

Aaron M. Kyle, Ph.D.

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Office: 363 Engineering Terrace, 500 W. 120th St., New York, NY 10027

Education

Purdue University May 2007
Doctor of Philosophy WEST LAFAYETTE, IN
Biomedical Engineering

Dissertation: *An Acoustic Transmission Line Model Applied to Liquid Filled Tubes: Measurements and Model Predictions*

Co-Advisors: Drs. George R. Wodicka, J. Stuart Bolton

Kettering University May 2002
Bachelor of Science (*Magna cum Laude*) FLINT, MI
Electrical Engineering

Thesis: *Feasibility and Design of a Vision System for Stamped Parts*

Professional Experience (Academic)

Co-Founder/Director November 2013 - Present
HYPOTHEkids (Hk) Maker Lab NEW YORK, NY

Created and teach engineering design to students from STEM-underrepresented populations. The Hk Maker lab is an intensive summer program in which high school students from disadvantaged schools throughout New York are introduced to and challenged with implementing the engineering design process.

Senior Lecturer in Biomedical Engineering January 2010 – Present
Columbia University NEW YORK, NY
Department of Biomedical Engineering
Fu Foundation School of Engineering and Applied Sciences

Instructor for undergraduate laboratory courses (BMEN E3810 & E3820). Courses cover a broad variety of topics including, principles of microscopy and imaging, design of medical data acquisition systems, microfluidics, biomedical measurement using ultrasound, basics of cell culture, etc.

Instructor for Senior Design Courses (BMEN E3910 & E3920). Guiding students towards building and testing clinically relevant biomedical devices. Efforts primarily pertain to assisting with electronics development, signals acquisition, and digital signal processing. Also used these courses as a platform for creating appropriate technologies for neonatal and maternal care in low resource settings.

Created and instructor for novel course, Bioinstrumentation (BMEE E4740). Students learn practical applications of electrical circuitry in the context of single biomedical device: a cardiac pacemaker.

Chair of ABET Committee. Accumulating pertinent materials, defining parameters and metrics of interest in preparation for upcoming self-study and ABET examination of Biomedical Engineering at Columbia University.

Undergraduate Committee. Spearheaded the revision of the undergraduate curriculum, which was implemented in the Fall '15.

Coordinator for TA assignments within the Department

BME Instructor, Summer Program for High School Students June 2010 – Present
Columbia University New York, NY
School of Continuing Education

Gave lectures and oversaw laboratory procedures for 40-50 high school students. Course focused on the effects of physical stimuli on cells.

Professional Experience (Industry)

Advisory Board Member May 2016 – Present
Luso Labs NEW YORK, NY

Providing technical expertise for Columbia-based startup company that is creating a low-cost automated method to detect cervical cancer in low resource countries.

Advisory Board Member October 2015 – Present
Neopenda NEW YORK, NY

Providing technical expertise for Columbia-based startup company that is creating a low-cost neonatal vital signs monitor for use in developing countries.

Advisory Board Member January 2012 – Present
Jibon Health NEW YORK, NY

Providing technical guidance in the design and manufacture of a low-cost device to mitigate postpartum hemorrhage in low resource settings.

Engineering Consultant January 2010 – January 2013
Gallilead Inc. INDIANAPOLIS, IN

Principal Engineer designing, testing, and optimizing liquid metal-based leads meant to mitigate failure due to fracture in implantable cardiac pacemakers and cardioverter defibrillators.

Peer-Reviewed Publications

J. Kang, K.S. Tyan, K. Jin, **A.M. Kyle**, "Evaluation of the antimicrobial efficacy and skin safety of a novel color additive in combination with chlorine disinfectants," *American Journal of Infection Control* (in press). <https://doi.org/10.1016/j.ajic.2018.04.223>

J. Kang, K.S. Tyan, K. Jin, **A.M. Kyle**, "Novel color additive for chlorine disinfectants corrects deficiencies in spray surface coverage and wet-contact time, and checks for correct chlorine concentration," *American Journal of Infection Control* (in press). <https://doi.org/10.1016/j.ajic.2018.03.008>

J. Kang, K.S. Tyan, K. Jin, **A.M. Kyle**, "Field-testing of a novel color indicator added to chlorine solutions used for decontamination of surfaces in Ebola Treatment Units," *Journal of Hospital Infection* (in press). <http://www.sciencedirect.com/science/article/pii/S019567011730628X?via%3Dihub>.

A.M. Kyle, M. Carapezza, C. Kovich. "Hk Maker Lab: A summer engineering program for high school students," *Journal of STEM Outreach*, [S.l.], v. 1, n. 1, Jan. 2018. Available at: <<http://ejournals.library.vanderbilt.edu/ojs/index.php/JRLSO/article/view/4418>>.

A.M. Kyle, D.C Jangraw, M.B. Bouchard, M.E. Downs, "BMEE E4740: A Project-Based Course in Bioinstrumentation," *IEEE Transactions on Engineering Education*, 59(4), pp. 52-48 (2016).

S. Han, P.I. Rogers, J. Kihlken, J. Wafel, C. Bull, M. Deuter-Reinhard, D. Feng, J. Xie. **A. Kyle**, S. Merfeld-Clauss, B.H. Johnstone, D.O. Traktuev, P.S. Chen, J.R. Lindner, K.L. March, "Intravenous xenogeneic transplantation of human adipose-derived stem cells improves left ventricular function and microvascular integrity in swine myocardial infarction model", *Catherization and Cardiovascular Interventions*, 86(2), pp. E38 – E48 (2014).

Patents and Intellectual Property

International Patent Application No. PCT/US2010/060078, Unpublished (filing date December 13, 2010) (Keith L. March, applicant; William J. Combs, applicant; Aaron M. Kyle, applicant; Nichole M. Leahy-Glass, applicant).

Conferences Abstracts and Papers

A.M. Kyle, C. Kovich, M.A. Carapezza, "Hk Maker Lab: Creating Engineering Design Courses for High School Students," *ASEE Annual Conference and Exposition*, Salt Lake City, UT, June 2018.

A.M. Kyle, R.L. Sattler, H.T. Zhao, C. Kovich, "HYPOTHEkids Maker Lab: A Summer Program in Engineering Design for High School Students" *ASEE Annual Conference and Exposition*, New Orleans, LA, June 2016.

M.B. Bouchard, M.E. Downs, D. C. Jangraw, **A. M. Kyle**, “A Hands-On Course Teaching Bioinstrumentation through the Design and Construction of a Benchtop Cardiac Pacemaker,” *Proceedings of the 35th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, Osaka, Japan, July 2013.

A. Kyle, M. B. Bouchard, M. E. Downs, D. C. Jangraw, “Biomedical Instrumentation from Start to Finish: A Project-Based Undergraduate Course,” in *2012 BMES Annual Fall Meeting*, Atlanta, GA, 2012.

G.K. Zhang, H.S. Ahmed, P. Desai, J. Yang, M. Michael, **A.M. Kyle**, E.M.C. Hillman, M. Nakakeeto-Kijjambu, R. Sahni, R. Polin, “Vital Signs Monitor for Low-Resource Hospitals,” 2012 Pediatric Academic Societies Annual Meeting, Boston, MA, May 2012.

A.M. Kyle, P.I. Rogers, S. Han, P.-S. Chen, K.L. March, “LifeShirt Acquisition System to Monitor ECG from Ambulatory Swine and the Implementation of an Arrhythmia Detection Algorithm,” *Proceedings of the 31st Annual International Conference of the IEEE Engineering in Medicine and Biology Society, Minneapolis, MN*, Minneapolis, MN, September 2009.

Invited Lectures

A. Kyle “Hk Maker Lab: Engineering Design for Secondary School Students and Teachers,” 2018 Biomedical Engineering Society Annual Meeting - Engineering Solutions to Address Healthcare Disparities, Oct. 19, 2019

A. Kyle “Hk Maker Lab: Engineering Design for High School Students,” NSBE Healthcare Innovation Special Interest Group Quarterly Town Hall Webinar, July 17, 2018

A. Kyle “BME Senior Design as a Platform for Creating Appropriate Technologies,” 2017 Biomedical Engineering Society Annual Meeting - Engineering Solutions to Address Healthcare Disparities, Oct. 12, 2017

A. Kyle “BME Senior Design as a Platform for Creating Appropriate Technologies,” 2017 Biomedical Engineering Society Annual Meeting - Engineering Solutions to Address Healthcare Disparities, July 3, 2017

A. Kyle “Biomedical Engineering Education: Hands-on Learning & Design at Columbia University,” 2017 Columbia University – Pontificia Universidad Católica de Chile BME Symposium, Santiago, Chile, Mar. 20, 2017.

A. Kyle “Biomedical Engineering Education: Hands-on Learning & Design at Columbia University,” 2015 Beihang University-Columbia University Bilateral BME Symposium, Beijing, China, Nov. 17, 2015.

A. Kyle, "Senior Design as a Platform for the Development of Appropriate Healthcare Technologies," 2012 University of Utah School of Medicine Extreme Affordability Conference, Salt Lake City, UT, March 23, 2012.

A. Kyle, "Development of Neonatal Care Devices for Mulago Hospital at Columbia University," Department of Pediatric Meeting, Kampala Uganda, July 28, 2011.

Funding (Active)

NIH (R25) June '16 - Present

Project Title: *Enhancing Secondary School STEM Education for Students and Teachers through Biomedical Engineering Design*

PI Status: PI

Amount Awarded: \$1,229,998

Portion of Award: 100%

Venturewell March '15 - Present

Project Title: *Innovation of Impactful Neonatal Care Devices for Use in Low Resource Settings through Biomedical Engineering Senior Design (Sustainable Vision Grant)*

PI Status: PI

Amount Awarded: \$33,100

Portion of Award: 100%

Awards and Honors

- **Joanna Nichols Visiting Scholar, Taipei American School** January 2019
- **Keynote Speaker, 2018 Academically Interested Minds Banquet** July 2018
- **Columbia University Presidential Award for Outstanding Teaching** May 2017
- **Janette and Armen Avnessians Diversity Award** May 2016
- **The Kim Award for Faculty Involvement** May 2012
- **Keynote Speaker, National Society of Black Engineers** October 23, 2011
Columbia University A Walk for Education Event

Professional Organizations and Service

- Steering Committee, 2017 BMES Coulter Workshop August 2016 – Present
- *Ad Hoc* Reviewer, GEM Consortium Fellowship November 2016
- *Ad Hoc* Reviewer, NIH Science Education Partnership Award Study Section Sept. 2016, Feb. 2018
- Advisor, Tau Beta Pi, New York-a December 2011 – December 2016

- IEEE, Engineering in Medicine and Biology Society 2006-Present
- Biomedical Engineering Society 2005 - Present
- Tau Beta Pi (Engineering Honor Society) 2000-Present
- Eta Kappa Nu (Electrical Engineering Honor Society) 2000-Present