

**Bradley Lusk, PhD**  
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## EDUCATION

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### **Center for Bioenergy & Photosynthesis at Arizona State University**

Post-doctoral researcher, July 2016 Tempe, AZ

- Funded by Office of Naval Research and Arizona State University Light Works
- The Microbial Electro-Photosynthesis (MEPS) project sought to utilize genetically modified cyanobacteria to generate value added products by coupling chemically mediated cathode oxidation with photosynthesis.

### **The Biodesign Institute at Arizona State University**

Doctor of Philosophy, Biological Design, December 2015 Tempe, AZ

3.75 GPA

[Dissertation Title: Thermophilic Microbial Electrochemical Cells](#)

- Developed microbial electrochemical cell (MXC) technology to capture energy stored in wastewater as hydrogen (H<sub>2</sub>) and electricity.
- Science Foundation Arizona *Fellowship*, 2009-2011

### **Arizona State University**

Bachelor of Science, Biology, May 2009

Tempe, AZ

3.77 GPA

- Certificate in the Philosophy of Science, May 2009
- University Scholarship

### **University of Waikato**

Foreign exchange student, 2006

Hamilton, NZ

### **University of Cambridge**

Cambridge College Program, 2005

Cambridge, UK

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## CURRENT and PAST EMPLOYMENT

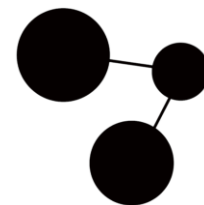
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### **#ScienceTheEarth**

Mesa, AZ

President, June 2016-present

- [www.ScienceTheEarth.com](http://www.ScienceTheEarth.com) is a 501(c)(3) non-profit corporation that functions to bridge cultures through science and human discovery. Working with [over 40](#) research institutions and schools in over 30 countries, ScienceTheEarth offers community members the opportunity to disseminate and connect their ideas with research professionals that can assist them in data collection, publication, and entrepreneurship.



### **Precient Technologies, LLC**

Tempe, AZ

Co-Founder and [Chief Executive Officer](#), August 2017-present

- Commercializing membrane biofilm reactor (MBfR) technology for the purpose of capturing precious metals from contaminated waters.

### **Arizona State University Biodesign Institute**

Tempe, AZ

August 2017-present

- Affiliate member of the Swette Center for Environmental Biotechnology

### **Arizona State University College of Integrative Sciences and Arts**

August 2018-present

Tempe, AZ

- Instructor for BIO 181 labs, develop new pedagogical techniques, lab prep

### **South Mountain Community College**

Phoenix, AZ

[Adjunct Professor](#) in School of Math, Science, & Engineering, January 2018-May 2018

- Development, delivery, and assessment of lecture and lab for Biology 100 and 160.

### **Global Network for Sustainable Development**

Tempe, AZ

[Advisory Board Member](#), December 2017-present

- Compliment the United Nations (UN) Sustainable Development Goals by educating young community leaders about the importance of global and local partnerships and by motivating them to create such partnerships. To achieve this goal, GNSD is working with international K-12 high schools to develop Sustainability Clubs for Peace and Peace Clubs for Sustainability that involve their members in community projects addressing protection of environment and non-violent conflict resolutions.

### **Bradley.Lusk**

Mesa, AZ

Owner and founder of online retail business, 2012-2016

- Sold vintage audio/video equipment, electronics, antiques, and collectibles via Ebay, LDDB, Half.com, Amazon, and Discogs
- From first year, received positive annual returns.
- In charge of marketing, advertising, pricing, inventory, accounting, shipping, customer service- everything.
- Sold to over 40 countries worldwide!

### **Cutter Aviation**

Phoenix, AZ

Line Service Technician, 2007-2009

### **Wal-Mart**

Mesa, AZ

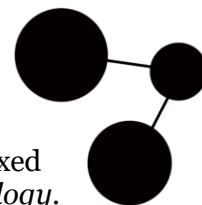
Cashier, 2006-2007

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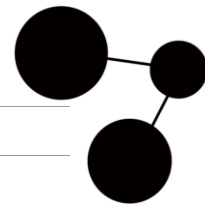
## **PUBLICATIONS**

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- **Bradley G. Lusk**, Peraza, I, Albal, G, Marcus, AK, Popat, SC, Torres, CI. 2018. pH Dependency in Anode Biofilms of *Thermincola ferriacetica* Suggests a Proton-Dependent Electrochemical Response. *Journal of the American Chemical Society*. 140 (16), 5527–5534. doi: 10.1021/jacs.8b01734



- **Bradley G. Lusk**, Colin, A, Parameswaran, P, Rittmann, BE, and Torres, CI. 2018. Simultaneous fermentation of cellulose and current production with an enriched mixed culture of thermophilic bacteria in a microbial electrolysis cell. *Microbial Biotechnology*. 11(1), 63–73. [doi:10.1111/1751-7915.12733](https://doi.org/10.1111/1751-7915.12733)
- **Bradley G. Lusk**. 2018. Representation for the underrepresented: the importance of the multidirectional exchange of values between scientists, STEM educators, and historically underrepresented members of the community to ensure inclusiveness and democracy in responsible research and innovation. *Journal of Responsible Innovation*. In Press.
- **Bradley G. Lusk**, Zhou, C, Tomaswick, A, and Rittmann, BE. 2018. Using the Membrane Biofilm Reactor (MBfR) to Recover Platinum Group Metals (PGMs) as Nanoparticles from Wastewater. *TechConnect Briefs*. [ISBN 978-0-9988782-3-2](https://doi.org/10.1002/9781119488782.ch3)
- **Bradley G. Lusk**, Parameswaran, P, Popat, SC, Rittmann, BE, and Torres, CI. 2016. Effect of pH and Buffer Concentration on Anode Biofilms of *Thermincola ferriacetica*. *Bioelectrochemistry*. 112 (2016) 47–52. [doi:10.1016/j.bioelechem.2016.07.007](https://doi.org/10.1016/j.bioelechem.2016.07.007)
- **Bradley G. Lusk**, Badalamenti, JP, Parameswaran, P, Bond, DR, Torres, CI. 2015. Draft genome sequence of the Gram-positive thermophilic iron reducer *Thermincola ferriacetica* strain Z-0001<sup>T</sup>. *Genome Announc* 3(5):e01072-15. [doi:10.1128/genomeA.01072-15](https://doi.org/10.1128/genomeA.01072-15)
- **Bradley G. Lusk**, Khan, QF, Parameswaran, P, Hameed, A, Ali, N, Rittmann, BE, and Torres, CI. 2015. Characterization of Electrical Current-Generation Capabilities from Thermophilic Bacterium *Thermoanaerobacter pseudethanolicus* Using Xylose, Glucose, Cellobiose, or Acetate with Fixed Anode Potentials. *Environmental Science & Technology*, 2015, 49 (24), 14725–14731. [doi: 10.1021/acs.est.5b04036](https://doi.org/10.1021/acs.est.5b04036)
- Parameswaran, P, Bry, T, Popat, SC, **Bradley G. Lusk**, Rittmann, BE, & Torres, CI. 2013. Kinetic, Electrochemical, and Microscopic Characterization of the Thermophilic, Anode-Respiring Bacterium *Thermincola ferriacetica*. *Environmental Science and Technology*, 47, 4934–4940. [doi: 10.1021/es400321c](https://doi.org/10.1021/es400321c)
- Ray Keeler and **Bradley G. Lusk**. 2018. Microbiome analysis of bacteria associated with biogeochemistry in Grand Canyon Caverns, Arizona, USA. In Prep.
- Peraza, I, Marcus, AK, **Bradley G. Lusk**. 2018. Modelling dynamic shifts in Nernst-Monod kinetics of thermophilic biofilms composed of anode respiring bacteria. In prep.
- **Bradley G. Lusk** and Liza C. Kurtz. 2018. Using pop culture and comic book conventions as an efficacious pedagogy for informal Science, Technology, Engineering, Art, and Mathematics (STEAM) education. In prep.



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## GRANTS AND FUNDING

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- **Bradley G. Lusk**, Tomaswick, A, Zhou, C, Rittmann, BE. 2018. “Developing the Membrane Biofilm Reactor for Recovering Platinum Group Metals from Contaminated Waters.” NSF STTR Phase I. \$224,806; *pending*.
- **Bradley G. Lusk** and Larry Henley. 2018. “Science Café Workshops with Science, Technology, Engineering, and Math Professionals in Surprise, AZ.” Surprise Community Outreach Program. \$3839; *pending*.
- **Science The Earth**. Non-profit corporation receives ~\$2000 quarterly in small donations to fund community oriented research projects via online campaigns and public outreach.

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## CONFERENCE SEMINARS and PRESENTATIONS

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### **A Place at the Table Sustainability Conference**

San Diego, CA

June 2014; University of California, San Diego

- Workshop: Developed sustainable brand *Re:Purpose* and delivered business proposal to professional investors.

September 2015; University of California, San Diego

- Workshop: Developed commercialized educational composting project and delivered business proposal to professional investors.
- Won best presentation award.

### **American Society for Microbiology (ASM)**

Boston, MA

May 2014

- Poster: “Proton diffusion limitations in thermophilic microbial electrochemical cells using *Thermincola ferriacetica* as an anode respiring bacterium.”
- Poster: “Evaluation of simultaneous fermentation and anode respiration capabilities of the thermophilic *Thermoanaerobacter pseudethanolicus* in microbial electrolysis cells (MECs).”

April 2016; Arizona State University

Tempe, AZ

- Seminar: “pH Shifts in the Anode Potential Response from *Thermincola ferriacetica* Suggest the Presence of a Rate Limiting Proton Coupled Electron Transfer Protein.”

[June 2016](#)

Boston, MA

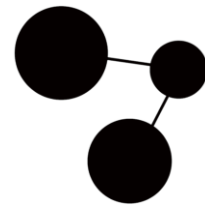
- Seminar: “pH Shifts in the Anode Potential Response from *Thermincola ferriacetica* Suggest the Presence of a Rate Limiting Proton Coupled Electron Transfer Protein.”

### **Arizona Regional Association (ARA) Winter Technical**

Tucson, AZ

March 2018

- Seminar: “[Biogeochemistry in Grand Canyon Caverns.](#)”



### **Association for Environmental Engineers and Science Professors**

September 2013; Colorado School of Mines

Golden, CO

- Poster: “Thermophilic bacteria in Microbial Electrochemical Cells: *Thermincola ferriacetica* and *Clostridium thermocellum*.”

### **Association for Women in Science; Society for Women in STEM**

February 2016; Arizona State University

Tempe, AZ

- Poster: “Characterization of the electrical current-generation capabilities from thermophilic bacterium *Thermoanaerobacter pseudethanolicus* using xylose, glucose, cellobiose, or acetate with fixed anode potentials.”
- STEM poster award winner for best graduate engineering poster.

### **AZBio Expo**

Phoenix, AZ

April 2013

- Poster: “Thermophilic bacteria in Microbial Electrochemical Cells *Thermincola ferriacetica* and *Clostridium thermocellum*.”

April 2014

- Poster: “Proton diffusion limitations in thermophilic microbial electrochemical cells using *Thermincola ferriacetica* as an anode respiring bacterium.”

April 2015

- Poster: “Evaluation of simultaneous fermentation and anode respiration capabilities of the thermophilic *Thermoanaerobacter pseudethanolicus* in microbial electrolysis cells (MECs).”

### **Biofilms 7**

Porto, PT

[June 2016](#); University of Porto

- Poster: “pH Shifts in the Anode Potential Response from *Thermincola ferriacetica* Suggest the Presence of a Rate Limiting Proton Coupled Electron Transfer Protein.”

### **Extremophiles 2016**

Kyoto, JP

[September 2016](#); Kyoto University

- Seminar: “pH Shifts in the Anode Potential Response from *Thermincola ferriacetica* Suggest the Presence of a Rate Limiting Proton Coupled Electron Transfer Protein.”

### **Ignite Food Phoenix**

Phoenix, AZ

April 2012

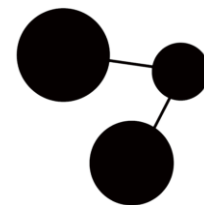
- Seminar: “[Food, Microbes, and Human Health](#).”  
Lay-audience of over 200 at a Phoenix, AZ based Ted-inspired event

### **International Society for Microbial Electrochemical Technology (ISMET)**

May 2014; Penn State

State College, PA

- Poster: “Proton diffusion limitations in thermophilic microbial electrochemical cells using *Thermincola ferriacetica* as an anode respiring bacterium.”



Lead Organizer for Logistics Planning Committee, October 2015; Tempe, AZ  
Arizona State University

- See *Educational Positions* section for job description.
- Poster: “Characterization of the electrical current-generation capabilities from thermophilic bacterium *Thermoanaerobacter pseudethanolicus* using xylose, glucose, cellobiose, or acetate with fixed anode potentials.”
- Seminar: “The effect of pH and buffer concentration on anode biofilms of *Thermincola ferriacetica*.”

[August 2016](#)

Busan, KR

- Seminar: “Simultaneous fermentation of cellulose and current production with a highly enriched mixed culture of thermophilic bacteria in a microbial electrolysis cell.”

[September 2016](#); Sapienza University

Rome, IT

- Seminar: “pH Shifts in the Anode Potential Response from *Thermincola ferriacetica* Suggest the Presence of a Rate Limiting Proton Coupled Electron Transfer Protein.”

**National Cave and Karst Management Symposium**

Eureka Springs, AR

October 2017

- George Huppert Scholarship Recipient
- Seminar: “Partial cave closures for study of microbiome in Grand Canyon Caverns, a sulfuric hypogene dry cave in north central Arizona, revealed a biotechnologically relevant community and had no deleterious economic impact.”

**Tech Connect World Innovation Conference and Expo**

Anaheim, CA

May 2018

- Seminar: “Using the Membrane Biofilm Reactor to Recover Platinum Group Metals from Wastewater.”

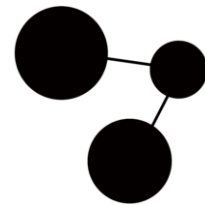
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## INVITED TALKS (NON-CONFERENCE)

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Lectured at over 40 universities including:

- Arizona State University - Tempe, AZ
- Ben Gurion University - Beersheba, IL
- BOKU - Vienna, AT
- Chalmers University - Gothenburg, SE
- Clemson University - Clemson, SC
- CNRS-Université de Toulouse - Toulouse, FR
- EAWAG - Dübendorf, CH
- Gemma UPC - Barcelona, ES
- Ghent University - Gent, BE
- Harvard University - Cambridge, MA
- HUST - Hanoi, VT
- Kansas State University - Manhattan, KS
- Los Andes University - Bogotá, CO
- National Technical University - Athens, GR



- NTU - Singapore, SG
- Penn State - State College, PA
- Quaid-i-azam University - Islamabad, PK
- Tel Aviv University - Tel Aviv, IL
- TERI - New Delhi, IN
- TU Wien - Vienna, AT
- Universidad Antonio Nariño - Bogotá, CO
- Università degli Studi di Milano - Milan, IT
- Universitat Autònoma - Barcelona, ES
- University of Alcalá - Alcalá, ES
- University of Auckland - Auckland, NZ
- University of Lisbon - Lisbon, PT
- University of Massachusetts - Amherst, MA
- University of Milano-Bicocca - Milan, IT
- University of Minnesota - Twin Cities, MN
- University of Notre Dame - Notre Dame, IN
- University of Queensland - Brisbane, AU
- University of Southern California - Los Angeles, CA
- University of West England - Bristol, UK
- UNESCO-IHE - Delft, NL
- U.S. Naval Research Lab - Washington, DC
- Volcani Research Center - Rishon Lezion, IL
- Wageningen University - Wageningen, NL
- Washington State University - Pullman, WA

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## **EDUCATIONAL LEADERSHIP POSITIONS**

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### **Camp Sparky**

Tempe, Mesa, Phoenix, AZ

Chair, Membership Development Coordinator, Vice Chair, 2005-2015

- On location [STEAM educational outreach](#) with Title 1 elementary youth grades 5-8
- Worked and collaborated with 17 schools in the valley  
Ocotillo, Balsz, Jordan, Emerson, Thew, Jefferson, Scales, Roosevelt, Edison, Pastor, Phoenix Collegiate Academy, Adams, Griffith, Guerrero, Holmes, Faith North, Lowell
- Responsible for managing team of student volunteers in many facets during my 10 year tenure including: developing STEM based materials and lesson plans, deliver STEM based materials at schools, training educators to develop and deliver lessons, lesson evaluations, fund raising, event planning and coordination, social media and website management, field trips to ASU, weekend summer camps at Tonto Creek Camp, membership recruitment and retention, management and problem solving, networking with businesses and schools

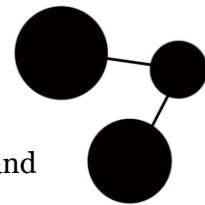
### **Arizona Science and Engineering Fair (AzSEF)**

Phoenix, AZ

Lead Coordinating Judge, February 2016-April 2016

- Responsible for judge recruitment, training, and retention





The event had participation from 1,124 students and nearly 300 local volunteers as judges. Worked with Intel Science and Engineering Fair staff and Phoenix, Tempe, and Mesa Public Schools to garner support and volunteers to judge the fair.

### **Phoenix Comicon**

Phoenix, AZ

Lead coordinator, [June 2016](#)

- Responsible for organizing and planning STEM themed interactive *Hands on Science* room at annual popular culture event. Organized four days of STEM related interactive activities with the School of Earth and Space Exploration (ASU), TechShop, and Arizona Cyber Warfare Range. Also worked with local volunteers to put together an Internet of Things exhibit and a Harry Potter and Dr. Who themed planetarium.

### **Swette Center for Environmental Biotechnology**

Tempe, AZ

Lab Mentor, 2009-2015

- Trained multiple high school seniors, undergraduates, masters, PhD, and postdoctoral students on proper lab procedures and protocols. Published several peer-reviewed scientific research papers with these students

### **International Society for Microbial Electrochemical Technology (ISMET)**

Lead Organizer for Logistics Planning Committee, October 2015 Tempe, AZ

- Organized an international science conference with over 250 attendants. Primary responsibilities included scheduling a team of over 50 volunteers for a three day event, booking sleeping accommodations for guests, procuring rooms and lecture halls for the event, and communication and organization before, during, and after the event.

### **Destination Imagination**

Phoenix, AZ

Team Leader and student mentor, 2009-2011

- On location STEM education outreach program with grade 6-7 classes of Phoenix Collegiate Academy

### **Helping Hands for the Homeless**

Tempe, AZ

Chief Marketing Officer, 2005-2006

- Responsible for managing team of student volunteers to raise awareness and funds for the Thomas J. Pappas School for the Homeless (now Children First Academy)

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## **COMMUNITY ENGAGEMENT and K-12 OUTREACH**

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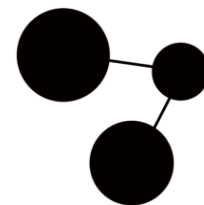
### **Arizona Science and Engineering Fair (AzSEF)**

Phoenix, AZ

Lead Coordinating Judge, February 2016-April 2016

- See *Educational Leadership Positions* section for job description.  
Judge, 2010-2018
- Annual science and engineering fair for grades 5-12





### **Bioscience Summer Camp and the Minority Male Summer Institute**

Professor, Biochemistry Workshop, May 2015

Phoenix, AZ

- Taught a seminar titled *Biochemistry* for enrolled high school seniors. Led a lesson involving DNA extraction protocol.

### **Grand Canyon Caverns**

Peach Springs, AZ

Lecturer, November 2017

- Seminar: *Science in a Cave* delivered to audience of tourists inside a cave and 220 feet underground.
- [Featured on local news station](#)

### **History of the Future Film Series**

Phoenix, AZ

Event Co-Organizer, May – August 2016

- Co-organized a summer film series with Phoenix FilmBar and Arizona State University's Center for Science and the Imagination titled *The History of the Future* that has now become an annual event

### **Humanist Society of Greater Phoenix**

Mesa, AZ

Lecturer, November 2017

- Seminar: [Science as a Force for Collaborative Global Action](#) to community of primarily secular learners.

### **Intel Science and Engineering Fair (ISEF)**

Grand Judge, 2016-2017

Phoenix, AZ; Los Angeles, CA

- Annual science and engineering fair for a range of grades 9-12. Competition includes over 1,800 students from over 75 countries.

### **Night of the Open Door**

Tempe, AZ

Science Communicator, 2012- 2014, 2018

- A university sponsored STEM community outreach event in which research projects in the lab are displayed to the public in an interactive, hands-on setting.
- Presented to children and other members of the general public on Microbial electrochemical cells, the human gut microbiome, membrane biofilm reactors, and bioremediation.

### **Phoenix Comicon**

Phoenix, AZ

Lead coordinator, [June 2016](#)

- See *Educational Leadership Positions* section for job description.

Panelist and Science communicator, 2014-2018

June 2014

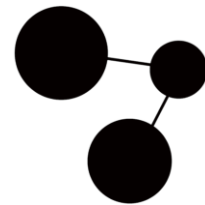
Phoenix, AZ

- Panel Discussions: *Icky Science, Ask a Scientist, Careers in Science, Meet a Scientist*

May 2015

Phoenix, AZ

- Panel Discussions: *Adventures and Disasters in Science, Science and Art*
- Workshop: *EdTech Mixer*: Meet with local educators to discuss science education.
- Event: *Beer with a Scientist*



June 2016

Phoenix, AZ

- Workshop: *EdTech Mixer*: Meet with local educators to discuss science education.
- Co-organized [Science of Jaws](#) panel featuring screenwriter Carl Gottlieb.
- Co-organized *Good and Evil: What Science and Humanism Have to Say About How to Save the World* featuring Andrew Sherwood- member of the Arizona State Senate.

May 2017

Phoenix, AZ

- Panel Discussions: *Crossing into the Fifth Dimension: The Science of The Twilight Zone*, [You've got a friend in you: The science of helpful microbes](#), and [Eating nuclear waste and pooping electricity: Microbial superpowers!](#)

May 2018

- Panel Discussions: *Say the Words and Alter the Universe: Physics of The Magicians*, *Everything you need is already inside you: Science in Black Lightning*, and *Exobiology: Ice Fishing on Europa*.

### **Rise: Lifelong Learners**

Surprise, AZ

Lecturer, January 2018; April 2018 (Surprise, AZ SciTech Festival)

- Seminar: *The Scale of Science* for community of elderly learners.
- Seminar: *Journey to the Center of the Earth! Discover Unique Microbes 220 Feet Below the Earth's Surface!*

### **Science Cafe**

Phoenix, AZ

Lecturer, September 2014

- Delivered seminar titled *How Bacteria Benefit Our Society* to children and other members of the general public at Burton Barr Central Public Library.

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## **CERTIFICATIONS**

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### **Waters Certificate of Training**

September 2010

- MassLynx 4.1 Tips & Tricks

### **CPR, AED, and First Aid Certified**

May 2015 - May 2018

- American Medical Certification

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## **RUNNING ENTHUSIAST!**

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- 2005 Phoenix, Arizona PF Chang's Rock 'n' Roll Marathon (3:45:00)
- 2006 Phoenix, Arizona PF Chang's Rock 'n' Roll Marathon (3:56:44)
- 2007 Phoenix, Arizona PF Chang's Rock 'n' Roll Marathon (4:48:26)
- 2015 Phoenix, Arizona PF Chang's Rock 'n' Roll 1/2 Marathon (1:32:08)
- 2015 Las Vegas, Nevada Geico Rock 'n' Roll 1/2 Marathon (1:38:21)
- 2016 Phoenix, Arizona Rock 'n' Roll 1/2 Marathon (1:34:26)
- 2018 Phoenix, Arizona Synchrony Financial Rock 'n' Roll 1/2 Marathon (1:40:00)