

# LOAN T. BUI

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## ----- EDUCATION

- 2017 **PhD, Biomedical Engineering**, University of Texas at Arlington (UTA), Arlington, TX.  
○ Dissertation: *Understanding Key Genetic Mutations and Molecular Alterations on Increasing Migration, Viability, Drug Resistance of Malignant Brain Tumor in Physical Confinement*  
○ Committee: *Young-Tae Kim, Cheng-Jen Chuong, Samir Iqbal, Kytai Nguyen*
- 2011 **BE, Biomedical Engineering**, The Catholic University of America (CUA), Washington, DC.  
○ Senior Design: *Acoustic Sensing Characterization Device*  
○ Advisor: *Victor Frenkel*
- 2008 **BS, Biotechnology**, University of Natural Sciences, Ho Chi Minh City, Vietnam.  
○ Thesis: Study of micro flora isolated from cocoa fermentation  
○ Advisor: *Le Van Bui*

## ----- AWARDS AND HONORS

- 2019 **Indiana CTSI Postdoc Challenge Award**: Grant funding to use CTSI Facilities for outstanding research
- 2017 **Alfred and Janet Potvin Award**: Outstanding bioengineering students
- 2011 **Tau Beta Pi**: Engineering Honor Society
- 2010 **Nagel Scholar**: Scholarship awarded to the top engineering student
- 2008 **Odon Wallet Scholarship**: For excellence in research
- 2008 **Lawrence S. Ting Scholarship**: For excellent academic achievement, school year 2007-2008

## ----- ACADEMIC AND RESEARCH POSITION

- 1/2018-Present **Post-Doctoral Research Associate**: *University of Notre Dame (ND)*, AME, Notre Dame, IN.  
○ Research Interests: Bioactive Nanoparticles for Cell Therapy, Lymphatic Metastasis, Microfluidics  
○ Major Duty: Conducting research at Center for Stem Cells and Regenerative Medicine; Mentoring undergraduate students; Writing research proposals; Publishing and Presenting original works in Professional Conferences.
- 9-12/2017 **Post-Doctoral Research Associate/Fellow**: *UTA*, Biomedical Engineering, Arlington, TX.  
○ Research Interests: Cancer Metastasis, Brain Tumor Invasion, Biomarkers, Microfluidic Diagnostic Platforms  
○ Major Duty: Trained laboratory personnel; Conducted research and published results.
- 8/2012-8/2017 **Graduate Research and Teaching Assistant**: *UTA*, Biomedical Engineering, Arlington, TX.  
○ Major Duty: Assisted Professors and Lecturers in teaching various courses (both undergraduate and graduate levels); Conducted research studies and maintained wet lab functions; Presented works in National Conferences and published scientific papers; Mentored undergraduate students, master students and summer interns.

## -----TEACHING EXPERIENCE

### *UNIVERSITY OF TEXAS AT ARLINGTON*

- Spring 2017 **Neural Engineering (BE5329)**, Graduate Teaching Assistant.  
Fall 2016 **Measurement Lab (BE3320)**, Graduate Teaching Assistant.  
Fall 2016 **Introduction to Tissue Engineering and Drug Delivery (BE4368)**, Graduate Teaching Assistant.  
Spring 2016 **Neural Engineering (BE5329)**, Graduate Teaching Assistant.  
Spring 2016 **Tissue Engineering and Drug Delivery Lab (BE3367)**, Graduate Teaching Assistant.  
Fall 2015 Introduction of Tissue Engineering and Drug Delivery, Graduate Teaching Assistant.  
Spring 2015 Neural Engineering, Graduate Teaching Assistant.  
Spring 2015 Tissue Engineering and Drug Delivery Lab, Graduate Teaching Assistant.

- Fall 2014 Introduction of Tissue Engineering and Drug Delivery, Graduate Teaching Assistant.  
 Spring 2014 Neural Engineering, Graduate Teaching Assistant.  
 Fall 2013 Fundamentals of Bioengineering, Graduate Teaching Assistant.

**UNIVERSITY OF NATURAL SCIENCE**

- Spring 2008 **Biochemistry Lab**, Undergraduate Teaching Assistant.

**TEACHING TRAINING**

- Fall 2019 Helping Students Learn to Read Scientific Literature.  
 Teaching with Debate.  
 Improve your Teaching & Student Learning with Classroom Research.

----- **MENTORING EXPERIENCE**

**CURRENT TRAINEES**

- Grace Petrosini (Undergraduate, ND)  
 Kellen Round (Undergraduate, ND)  
 Madeline Owen (Undergraduate, ND)  
 Pietro Sainaghi (Undergraduate, ND)

**PAST TRAINEES**

- Sayem Bhuiyan (Graduate, University of North Dakota)  
 Alissa Hendricks (Graduate, Virginia Polytechnic Institute and State University)  
 Qionghua Shen (Graduate, UTA)  
 Vanessa Saavedra (Undergraduate, University of Texas at El Paso)  
 Yeun Hur (Undergraduate, Texas A&M University)  
 Calvin Kong (Undergraduate, University of Texas at Austin)

----- **RESEARCH EXPERIENCE**

- 2018-2020 **Postdoc. Research**, *University of Notre Dame*, Notre Dame, IN.  
**Project: Exploiting Human Induced Pluripotent Stem Cell (hiPSC) to Improve Lymphangiogenesis**  
 o Investigating the differentiation pathway of human iPSCs to lymphatic endothelial cells that could enhance lymphangiogenesis for rescue of diseased lymphatics and for tissue regeneration.  
**Project: Engineering Bioactive Nanoparticles to Rejuvenate Progenitor Cells**  
 o Developing lipid carrier delivery system to improve endothelial progenitor cell functions in diabetes contexts.  
**Project: Understanding Interplay between Lymphatics and Breast Cancer during Tumor Invasion**  
 o Developing microfluidic system to mimic lymphatic vasculatures in proximity to primary breast cancer and to study their association with tumor migration
- 2015-2017 **Ph.D. Research**, *University of Texas at Arlington*, Arlington, TX.  
**Project: Characterizing various changes in biomolecules in migrating tumor cells**  
 o Developed a microchannel platform facilitating exclusive collection of migrating cells for downstream gene expression quantification.  
 o The article was published in *Biomedical Physics & Engineering Express*.
- 2014-2015 **Ph.D. Research**, *University of Texas at Arlington*, Arlington, TX.  
**Project: Identifying roles of key genetic mutations on increasing migration of brain cancer**  
 o Rapid and efficient analysis of migratory of cancer cells and their correlate properties that could be helpful for the development of anti-migratory drugs.  
 o The article was published in *Biomedical Microdevices*.
- 2013-2015 **Ph.D. Research**, *University of Texas at Arlington*, Arlington, TX.  
**Project: Understanding the impact of confined microenvironments on drug resistance of brain tumor lines with different genetic malignancy**  
 o Studied the viability and drug resistance of different malignant brain cell lines in different physical confinements.  
 o The work was published in *Nature Scientific Reports*.

- 2011-2012 **Summer Internship Research**, *Vitreous State Laboratory*, CUA, Washington, DC.
- Designed and tested 3D-scaffolds for tissue engineering using different materials such as Agarose, Gelatin, Chitosan, Hydroxyapatite, Hydroxyethyl starch.
  - Research work was presented at BMES 2012.
- 2010-2011 **Undergraduate Research**, *BONE/CRAB Lab*, CUA, Washington, DC.
- Assisted with lab's research projects including preparing hands-on experiments, accumulating, reporting and analyzing data, writing papers. The research focused on the field of Biomaterials and Tissue Engineering.
- 2006-2008 **Undergraduate Research**, *Plant biotechnology and Bioconversion Laboratory*, Vietnam.
- Studied microorganism population isolated from cocoa fermentation. Performed microbiological analyses to identify yeast, mold, lactic acid bacteria, and acetic acid bacteria during the fermentation process.

### ***AD HOC REVIEWERS***

2018-Present FEBS Letters, Biomicrofluidics, Nature Communications, Science Advances, Advances in Wound Care

### **----- PUBLICATIONS**

#### ***JOURNAL ARTICLES***

- [J10] Liu, Y., **Bui, L.**, Hanjaya-Putra, D., Bruening, M., Membrane-Based Affinity Purification to Identify Target Proteins of a Small-Molecule Drug. *Analytical Chemistry*. 2020
- [J9] Khan, I., **Bui, L.**, Bachoo, R., Kim, Y. T., Chuong, C. Differences in Creep Response of GBM cells migrating in confinement. *International Biomechanics*. 2020
- [J8] **Bui, L.**, Shen, Q., Hill, T., Bhuiyan, S., Barakat, R., Saavedra, V., ... & Kim, Y. T. Microchannel Device for Proteomic Analysis of Migrating Cancer Cells. *Biomedical Physics & Engineering Express*. 2018
- [J7] **Bui L**, Bhuiyan HS, Hendrick A, Chuong C, Kim Y. Role of key genetic mutations on increasing migration of brain cancer cells through confinement. *Biomedical Microdevices*. 2017 Sep, 19:56.
- [J6] **Bui L**, Aleid A, Alassaf A, Wilson OC, Raub CB, Frenkel V. Development of a custom biological scaffold for investigating ultrasound-mediated intracellular delivery. *Materials Science and Engineering: C*. 2017 Jan 1;70:461-70.
- [J5] Batabyal, S., Satpathy, S., **Bui, L.**, Kim, Y. T., Mohanty, S., Bachoo, R., & Davé, D. P. (2017). Label-free optical detection of action potential in mammalian neurons. *Biomedical Optics Express*, 8(8), 3700-3713.
- [J4] Ali W, Ilyas A, **Bui L**, Sayles B, Hur Y, Kim YT, Iqbal SM. Differentiating Metastatic and Non-metastatic Tumor Cells from their Translocation Profile through Solid-state Micropores. *Langmuir*. 2016 May 6;32(19):4924-34.
- [J3] Ali W, Moghaddam FJ, Raza MU, **Bui L**, Sayles B, Kim YT, Iqbal SM. Electromechanical transducer for rapid detection, discrimination and quantification of lung cancer cells. *Nanotechnology*. 2016 Mar 29;27(19):195101.
- [J2] **Bui L**, Hendricks A, Wright J, Chuong CJ, Davé D, Bachoo R, Kim YT. Brain Tumor Genetic Modification Yields Increased Resistance to Paclitaxel in Physical Confinement. *Scientific reports*. 2016;6.
- [J1] Nguyen T, **Bui L**, Tran N, Frenkel V. Calibrating therapeutic ultrasound transducers: corrections for the effects of acoustic cavitation and acoustic streaming. *Техническая акустика*. 2013;13.

#### ***CONFERENCE PRESENTATIONS***

- [C12] **L Bui**, D Hanjaya-Putra, "Microfluidic Hydrogel-Based Platform to Study Breast Cancer Cell and Lymphatic Capillary Interaction," Cancer Research Day, April 2019, Notre Dame, IN (Award: Outstanding Poster Presentation)
- [C11] **L Bui**, D Hanjaya-Putra, "Engineering Bioactive Nanoparticles to Rejuvenate Progenitor Cells," ND-Purdue Soft Matter & Polymers Symposium, Oct 2018, Notre Dame, IN (Award: Outstanding Poster Presentation)
- [C10] **L Bui**, T Hill, S H Bhuiyan, Q Shen, V Saavedra, C Kong and Y Kim, "Proteomic Changes of Cells during Their Migration in Physical Confinement," The Annual Celebration of Excellence by Students Symposium (ACES), March 2017, Arlington, TX. (Dean's Award: Outstanding Poster Presentation)

- [C9] **L Bui**, A Hendrick, T Hill, R Leviner and Y Kim, “Key Gene Mutations for Increasing Migration of Brain Cancer Cells via Confinement,” Biomedical Engineering Society (BMES), October 2016, Minneapolis, MN.
- [C8] A Hendricks, **L Bui**, R Leviner, Y Kim, “Cellular Interactions of Pancreatic Cancer Cells to Peripheral Nerves as a Model of Perineural Invasion,” BMES, October 2015, Tampa, FL.
- [C7] **L Bui**, A Hendricks, R Leviner, and Y Kim, “Non-microtubule Targeting Drug Increased Eradication Effect on Brain Tumor Cell Lines in Physical Confinement,” BMES, October 2015, Tampa, FL.
- [C6] **L Bui**, A Hendricks, and Y Kim, “Brain Tumor Genetic Modification Yields Increased Resistance to Paclitaxel in Physical Confinement,” ACES, March 2015, Arlington, TX.
- [C5] B Sayles, **L Bui**, C Chuong, D Davé, Y Sun, R Bachoo, and Y Kim, “Quantitative Comparison of Metastasizing and Non-metastasizing Breast Cancer Cell Migration via Various Dimension Microchannels,” Society for Biomaterials (SFB), May 2014, Denver, CO.
- [C4] **L Bui**, B Sayles, Y Hur, C Chuong, D Davé, R Bachoo, and Y Kim, “Flower Microchannel Device for Studying Brain Cancer Cell Migration,” SFB, May 2014, Denver, CO.
- [C3] **L Bui**, B Sayles, O Yetkin, and Y Kim, “Developing Microchannel Device for Cancer Cell Migration Study,” ACES, March 2014, Arlington, TX.
- [C2] B Nguyen, **L Bui**, R Silva, O Wilson, P Mehl, V Frenkel, “Preliminary assessment of 3D biological scaffolds for evaluating therapeutic ultrasound exposures,” BMES, October 2012, Atlanta, GA.
- [C1] **L Bui**, P Mehl, R Silva, O Wilson, “Freeze-Dried Chitosan-Hydroxyapatite 3D Scaffolds with Agar or Gelatin as Support Matrix,” BMES, October 2012, Atlanta, GA.

## ----- SKILLS

<b>Technique</b>	Microfluidics, Photolithography, Softlithography, 3D-Printing, Biomaterials, Polymeric Fabrication, Cancer Research, Primary Cell Culture, Animal Study, Immunofluorescence staining, Cell-based Assay, EM Microscopy, Flow Cytometry, PCR, Western Blot, Data Analysis
<b>Software</b>	AutoCAD, LayoutEditor, Solidworks, Matlab, R, Minitab, ImageJ, Photoshop, Microsoft Office
<b>Others</b>	Leadership, Team work, Teaching, Mentoring, Time management, Scientific Writing, Presentation

## ----- SERVICE ACTIVITIES

Feb 2018	<b>Judge</b> , Northern Indiana Regional Science & Engineering Fair, ND, Notre Dame, IN
2015-2017	<b>Vietnamese Teaching Volunteer</b> , Phap Quang Buddhist Temple, Grand Prairie, TX
Oct 2016	<b>Room Monitor</b> , BMES Conference, Minneapolis, MN
Apr 2016	<b>Representative of Book Drive For Vietnam</b> , Arlington, TX
Nov 2010	<b>Judge</b> , The LEGO Robotics Tournament, Smithsonian’s Ripley Center
Aug 2010	<b>Orientation Advisor</b> , Center for Global Education, CUA