

# TRAN N. H. NGUYEN, Ph.D.

## Curriculum Vitae

Department of Biomedical Engineering  
The Harold C. Simmons Comprehensive Cancer Center (Secondary Appointment)  
UT Southwestern Medical Center  
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[www.trannguyenlab.com](http://www.trannguyenlab.com)

## PROFESSIONAL EXPERIENCE

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- 2025-Present   Assistant Professor in Biomedical Engineering  
*UT Southwestern Medical Center*
- 2020-2025   Postdoctoral Fellow in Bioengineering,  
*University of Washington*
- Advisor: Albert Folch

## EDUCATION

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- 2020   Ph.D. in Biomedical Engineering  
*Weldon School of Biomedical Engineering, Purdue University*
- Advisors: Hugh Lee, Muhammad Ashraful Alam, Riya Shi, and Jenna Rickus
- 2013   B.S. in Chemical Biology  
*College of Chemistry, University of California, Berkeley*

## FELLOWSHIPS & AWARDS

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- 2025   The Electrochemical Society Travel Grant
- 2024   Chemical and Biological Microsystems Society Travel Grant
- 2024   The Rising Stars in Engineering in Health
- 2023   The Mistletoe Research Fellowship, Momental Foundation
- 2023   Interdisciplinary Postdoctoral Fellowship in Cancer Research, University of Washington & Fred Hutch Cancer Center
- 2023   Asian Deans' Forum, Rising Stars Women in Engineering, University of Tokyo
- 2023   Excellence in Research & Translation Postdoctoral Award, Department of Bioengineering, University of Washington
- 2022   NextProf Nexus, Faculty Development Workshop, UC Berkeley

2021	Catalytic Collaboration Trainee Award, Brotman Baty Institute, Seattle
2020	Washington Research Foundation   Postdoctoral Fellowship – Finalist
2018	Ronald W. Dollens Scholarship, Purdue University
2015	Lynn Fellowship, Weldon School of Biomedical Engineering, Purdue University

## PUBLICATIONS (\*UNDERGRADUATE MENTEE)

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### Peer Reviewed Journal Articles

2025	N. Gottshall, R. I. Stepanov, A. Ahmadianyazdi, D. Sinha, E. Lockhart, <b>T. N. H. Nguyen</b> , S. Hassan, L. Horowitz, R. Yeung, T. S. Gujral, A. Folch. Horowitz, L. R. “Low-cost Robotic Manipulation of Live Microtissues for Cancer Drug Testing”, <i>Science Advances</i> . <b>11</b> : 20 (2025).
2024	<b>T. N. H. Nguyen</b> , L. Horowitz, *T. Krilov, E. Lockhart, H. L. Kenerson, T. S. Gujral, R. S. Yeung, N. Arroyo-Currás, and A. Folch. “Label-Free, Real-time Monitoring of Cytochrome C Drug Responses in Microdissected Tumor Biopsies with a Multi-Well Aptasensor Platform”, <i>Science Advances</i> . <b>10</b> : 6 (2024).
2024	E. Lockhart, L. F. Horowitz, A. Rodríguez, S. Zhu, <b>T. N. H. Nguyen</b> , M. Mehrabi, T. S. Gujral, and A. Folch. Drug testing of monodisperse arrays of live microdissected tumors using a valved multiwell microfluidic platform. <i>Lab Chip</i> . <b>24</b> , 2683–2699 (2024).
2020	<b>T. N. H. Nguyen</b> , X. Jin, J. Nolan, *Y. Wang, *S. Lam, M. A. Alam, H. Lee. “Printable Nonenzymatic Glucose Biosensors Using Carbon Nanotube-PtNP Nanocomposites Modified with AuRu for Improved Selectivity”, <i>ACS Biomaterials Science &amp; Engineering</i> , <b>6</b> : 5315–5325 (2020).
2020	Y. Sun, <b>T. N. H. Nguyen (Co-First Author)</b> , A. Anderson, X. Cheng, T. E. Gage, J. Lim, Z. Zhang, H. Zhou, F. Rodolakis, F. Zhang, Z. Arslan, S. Ramanathan, H. Lee, and A. A. Chubykin. “In vivo glutamate sensing inside the mouse brain with perovskite nickelate-nafion heterostructures”, <i>ACS Applied Materials &amp; Interfaces</i> , <b>12</b> : 24564–24574 (2020).
2020	<b>T. N. H. Nguyen</b> , J. Nolan, X. Cheng, H. Park, *Y. Wang, *S. Lam, H. Lee, S. J. Kim, R. Shi, A. A. Chubykin, and H. Lee. “Fabrication and Ex Vivo Evaluation of Activated Carbon-Pt Microparticles Based Glutamate Biosensor”, <i>Journal of Electroanalytical Chemistry</i> , <b>866</b> : 114136 (2020).
2019	<b>T. N. H. Nguyen</b> , J. Nolan, H. Park, *S. Lam, M. Fattah, J. Page, H-E. Joe, M. B. G. Jun, H. Lee, S. J. Kim, R. Shi, and H. Lee. “Facile Fabrication of Flexible Glutamate Biosensor using Direct Writing of Platinum Nanoparticles-based Nanocomposite”, <i>Biosensors and Bioelectronics</i> , <b>131</b> : 257-266 (2019).
2019	J. Nolan, <b>T. N. H. Nguyen</b> , *KVH. Le, LE. Delong, and H. Lee. “Simple Fabrication of Flexible Biosensor Arrays Using Direct Writing for Multianalyte Measurement from Human Astrocytes”, <i>Slas Technology: Translating Life Sciences Innovation</i> , <b>25</b> : 33-46 (2019).

- 2019 J. Nolan, **T. N. H. Nguyen**, M. Fattah, J. Page, R. Shi, and H. Lee. “Ex vivo Electrochemical Measurement of Glutamate Release during Spinal Cord Injury”, *MethodsX*, **6**: 1894-1900 (2019).
- 2018 Q. Yang, H. Park, **T. N. H. Nguyen**, J. F. Rhoads, A. Lee, R. T. Bentley, J. W. Judy, H. Lee. “Anti-biofouling Implantable Catheter using Thin-film Magnetic Microactuators”, *Sensors and Actuators B: Chemical*, **273**: 1694-1704 (2018).
- 2017 G. R. Dunn, N. R. N. Barzegar, W. N. Shi, J. N. M. Belling, **T. N. H. Nguyen**, E. Barkovich, K. Chism, M.R. Deweese, A. Zettl, K. Shen, and M. M. Maharbiz. “Selective Insulation of Carbon Nanotubes”, *Physica Status Solidi (B) Basic Research*, **254**: 1700202 (2017).

### In Submission

**T. N. H. Nguyen**, L. Horowitz, \*B. Nguyen, \*T. Krilov, S. Zhu, E. Lockhart, T. S. Gujral, and A. Folch. “Microfluidic Modulation of Microvasculature in Microdissected Tumors”, bioRxiv ([/doi.org/10.1101/2024.09.26.615278](https://doi.org/10.1101/2024.09.26.615278)).

L. Horowitz, R. Rodriguez-Mias, S. Li, N. Gottshall, I. Stepanov, C. Stiles, **T. N. H. Nguyen**, E. Lockhart, R. S. Yeung, J. Villen, T. S. Gujral, and A. Folch. “Microdissected Tumor Cuboids: a Microscale Cancer Model that Maintains a Complex Tumor Microenvironment”, bioRxiv ([/doi.org/10.1101/2024.03.22.586189](https://doi.org/10.1101/2024.03.22.586189)).

### In Preparation

**T. N. H. Nguyen**, \*T. Krilov, L. Horowitz, H. L. Kenerson, R. S. Yeung, N. Arroyo-Currás, and A. Folch. “Real-time Monitoring of Interleukin-6 and Interferon Gamma Drug Response from Microdissected Tumor Slices Using a Multi-Well Aptasensors Platform.”

### CONFERENCE ACTIVITY (\*UNDERGRADUATE MENTEE)

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#### Abstract & Presentations

- 2024 **Nguyen, T. N. H.**, Horowitz, L. F., \*Nguyen, B., Gujral. T. S., and Folch. A. Microfluidic Modulation of Tumor Microvasculature in Micro-dissected Cancer Tissues. *Biomedical Engineering Society*, Baltimore, Maryland, 23-26 Oct. (Oral Presentation)
- 2024 **Nguyen, T. N. H.**, Horowitz, L. F., \*Nguyen, B., Gujral. T. S., and Folch. A. Microfluidic Modulation of Tumor Microvasculature in Micro-dissected Cancer Tissues. *Miniaturized Systems for Chemistry and Life Sciences*, Montreal, Canada, 13-17 Oct. (Poster Presentation)
- 2024 **Nguyen, T. N. H.**, Horowitz, L. F., \*Nguyen, B., Gujral. T. S., and Folch. A. Microfluidic Modulation of Tumor Microvasculature in Micro-dissected Cancer Tissues. *3<sup>rd</sup> Microphysiological Systems World Summit*, Seattle, Washington, 10-14 May. (Poster Presentation)
- 2024 **Nguyen, T. N. H.**, Horowitz, L. F., \*Nguyen, B., Gujral. T. S., and Folch. A. A Microfluidic Platform to Preserve Micro-dissected Tumor Microvasculature. *Fifth Annual Cascadia Regenerative Medicine Symposium*, Vancouver, British Columbia, 18-19 Jan. (Oral Presentation)

- 2023 **Nguyen, T. N. H.**, Horowitz, L. F., Arroyo-Currás, N., and Folch. A. Electrochemical Measurement of Cytochrome c Release from Microdissected Cancer Tissues. *Biomedical Engineering Society*, Seattle, Washington, 11-14 Oct. (Oral Presentation)
- 2023 Horowitz, L. F., **Nguyen, T. N. H.**, Lockhart, E., Rodriguez, R., Lim, C. B., Kenerson, H., Villen, Judit., Yeung, R., Gujral. T. S., and Folch. A. Microdissected “cuboids” as a model system for cancer drug testing. *Biomedical Engineering Society*, Seattle, Washington, 11-14 Oct. (Poster Presentation)
- 2023 **Nguyen, T. N. H.**, Horowitz, L. F., \*Nguyen, B., Rodriguez, A. D., Lim, C. B., Mehrabi, M., Gujral. T. S., and Folch. A. Modulation of the Tumor Microvasculature in Micro-dissected Cancer Tissues using a Microfluidic Drug Testing Platform. *Institute for Stem Cell & Regenerative Medicine, 2023 Stem Cell Mini Symposium*, Seattle, Washington, 25 May. (Oral Presentation)
- 2023 **Nguyen, T. N. H.**, Horowitz, L. F., \*Krilov, T., \*Lim, R., Rodriguez, A. D., Lim, C. B., D. T., Gujral. T. S., Arroyo-Currás, N., and Folch. A. Local Electrochemical Measurement of Cyt C Release from Microfluidic Arrays of Micro-dissected Cancer Tissues. *SELECTBIO, Innovations in Microfluidics 2023, 3D-Printing and 3D-Tissue*, Seattle, Washington, 4-5 May. (Oral Presentation)
- 2022 Nguyen, B\*, **Nguyen, T. N. H.**, Horowitz, L. F., Rodriguez, A. D., Lim, C. B., Mehrabi, M., Gujral. T. S., and Folch. A. A Microfluidic Platform to Preserve Micro-dissected Tumor Microvasculature. *Miniaturized Systems for Chemistry and Life Sciences*, Hangzhou, China, 23-27 Oct. (Oral Presentation)
- 2021 **Nguyen, T. N. H.**, Horowitz, L. F., Rodriguez, A. D., Mehrabi, M., Schwartz, D. T., and Folch. A. Detection of Cytochrome C from Micro-dissected Tumors in Microfluidic Arrays using Aptamer-based Electrochemical Sensors. *Miniaturized Systems for Chemistry and Life Sciences*, Palm Springs, California, 10-14 Oct. (Poster Presentation)
- 2018 **Nguyen, T.**, \*Lam, S., Park, H., Shi, R., and Lee. H. Development of Flexible Glutamate Biosensor using Activated Carbon–Pt Microparticle Composite Ink. *Proceedings of IEEE Sensors*, New Delhi, India, 28 Oct. (Oral Presentation)
- 2017 **Nguyen, T.**, Park, H., Shi, R., and Lee. H. Rapid Prototyping of Microscale and Flexible Electrochemical Biosensor using Direct Writing. *39th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Jeju Island, Korea, 15 July. 2017. (Oral Presentation)
- 2016 Yang, Q., **Nguyen, T.**, Liu, C., Miller, J., Rhoads, J. F., Linnes, J., and Lee, H. Polyimide-Based Magnetic Microactuators for Biofouling Removal. *Proceedings of 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Orlando, Florida, 16 Aug. (Oral Presentation)

2016      **Nguyen, T.**, Linnes, J., and Lee, H. Removal Capabilities of Polyimide-Based Magnetic Microactuators. *Biomedical Engineering Society Annual Meeting*, Minneapolis, Minnesota, 7 Oct. 2016. (Poster Presentation)

## PATENT APPLICATIONS

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1.            “Integrated Electrochemical Aptasensors for Measuring Cell Death and Cytokine activity from Intact Tissue Samples” US Patent Application 18/652,334 filed 5/01/2024. A Folch, **TNH Nguyen**, L Horowitz, N Arroyo.
2.            “Direct Electron Transfer Glutamate Biosensor Using Platinum Nanoparticle and Carbon Nanotubes” US Patent Application 17/625,262 filed 6/7/2020. H Lee, **TNH Nguyen**.

## GRANT PROPOSAL EXPERIENCE

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### **NIH/NCI R01 CA272677**

Folch (PI)

4/2023 – 03/2028

**Status:** Funded

Multiplexed Drug Testing of Microdissected Tumors using a Microfluidic Platform with Integrated Electrochemical Aptasensors.

**Role:** Intellectual originator of the project, leading the development of an electrochemical sensor platform. Led experimental design, drafted specific aims and methodology.

### **NIH/NCI R01**

Folch (PI)

**Status:** Reviewed/Not Funded

Metabolic Engineering of the Intact Tumor Microenvironment Using Microdissected Tumor "Cuboids" with a Microfluidic Device.

**Role:** Project leader who generated key preliminary data and led experimental design efforts that formed the foundation of the R01 proposal focused on metabolic engineering of microdissected tumor cuboids using a microfluidic platform.

### **NIH/NCI T32 CA080416**

Stoddard, Barry (PI), Fred Hutchinson Cancer Center & University of Washington

12/2023 – 12/2024

**Status:** Funded

**Title:** Real- time Monitoring of Cytochrome C Drug Responses in Microdissected Tumor Biopsies with a Multi- well Aptasensor Platform.

**Role:** Project leader on a study designing a multi-well aptasensor platform for real-time detection of cytochrome C release in drug-treated microdissected tumor biopsies, advancing applications in precision cancer therapy.

### **Brotman Baty Institute, Seattle**

Nguyen, Tran (PI), University of Washington

01/2021 – 02/2022

**Title:** Modulation of the Tumor Microvasculature in Microdissected Cancer Tissues using a Microfluidic Drug Testing Platform.

**Role:** Principal Investigator for a project developing a microfluidic platform to modulate and analyze tumor microvasculature in microdissected cancer tissues for drug testing applications.

## RESEARCH EXPERIENCE

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- 2020-Present. Folch Lab, Department of Bioengineering,  
*University of Washington*
- Advisor: Albert Folch
  - Research: Integrating electrochemical biosensors platform for drug screening using microdissected tumors and perfusing and preserving microvasculature of microdissected tissues.
- 2015-2020 Laboratory of Implantable Microsystem Research, Weldon School of Biomedical Engineering  
*Purdue University*
- Advisor: Hyowon Lee
  - Dissertation: Printable Electrochemical Biosensors for Detection of Neurotransmitter and Other Biological Molecules.
- 2012-2014 Zettl Group, Physics Department,  
*UC Berkeley*
- Advisor: Alex Zettl
  - Research: Application of multiwalled carbon nanotubes as a non-destructively electrochemical neural probe for biological systems.
- 2014 Maharbiz Group, EECS Department,  
*UC Berkeley*
- Advisor: Michel Maharbiz
  - Research: Supported testing microelectrode arrays for neural recording and examining the action potential's mechanical properties.
- 2013 Knight Lab, Cognitive Neuroscience Research Laboratory, Psychology Department  
*UC Berkeley*
- Advisor: Robert T. Knight
  - Research: Explored using an electroencephalogram to record brainwave signals during imagined speech to identify the signal's originated area.

## TEACHING EXPERIENCE

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### University of Washington, Co-Instructor

Working in Science Education (STEP-WISE) Scholar  
BIOL 495 - Biology, Technology, and Ethics of Personalized Medicine (Winter 2023)

### University of Washington, Invited Guest Lecturer

BIOEN 299 - Introduction to Bioengineering (Spring 2024)

### Purdue University, Teaching Assistant

BME 21000 - Biomolecules: Structure, Function, and Engineering Applications (Fall 2019, Fall 2017)  
BME 48901 - Senior Design Project (Fall 2016)

## UNDERGRADUATES MENTORED

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### On going

Krilov T. 2022. Multiplex system development and implementation of aptasensor technology for real-time tumor drug monitoring.

Nguyen B. 2021. Image data analysis using IMARIS: modulation of tumor microvasculature in microdissected cancer tissues. (2024 B.S Bioengineering). 2023 Husky 100. Bioinformatics Analyst at Fred Hutchinson Cancer Center.

### Completed

Nguyen B. 2022. Circuit design for aptasensor systems

Gopal S. 2021. 3D-printed perfusion systems for microvasculature preservation in microdissected cancer tissues. (2022 B.S Bioengineering). 2022 Husky 100.

Lin R. 2021. 3D-printed electrochemical sensors for tissue culture data collection. (2021 B.S Bioengineering). Master Student at Columbia University.

Le KVH. 2018. Data collection on flexible biosensor arrays for analytes measurement.

Wang Y. 2017. Fabrication and evaluation of carbon nanotube-PtNP modified glucose and glutamate biosensors. (2018 B.S Biomedical Engineering). Master Student at Duke University.

Lam S. 2017. Fabrication of flexible glutamate and glucose biosensors: evaluation and data collection in sensor development. (2019 B.S Neuroscience). Ph.D. student at University of Pittsburg.

## PROFESSIONAL SERVICE

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### To University

Women in Engineering, Weldon School of Biomedical Engineering, *Purdue University*. (2016 – 2019)

- Graduate Woman Gathering Ambassador, promoting fellowship and support among women in engineering.

Office of Interdisciplinary Graduate Program, *Purdue University*. (2016 – 2018)

- Interdisciplinary Graduate Program Student Advisory Board Member.
- Facilitated cross-department collaboration and engagement among graduate students, enhancing communication and resources within the Interdisciplinary Biomedical Sciences program.
- Planned the annual Interdisciplinary Spring Reception and participated in Social Justice Seminars to foster inclusivity and networking opportunities.

Introduce a Girl to Engineering Day Volunteer, *Purdue University*. (2016, 2017)

- Organized and facilitated a one-day event featuring hands-on engineering activities, mentorship, and informational sessions for high school freshmen and sophomores as part of National Engineer's Week.

Nanoday at the Birck Nanotechnology Center Volunteer, *Purdue University* (2016, 2017, 2018)

- Led interactive nanotechnology demonstrations and activities for K-12 students, introducing over 300 students to the science of nanotechnology and fostering engagement through hands-on experiences with advanced research equipment.

## To Community

Program Instructor, Women in Engineering Program, *Purdue University*. (2016 – 2019)

- Imagination, Innovation, Discovery, and Design Program
- Hands on Engineering Activities, K-5 students

## PROFESSIONAL ASSOCIATIONS

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- Biomedical Engineering Society, 2023-present
- The Electrochemical Society, 2024-present

## REFERENCE CONTACTS

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**Albert Folch**, Professor of Bioengineering  
 Department of Bioengineering, University of Washington  
 3720 15th Ave NE, Foegen N430N  
 Seattle, WA 98103  
 (206) 685-2257 / [afolch@uw.edu](mailto:afolch@uw.edu)

**Hyowon (Hugh) Lee**, Professor of Biomedical Engineering  
 Weldon School of Biomedical Engineering, Purdue University  
 206 S Martin Jischke Dr, MJIS 2070  
 West Lafayette, IN 47907  
 (765) 496-2444 / [hwlee@purdue.edu](mailto:hwlee@purdue.edu)

**Netzahualcóyotl Arroyo Currás**, Associate Professor  
 Department of Pharmacology and Molecular Sciences  
 Johns Hopkins University School of Medicine  
 316 Hunterian Building  
 725 North Wolfe Street, Baltimore, MD 21205  
 (443) 287-4798 / [netzarroyo@jhmi.edu](mailto:netzarroyo@jhmi.edu)

**Muhammad Ashraful Alam**, Jai N. Gupta Distinguished Professor  
 Elmore School of Electrical/Computer Engineering, Purdue University  
 207 S. Martin Jischke Dr, WANG 3051  
 West Lafayette, Indiana 47907-1971  
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**Becca Price**, Professor of Interdisciplinary Arts & Sciences  
 School of Interdisciplinary Arts & Sciences  
 University of Washington, Bothell  
 11136 NE 180th Street, Bothell, WA 98011-1713  
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