Council for Entrepreneurial Development, Annual Life Science Conference. (Featured Speaker. Raleigh, NC, Mar. 2018).
- "Kepley BioSystems Innovation with Impact." Invest for Impact Annual Meeting, University of North Carolina Chapel Hill, Kenan Flagler School of Business. (Featured Speaker. Chapel Hill, NC, Feb. 2018).

- "Interventional Marine Ecology Symposium." Savannah State University. (Symposium Speaker and Coordinator. Savannah GA, Feb. 2018).
- "Sustainable Bait Solutions for America's Fishing Industry." America's Small Business Development Center (ASBDC) Client Showcase. (Invited Speaker and Exhibitor. Washington, DC, Feb. 2018).
- "Rethinking Global Fishing Sustainability and Sensibilities with Chemistry." Food Con Annual Meeting: Good for All: Sustainable, Profitable, and Accessible, University of North Carolina at Chapel Hill. (Panelist. Chapel Hill, NC, Dec. 2017).
- "Kepley BioSystems and OrganoBait "Show and Tell." Cucalorus Connect Festival. (Featured Speaker. Wilmington, NC, Nov. 2017).
- "OrganoBait: The Future of Sustainable Fishing." Fish 2.0: Innovation Forum at Stanford University. (Invited Speaker. Stanford, CA, Nov. 2017).
- "OrganoBait – Sustainable Fishing Solutions." Piedmont Triad Life Sciences Exchange Group. (Invited Speaker. Greensboro, NC, June 2017).
- "Using Nanoscience and Chemistry to Create a More Sustainable Ocean and Vibrant Fishing Community." Annual Triad BioNight Symposia. (Invited Speaker. Greensboro, NC, Mar. 2017).
- "Gone Fishing: The Future of Recreational Fishing." North Carolina Center of Innovation Network (COIN), InnovEight Event at First Flight Venture Center. (Invited Speaker. Raleigh, NC, Jan. 2017).
- "Creating a Sustainable Solution for Global Crustacean Fishers." Hello Tomorrow Global Summit. (Invited Speaker. Paris, France, Oct. 2016).
- "Engineering a Synthetic Crustacean Bait to Stem Forage Fish Depletion." Annual Nano-Manufacturing Conference at the Joint School of Nanoscience and Nanoengineering. (Invited Speaker. Greensboro, NC, Sept. 2016).
- "Kepley BioSystems Inc." North Carolina Technology Awards Gala. (Featured Speaker. Raleigh, NC, Nov. 2015).
- "Getting from Academia to Enterprise." Annual Nano-Manufacturing Conference at the Joint School of Nanoscience and Nanoengineering. (Invited Speaker. Greensboro, NC, Aug. 2015).
- "Improving Crustacean Aquaculture." BioMarine Conference. (Panelist. Wilmington, NC, Oct. 2015).
- "A New Steroid-Mimicking Nanomaterial that Mediates Inhibition of Human Lung Mast Cells Responses." The Annual American Academy of Immunology Conference. (Travel Grant, Invited Speaker. Pittsburgh, PA, May 2014).
- "Nanomaterials for Mast Cell and Basophil Stabilization Through Non-FcεRI Stimuli." The Annual American Academy of Allergy, Asthma, & Immunology Conference. (Invited Poster Presentation. San Antonio, TX, Feb. 2013).
- "Fullerene Nanomaterials as a Platform for Developing Therapeutics and Diagnostics for Inflammatory Arthritis." The Annual Keystone Symposia on Molecular and Cellular Biology: Rheumatoid Arthritis, Molecular & Clinical Insights. (Invited Poster Presentation. Santa Fe, NM, Jan. 2012).
- "Fullerene Derivatives as a Novel Approach for Controlling Asthma via Induction of Dual-specificity Phosphatase-1 in Mast Cells." The Annual American Academy of Immunology Conference. (Travel Grant, Invited Speaker. San Francisco, CA, Apr. 2011).
- "Effects of Nanomaterials on Allergic Mediator Release from Human Mast Cells through Non-IgE Mediated Pathways." The Annual American Academy of Allergy, Asthma, & Immunology Conference. (Poster Presentation. New Orleans, LA, Feb. 2010).
- "Fullerene Structure Regulates FCεRI-Calcium Flux in Human Mast Cells." The Annual American Academy of Allergy, Asthma, & Immunology Conference. (Invited Speaker and Poster Presentation. New Orleans, LA, Feb. 2010).
- "A Novel Nanomedicine Platform for Controlling Mast Cell Activation." The Annual American Association of Immunologist Conference. (Poster Presentation. Seattle, WA, May 2008).

- "Fullerene-Based Nanomaterials Inhibit Atherosclerotic Foam Cell Formation." The American Society for Nanomedicine Annual Conference. (Poster Presentation. Rockville, MD, Sept. 2008).
- "Effects of Native Allele Spectra on Profile Matching." The Annual American Academy of Forensic Science Conference. (Young Research Speaker. Seattle, WA, Feb. 2006).

## Editorial & Board Membership

- Review Editor. *Frontiers Journal of Marine Science*. Section: Marine Fisheries, Aquaculture and Living Resources. (2022 to Present)
- Invited Topic Editor. *Journal of Visualized Experiments* (JoVE). Section: Current Methods and Sustainable Approaches to Horseshoe Crab Research and Species Preservation. (2021 to Present)
- Invited Topic Editor. *Frontiers Journal of Marine Science*. Section: Advances in the Biology, Aquaculture, and Conservation of Threatened Marine Species and their Application in Human Health and Nutrition. (2020-2021)
- Board Member. International Union for the Conservation of Nature (IUCN) – Horseshoe Crab Specialist Group. (2019 to Present)
- Grant Reviewer. National Science Foundation (NSF). Service as an external grant reviewer for the Small Business Innovation Research (SBIR) and the Industry-University Cooperative Research Centers Program (IUCRC) programs. (2018 to Present)

## Course Development & Delivery

### Lecturer/Course Developer.

2022 – present NAN-776 – Topics in Molecular Biology.
2022 – present NAN-750 – NanoMedicine.

### Guest Lecturer/Instructor/Student Training.

2021 NAN-708 – Science Communications.
2015 NAN-621 – Professional Development Seminar I.
2015 NAN-621 – Professional Development Seminar II.
2015 NAN 750 – Nanomedicine.
2014 NAN 770 – Scientific Integrity.
2010 – 2014 NAN 611 – Nanobiology Laboratory Skills and Techniques.

Department: Nanoscience; University of North Carolina at Greensboro, Joint School of Nanoscience & Nanoengineering.

### Lecturer/Course Developer.

2015 NAN 205 – Measurement/Characterization of Nanomaterials.

Department: Nanoscience; Danville Community College.

## PhD Committee / Thesis Advisor

PhD and MSc Co-Advisor and PhD Committee Member and Thesis Co-Advisor (7 PhD & 3 MSc) at the University of North Carolina at Greensboro (UNCG) – Joint School of Nanoscience and Nanoengineering (JSNN) and Savannah State University *(2014 – present):*

- PhD Candidate: Abed Ibrahim (UNCG – JSNN).
  → Thesis: Gold Coated Metal Ferrite ($MFe_2O_4$) Nanoparticles as X-ray Computed Tomography Contrast Agents. Graduation Expected: 2027. Publications: N/A.
- MSc Candidate: Paul Modey (UNCG – JSNN). Graduated: 2024.
- MSc Candidate: Shadrack Afrane (UNCG – JSNN). Graduated: 2024.
- MSc Candidate: Nia Burnett (Savannah State University – Marine and Environmental Sciences).

→ Thesis: The Impact of Microplastics on Limulus Polyphemus and Palaemonetes pugio. Graduation Expected: 2026. Publications: N/A.

- PhD Candidate: Mohammad Fereydouni (UNCG – JSNN).
  → Thesis: Studies Examining the Efficacy of Therapeutically Enhanced Human Mast Cells as a Cancer Immunotherapy. Graduated: 2021. Publications: 2.
- PhD Candidate: Michael Elias (UNCG – JSNN).
  → Thesis: Studies Examining Mast Cells, Nanomaterials, and Immunoglobulins to Treat Breast Cancer, Atherosclerosis, and Allergies. Graduated: 2019. Publications: 2.
- PhD Candidate: Getachew Tedla (UNCG – JSNN).
  → Thesis: Designing and Testing a Molecularly Targeted Glioblastoma Theranostic: Experimental and Computational Studies. Graduated: 2019. Publications: 2.
- PhD Candidate: Jesse Plotkin (UNCG – JSNN).
  → Thesis: Production of Functional Mast Cells via Differentiation of Human Adipose Derived Stem Cells. Graduated: 2018. Publications: 4.
- PhD Candidate: Bryce Duncan (UNCG – JSNN).
  → Thesis: New Potential Reservoirs for Human Immunodeficiency Virus (HIV) and a Nanoscale Approach to Inhibition of HIV. Graduated: 2017. Publications: 2.
- PhD Candidate: Ashley Turner (UNCG – JSNN).
  → Thesis: The Antioxidant Properties of Novel Fullerene Nanoparticles in Human Skin.
  → Graduated: 2017. Publications: 2.

## Mentorship

### Graduate and Post-Graduate Scholars (6).

- Stefano Belmonte, MSc (Wake Forest University, Winston Salem, NC). Master Thesis Internship. Supervised research required by the Graduate School of Wake Forest University for successful completion of master's degree requirements. (*Duration: 3 months, 2023*).
- Taylor Reynolds, MSc (Joint School of Nanoscience and Nanoengineering, Greensboro, NC). Master Thesis Internship. Supervised research required by the Graduate School of University of North Carolina at Greensboro and the Joint School of Nanoscience and Nanoengineering for successful completion of master's degree requirements and placement into the doctoral program. (*Duration: 3 months, 2023*).
- Jonathon Howarth, MSc (Wake Forest University, Winston Salem, NC). Master Thesis Internship. Supervised research required by the Graduate School of Wake Forest University for successful completion of master's degree requirements. (*Duration: 3 months, 2019*).
- Benjamin Moorman, PhD (University of Hawaii at Manoa, Honolulu, HA). North Carolina Biotechnology Center (NCBC) – Industrial Intern Program (IIP). Supervised research initiatives designed to provide graduates experience with an industrial partner and increase future hiring potential. (*Duration: 3-months; 2018*).
- Rachel Tinker-Kulberg, PhD (University of California at San Diego, San Diego, CA). North Carolina Biotechnology Center (NCBC) – Industrial Intern Program (IIP). Supervised research initiatives designed to provide graduates experience with an industrial partner and increase future hiring potential. Dr. Tinker-Kulberg was hired by Kepley BioSystems in 2018 via an NSF grant. (*Duration: 3 months; 2017*).
- James Worth Mills, J.D. (University of North Carolina School of Law, Chapel Hill, NC). (Small Business Technology Development Company – Law Extern Program). Internship experience for emerging lawyers with small enterprise. (*Duration: 3 months; 2016*).

### Undergraduate Students.

- Grace Fenwick (University of North Carolina, Wilmington, NC). National Science Foundation (NSF) – Research Education for Undergraduates (REU) funded by the NSF (Amount: $8,000). Guided research on

horseshoe crab blood chemistry and egg hatchlings. Artificially inseminated horseshoe crab eggs and brought hatchlings through 12 molt cycles. (*Duration: 2.5 months; 2023*).

- Arya Revenkar (Virginia Commonwealth University, Richmond, VA). National Science Foundation (NSF) – Research Education for Undergraduates (REU) funded by the NSF (Amount: $8,000). Guided research on horseshoe crab blood chemistry and egg hatchlings. Artificially inseminated horseshoe crab eggs and brought hatchlings through 12 molt cycles. (*Duration: 2.5 months; 2023*).
- Abby Williams (University of North Carlina, Chapel Hill, NC). North Carolina Biotechnology Center (NCBC) – Industrial Intern Program (IIP). Supervised student internship for industrial preparedness offered by NCBC and allowing am undergraduate student to gain professional research and business experience. (*Duration: 3 months; 2019*).
    - → Publication: Co-First Author for manuscript published in 2019. "Use of a Canine Gastrointestinal Olfactory Stimulant in a Shelter Setting." *Journal of Animal Health and Behavioural Science*, 3(1).
- Ian Cunningham (North Carolina Biotechnology Center (NCBC) – Industrial Intern Program (IIP). Supervised student internship for industrial preparedness offered by NCBC and allowing am undergraduate student to gain professional research and business experience. (*Duration: 3 months; 2019*).
    - → Publication: Co-First Author for manuscript published in 2019. "Use of a Canine Gastrointestinal Olfactory Stimulant in a Shelter Setting." *Journal of Animal Health and Behavioural Science*, 3(1).
- Cole Wilder (Coastal College of Georgia, Brunswick, GA). National Science Foundation Phase I Small Business Innovation Research Grant Phase I. Supervised grant funded research associated with horseshoe crab aquaculture on Jekyll Island Georgia and with the University of Georgia and Georgia Sea Grant Agency. (*Duration: 3 months; 2018-2019*).
    - → Publication: Author for original research article published in 2020. (2020). "Evaluation of Indoor and Outdoor Aquaculture Systems as Alternatives to Harvesting Hemolymph from Random Wild Capture of Horseshoe Crabs." *Frontiers in Marine Science, 7:568628*.
- Ivy Spratling (Gardner Webb University, Boiling Springs, NC). National Science Foundation Phase I Small Business Innovation Research Grant Phase I. Supervised grant funded research associated with horseshoe crab aquaculture on Jekyll Island Georgia and with the University of Georgia and Georgia Sea Grant Agency. (*Duration: 3 months; 2018-2019*).
    - → Publication: Author for original research article published in 2020. "Evaluation of Indoor and Outdoor Aquaculture Systems as Alternatives to Harvesting Hemolymph from Random Wild Capture of Horseshoe Crabs." *Frontiers in Marine Science, 7:568628*.
- Jordan Krisfalusi-Gannon (High Point University, High Point, NC). National Science Foundation (NSF) – Research Education for Undergraduates (REU) funded by the NSF (Amount: $8,000). Guided research on analytical analysis of biological matter chemistries, product design and development, and manuscript writing. (*Duration: 6 months; 2016*).
    - → Awards: 148th Annual Meeting of the American Fisheries Society Travel Grant, Atlantic City, NJ. (Aug. 19 – 23, 2018).
    - → Publication: Co-First Author for manuscript published in 2018. "The Role of Horseshoe Crabs in the Biomedical Industry and Recent Trends Impacting Species Sustainability." *Frontiers in Marine Science, 5:185*.
    - → Poster Presentation: 148th Annual Meeting of the American Fisheries Society in Atlantic City, NJ. (Aug. 20, 2018). "Sustainable Free-Range Horseshoe Crab Aquaculture to Improve Blood Harvesting Frequency, Quality, and Volume" (Poster ID: 31377).
- Waleed Ali (Columbia University, New York City, NY). National Science Foundation (NSF) – Research Education for Undergraduates (REU) funded by the NSF (Amount: $8,000). Guided research on analytical analysis of biological matter chemistries, product design and development, and manuscript writing. (*Duration: 6 months; 2016*).

→ Awards: Fulbright Guest Researcher at Aarhus University. (Denmark). Objective: Explored strategies for horseshoe crab conservation through both reducing pharmaceutic industry harvesting and ecoinformatic-driven policy changes.

→ Publication: Co-First Author for manuscript published in 2018. "The Role of Horseshoe Crabs in the Biomedical Industry and Recent Trends Impacting Species Sustainability." *Frontiers in Marine Science, 5:185.*

- Sara Dunlap (Elon University, Burlington, NC). Semiconductor Research Corporation – Undergraduate Research Opportunity. Supervised summer internship for emerging undergraduate college students for developing advanced laboratory instrumentation skills, experimental, and bench techniques for future job placement. (*Duration: 3 months; 2015*).
- Lee Graves (University of Virginia, Charlottesville, VA). Undergraduate Student Internship Program – The Joint School of Nanoscience & Nanoengineering. Supervised summer and fall semester internships on fullerenes research investigating mechanisms that inhibit cholesterol uptake in macrophage cells. (*Duration: 6 months; 2015*).
- Bianca Whitehead (North Carolina A&T State University, Greensboro, NC). Semiconductor Research Corporation, Undergraduate Research Opportunity, Summer Internship Program. Supervised student research efforts investigating the utility of fullerenes as a mechanism to extend the life span of fresh cut flowers. (*Duration: 3 months; 2014*).

  → Presentation: Oral and Poster presentation at Tech Con 2014 (Austin, TX).

  → John Cruickshank (University of North Carolina, Chapel Hill, NC). Undergraduate Student Internship Program – The Joint School of Nanoscience & Nanoengineering. Supervised three consecutive summer and fall internship cycles instruction and teaching biological laboratory techniques of tissue culture, Western blotting, and enzyme assays on the anti-inflammatory effects of fullerenes (*Duration: 9 months; 2012-2014*).
- Jonah Nikouyeh (University of North Carolina at Greensboro, Greensboro, NC). Semiconductor Research Corporation, Undergraduate Research Opportunity, Summer Internship Program. Supervised student research investigating the structure/activity relationships using novel endofullerenes for MRI. (*Duration: 3 months; 2013*).

  → Presentation: Oral and Poster presentation at Tech Con 2013 (Austin, TX).
- Giles Johnson (Virginia Commonwealth University, Richmond, VA). National Science Foundation (NSF) – Science, Technology, Engineering and Math (STEM) Curriculum. Supervised student research investigating the methods of functionalizing fullerenes for ELISA assays. (*Duration: 6 months; 2010*).
- Christopher Hill (University of Virginia, Charlottesville, VA). Science, Technology, Engineering and Math (STEM) Summer Internship. Supervised student research investigating the effects of fullerenes on atherosclerosis and inflammatory disease states. (*Duration: 12 months; 2009*).

## Community College Students.

- Richard Farris (Alamance Community College, Graham, NC). Biotech Laboratory Experience Internship. Provided instruction for research design and training on analytical instruments and hands-on experience for future job placement opportunities. (*Duration: 3 months; 2018).*
- Arnie L. Robertson (Danville Community College, Danville, VA). Community College Internship and Professional Experience Program. Objective: Introduce emerging community college students to advanced laboratory instrumentation, develop experimental and bench skills and provide hands-on training for future job placement. Techniques learned: tissue culture, enzyme assays, western blotting, ELISA, and training on various analytical instrumentation and microscopes. Arnie was hired by Kepley BioSystems in 2014 via an NSF grant. (*Duration: 2 years; 2013-2014*).
- Designed and supervised internship program to enable hands-on laboratory experience for 4 Forsyth Technical Community College students (Winston-Salem, NC; *duration: 6 months):*

Roger English (2012); Greg Walker (2012); Lisa Brothers (2011); Stephen Crawford (2010).

### High School Students.

- Lauren Perdue (Northeast Guilford High School, Greensboro, NC). Guided summer internship conducting research on horseshoe crab feed and evaluation of indoor and outdoor aquaculture conditions and management. Leading to acknowledgement on a peer reviewed publication. (*Duration: 4 months; 2019*).
- Christopher Kepley Jr. (Dan River High School, Danville, VA). National Science Foundation (NSF) – Research Assistantship for High School Students (RAHSS) funded by the NSF (Amount: $5,000). Guided research on discovering chemosensory molecules released from biological matter involving Liquid Chromatography-Mass Spectrometry (LC-MS) and High-Performance Liquid Chromatography (HPLC). (*Duration: 3 months; 2016*).
- John White Dan River High School, Danville, VA). National Science Foundation (NSF) – Research Assistantship for High School Students (RAHSS) funded by the NSF (Amount: $5,000). Guided research on discovering chemosensory molecules released from biological matter involving Liquid Chromatography-Mass Spectrometry (LC-MS) and High-Performance Liquid Chromatography (HPLC). (*Duration: 3 months; 2016*).
- Alex Hasler (Guilford County High School, Greensboro, NC). Science, Technology, Engineering and Math (STEM) Senior Project researching tissue engineering, Western blotting, and enzyme assays for examining the effects of various herbs on cancer cell growth. (*Duration 6 months; 2012*).

## Awards & Honors

- North Carolina BIONEER Award. Kepley BioSystems, Inc. (Award: $10,000); Mar. 2022).
- Jerry McGuire Student Entrepreneur Award (UNCG); 2015.
- Summa Cum Laude (GPA: 3.96), Joint School of Nanoscience and Nanoengineering, University of North Carolina at Greensboro; 2014.
- Finalist, University of North Carolina at Greensboro 3-Minute Thesis Competition; 2014.
- Invited Speaker & Travel Grant Recipient, American Academy of Immunology; 2014.
- Summer Research Excellence Award (UNCG), (Award Amount: $3,000); 2014.
- Lula Martin McIver Scholarship (UNCG), (Award: $6,000 per year); 2013-2014.
- Inclusiveness Award (University of North Carolina at Greensboro): For promoting student diversity, (Award: $4,000 per year); 2012-2014.
- Dean's List (University of North Carolina at Greensboro); 2010-2014.
- Invited Speaker & Travel Grant Recipient, American Academy of Immunology; 2010.
- Magna Cum Laude (GPA: 3.67), Virginia Commonwealth University; 2006.
- Young Researcher Award & Travel Grant, American Academy of Forensic Science; 2006.
- Dean's Scholarship for Outstanding Academic Success: GPA 4.0, (Award Amount: ½ Tuition and Books); 2004-2006.
- Virginia Commonwealth University's Dean's List; 2002-2006.
- Phi Theta Kappa National Honor Society; 2003.
- Summa Cum Laude (GPA: 3.92), Northern Virginia Community College; 2004.
- Northern Virginia Community College's Dean's List; 2002-2004.

## Community Outreach

- Economic Development Administration. North Carolina Triad-to-Triangle Bioeconomy Tech Hub Collaboration with North Caroline Biotechnology Center (NCBC) and North Carolina Agriculture and

Technology State University. Objective: Build a Strong, Diverse Bioeconomy in North Carolina and Nationally. (Collaborator, Aug. 2023).

- High Point University - Summer Undergraduate Research Programs (SuRPs). From Ancient Species to Modern Medicine: Harnessing Horseshoe Crab Blood for Early Detection and Antibiotic Susceptibility Testing. (Invited Speaker, July 2023).
- Joint School of Nanoscience and Nanoengineering - Summer Fireside Chats. (Invited Speaker, June 2023).
- Coastal Science Podcast - SAPELO NERRds: The Possibilities are Limulus. (Speaker. Podcast, Apr. 2023).
- Joint School of Nanoscience and Nanoengineering - Materials Research Society. Science Communication. (Invited Speaker, Mar. 2023).
- $TED_x$Greensboro: Risk, Greensboro, NC. (Speaker. Webinar, Sept. 2020; COVID-19).
- Society for the Prevention of Cruelty to Animals of the Triad (Greensboro, NC.). Daily dog walking, kennel cleaning, animal feeding, and specimen delivery. (Shelter Volunteer. 2019-2020)
- Northeast Guilford High School (Speaker. 2019)
- North Carolina Museum of Natural Sciences (Raleigh, NC.). (Annual speaker, presenter, and demonstrator at Museum events: BugFest! and Darwin Days. 2017-2020)
- Provided 12-months of supervised instruction for four recent graduate or post-graduate students. After completion of internship: 1 completed a Jurisprudence Degree, 1 completed a Master of Science, and 2 went into industry. (Graduate/Post-Graduate Internship Supervisor. 2016-2019)
- Provided 16-months of supervised instruction for four high school students. After completion of internship: 2 students were accepted in Virginia Polytechnical Institute, 1 was accepted into University of North Carolina at Asheville, and 1 is awaiting college admission (High School Student Internship Supervisor. 2012-2020)
- Provided 51-months of supervised instruction for six community college students. After completion of internship: 1 student was hired by my company, 1 student enrolled in and completed a PhD in Nanoscience, and 4 students went into professional work force. (Community College Student Internship Supervisor. 2010-2018)
- Provided 66-months of supervised instruction for 13 undergraduate students. Outcomes include: 6 peer-reviewed publications, 3 presentations, and >$20,000 in grant funding. After completion: 1 intern was hired by my company, 2 completed Medical Doctorates at the University of Virginia and Columbia University, 1 completed a Doctor of Pharmacy at Virginia Commonwealth University, and 9 pursued graduate degrees. (Undergraduate Student Internship Supervisor. 2009-2019)
- North Carolina Science Festival –Girls in Science and Technology (Greensboro, NC). (Speaker and Presenter. 2013-2014)
- North Carolina Science Festival (Greensboro, NC.). Preformed demonstrations for elementary, middle, and school students and teachers. (Speaker, Presenter, and Demonstrator. 2012-2014)
- Galileo High School (Danville VA.) Title: Pharmaceutical Applications of Fullerene Derivatives: Special Emphasis on Signal Transduction Pathways. (Speaker. 2013)
- Northwest Guilford High School (Greensboro, NC). Demonstrated various laboratory techniques for a college-bound seniors and high school students. (Speaker. 2013)
- North Carolina Association for Biomedical Research Nanobiotechnology Teacher Workshop (Greensboro, NC.). Title: Developing Fullerenes for Pharmaceutical Applications. This is a Guilford County continuing education workshop for high school teachers. (Speaker. 2012)
- Nanomanufacturing Innovation Consortium (NIC). Gateway University Research Park (Greensboro, NC.). Co-founder of company through NIC called Kepley BioSystems, Inc. established to employ research scholars and graduates. (2012)

- Danville Science Center and Science Museum of Virginia (Danville, VA.). Ongoing "Nano-Days" presentations and hands-on demonstrations for high school, middle school, and elementary students. (Speaker, Presenter, and Demonstrator. 2007-2010)

## Technical Experience

**Analytical Chemistry & Instrumentation:** Autoanalyzer ▪ Basic organic synthesis ▪ Centrifuges (standard and high speed) ▪ Chromatography (paper and thin layer) ▪ Dark room equipment ▪ Dynamic light scattering (DLS) ▪ Flow Cytometry (FACs) ▪ Gas chromatography-Mass spectrometry (GC-MS) ▪ High performance liquid chromatography (HPLC) ▪ Incubators ▪ Inductively coupled plasma-Mass spectrometry (ICP-MS) ▪ Liquid chromatography-Mass spectrometry (LC-MS) ▪ Light, scanning, fluorescence, and confocal microscopes ▪ Micro Burette ▪ Microtomes (paraffin and celloidin) ▪ Optical density ▪ Nanoparticle functionalization ▪ Nanoparticle characterization ▪ pH meter ▪ Precision balance ▪ Spectroscopy (atomic absorption, fluorescence, FT-IR, and UV/vis) ▪ X-ray equipment ▪ Zeta potential.

**Animal Care & Human Research:** Administer injections and medication ▪ Anesthetize, catheterize and infuse ▪ Antibody testing methods ▪ Aquaculture systems design and development ▪ Breed and maintain (annelids, crayfish, drosophila, horseshoe crabs, and rodents) ▪ Collect and handle blood/other samples ▪ Customize diets, feed studies ▪ Handle, restrain and weigh ▪ Maintain and assess records ▪ Perform animal autopsy ▪ Perform simple surgical procedures ▪ Prepare for sterile surgical procedures ▪ Recirculating aquaculture systems (RAS) ▪ Vermicompost & vermiculture.

**Biology & Immunology:** Agarose gel electrophoresis ▪ Assays [coagulation factors, enzymes, infectivity, lipid, peptide and other (biochemical) assays] ▪ Aseptic/sterile technique ▪ Calcium/Reaction oxygen species (ROS) monitoring ▪ cDNA synthesis ▪ Cell Culture (mammalian) ▪ Cell fractionation ▪ Column (ion exchange resins, gel, gas liquid, and HPLC) ▪ Conjugation ▪ DNA/RNA extraction ▪ Enzyme-linked immunosorbent assays (ELISA) ▪ Endotoxin monitoring ▪ Equilibrium sedimentation centrifugation ▪ Extract phenols from DNA ▪ Filtrate ▪ Florescent antibody ▪ Functional cellular analysis ▪ Gel electrophoresis (DNA, RNA, agarose, conjugates, polyacrylamide, protein) ▪ Gradients (density/equilibrium) ▪ Hemagglutination and hemolysis assay ▪ Immuno-blotting (Western) ▪ Immunohistochemistry ▪ Immuno-precipitation ▪ *In Vivo* experimentation (arthropod, CITI, IACUC, IRB, rodent) ▪ Lymphocyte culture ▪ Lyophilization ▪ Microscopy (live cell imaging, electron microscopy, helium ion microscopy) ▪ Plaque assay for antibody forming cells ▪ Pipette ▪ Prepare antibodies ▪ Prepare media ▪ Primary Cell Isolation ▪ Polymerase Chain Reaction (PCR, qPCR, RT-PCR, SNP) ▪ Purify/ characterize enzymes ▪ Spectrophotometry (UV, IR, and atomic absorption) ▪ Sterilize ▪ Titration ▪ Venipuncture.

**Microbiology & Bacteriology:** Cell culture ▪ Culture transfers ▪ Inoculation ▪ Growth of competent cells ▪ Maintain and purify (bacteria and cell culture) ▪ Microbiology (plating, streaking, CFU, antimicrobial activity) ▪ Prepare media ▪ Pour plates ▪ Replica plating ▪ PCR machines ▪ Use of restriction enzymes.

**Microscopy & Histology:** Cell and fiber stains ▪ Cytotoxicity assay ▪ Electron Microscopy (HIM, SEM, and TEM) ▪ Embedding processes: paraffin, celloidin ▪ Fix ▪ Form film on grids ▪ Microtome slides ▪ Perfusions of animals ▪ Prepare grids ▪ Print film ▪ Process film ▪ Sectioning ▪ Staining techniques and processes.

**Additional Skills / Relevant Experience:** Accounting (QuickBooks) ▪ Apply scientific approach to problems ▪ Communicate research findings: models, charts, and graphs to scientific and lay audiences ▪ Database skills ▪ Data processing (Word, Excel, PowerPoint, and Outlook) ▪ Design, conduct and interpret scientific research ▪ Laboratory Management ▪ Operating Systems (Mac, Microsoft Windows, Linux) ▪ Statistical analysis (GraphPad Prism, ImageJ, and Statistical Analysis System).

## Contact

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|---|---|
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