Frank Ureña, PhD

U.S. Citizen | MD Candidate, St. George's University School of Medicine (Expected 2028)
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PROFESSIONAL PROFILE

PhD-trained biomedical researcher and MD candidate pursuing physician-scientist training in academic internal medicine, medical oncology, and translational cancer immunology. Research background spans T-cell biology, microRNA signaling, cancer-associated fibroblast biology, pulmonary organoid systems, molecular diagnostics, vaccine development, and preclinical disease models. Publication record includes first-author work in the *Journal of Biological Chemistry* and co-authorship in *Nature Biomedical Engineering*.

EDUCATION

St. George's University School of Medicine | MD Candidate (Expected 2028)
University of Hawai'i at Mānoa | PhD, Molecular Biosciences & Bioengineering (2022)
Arizona State University | MS, Biomedical Diagnostics (2019)
Northeastern University | BS, Liberal Studies (2011)

HONORS AND AWARDS

- AAI Minority Scientist Travel Award (2020)
- Carl Storm Underrepresented Minority Fellowship, Gordon Research Conferences (2020)

RESEARCH HIGHLIGHTS

- 4 peer-reviewed publications, including 2 first-author publications.
- Co-author on translational biomaterial vaccine research published in Nature Biomedical Engineering.
- First-author Journal of Biological Chemistry publication on miRNA-15a/16 regulation of MEK1-ERK1/2-Elk1 signaling during T-cell activation.
- Experience across immunology, cancer biology, pulmonary biology, molecular diagnostics, vaccine platforms, and preclinical model systems.

RESEARCH EXPERIENCE

Postdoctoral Research Fellow, Harvard Medical School / Massachusetts General Hospital (2022-2023)

- Advanced translational projects in pancreatic ductal adenocarcinoma, with emphasis on cancer-associated fibroblast biology.
- Studied immune-epithelial interactions and alveolar cell differentiation using patient-derived organoid systems.

Graduate Research Assistant, University of Hawai'i (2019-2022)

- Developed genetically engineered mouse models to investigate miRNA-15a/16-1 regulation of T-cell biology.

- Identified a mechanism connecting microRNA signaling to T-cell activation through the MEK1-ERK1/2-Elk1 pathway.
- Produced first-author research published in the Journal of Biological Chemistry.

Research Assistant, Wyss Institute / Harvard Medical School (2016-2018)

- Supported the development of biomaterial vaccine platforms designed to capture pathogen-associated molecular patterns.
- Conducted rodent and swine studies evaluating immune responses to vaccine candidates.
- Contributed to work later published in Nature Biomedical Engineering.

ADDITIONAL SCIENTIFIC, CLINICAL, AND PUBLIC HEALTH EXPERIENCE

Scientific Assistant, Washington State University (2019). Prepared CRISPR guide constructs and supported the generation of knockout and knock-in mouse models.

Graduate Research Assistant, University of Hawai‘i Cancer Center (2018-2019). Performed cell culture, viral transduction, and molecular diagnostic assay development for bladder cancer research.

Research Associate, Toxicon Corporation (2014-2015). Conducted toxicology, toxicokinetic, and pharmacokinetic studies under GLP/GMP standards and supported regulatory reporting.

Pathology Technician, Lahey Clinic and Medical Center (2013-2014). Assisted with autopsies, surgical pathology processing, cytology preparation, and specimen accessioning.

Laboratory Assistant, Converge Diagnostic Services (2012-2013). Performed clinical laboratory testing, HPV molecular diagnostics, and quality assurance procedures.

Risk Reduction Counselor, Greater Lawrence Family Health Center (2012). Provided HIV, STI, and hepatitis counseling, testing, outreach, and public health education.

Chemical Reagent Coordinator, Joule Scientific Staffing (2008). Managed chemical inventory and regulatory compliance procedures.

PEER-REVIEWED PUBLICATIONS

1. **Ureña FR**, Ma C, Hoffmann FW, et al. T-cell activation decreases miRNA-15a/16 levels, promoting MEK1-ERK1/2-Elk1 signaling and enhancing proliferative capacity. *Journal of Biological Chemistry*. 2022.
2. Ma C, Hoffmann FW, Nunes LGA, **Ureña FR**, et al. Selenoprotein I deficiency in T cells promotes differentiation into tolerant phenotypes while decreasing Th17 pathology. *Journal of Leukocyte Biology*. 2022.
3. DeLude A, Wells R, Boomla S, Chuang SC, **Ureña FR**, et al. Loop-mediated isothermal amplification assay for rapid detection of Dickeya fangzhongdai. *Scientific Reports*. 2022.
4. Super M, Doherty E, Cartwright M, **Ureña FR**, et al. Biomaterial vaccines capturing pathogen-associated molecular patterns protect against bacterial infections and septic shock. *Nature Biomedical Engineering*. 2022.

ABSTRACTS AND PRESENTATIONS

Abstracts and Proceedings

5. Kennedy pathway regulation by miR-16-1/15a cluster family during T-cell activation. *Journal of Immunology*. 2020.
6. Adapting the innate immune system to develop long-lived vaccines to bacterial pathogens. *Journal of Immunology*. 2017.

Selected Presentations

- WINDREF Oral Seminar, St. George's University (2024)
- JABSOM Annual Biomedical Sciences & Health Disparities Symposium (2021)
- Albert L. Tester Memorial Symposium (2021)
- 4th International Conference on Epigenetics & Bioengineering (2020)
- Poster: 12th International Symposium on Selenium in Biology and Medicine (2022)

LEADERSHIP AND SERVICE

- Research Coordinator, SGU Dermatology Interest Group (2024-2025)
- Volunteer Tutor, Bel Air and Father Mulligan Orphanages (2023-2025)
- COVID Testing Volunteer, Pacific Alliance Against COVID (2021-2022)
- Molecular Workshop Instructor, Science Symposium for Girls (2020)

ACADEMIC AND CLINICAL INTERESTS

- Academic Internal Medicine
- Medical Oncology
- Physician-Scientist Training Programs (PSTP)
- Translational Cancer Biology and Immunology

SELECTED PROFESSIONAL ORGANIZATIONS

- American College of Physicians
- American Society for Clinical Pathology
- American Academy of Hospice and Palliative Medicine
- American College of Radiology and Society of Interventional Radiology, retained as specialty exploration memberships

LANGUAGES

- English (Native/Professional)
- Spanish (Native/Professional)