



Alex Rolband

Patent Agent

Charlotte
+1.704.331.7487

Alex.Rolband@klgates.com

OVERVIEW

Dr. Rolband is a Patent Agent in the firm's IP Procurement and Portfolio Management practice. Alex has experience in drafting patent applications, prosecuting domestic and foreign patent applications, managing patent portfolios, and coordinating IP strategies. He has helped clients of all sizes develop strong patent portfolios for protecting their intellectual property rights. His experience covers a broad range of technologies including machine learning architectures, financial services, authentication systems, quantum computing, geophysics, geochemistry, metabolism, nanobiotechnologies, and nano-structured semiconductors.

PROFESSIONAL BACKGROUND

Prior to joining the firm, Alex briefly worked as a postdoctoral research scholar at North Carolina State University after receiving his Ph.D. in Nanoscale Science from the University of North Carolina at Charlotte. His research background as a biophysical chemist focused heavily on the design and characterization of therapeutic nucleic acids for applications as gene therapies, antibiotics, and anticoagulants. Alex also served 8 years in the North Carolina Army National Guard as an artillery observer.

PROFESSIONAL / CIVIC ACTIVITIES

- Member, American Chemical Society, 2016-Present

SPEAKING ENGAGEMENTS

- Speaker, "Investigating the mechanism of Nsa1 removal from the pre-60s ribosomal subunit by Rix7 through single-molecule FRET," *SERMACS 2023*, October 2023.
- Speaker, "Assessing the Biological Activities of DNA-Templated Silver Nanoclusters," *Complex Matter and Biophysics Seminar*, September 2023.
- Speaker, "SAXS for NANPs: Advancing the Structural Characterization of Ribonucleic Acid Nanoparticles Through Small-Angle X-ray Scattering," *ASBMB 2023*, March 2023.

- Speaker, “Enhanced Structural Characterization of Multi-stranded Nucleic Acid Nanoparticles,” *SERMACS* 2021, November 2021.
- Speaker, “Using RNA Nanoring Scaffolds to Modulate the Fluorescent Properties of Silver Nanoclusters, *22nd Rustbelt RNA Meeting*, October 2020.
- Speaker, “Recent Uses of SAXS in Probing Nucleic Acid Nanotechnology Structure and Function,” *Smart Materials Programmed to Operate in Living Systems*, May 2020.

EDUCATION

- D.Phil., University of North Carolina at Charlotte, 2023 (*Nanoscale Science*)
- B.S., University of North Carolina at Charlotte, 2019 (*Chemistry*)

ADMISSIONS

- United States Patent and Trademark Office

OTHER PUBLICATIONS

- Co-Author, “Demonstrating the Synthesis and Antibacterial Properties of Nanostructured Silver,” *Journal of Chemical Education*, 2023.
- Co-Author, “Optical, structural and antibacterial properties of silver nanoparticles and DNA-templated silver nanoclusters,” *Nanomedicine*, 2023.
- Co-Author, “Expanding Structural Space for Immunomodulatory Nucleic Acid Nanoparticles via Spatial Arrangement of Their Therapeutic Moieties,” *Advanced Functional Materials*, 2022.
- Co-Author, “Locking and Unlocking Thrombin Function Using Immunoquiescent Nucleic Acid Nanoparticles with Regulated Retention In Vivo,” *Nano Letters*, 2022.
- Co-Author, “Biomotors, viral assembly, and RNA nanobiotechnology: Current achievements and future directions,” *Computational and Structural Biotechnology Journal*, 2022.
- Co-Author, “DNA-Templated Fluorescent Silver Nanoclusters Inhibit Bacterial Growth While Being Non-Toxic to Mammalian Cells,” *Molecules*, 2021.
- Co-Author, “Challenges to optimizing RNA nanostructures for large scale production and controlled therapeutic properties,” *Nanomedicine, Future Medicine*, 2020.
- Co-Author, “Tuning properties of silver nanoclusters with RNA nanoring assemblies,” *Nanoscale*, 2020.
- Co-Author, “Small-Angle Scattering as a Structural Probe for Nucleic Acid Nanoparticles (NANPs) in a Dynamic Solution Environment,” *Nanomaterials, MDPI*, 2019.
- Co-Author, “The Natural Versatility of RNA,” *RNA Nanotechnology and Therapeutics*, 2022.

- Co-Author, “Light Scattering Techniques for Characterization of NANPs and Their Formulations,” *RNA Nanotechnology and Therapeutics*, 2022.
- Co-Author, “Anticoagulant Activity of Nucleic Acid Nanoparticles (NANPs) Assessed by Thrombin Generation Dynamics on a Fully Automated System,” *Methods in Molecular Biology*, 2023.
- Co-Author, “Synthesis of DNA-Templated Silver Nanoclusters and the Characterization of Their Optical Properties and Biological Activity,” *Methods in Molecular Biology*, 2023.
- Co-Author, “Aptamer Conjugated RNA/DNA Hybrid Nanostructures Designed for Efficient Regulation of Blood Coagulation,” *Methods in Molecular Biology*, 2023.
- Co-Author, “Structural Characterization of Nucleic Acid Nanoparticles Using SAXS and SAXS-Driven MD,” *Methods in Molecular Biology*, 2023.

AREAS OF FOCUS

- IP Procurement and Portfolio Management

INDUSTRIES

- Energy
- Life Sciences