Mali Ya Mungu Ocoko
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Education

Doctor of Philosophy, Biomedical Engineering Jun. 2023 – May. 2027
Case Western Reserve University, Cleveland, OH

Bachelor of Science, Biomedical Engineering Sept. 2019 - May. 2023
Case Western Reserve University, Cleveland, OH

Research Experience

Graduate Research Assistant Jun. 2023 - Present
Department of Biomedical Engineering, Case Western Reserve University

- My project involves applying microfluidic techniques to fabricate soft-polymer-based intracortical probes for precise local delivery of anti-inflammatory drugs to implant sites, aiming to mitigate neuroinflammatory responses triggered by implanted devices Furthermore, I plan and conduct non-functional probe studies in mouse models to analyze the neuroinflammatory response to our treatment, with the aim of transitioning to functional probe studies soon.

Undergraduate Research Assistant May. 2022 – May 2023
Louis Stokes Veterans Affairs Medical Center

- Throughout my research project, my focus was on determining the release rate of resveratrol from loaded polymer films. This involved conducting in-vitro experiments and developing computational models to study the release dynamics of the antioxidant. Additionally, I conducted neural recording and Electrochemical Impedance Spectroscopy (EIS) measurements on microfluidic probes implanted in mouse models, alongside assisting with rat surgeries and euthanasia. Following these procedures, I prepared and analyzed rat brain samples to assess the neuroinflammatory response to the antioxidant-loaded soft polymer neural probes.

Honors and Awards

Advanced Platform Technology (APT) Graduate Fellow May 2023

- Inaugural APT Graduate Fellow

Publications

Mueller, N. Kim, Y. **Ocoko, M.Y.M** Dernelle, P. Kale, I. Patwa, S Hermoso, A. Chirra, D. Capadona, J. Hess, A. (2024). Effects of Micromachining on Anti-oxidant Elution from a Mechanically-Adaptive Polymer. Journal of Micromechanics and Microengineering. 34. 10.1088/1361-6439/ad27f7.

Conference Presentations

Poster Presentations

Ocoko, M.Y.M, Duncan, J. Wang, H. Capadona, J. Hamedani, H.A. Hess-Dunning. A. (2023). Development of Patterning and Transfer Processes for Integrating Annealed Titanium Nanotube Array Microsegments onto Polymer Substrates, Biomaterials Day, Cleveland, OH

Mueller, N. Kim, Y. **Ocoko, M.Y.M** Dernelle, P. Kale, I. Patwa, S Hermoso, A. Chirra, D. Capadona, J. Hess, A. (2023) Mechanically-adaptive, resveratrol-eluting neural probes improve single-unit recording performance, BMES Annual Meeting, Seattle, WA

Ocoko, M.Y.M, Mueller, N. Capadona, J. Hess-Dunning. A. (2022). Determining the Release Rate of Resveratrol Loaded Polymer Films, APT Research Symposium, Cleveland, OH

Technical Skills

- Laboratory Skills: Nanodrop, data analysis, laser micromachining, photolithography, wet and dry (reactive ion) etching, 3D printing, and polymer film synthesis
- Programming languages: Matlab
- Computer aided design/engineering: COMSOL

Languages

English: Fluent
French: Proficient