Venkata R. Yelleswarapu

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EDUCATION & HONORS

University of Pennsylvania School of Engineering and Applied Science, Philadelphia, PA

- Third year Bioengineering PhD Candidate in the Issadore Lab , GPA: 3.92
- Microsoft Fellowship Recipient: Two year PhD fellowship sponsored by Microsoft Research. (12 Nationwide)

Boston University College of Engineering, Boston, MA

- Double Major in Biomedical Engineering and Electrical Engineering, Class of 2014
  - Concentration in Nanotechnology
- Overall GPA: : 3.89/4.0, Summa Cum Laude; Dean's List
- Trustee Scholar- most prestigious merit-based award at BU that recognizes outstanding academic and leadership abilities. (Full tuition scholarship, ~20/4400 seniors)
- Kilachand Honors College: a multidisciplinary program for high-achieving students (~40/4400 seniors)
- Honor Societies: Tau Beta Pi (Treasurer), Alpha Eta Mu Beta

RESEARCH EXPERIENCE

Microfluidic Fluorescent Droplet Reader, Dr. David Issadore (PhD Research) **Fall 2014 - Present**

- Develop a portable, cost-effective droplet reader that can replace flow cytometers in resource poor settings for potential applications in cell capture, digital PCR, and general microfluidic diagnostics.
- Launched a startup – Chip Diagnostics – in 2016 for portable, high-throughput droplet digital PCR

Parallelized Droplet Maker, Dr. David Issadore (PhD Research) **Fall 2014 - Present**

- Integrate 10k+ droplet makers on a single 10x10cm^2 chip for parallelized droplet generation at ~1MHz rates.
- Extend droplet chemistry capabilities by fabricating droplet makers in PDMS, glass, or silicon

MicroPore Filter for Rare Cell Capture, Dr. David Issadore (PhD Research) **Spring 2015 - Present**

- Lithographically create copper molds for thick permalloy filters to exponentially increase magnetic trap strength to capture rare cells with much higher enrichment than traditionally possible

Optogenetic Methods for Synthetic Biology **Fall 2013-Spring 2014**

Boston University, Dr. Ahmad Khalil. Senior Design Project Boston, MA

- Constructing a well plate platform for light-based yeast gene transcription.
- Automating the optogenetic process using a programmable microcontroller with a printed circuit board and wifi to run in remote settings such as incubators.

Materials and Systems Biology Research in Biotechnology & BioMedicine REU **Summer 2013**

Rensselaer Polytechnic Institute, Dr. Ge Wang Troy, NY

- ***Co-inventor on provisional patent*** for low field MRI-CT scanner design contributions.
- Modeled omni-tomography: the principle of combining imaging modalities such as MRI, CT, PET, etc. into one compact system for simultaneous image acquisition

Clinical Development/Marketing Internship **Summer 2012**

OmniGuide, Inc. Cambridge, MA

- Performed review of competitive energies for laparoscopic surgery and clinical outcomes – including analyzing energy sources, surgeon databases, and patient revenues to advise management team

Matrix Mechanotransduction Lab Research Assistant **Fall 2011-Spring 2012**

Boston University, Dr. Michael Smith Boston, MA

- Learned to determine cell response to stress from single fiber mechanotransduction, and optimal design of stress gradients for persistent testing of time lapse experiments

Materials Research Science and Engineering Centers REU **Summer 2011**
UMASS Amherst, Dr. Shelly Peyton Amherst, MA

- Analyzed how nanotopography & stiffness affect breast cancer movement using a device with nanoparticle lines to model high density collagen at tumor sites
- Tracked cells using timelapse & oil immersion to conclude that cell movement is highly directed at small gaps, indicating guided movement away from tumors during metastasis

Joe Tien Group (Tissue Engineering/Modeling) Research Assistant **Spring 2011**
Boston University, Dr. Joe Tien Boston, MA

- Measured the physical properties (mainly permeability) of collagen gels based on different initial conditions created in the preparation phase

BU Biomedical Optics Lab Volunteer **Summer 2010**
Boston University, Dr. Irving Bigio Boston, MA

- Collected data to measure diffuse reflectance from various types of tissue phantoms
- Worked on designing setups that would effectively capture diffuse reflectance

Young Scholars Program Research Assistant **Summer 2009**
Northeastern University, Dr. Dimarzio Boston, MA

- Explored how to digitally stain cancerous cells to avoid excisions by using confocal and hyperspectral imaging under the guidance of Professor Charles DiMarzio
- Analyzed images using Matlab to measure transmission spectra for specific cell structures

PROFESSIONAL ACTIVITIES

Silicon Valley Bank Trek **January 2017**

- Four day event to connect and pitch with VCs, partners, entrepreneurs, and investors in Silicon Valley

Penn Center for Innovation Fellow **Spring 2015-Present**

- Hands-on learning about technology transfer where fellows work with technology licensing officers to evaluate invention disclosures for intellectual property.

Y-Prize Tech Consultant **Summer 2015-Spring 2016**

- Act as a liaison to elucidate technical aspects of our lab's research being commercialized in the competition.
- Educate competition participants on the technology by hosting discussion events and coaching a finalist team

Penn Biotech Group Healthcare Consulting member **Fall 2014**

- Identify potential target biomarkers for translating research to marketable products by sifting through financial and medical databases.

Recruitment officer on Graduate association of BioEngineers (GABE): **Fall 2014 - 2015**

- Act as a liaison between the department and GABE during recruitment; arrange activities for recruits

Penn Bioengineering Mentorship Program **Fall 2014 - 2015**

- Advise undergrads on careers, courses, and academic pathways in Bioengineering

Students for Advancement for Nanotechnology (SANT) **VP (2012), President (2013)**

- Co-founded SANT to raise awareness of nanotechnology applications and to guide students on nano concentration offered at BU.
- Hosted *Nanovember,* a month-long event of guest lectures and a Nano Art Show, with over 200 guests**.**

Tau Beta Pi **Treasurer 2013**

- Organized regional conference, bent & induction ceremonies, video game tournaments, information sessions

Caritas Norwood Hospital Radiology Volunteer **2008-2010**

SKILLS

MATLAB, Nanofabrication (Lithography, Chemical Etching, Laser Micromachining), Solidworks, COMSOL, Microfluidic design, Cell Culture, Image Analysis, Android, Microscopy, Biomedical Instrumentation, Signal Processing

PUBLICATIONS

1) **VR. Yelleswarapu**, H. Jeon, S. Yadavali, D. Issadore, Ultra-High Throughput Detection (1 Million Droplets / Second) of Fluorescent Droplets Using a Cell Phone Camera and Time Domain Encoded Optofluidics, 2016 (submitted).
2) J. Ko, M. A. Hemphill, D. Gabrieli, L. Wu, **VR. Yelleswarapu**, G. Lawrence, W. Pennycooke, A. Singh, D. Meaney, D. Issadore, Smartphone-enabled optofluidic exosome diagnostic for concussion recovery, *Scientific Reports*, 6, 31215, 2016.
3) **VR Yelleswarapu***, J Ko*, A Singh, N Shah, D Issadore. Magnetic Nickel iron Electroformed Trap (MagNET): A master / replica fabrication strategy for ultra-high throughput (> 100 mL/hr) immunomagnetic sorting, *Lab on a Chip*, DOI: 10.1039/C6LC00487C, 2016. (*Equal Contribution)
4) HH Jeong, **VR Yelleswarapu**, S Yadavali, D Issadore, D Lee. "Kilo-scale droplet generation in three-dimensional monolithic elastomer device (3D MED)". *Lab on a Chip*, 2015. DOI: 10.1039/C5LC01025J
5) **VR Yelleswarapu**, FL Liu, W Cong, G Wang. "Top-Level System Designs for Hybrid Low-field MRI-CT with Potential of Pulmonary Imaging." *Sensing and Imaging*, 2014.
    a. Provisional patent (US 61/857,848), Poster Presentation on August 8, 2013.

PRESENTATIONS

1) Oral and Poster presentation at Biomedical Engineering Society in October 2016.
2) Attended Microsoft Faculty Summit at MSR HQ in Redmond in July 2016.
3) **VR Yelleswarapu**, "Diagnostics on Hybrid Microfluidic-Electronic Chips." Microsoft Research Redmond. May 2016.
4) **VR Yelleswarapu***, J Ko*, A Singh, N Shah D Issadore. "Magnetic Nickel-iron Electroformed Trap (MagNET) for high throughput immunomagnetic sorting." Singh Center Poster Symposium. **First Place in Poster Contest**. Oct 2015.
5) **Yelleswarapu V**, Muluneh M, Issadore D. "Point-of-Care Microfluidic Detector based on Amplitude Modulation for Parallel, Digital Diagnostic Assays." Penn Science Student Research Symposium 2015. **First Place in Poster Contest.**
6) Engineered Microenvironments to Parse the Role of Stiffness and Nanotopography in Metastasis." CHM & MRSEC REU Presentation. UMASS Amherst; August 3, 2011.
7) "Clinical Applications of Hyperspectral Imaging." Northeastern Young Scholars Program with Dr. DiMarzio. Poster Presentation. Northeastern University; August, 2009.