Chad T. Coarsey

Professional Resumé & Vitae

One-handed yet far reaching

1050 Crystal Way Unit G
33444 Delray Beach, FL
USA
M +1 (704) 880 5577
E ccoarsey@bionicglove.org
c-coarsey.github.io

Education

2015–2017

M.S. Florida Atlantic University, Boca Raton, FL
GPA: 3.61 Bioengineering

2009–2014

B.S. Florida Atlantic University, Boca Raton, FL
GPA: 3.16 Molecular Biology & Microbiology

Master thesis

title: *Development of Smart Phone-Based Automated Microfluidic-ELISA For Human Immunodeficiency Virus 1*

supervisor: Waseem Asghar, PhD.

description: The majority of HIV prevalence found in Sub-Saharan Africa with 36.9 million living with HIV/AIDS. The cultural implications such as patient non-compliance or denial of available routine medical care can potentially cause limitations on the eectiveness of detecting such virulent pathogens or manage chronic disease. The lack of access to healthcare hinder the ability to adequately diagnose and treat infection in resource-limited settings. Intervention through diagnosis and interventional treatment helps prevent the spread of transmission, where pre-exposure prophylaxis or active disease prevention measures are not readily available. Serological detection can be advantageous for surveillance and screening, Enzyme-Linked Immunosorbent Assay (ELISA) can detect a viral protein (antigen) or antibodies. The ELISA can require at least 12 hours of assay preparation and takes a diagnostic laboratory many resources to run. There is need to develop Point-of-Care (POC) testing that can potentially be used for decentralized testing that can leverage existing technologies such as smart phone capability. A novel smart phone-enabled automated magnetic bead-based platform was developed for a microuidic ELISA for HIV-1 detection at the POC to meet this demand.

Experience

Vocational

Director for (Dis)Ability Diversity, *oSTEM, Inc.*. **2017-**

Foster new global initiatives and programming bringing visibility to intersectional LGBTQ+ identities, highlighting accessibility challenges we all face and must overcome, and providing invaluable resources for equal access

Detailed achievements:

- Disabilities LGBTQ+ Affinity Group;
  - Creation of Affinity group e-mail list;
  - Moderation of group breakout session at the National Conference;
- Content Creation for Awareness and Visibility:
  - Moderation of LGBTQ+ Panel focused on de-stigmatizing invisible (dis)abilities and diseases;
  - Creation of helpful tools and resources available and circulated;

Co-founder & Chief of Bioengineering, *The Bionic Glove Project, 501(c)3.* **2015-**

Use 3-D printing and scanning technologies to develop and provide custom prosthetics for upper limb amputees for no cost. Partner with an array of South Florida Medical Professionals, Specialists, Orthotists and Prosthetists, care networks, health foundations, and are involved with the e-NABLE global foundation.

- Chief of Bioengineering;
  - Developed and have delivered custom 3-D printed prosthetic solutions for four specific patients;
  - Fostered a pipeline for undergraduate research and inquiry through partnerships with universities and high school STEM programs for computer-assisted design (CAD), and 3-D printing;
- Regulatory Affairs and Compliance
  - Working with IRB office at FAU and FDA to foster best practices and ensure patient safety;
  - created Scientific Advisory Board to ensure the high quality of patient care;
- Development and Patient Contact
  - Guide patients through a custom process and organize appointments for our specialists;
  - Networking and building collaborative branches with other fellow e-NABLE groups in Florida, the US, and worldwide;

Research Assistant, *The Asghar Lab: Micro and Nanotechnologies in Medicine.* **2014-2017**

Current research lab, developed disease diagnostic platforms for emerging pathogens including rapid automated antigen-capture detection microfluidic platforms (Enzyme-Linked Immunosorbant assay), and helped develop molecular diagnostic systems for RT-LAMP detection of RNA

- Microfluidic ELISA (M-ELISA for Viral Pathogen Detection;
  - Ran through several validation and troubleshooting steps to achieve a bead-based POC ELISA;
  - Integrated bead-based ELISA system for rapid HIV-1 p24 detection with high sensitivity;
- Loop-mediated Isothermal Amplification (LAMP)
  - Designed and tested over eight optimized sets of LAMP primers for HIV-1 DNA model;
  - Helped overcome primer-dimer challenges with specific reagent and protocol optimization;
- Smart Phone-based ELISA Detection
  - Helped implement and test a smart phone-based detection system for HIV-p24 M-ELISA;
  - Collaborated to enhance a cell phone algorithm used to facilitated further POC testing;

Publications

Chad T. Coarsey, Nwadiuto Esiobu, Ramswamy Narayanan, Mirjana Pavlovic, Hadi Shafiee Waseem Asghar *Strategies in Ebola virus disease (EVD) diagnostics at the point of care*, 43(6):779–798, 2017.

Safavieh, Chad Coarsey, Nwadiuto Esiobu, Adnan Memic, Jatin Mahesh Vyas, Hadi Shafiee, Waseem Asghar *Advances in Candida detection platforms for clinical and point-of-care applications*. Critical Reviews in Biotechnology, 37(4):441-458, 2017.

Teaching Experience

Education Consultant, *TeachGeek, Inc.*, Boca Raton, FL. **2016-**
Teaching 3-D printing and CAD to middle and high school children
Help troubleshoot and print student designs

Teaching Assistant, *Florida Atlantic University*, Boca Ratom, FL. **2015-2017**
General Microbiology (MCB 2030L) and Intro. Bioengineering (EGN 1935) Lab

Selected Press Coverage

- Asghar Lab: https://youtu.be/FMI_a5NDjME
- Bionic Glove Project: http://bit.ly/2B1xdWL
- TEDx Talk: https://youtu.be/Jg36WFnv$_Z$I

References

- Waseem Asghar, PhD. wasghar@fau.edu
- Charles "Perry" Weinthal weinthalp@bionicglove.org
- Patty Anastasio, M.D. panastasio@gmail.com

More available upon request

Languages

English: Proficient Level *Fully conversational*

French: Basic Level *Extended vocabulary and grammar*

C Language: Basic level *Basic c programming*

Interests

Ceramics: Hand building, wheel-throwing, and clay and glaze making; I enjoy Raku and high-fire pottery

3-D Printing: CAD hobbiest and making my own functional and aesthetic designs which I am able to 3-D print, and enjoy assisting troubleshooting 3-D printing especially for bioengineering and wet-lab applications

Traveling: Having a brother live 12 hours away in Thailand, my family and I have had the opportunity to travel around the world. I enjoy traveling and new experiencing places while showing my gratefulness through service.