Nicole Zeinstra

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EDUCATION

UNIVERSITY OF CALIFORNIA, BERKELEY, SCHOOL OF LAW · Berkeley, CA — Aug. 2022 – Present
J.D. Candidate

Awards: Berkeley Center for Law and Technology Scholar
Activities: *Berkeley Technology Law Journal* (Articles Editor); *Berkeley Business Law Journal* (Articles Editor); Berkeley IP Law Society

UNIVERSITY OF WASHINGTON · Seattle, WA — May 2022
Ph.D. in Bioengineering · GPA: 3.9/4.0

Thesis: "Understanding the coronary vasculature after myocardial infarction and engineering thick vascularized patches towards cardiac repair"
Awards: UW Foster School of Business Technology Entrepreneurship Certificate; NIH Ruth L. Kirschstein National Research Service Award Individual Predoctoral Fellowship (F31); UW Bioengineering Cardiovascular Training Grant
Activities: UW School of Law Center for Advanced Study and Research on Innovation Policy Summer Institute

MASSACHUSETTS INSTITUTE OF TECHNOLOGY · Cambridge, MA — June 2016
B.S. in Chemical-Biological Engineering, Biology · Concentration in Economics · GPA: 4.7/5.0

Awards: MIT Biological Engineering Research and Innovation Scholar; NCAA Postgraduate Scholar in Track; CoSIDA Academic All-American in Cross Country, Track and Field

EXPERIENCE

WILSON SONSINI GOODRICH & ROSATI · Palo Alto, CA — May 2023 –
Patent Agent

UW BIOENGINEERING · Seattle, WA — Sep. 2016 – May 2022
Research Assistant · Advisors: Dr. Ying Zheng, Dr. Charles Murry
Developed a tissue engineering technique to make large engineered tissues with 3D networks of perfusable vasculature.
Created pre-vascularized cardiac patches containing stem cells and assessed patches as cell therapy for myocardial infarction.

WASHINGTON RESEARCH FOUNDATION & WRF CAPITAL · Seattle, WA — Sep. 2021 – May 2022
Venture Analyst
Performed background research on grant-making and investment opportunities totaling over $2,000,000.
Assessed the scientific novelty, market potential, and competitive landscape of STEM innovations.

UW INSTITUTE OF TRANSLATIONAL HEALTH SCIENCES AND WASHINGTON RESEARCH FOUNDATION · Seattle, WA — June 2020 - Aug. 2020
Technology Commercialization Fellow
Developed and presented a commercialization plan for a novel stem cell-based drug testing platform that resulted in $75,000+ funding for early-stage product development.
Conducted customer discovery interviews to determine commercialization potential of the drug testing platform.

UNIVERSITY OF WASHINGTON COMOTION · Seattle, WA — Nov. 2019 - Feb. 2020
Patent Intern
Performed patent landscape analyses based on invention disclosures to guide in patenting decisions.

MIT KOCH INSTITUTE FOR INTEGRATIVE CANCER RESEARCH · Cambridge, MA — Jan. 2015 – May 2016
Research Assistant · Advisors: Dr. Darrell J. Irvine, Dr. Paula T. Hammond
Engineered antigenic nanoparticles for HIV vaccination; Generated 3D microbead cultures for insulin-producing cells.

ABBVIE BIORESEARCH CENTER · Worcester, MA — May 2015 - Aug. 2015
Process Development Intern
Optimized feed components for multiple lines of CHO cells in small-scale bioreactors to maximize yield of antibody production.

MIT CHEMICAL ENGINEERING DEPARTMENT · Cambridge, MA — Sep. 2013 – Sep. 2014
Research Assistant · Advisor: Dr. Daniel I.C. Wang
Genetically modified sulfur-consuming bacteria to improve ability to desulfurize oil.

RESEARCH CONTRIBUTIONS

PATENTS

Zeinstra, N. and Y. Zheng. 2022. Multilayer Vascular Construct. 63/374,202, filed Aug 31, 2022. Provisional patent.

PEER-REVIEWED PUBLICATIONS

Tang, P., M. Kirby, N. Le, Y. Li, **N. Zeinstra**, C. Murry, Y. Zheng, and R. Wang (2021). *Polarization sensitive optical coherence tomography for imaging depth-resolved collagen organizations*. Nature, Light: Science and Applications.

Zeinstra, N., M. Redd, W. Qin, W. Wei, A. Martinson, Y. Wang, R. Wang, C. Murry, and Y. Zheng (2019). *Patterned human microvascular grafts enable rapid vascularization and increase perfusion in infarcted rat hearts.* Nature Communications.

ARTICLES IN PREPARATION & REVIEW

Zeinstra, N., A. Frey, Z. Xie, R. Wang, C. Murry, and Y. Zheng. *Stacking thick perfusable human microvascular networks promotes host integration and rapid vascularization.* In preparation.

Zeinstra, N., Z. Xie, M. Kirby, D. Zhang, M. Le, C. Murry, Y. Zheng, and R. Wang. *Quantifying Microvascular Structure in Healthy and Infarcted Rat Hearts Using Optical Coherence Tomography Angiography*. IEEE Transactions on Medical Imaging. In review.

POSTERS

Zeinstra, N. (2019). *Thick human cardiac tissue constructs containing patterned, perfusable human microvessels from pluripotent stem cells.* Institute for Stem Cell and Regenerative Medicine (ISCRM) Stem Cell Symposium Poster Session. Seattle, WA

Zeinstra, N. (2019). *Thick human cardiac tissue constructs containing patterned, perfusable human microvessels from pluripotent stem cells.* International Society for Stem Cell Research (ISSCR) Annual Meeting Poster Session. Los Angeles, CA.

Zeinstra, N. (2019). *Thick human cardiac tissue constructs containing patterned, perfusable human microvessels from pluripotent stem cells.* BC Regenerative Medicine Initiative Poster Session. Victoria, BC.

Zeinstra, N. (2018). *Steps towards perfusable 3D cardiac tissue constructs from hiPSCs*. Bioengineering Cardiovascular Training Grant (BCTG) Symposium Poster Session. Seattle, WA.

Zeinstra, N. (2015). *Effect of Size on Lymph Node Accumulation for Amphiphilic Proteins.* MIT SuperUROP Fall Poster Session. Cambridge, MA.

TALKS

Zeinstra, N. (2021). *Thick human cardiac tissue constructs with patterned, perfusable microvessels from hPSCs*. UW Biomaterials Seminar. Seattle, WA.

Zeinstra, N. (2020). *Thick human cardiac tissue constructs with patterned, perfusable microvessels from hPSCs*. UW Biomaterials Seminar. Seattle, WA.

Zeinstra, N. (2019). *Patterned, perfusable microvessels from hPSCs improve host vascular integration in cardiac tissue grafts.* North American Vascular Biology Organization (NAVBO) Annual Meeting. Monterey, CA.

Zeinstra, N. (2018). *Steps towards perfusable 3D cardiac tissue constructs from hiPSCs.* Center for Cardiovascular Biology Trainee Research Update. Seattle, WA.

Zeinstra, N. (2018). *Steps towards perfusable 3D cardiac tissue constructs from hiPSCs.* Institute for Stem Cell and Regenerative Medicine (ISCRM) Symposium. Seattle, WA.