

**EDUCATION**

**09/17—08/18:** MS, Chemical Engineering | **Tufts University** – Medford, MA

**08/13—05/17:** BS, Chemical Engineering | **Tufts University** – Medford, MA

**PUBLICATIONS**

- Wang, C., Cui, A., **Bukenya, M.**, Aung, A., Thomas, A., Liang, S., Suh, H., Wittrup, K.D., Hacohen, N., Irvine, D.J. (2020) *Combined Engagement of Innate and Adaptive Immune Cells Sensitizes Tumors to Checkpoint Blockade*. Manuscript in Preparation
- Aung, A., Cossette, B., **Bukenya, M.**, Kazer, S.W., Lee, H., Adams, J., Griffith, L., Irvine, D.J. (2020) *Induction of Naïve Antibody Responses from Ex Vivo Cultured Lymph node-on-a-chip*. Manuscript in Preparation
- **Bukenya, M.**, Lee, H.J., Kalidindi, S., DeCortin, M., Tice, L., Yoo, P.J., Yi, H. (2020) *A Robust Fabrication Technique for Hydrogel Films Containing Micropatterned Opal Structures via Micromolding and an Integrated Deposition-Polymerization Approach*. (Langmuir)
- **Bukenya, M.** (2018) *A Micromolding-based Evaporation-Polymerization Technique for Rapid and Tunable Fabrication of Hydrogel Films Containing Micropatterned Opal Structures* (Master's Thesis, Under Embargo). ProQuest Dissertations and Theses Global Database.

**RESEARCH EXPERIENCE & EMPLOYMENT HISTORY**

**04/19—Present:** *Research Support Associate - Irvine Lab*, PI – Prof. Darrell J. Irvine, **Koch Institute, Massachusetts Institute of Technology (MIT)** - Cambridge, MA

- Investigate B16F10 melanoma sensitization to checkpoint blockade therapy by a potent combination immunotherapy
- Study mechanisms of complement-mediated tumor control in the context of immunotherapy
- Evaluate antitumor benefits of a pan-tumor targeting immunocytokine in lung adenocarcinoma models
- Model human germinal center reaction *ex vivo* via bispecific antibody-mediated interactions between T-follicular helper cells and autologous antigen-specific B cells
- Probe immune responses against HIV antigens using microfluidic chip-based cultures of human lymphoid tissues
- Study *in vivo* degradation of antigens in murine lymph nodes using Fluorescence Resonance Energy Transfer (FRET)

**09/18—03/19:** *Engineer I – Gene Therapy*, Manager – Dr. Jenny W. Shupe, **Biogen** - Cambridge, MA

- Determined robust suspension culture conditions for adeno-associated virus vectors (AAV) production using a HeLa producer cell line (HeLa-PCL)
- Established a 'sequential batch' production strategy which improved AAV titers and reduced amounts of fresh adenovirus needed for AAV replication
- Optimized rolling seed train for HeLa-PCL by determining passage frequency and nutrient supply strategies
- Implemented alternating tangential flow (ATF) perfusion process to test the feasibility of continuous AAV production

**07/17—09/17:** *Research Technician, Systems Immunology* – Love Lab, PI – Prof. J. Christopher Love, **Koch Institute, MIT** – Cambridge, MA

- Enlisted Seq-well technique to isolate and process mRNA from samples of peanut allergy patients for single cell RNA sequencing (scRNA-seq)
- Utilized R Seurat package to cluster and visualize scRNA-seq data to evaluate effects of sequencing depth on data quality

**06/16—08/16:** *Intern – NIBIB, Preceptor* – Dr. Nicole Y. Morgan, **National Institutes of Health (NIH)** – Bethesda, MD

- Constructed Drop-seq apparatus and characterized droplet formation using microscopy for single cell sequencing
- Improved droplet stability & cell/bead coencapsulation efficiency by modulating voltage and flow rates of water and oil
- Presented work to research group and to the broader NIH community on NIH Summer poster day

**11/15—03/19:** *Research Assistant* - Nanobiofabrication Lab, PI & Advisor – Prof. Hyunmin Yi, **Tufts University** – Medford, MA

- Developed a robust micromolding strategy for fabrication of responsive micropatterned photonic films
- Enlisted micromolding techniques to synthesize biochemically functional polymeric microparticles with potential for biosensing and drug delivery applications

**03/13—08/13:** *Intern – Uganda Office, Manager* – Ms. Barbara Kayanja, **Global Health Corps** - Kampala, Uganda

- Presented works of Corps toward health equity at major health care exhibition events

**06/12—03/13:** *Intern, Supervisor* – Dr. Alex G. Coutinho, **Infectious Diseases Institute (IDI)** – Makerere University College of Health Sciences - Kampala, Uganda

- Compiled medical experiences of HIV+ patients with antiretroviral therapy for use in clinical studies and reports
- Showcased IDI outreach programs, e.g., Prevention of Mother to Child Transmission of HIV at health care exhibitions
- Co-wrote grant that funded medical support and skills development for HIV+ young adult patients at the IDI clinic

## TEACHING EXPERIENCE

**09/16—04/18:** *Teaching Assistant (5 Semesters)*, **Department of Chemistry, Tufts University** – Medford, MA

- Instructed General Chemistry and Organic Chemistry laboratory courses
- Graded lab reports and held weekly office hours to answer questions and aid students in their assignments

## TECHNICAL SKILLS

### Laboratory

- **Micro/nanofabrication**– Photolithography; Soft lithography; Microparticle Fabrication; Microfluidics
- **Protein Work** – Protein expression; Affinity & size exclusion chromatography (FPLC); Protein labeling
- **Analysis** – Flow cytometry; Confocal and fluorescence microscopy; *In vivo* bioluminescence and fluorescence imaging; UV-Vis Spectrophotometry; SEM; Spectroscopy
- **Molecular Biology** – Cloning; RNA isolation; SDS PAGE; Electroporation; ELISA; Pulldown assays; Zymography
- **Animal Work**– Mice colony maintenance; Necropsy; Injections; Tumor inoculation; Genotyping; Adoptive cell transfer
- **Tissue Processing** –Vibratome sectioning; Cryosectioning
- **Cell Work:** Suspension and adherent cell culture; Benchtop bioreactor operation

**Programing:** R (Proficient); MATLAB (proficient); Python (intermediate); JMP (Intermediate)

## LEADERSHIP ACTIVITIES

**08/17—03/18:** *Founding Secretary*, **Biomedical Engineering and Chemical Engineering Society** – Tufts University

- Spear-headed programing and membership recruitment drives for the graduate student organization

**09/16—05/17:** *Secretary & Mentorship Coordinator*, **National Society of Black Engineers (NSBE)** – Tufts University Chapter

- Coordinated meetings and resource opportunities for the organization's 54 members

**08/15—11/16:** *Resident Advisor*, **Tufts University Residential Life**

- Planned social engagement activities and provided academic and mental health resources for 47 student residents

**06/12—09/13:** *Member*, **MasterCard Foundation Young Leader Think Tank**

- Researched youth unemployment in Sub-Saharan Africa and co-authored report on possible solutions

*Please contact me at [mauricebukenya@gmail.com](mailto:mauricebukenya@gmail.com) for an updated version of this resume.*