CURRICULUM VITAE

JACQUELINE CALLIHAN LINNES
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Weldon School of Biomedical Engineering
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Education

BS	2004	Interdisciplinary Engineering, Purdue University West Lafayette, Indiana
PhD	2010	Bioengineering, University of Washington, Seattle, Washington

Professional Experience

Postdoctoral Fellow, Division of Global Health Equity, Brigham and Women's Hospital/Harvard Medical School, Jan. 2011 – Jan. 2012
Instructor, Edgerton Center, Massachusetts Institute of Technology, Jan. 2011 – May 2012
Postdoctoral Research Fellow, Harvard School of Public Health, Jan. 2012 – Jun. 2012
Postdoctoral Research Fellow, Biomedical Engineering/Boston University, Jan. 2012 – Dec. 2014
Assistant Professor, Biomedical Engineering/Purdue University, Jan. 2015 – present

Honors and Awards

Women in Engineering Alumni Academic Achievement Award, Purdue University, 2003
Interdisciplinary Engineering Outstanding Senior Academic Achievement Award, Purdue University, 2003
Top Scholar Research Appointment, University of Washington, 2004
Student Travel Award, Biomedical Engineering Society Annual Meeting, 2006
Graduate Research Fellowship, National Science Foundation, 2006-2009
International Service Scholarship, University of Washington Rotaract, 2009
Travel Award, Bringing Diagnostics to the Point of Care, Nairobi, Kenya, 2012
Travel Award, Northeastern University Future Faculty Fellows Workshop, 2013
National Research Service Award, Postdoctoral Fellowship, National Institute of Health, 2014
Outstanding Engineering Graduate Student Mentor, Weldon School of Biomedical Engineering, Purdue University, 2016
Willis A. Tacker Prize for Outstanding Teaching in Biomedical Engineering, 2016
Vodafone Foundation Wireless Innovation Project, 1st Place Award, 2017
Purdue Research Foundation International Travel Award, 2017
Mandela Fellows Global Innovation Challenge Award, 2017
Fast Company's 2018 World Changing Ideas Finalist, 2018
Ralph W. and Grace M. Showalter Research Trust Award, 2018

Scientific and Professional Societies

Member, Tau Beta Pi (Engineering Honors Society), Inducted 2002
Member, Pi Delta Phi (French National Honor Society), Inducted 2002
Member, Biomedical Engineering Society, 2006 - Present
Member, Biomaterials Society, 2008 - Present
Member, Institute for Electrical and Electronics Engineers, Engineering in Medicine and Biology Society, 2015 - Present

Member, Chemical and Biological Microsystems Society, 2017 - Present

DISCOVERY

Research Grants and Contract Received ($2.49 M in external funding to Purdue)

Prior to Purdue

- National Science Foundation, Graduate Research Fellowship (08/1/06 – 07/31/09), $90,000, Fellow
- Pilot Project Grant, Harvard Education and Research Center, "Investigation of open-cell drop ceiling louvers for use in upper-room ultraviolet germicidal irradiation", (07/1/11 – 06/30/12), $10,000, PI
- Massachusetts Institute of Technology, D-Lab Scale-Ups, Design for Dissemination Fellowship, "Low-cost solar water disinfection technology," (05/01/12 – 08/30/13), $20,000, PI
- National Institute of Health, NIAID, Ruth L. Kirschstein National Research Service Award (F32), "A Rapid Instrument Free Molecular Diagnostic for *B. Pertussis*," (02/21/14 – 12/31/14), $59,054, PI/trainee, Sponsor: Catherine Klapperich, Boston University

At Purdue

- Innovations in International Development Lab Seed Grant, Global Engineering Program, Purdue University, "Point-of-care detection of neonatal sepsis," (08/01/15 – 07/01/17), $50,000, PI
- PRF Summer Faculty Grant, Purdue Research Foundation, "Ultra-low-cost paper-fluidics as a rapid molecular diagnostic platform to detect *B. pertussis*," (06/2/15 – 07/27/15), $16,000, PI
- National Institute of Health, NIDA, contract 108380, "Two novel BioMEMS relevant to clinical and animal drug abuse research," (04/15/16 – 04/14/17), $100,000, PI: Jenna Rickus, Co-PI ($50,000) Jacqueline Linnes
- Grand Challenges Explorations, Bill and Melinda Gates Foundation, "Ultra-low cost paper-based nucleic acid diagnostic platform," (05/01/16 – 04/30/217), $100,000, PI, Co-Investigator: George Chiu
- Purdue University, Purdue Institute for Inflammation, Immunology and Infectious Disease (PI4D), "Detection of *B. bronchiseptica* in oropharyngeal swine samples to evaluate a point-of-care molecular diagnostic for whooping cough," (07/01/16 – 06/30/17) $25,000, PI
- Indiana Center for Translational Science, Center for Diabetes and Metabolic Diseases Pilot and Feasibility Grant, "Collection and Correlation of the Ratio and Time-Lag of Glucose Concentration Changes in Blood and Exhaled Breath Condensates," (08/01/16 – 12/31/17) $45,000, PI, Co-Investigator: Kieren Mather, Indiana University School of Medicine
- National Science Foundation, SBIR, 1720900, "Rapid Instrument-free Nucleic Acid Test for Pathogen and Biothreats," (07/01/17 – 06/30/18), $208,333, Subcontract-PI ($62,000), Principle Investigator: HyunDae Cho, Crosslife Technologies, Inc.

- Vodafone Foundation, Wireless Innovation Project, "PathVis: the power of the lab in the palm of your hand," (07/01/17 – 06/30/20), $300,000, PI, Co-PI: Tamara Kinzer-Ursem

- National Institute of Health, NIBIB, 1R21EB024733, "Biosensor for Non-Invasive Glucose Detection in Exhaled Breath Condensates," (07/01/17 – 06/30/20), $592,830, PI, Co-PI: Tamara Kinzer-Ursem, Co-Investigators Hye-Ji Kim

- Showalter Trust Research Award, "Detection platform for substance use monitoring in sweat," (07/01/18 – 06/30/19), $75,000, PI, Co-Investigator: Alexander Wei

- Eli Lilly Research Contract: "Connected Solutions - Non-Invasive Sensing" (06/01/2018 – 05/31/2019) $4,987,619, PI: Shuresh Gramilla, (Co-Investigator: ($250,000) Jacqueline Linnes

- National Science Foundation, SBIR, subcontract, 1819970 "A Rapid Portable Biosensor for Field Detection of Vibrio Cholerae in Environmental Water Sources," (06/25/18 – 06/30/19), $225,000, Subcontract-PI ($62,000), Principle Investigator: Katherine Clayton, OmniVis, LLC.

- National Institute of Health, NIAID, 1R61AI140474, "Smartphone-based Diagnostic for HIV Self-Testing" (08/06/2018 – 07/31/2021), $1,143,157, PI, Co-PI: Tamara Kinzer-Ursem, Co-Investigators: Steven Wereley, Ellen Gruenbaum, Subcontracts: Indiana University School of Medicine, Moi University, OmniVis LLC

PUBLICATIONS

(bold indicates self, + indicates corresponding author(s), [G] indicates graduate student, [UG] indicates undergraduate student)

Refereed journal papers

1. **J Callihan**[UG], R Roeder[PD], LA Geddes+, M Otlewski[G], A Kemeny[G]. "Ventricular fibrillation frequency," *Pacing and Clinical Electrophysiology*. 28(7) 610-612 (2005). DOI: 10.1111/j.1540-8159.2005.00166.x

2. T Pinon[UG], K Katzenmeyer[G], **J Callihan[G]**, JD Bryers+. "Expression, purification, and characterization of a recombinant *Staphylococcus epidermidis* fibronectin-binding protein," *Journal of Undergraduate Research in Bioengineering*. 2007. 7 80-84.

3. RS Stowers[UG], **J Callihan[G]**, JD Bryers. "Optimal conditions for F(ab')2 antibody fragment production from mouse IgG2a," *Journal of Undergraduate Research in Bioengineering*. 2008. 8 16-20.

4. *D Alexander[G], ***JC Linnes**[G], S Bolton, T Larson+. "Ventilated cookstoves associated with improvements in respiratory health-related quality of life in rural Bolivia," *Journal of Public Health*. 2014. 36 (3) 460-466 (*equal authorship) doi: 10.1093/pubmed/fdt086

5. **JC Linnes[G]**, H Ma[PD], JD Bryers+. "Giant extracellular matrix binding protein gene and protein expression in *Staphylococcus epidermidis* is regulated by biofilm formation and osmotic pressure," *Current Microbiology*, 2013. 66 (6) 627-33. doi: 10.1007/s00284-013-0316-7

6. **JC Linnes**[G], K Mikhova, JD Bryers+. "Adhesion of *Staphylococcus epidermidis* to biomaterials is inhibited by firbronectin and albumin," *Journal of Biomaterials Research Part A*. 2013. 100 (8) 1990-7. doi: 10.1002/jbm.a.34036

7. **JC Linnes**[PD], SN Rudnick, GM Hunt[UG], JJ McDevitt, EA Nardell+. "Eggcrate UV: A whole ceiling upper-room ultraviolet germicidal irradiation system for air disinfection in occupied rooms," *Indoor Air.* 2013. 24 (2) 116-24. doi: 10.1111/ina.12063

8. S Miller+, **JC Linnes**[PD], J Luongo[G]. "Ultraviolet germicidal irradiation: Future directions for air disinfection and building applications," *Photochemistry and Photobiology*, 2013. 89 (4) 777-81. doi: 10.1111/php.1208

9. P Vacas-Jacques[PD]+, **JC Linnes**[PD], A Young, V Gerrard, J Gomez-Marquez. "Portable digital lock-in instrument to determine chemical constituents with single-color absorption measurements for Global Health Initiatives," *Review of Scientific Instruments*, 2014. 85 (3), 033103. doi: 10.1063/1.4867097

10. **JC Linnes**[PD], A Fan[PD], NM Rodriguez[G], B Lemieux, H Kong, CM Klapperich+. "Paper-based molecular diagnostic for *Chlamydia trachomatis*," *RSC Advances*, 2014, 4 (80), 42245 – 51. doi: 10.1039/c4ra07911f

11. R Derda, J Gitaka, TM Kariuki, CM Klapperich, CR Mace, AA Kumar[G], M Lieberman, **JC Linnes**[PD], J Nasimolo, J Ndung'u, E Taracha, A Weaver[PD], DB Weibel, P Yager+. "Enabling the development and deployment of next generation point of care diagnostics," *PLoS Neglected Tropical Diseases*, 2015. 9 (5): e0003676. doi:10.1371/journal.pntd.00036762015

12. NM Rodriguez[G], **JC Linnes**[PD], A Fan[PD], CE Ellenson[UG], NR Pollock, CM Klapperich+, "Paper-based RNA extraction, *in situ* isothermal amplification, and lateral flow detection for low-cost, rapid diagnosis of Influenza A (H1N1) from clinical specimens," *Analytical Chemistry*, 2015. 87 (15): 7872 – 9. doi: 10.1021/acs.analchem.5b01594

13. **JC Linnes**[G], NM Rodriguez[G], L Liu, CM Klapperich+, "Polyethersulfone improves the efficiency of nucleic acid amplification compared to current paper-based diagnostic materials," *Biomedical Microdevices,* 2016. 18(2): 1-12. doi: 10.1007/s10544-016-0057-z

14. EA Phillips[G], R Shen[UG], S Zhao[UG], **JC Linnes+**, "Thermally actuated wax valves for paper-fluidic diagnostics," *Lab on a Chip,* 2016. 16 4230-4236. doi: 10.1039/c6lc00945j

15. KN Clayton[G], G Berglund[UG], **JC Linnes**, S Wereley, T Kinzer-Ursem+, "DNA microviscosity characterization with particle diffusometry for downstream DNA detection applications", *Analytical Chemistry,* 2017 Dec. 89(24):13334-133341. doi: 10.1021/acs.analchem.7b03513

16. A Horst[G], NL Kolluri[G], JM Rosenbohm[G], J Hardick, C Gaydos, M Cabodi, CM Klapperich, **JC Linnes**+, "A paper-fluidic platform to detect *Neisseria gonorrhoeae* in clinical samples," *Biomedical Microdevices,* 2018 Apr. 20(2): 35-42. doi: 10.1007/s10544-018-0280-x

17. EA Phillips[G], T Moehling[G], A Ellington, S Bhadra, **JC Linnes**+, "Strand Displacement Probes Combined with Isothermal Nucleic Acid Amplification for Instrument-Free Detection from Complex Samples," *Analytical Chemistry*, 2018 Jun. 90(11):6580-6586. doi: 10.1021/acs.analchem.8b00269

18. KN Clayton*, T Moehling[G]*, S Wereley, **JC Linnes**+, T Kinzer-Ursem+, "Particle Diffusometry: An Optical Detection Method for Vibrio cholerae Presence in Environmental Water Samples," *In Press*

Refereed conference or symposium papers

- C Matlack[G], H Chizeck, T Davis[G], **JC Linnes**[G]. "A Low-cost Solar Disinfection Indicator for Safe Water," *Proceedings of the 2011 IEEE Global Humanitarian Technology Conference*, 2011. GHTC 283-286, Seattle, WA, USA

- Q Yang[G], T Nguyen[G], C Liu[G], J Miller[G], J Rhoads, **JC Linnes**, H Lee. "Polyimide-Based Magnetic Microactuators for Biofouling Removal," *Proceedings of the 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 2016 August 16; Tampa, FL, USA

- OS Hoilett[G], AF Aboelzahab, EA Layow, **JC Linnes**, CH Lee. "#FunTimesWithTheTA—A Series of Fun Supplementary Lessons for Introductory Level Biomedical Instrumentation Students (Work in Progress)," *Proceedings of the 2017 ASEE Annual Conference & Exposition,* 2017 June 24, Columbus, OH, USA

- OS Hoilett[G], AF Aboelzahab, EA Layow, **JC Linnes**, CH Lee. "#FunTimesWithTheTA—A Series of Fun Supplementary Lessons for Introductory Level Biomedical Instrumentation Students, Part II (Work in Progress)," *Proceedings of the 2018 ASEE Annual Conference & Exposition*, 2018 June 24, Salt Lake City, UT, USA

- D Tankasala[G], GP Ng[UG], MS Smith[UG], JR Bendell[UG], **JC Linnes**. "Selective Collection and Condensation of Exhaled Breath for Glucose Detection," *Proceedings of the 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 2018 July 17-21; Honolulu, Hawaii, USA

- OS Hoilett[G], AM Twibell[UG], R Srivastava[UG], **JC Linnes**. "Kick LL: A Smartwartch for Monitoring Respiration and Heart Rate using Photoplethysmography," *Proceedings of the 40th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, 2018 July 17-21; Honolulu, Hawaii, USA

Book chapters

- Y Fu[G], SH Jeong[G], **J Callihan**[UG], J Kim, K Park, "Preparation of Fast-dissolving Tablets Based on Mannose", in *Polymeric Drug Delivery II*, Ed. By S. Svenson. American Chemical Society, Washington DC 2006.

- **JC Linnes**, E Johansen, AA Kumar, "Incorporating the Needs of Users in the Development of Diagnostics for Global Health: A Framework and Two Case Studies", in *Diagnostic Devices with Microfluidics.* Ed. by F. Piraino and S. Selimovic. CRC Press, Boca Raton, FL 2017.

- **JC Linnes**, E Phillips[G], "Thermally Actuated Wax Vales for Multistep Diagnostics", in *Diagnostic Devices with Microfluidics*. Ed. by F. Piraino and S. Selimovic. CRC Press, Boca Raton, FL 2017.

Invited colloquium/seminar series presentations

1. New York Academy of Sciences, New York, NY, "Innovating on a shoestring: medical technologies for the developing world" 6/30/2011

2. Tech Talk, the MITRE Corporation, Burlington, MA, "State of the art technologies for low-resource settings," 5/7/2013

3. Purdue University, Weldon School of Biomedical Engineering, BME Seminar Series, "Towards truly point-of-care molecular diagnostics," 1/21/2015

4. Purdue University, Medicinal Chemistry and Molecular Pharmacology, MCMP Seminar Series, "Democratizing diagnostics – Tools to enable rapid diagnostics for everyone," 4/23/2015

5. Science on Tap, Lafayette, IN, "Bringing the Lab to the Patients: Point-of-care Diagnostics for Global Health," 2/16/2016

6. Purdue University, Bionano Lunch Seminar, "Automating paper-based molecular diagnostics", 3/2/2016

7. University of Illinois, Chicago, Big 10 Seminar Exchange, "Bringing Molecular Diagnostics out of the Lab and to the Point of care," 3/4/2016

8. Design of Medical Devices Conference, Microfluidics Session, Minneapolis, MN, "Point-of-care Diagnostics," 4/13/2016

9. Panelist, Innovations in International Development (I2D) Lab Exposition, West Lafayette, IN, "Role of Engineering in Global Health," 4/1/2016

10. University of California, Berkeley, Point of Care Diagnostics Seminar, "Tools to bring molecular diagnostics to the extreme points of care," 4/28/2016

11. "Opportunities, trends, and future of biomedical technologies, including diagnostics, 3-D printing, wearables, and more" Mandela Washington Fellows, Young African Leaders Institute, Purdue University, 7/26/2016

12. Center for Diabetes and Metabolic Diseases Symposium, Indiana University School of Medicine, "Collection and Correlation of the Ratio and Time-Lag of Glucose Concentration Changes in Blood and Exhaled Breath Condensates," 8/5/2016

13. Purdue SMART Films consortium, Purdue University, West Lafayette, IN "Point-of-care Molecular Diagnostics," 9/15/2016

14. National Institute of Drug Abuse-Purdue Neural Engineering Symposium, Baltimore, MD "C-DAIT: Center for Drug Abuse Intervention and Treatment," 4/7/2017

15. African International Biotechnology and Biomedical Conference, Nairobi, Kenya "Tools to bring molecular diagnostics to the point of care," 9/14/2017

16. Mandela Washington Fellows, Young African Leaders Institute, Purdue University, West Lafayette, IN "Opportunities, trends, and future of biomedical technologies, including diagnostics, 3-D printing, wearables, and more", 07/11/2017

17. Purdue In the Know, West Lafayette, IN "Tools to bring molecular diagnostics to the point of care," 9/21/2017

18. Presidents Council Women for Purdue, Naples, FL "Point-of-care diagnostics for global health," 2/15/2018

19. TedX Purdue, West Lafayette, IN "Art of the ordinary," 3/3/2018

20. Micro and Nanotechnology in Medicine Conference, Kauai, HI, *"Particle Diffusion Biosensor for Smartphone-based Pathogen Detection"* December 10-14, 2018.

LEARNING

New Courses Developed at Purdue
BME 595 Point-of-Care Diagnostics (2017)
SA 10517/BME 395 Medical Needs-Finding in Low-Resource Settings: Ecuador (2016-2019)
BME 695 Instrumentation Measurement (2017)

Courses Taught at Purdue
BME 390 Professional Development and Design in Biomedical Engineering (2015, 2018)
BME 488/489 Senior Design Project Laboratory (2015, 2018)
BME 490 Professional Elements of Design (2015, 2018)
BME 405 Professional Elements of Design, Distance Learning During Study Abroad (2015, 2018)
BME 495 Translational Senior Design (2016)

Courses Taught at Prior to Purdue
EC.710 D-Lab Health (Massachusetts Institute of Technology) (2012)
BE 428 Device and Diagnostics Design (Boston University) (2013, 2014)

PhD and MS Thesis Service
- Katherine Clayton, PhD 2017, (PI: Tamara Kinzer-Usem, Steven Wereley), *Particle Diffusometry for Biomedical Applications*
- Taehoon Kim, PhD 2017 (PI: Young Kim), *Hyperspectral Image Reconstruction From RGB Data and its Biomedical Applications*
- Donghoon Lee, MS 2018 (PI: Steven Wereley), *Vibrational Dynamic Modulation in Handheld Particle Diffusometry Instrumentation*
- Bahar Dohwan, MS 2018 (PI: Hywoon Lee), *Subcutaneous drug delivery system for the reversal of an opioid overdose*

Undergraduate Special Projects Directed
Research Experience for Undergraduates Program, University of Washington
- Tessa Pinon, St. Mary's University, 2006
  Research Project: Expression and characterization of a recombinant *Staphylococcus epidermidis* fibronectin-binding protein
- Ryan Stowers, Clemson University, 2008
  Research Project: Optimization of antibody fragmentation of monoclonal antibodies against *Pseudomonas aeruginosa*

Northeastern University Co-op Program, Harvard School of Public Health

- Douce Hunt, Biology, 2011
  Research Project: Evaluation of germicidal efficacy of ultraviolet LEDs for air disinfection
- Ross Dworet, Chemical Engineering, 2011
  Research Project: Open-cell air-mixing system for ultraviolet germicidal irradiation of upper-room air

Undergraduate Research Program, Boston University
- Angela Lai, Biomedical Engineering, (Lutchen Fellowship and UROP) 2012, (UROP) 2013
  Research Project: Improved limits of detection in low-cost paper diagnostics for drug adherence
- Courtney Ellenson, Biomedical Engineering, (STARS Program) 2012, (Engineering Scholar and UROP) 2013, (Lutchen Fellow) 2013
  Research Project: Optimization of *Neisseria gonorrhoeae* genomic DNA extraction for point-of-care tests

Biomedical Engineering Senior Project Research, Boston University, 2013-2014
- Angela Lai, Tim Mon, Yash Adhikari, Leslie Nordstrom
  Research Project: An integrated microfluidic device for diagnosing *Neisseria gonorrhoeae*
  * National Instruments, 2014 LabView myRIO Student Design Competition Participants
  * Rice 360, 2014 Undergraduate Global Health Design Competition Participants
  * Boston University College of Engineering Societal Impact Capstone Project Award

Biomedical Engineering Senior Project Research, Boston University, 2014-2015
- Courtney Ellenson, Gil Couvarrubias, Danielle Coneelly, Nelson Boland
  Research Project: An automated point of care diagnostic sexually transmitted infections
  * Rice 360, 2014 Undergraduate Global Health Design Competition Participants
  * NIH DEBUT Competition, 2015 Honorable Mention

SURF (Summer Undergraduate Research Fellowship) students: 2015
- Megan Chiu (Purdue University, Mechanical Engineering, 2017)
  Research Project: Digital Detection of Mobile Molecular Diagnostics
- Rui Shen (Purdue University, Mechanical Engineering, 2016)
  Research Project: Passive Paper-Fluidic Valves

SURF (Summer Undergraduate Research Fellowship) students: 2016
- Gregory Berglund (Purdue University, Biomedical Engineering, 2017)
  Research Project: Cloning and validation of DNA from neonatal sepsis pathogens
- Siyu Zhao (Purdue University, Chemical Engineering, 2017)
  Research Project: Thermally actuated wax valves to automate Paper-fluidic diagnostics

SURF (Summer Undergraduate Research Fellowship) students: 2017
- Meghan Henderson (Purdue University, Biomedical Engineering, 2020)
  Research Project: Optical design of smartphone microscope for diffusometry

Summer Stay Scholar students: 2017
- Anna Bird (Purdue University, Biomedical Engineering, 2019
  Research Project: Fluidic control in two-dimensional paper networks

SURF (Summer Undergraduate Research Fellowship) students: 2018
- Emilie Newsham (Purdue University, Biomedical Engineering, 2019)
  Project: Fundamental fluid flow in wax valves to automate multi-step paper assays

Short Courses and Workshops Taught

1. "Electricity-free nebulizers to deliver asthma medication," design+build workshop for 6-8th grade students, Innovation to Reality (I2R), Women in Engineering Program, Purdue University, April 21, 2015

2. "Mobility Comparison Course" and "Building a Prosthetic Leg," design+build workshop for 6-8th grade students, Innovation to Reality (I2R), Women in Engineering Program, Purdue University, April 7, 2016

3. "Laminar flow in paper microfluidics using crayon wax channels and food coloring," Science at the Market, West Lafayette Farmers' Market, August 3, 2016

4. "Biosensors and Point-of-care Diagnostics," Science at the Market, West Lafayette Farmers' Market, June 28, 2017

5. "Point-of-care Diagnostics Workshop" African International Biotechnology and Biomedical Conference, Nairobi, Kenya, September 11-12, 2017

6. "Incorporating the Needs of Users into Point-of-Care Diagnostics," MicroTotal Analytical Systems Workshop, Savannah, GA, October 22, 2017

7. "Point-of-care Diagnostics in Resource-Limited Settings" African International Biotechnology and Biomedical Conference Workshop, Nairobi, Kenya, August 6-8, 2018

8. "Incorporating the Needs of Users into Point-of-Care Diagnostics," MicroTotal Analytical Systems Workshop, Kaohsiung, Taiwan, November 12, 2018

TECHNOLOGY TRANSFER

Patents Awarded (^{G} indicates graduate student, ^{UG} indicates undergraduate student)

1. "Mannose based fast dissolving tablets" International Patent. WO 2004/047810. Y Fu^{G}, SH Jeong^{G}, J Kim, **J Callihan**^{UG}, CM Pai, SY Park, G Seomoon, K Park, 2004

2. "Mannose based fast dissolving tablets" US Patent. US2006/0134195. Y Fu^{G}, SH Jeong^{G}, J Kim, **J Callihan**^{UG}, CM Pai, SY Park, G Seomoon, K Park, 06/22/2006

3. "Multiplexed diagnostic systems" International Patent. WO 2012/119128 A1. I Bosch, L Gherke, J Gomez-Marquez, K Hamad-Schifferli, NC Hanoumara, **JC Linnes**, DK Wood, 2012

4. "Systems, devices and methods for multiplexed diagnostics" US Patent. 9,488,613. I Bosch, L Gherke, J Gomez-Marquez, K Hamad-Schifferli, NC Hanoumara, JC Linnes, DK Wood, 11/08/16

5. "Solar Disinfection of Fluid" US Patent. 9,868,651. CB Matlack, TB Davis, **JC Linnes**. 01/18/18

Patents Filed (^{G} indicates graduate student, ^{UG} indicates undergraduate student)

1. "Temperature Controlled Phase-change Valves for Disposable Nucleic Acid Amplification on Paper" PCT Application. 62/342453. **JC Linnes**, R Shen^{UG}, M Chiu^{UG}, K Byers^{G}, O Hoilett^{G}, E Phillips^{G}. Filed 04/19/2017

2. "Detection Device Having Capture Region and Detection Region" PCT Application. US2016/066157. CM Klapperich, NM Rodriguez[G], **JC Linnes.** Filed 06/15/17

3. "Methods of measuring structural and functional changes of a biomolecular composition" US Patent Application. 62/846,430. ST Wereley, TL Kinzer-Ursem, KN Clayton[G], **JC Linnes**, D Lee[UG], T Moehling[G]. Filed 12/19/17

4. "Fluidic Control Elements for Signal Readout Enhancement In Two Dimensional Paper Networks" US Patent Application 15/875,016. **JC Linnes**, LM Jamicich[UG], EA Phillips[G], KM Byers[G], AR Bird[UG]. Filed 01/19/18

5. "Methods for Detecting Heart Rate, Respiration, Heart Rate, and Oxygen Saturation and Uses Thereof" Provisional Patent Application. (docket 16159,007) **JC Linnes**, OH Hoilett[G], HW Lee, AM Twibell[UG], R Srivastava[UG], J Ummel[UG], R Lindsey[UG],

6. "Highly specific lateral flow detection of nucleic acids" Provisional Patent Application. **JC Linnes**, EA Phillips[UG], S Bhadra, A Ellington

Appearances in Media Interviews and Other Coverage

- Purdue University News - "Purdue researcher receives 'Grand Challenges Explorations' grant to develop low-cost HIV-testing method". May 26, 2016 https://www.purdue.edu/newsroom/releases/2016/Q2/purdue-researcher-receives-grand-challenges-explorations-grant-to-develop-low-cost-hiv-testing-method.html

- Shruz Communications – Indiana-based media outlet in "Hydroponics team wins Schurz Innovation Challenge at Purdue". Dec 2016 http://www.schurz.com/2016/12/hydroponics-team-wins-schurz-innovation-challenge-purdue/

- Purdue University PRF News Dec 2016 https://www.purdue.edu/newsroom/releases/2016/Q4/hydroponics-team-wins-schurz-innovation-challenge-at-purdue.html

- Executive Vice President for Research and Partnerships 2015-2016 Annual Report: Lifeology

- Purdue BME News - Purdue researchers developing smartphone-enabled point-of-care disease detection platform August 4, 2017 https://engineering.purdue.edu/BME/AboutUs/News/2017/purdue-researchers-developing-smartphoneenabled-pointofcare-disease-detection-platform

- IEEE Spectrum – Fighting Cholera with a Smarphone, September 28, 2017 https://spectrum.ieee.org/the-human-os/biomedical/diagnostics/fighting-cholera-with-a-smartphone

- Vodafone Sandbox Blog – Stopping Disease with a Smarphone and an App November 28, 2017 http://www.vodafone.com/content/index/what/technology-blog/stopping-disease-outbreak.html

- Fast Company 2018 World Changing Ideas Awards Finalists https://www.fastcompany.com/40546728/the-2018-world-changing-ideas-awards-finalists

- Purdue BME News - Purdue researchers receive $1.14M grant to develop mobile HIV testing, October 15, 2017
  https://engineering.purdue.edu/BME/AboutUs/News/2018/Purdue-researchers-receive-1.14M-grant-to-develop-mobile-HIV-testing

- Purdue Alumnus Magazine – The Quest to Hald the Opioid Epidemic, Fall 2018
  https://purdue.imodules.com/s/1461/alumni/index.aspx?sid=1461&gid=1001&pgid=333

ENGAGEMENT

Major Committee Assignments in the Department, School and/or University

- Jan 2015 – Present, Undergraduate Curriculum Committee, member, Weldon School of Biomedical Engineering
- Jun 2016 – May 2017, Graduate Admissions Committee, member, Weldon School of Biomedical Engineering
- Dec 2016 – May 2017, Faculty Search Committee, member, Networked Wireless Nanoelectronic Implants Preeminent Team
- August 2017 – Present, Faculty Search Committee, member, Regenstrief Center for Healthcare Engineering, Smart Health Engineering
- Aug 2017 – Present, Diversity and Inclusion Working Group, member, Weldon School of Biomedical Engineering

Student Organization Advisor

Engineering World Health Purdue University Student Chapter. 2015-present

- 2018 Engineering World Health International Design Competition Winners

Service to Government or Professional Organizations

Ad Hoc Grant Review

1. National Science and Research Council of Canada. IC-IMPACTS Centres of Excellence, 2014
2. National Institute of Health, Surgical Sciences, Biomedical Imaging and Bioengineering IRG (SBIB), 2016
3. National Science Foundation, 2017
4. National Science Foundation, 2017
5. National Institute of Health, Small Business Innovative Research, 2017
6. National Institute of Health, Instrumentation and Systems Development (ISD) Study Section, 2017
7. National Science Foundation, 2019
8. National Institute of Health, Instrumentation and Systems Development (ISD) Study Section, 2019

Ad Hoc Peer Review

ACS Infectious Diseases, ACS Omega, Analytical Chemistry, Analytical Methods, Angewandte Chemie, Biomedical Microdevices, Diagnostics, Diagnostic Microbiology and Infectious Disease, Journal of Visualized Experiments, Microbiological Methods, PLOS Neglected Tropical Diseases

Conference Session Chair Positions

1. “Paper fluidics” platform session, Nano and Micro Technologies track, Biomedical Engineering Society Annual Meeting, Tampa, FL, October 09, 2015

2. “Interactive Education: How to Engage, Excite, and Teach BME Students” session, Biomedical Engineering Education track, Biomedical Engineering Society Annual Meeting, Tampa, FL, October 09, 2015

3. “Drug Screening Technologies” platform session, Nano and Micro Technologies track, Biomedical Engineering Society 2016 Annual Meeting. Minneapolis, MN, October 7, 2016.

4. “Advances in Pathogen Detection” platform session, Nano and Micro Technologies track, Biomedical Engineering Society 2016 Annual Meeting. Minneapolis, MN, October 8, 2016.

5. “Affordable Devices” platform session, Device Technologies and Biomedical Robotics Track. Biomedical Engineering Society 2016 Annual Meeting. Minneapolis, MN, October 5-8, 2016.

6. “Micro/Nano Tools in Molecular Biology” platform session, Nano and Microtechnologies Track. Biomedical Engineering Society 2017 Annual Meeting. Phoenix, AZ, October 11-14, 2017.

7. “Device Applications and Translation” platform session, Device Technologies and Biomedical Robotics Track. Biomedical Engineering Society 2018 Annual Meeting. Atlanta, GA, October 17-20, 2018

8. “Nanotechnologies for Global Health and Infectious Diseases” platform session, Micro/Nano Tools in Molecular Biology Track. Biomedical Engineering Society 2018 Annual Meeting. Atlanta, GA, October 17-20, 2018

9. “2C3 Cytometry/Sensors” platform session, MicroTotal Analytical Systems conference, Hsinchu, Taiwan, November 12-16, 2018

Professional Society Engagement

- Biomedical Engineering Society, Abstract Reviewer. 2015, 2016, 2017, 2018
- Gordon Research Conference, Physics and Chemistry of Microfluidics Poster Reviewer. 2015, 2017
- African International Biotechnology and Biomedical Society, Poster Reviewer. 2017
- Chemical and Biological Microsystems Society, MicroTotal Analytical Systems conference, Connections Committee member. 2017
- Chemical and Biological Microsystems Society, MicroTotal Analytical Systems conference, Poster Review. 2018
- Chemical and Biological Microsystems Society, MicroTotal Analytical Systems conference, Executive Technical Program Committee. 2018-2021
- IEEE EMBS, Micro and Nontechnology in Medicine, Program Committee, 2018
- Biomedical Engineering Society, Device Technologies and Biomedical Robotics Track Chair, 2019