ASHLEY N DALRYMPLE, PHD (SHE/HER)

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https://ashleydalrymple.com/

INTERESTS

Neural interfaces, rehabilitation engineering, machine learning, control systems, sensorimotor systems, neuroplasticity, science communication, karate, cooking, baking, woodworking

EDUCATION

DOCTOR OF PHILOSOPHY, NEUROSCIENCE, 2019

University of Alberta, Edmonton, AB, Canada

Thesis Title: Machine Learning to Characterize Motor Patterns and Restore Walking after Neural Injury

Advisor: Vivian Mushahwar

BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING, BIOMEDICAL OPTION, 2013

University of Alberta, Edmonton, AB, Canada

EXPERIENCE

POST-DOCTORAL ASSOCIATE

Oct. 2020 – Present: Department of Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, USA

Mentors: Douglas Weber and Lee Fisher*
*Dr. Fisher is affiliated with the University of Pittsburgh

POST-DOCTORAL ASSOCIATE

Sept. 2019 – Sept. 2020: Department of Physical Medicine and Rehabilitation, University of Pittsburgh, Pittsburgh, PA, USA

Mentors: Douglas Weber and Lee Fisher

POST-DOCTORAL RESEARCH ASSISTANT

Jan. – Jul. 2019: Bionics Institute, Melbourne, VIC, Australia

Mentors: Robert Shepherd and James Fallon

GRADUATE RESEARCH ASSISTANT

Sept. 2013 – Dec. 2018: Neuroscience and Mental Health Institute, Division of Physical Medicine and Rehabilitation, Faculty of Medicine and Dentistry, University of Alberta, Edmonton, AB, Canada

Mentor: Vivian Mushahwar

UNDERGRADUATE RESEARCH ASSISTANT

May – Sept. 2012	Faculty of Engineering, University of Alberta, Edmonton, AB, Canada
Mentor	Karthik Shankar

COORDINATOR

Sept. – Dec. 2011	Girls, Engineering, and Mentorship (GEM) Club, DiscoverE, Faculty of Engineering, University of Alberta, Edmonton, AB, Canada

INSTRUCTOR

May – Aug. 2011	DiscoverE, Faculty of Engineering, University of Alberta, Edmonton, AB, Canada

GRANTS AND SCHOLARSHIPS

GRANTS

2021	CIHR Postdoctoral Fellowship Quantifying the Effects of Transcutaneous Spinal Cord Stimulation on Spinal Excitability, Phantom Limb Pain, and Balance and Gait Function in Lower Limb Amputees Role: Primary Applicant Rank: 2/615	$45,000/yr Awarded but Declined
2021	University of Pittsburgh Year of Engagement Educational Materials for STEM Outreach to Pittsburgh Youth Role: Co-Creator	$16,000
2021-2026	National Institutes of Health (NIH) BRAIN Initiative UG3/UH3 SWITCH trial: Early feasibility study of Stentrode BCI for augmentative communication Role: Contributor; PIs: Weber, Oxley	$10M
2020-2021	National Center of Neuromodulation for Rehabilitation (NM4R) Pilot Project Grant (National Institutes of Health) Preventing Episodes of Phantom Limb Pain in Lower Limb Amputees Role: Postdoctoral Fellow	$37,500
2018	Campus Alberta Neuroscience Student Mobility Grant Machine Learning Classification of Neural Signals	$1,116
2015	Campus Alberta Neuroscience Student Mobility Grant Machine Learning Classification of Neural Signals	$658

SCHOLARSHIPS

2017/2018	Queen Elizabeth II Graduate Student Scholarship – Doctoral	$15,000
2016/2017	Queen Elizabeth II Graduate Student Scholarship – Doctoral	$15,000
2015	Government of Alberta Graduate Student Scholarship for Academic Excellence	$3,000
2015	Faculty of Medicine 75th Anniversary Scholarship for Academic Excellence	$7,000
2014	Government of Alberta Graduate Citizen Scholarship for Leadership	$2,000
2012	EFC Foundation Scholarship for Leadership in Electrical Engineering	$1,000
2012	Jason Lang Scholarship for Academic Excellence	$1,000
2008	University of Alberta Academic Excellence Scholarship	$1,250
2008	Faculty of Engineering Academic Excellence Scholarship	$1,750
2008	Alexander Rutherford Scholarship for Academic Excellence	$2,500
2008	Alice and Alexander Barnhill Scholarship	$1,000

PEER-REVIEWED PUBLICATIONS

IN REVIEW

1. V Nair, **AN Dalrymple**, Z Yu, G Balakrishnan, CJ Bettinger, DJ Weber, K Yang, JT Robinson, "Miniature battery-free bioelectronics", *Science*, Abstract accepted.
2. MK Jantz, J Mak, **AN Dalrymple**, J Farooqui, EM Grigsby, AJ Herrera, E Pirondini*, JL Collinger*, "Lifting as we climb: experiences and recommendations from women in neural engineering", *Frontiers in Neuroscience, Neuroprosthetics, Women in Neuroengineering and Neurotechnologies.* Abstract accepted.

IN REVISION

1. AC Nanivadekar*, R Bose*, BA Petersen*, EV Okorokova, D Sarma, J Farooqui, **AN Dalrymple**, I Levy, ER Helm, VJ Miele, ML Boninger, M Capogrosso, SJ Bensmaia, DJ Weber, LE Fisher, "Spinal cord stimulation restores sensation, improves function, and reduces phantom pain after transtibial amputation", Pre-print: *medRxiv*, **2022**.

ACCEPTED

1. **AN Dalrymple**, CA Hooper, MG Kuriakose, M Capogrosso, DJ Weber, "Using a high-frequency carrier does not improve comfort of transcutaneous spinal cord stimulation", *Journal of Neural Engineering.* Pre-print: *bioRxiv*, **2022**.

PUBLISHED

1. N Verma, RD Graham, J Mudge, JK Trevathan, M Franke, AJ Shoffstall, J Williams, **AN Dalrymple**, LE Fisher, DJ Weber, SF Lempka, KA Ludwig, "Augmented transcutaneous stimulation using an injectable electrode: a computational study", *Frontiers in Bioengineering and Biotechnology, Bionics and Biomimetics*, vol 9, **2021**. Pre-print: *bioRxiv*, 2021.
2. **AN Dalrymple*,** JE Ting*, R Bose, JK Trevathan, S Nieuwoudt, SF Lempka, M Franke, KA Ludwig, AJ Shoffstall, LE Fisher, DJ Weber, "Stimulation of the dorsal root ganglion using an Injectrode", *Journal of Neural Engineering*, vol 18(5), **2021**. Pre-print: *bioRxiv*, 2021. *These authors contributed equally.
3. JA deLima***, A Dalrymple*,** M Jantz*, C Charlebois*, C Weber, "Working toward diversity and inclusion in neural engineering", *IEEE Pulse*, vol 12(5), **2021**. *These authors contributed equally.
4. RK Shepherd, PM Carter, **AN Dalrymple**, YL Enke, AK Wise, J Firth, A Thompson, JB Fallon, "Platinum dissolution and tissue response following long-term electrical stimulation at high charge densities", *Journal of Neural Engineering*, vol 18(3), **2021**.
5. **AN Dalrymple**, "Implanted devices: the importance of both electrochemical performance and biological acceptance", *Neural Regeneration Research, Invited Perspective Article*, vol 16(6), **2021.**
6. **AN Dalrymple**, VK Mushahwar, "Intelligent control of a spinal prosthesis to restore walking after neural injury: recent work and future possibilities", invited Special Issue on "Autonomy and Intelligence in Neurorehabilitation Robotic and Prosthetic Technologies", *Journal of Medical Robotics Research*, vol 5(1&2), **2020.**
7. RK Shepherd, PM Carter, YL Enke, A Thompson, B Flynn, E Trang, **AN Dalrymple**, JB Fallon, "Chronic intracochlear stimulation at high charge densities: reducing platinum dissolution", *Journal of Neural Engineering*, vol 17(5), **2020.**
8. **AN Dalrymple**, M Huynh, BA Nayagam, CD Lee, A Petrossians, JJ Whalen, JB Fallon, RK Shepherd, "Electrochemical and biological characterization of thin-film platinum-iridium alloy electrode coatings: a chronic in vivo study", *Journal of Neural Engineering*, vol 17(3), **2020.**
9. **AN Dalrymple**, DA Roszko, RS Sutton, VK Mushahwar, "Pavlovian control of intraspinal microstimulation to produce over-ground walking", *Journal of Neural Engineering*, vol 17(3), **2020**. Pre-print: *bioRxiv*, *2019*.
10. **AN Dalrymple**, UA Robles, M Huynh, BA Nayagam, RA Green, LA Poole-Warren, JB Fallon, RK Shepherd, "Electrochemical and biological performance of chronically stimulated conductive hydrogel electrodes", *Journal of Neural Engineering*, vol 17(2), **2020**.
11. **AN Dalrymple**, M Huynh, UA Robles, J Marroquin, CD Lee, A Petrossians, JJ Whalen, D Li, HC Parkington, JS Forsythe, RA Green, LA Poole-Warren, RK Shepherd, JB Fallon, "Electrochemical and mechanical performance of reduced graphene oxide, conductive hydrogel, and electrodeposited Pt-Ir coated electrodes: an active in vitro study", *Journal of Neural Engineering*, vol 17(1), **2019**.

12. **AN Dalrymple**, SA Sharples, N Osachoff, AP Lognon, PJ Whelan, "A supervised machine learning approach to the characterization of spinal network function", *Journal of Neurophysiology*, vol 121(6):2001-12, **2019**.
13. **AN Dalrymple**, DG Everaert, DS Hu, VK Mushahwar, "A speed-adaptive intraspinal microstimulation controller to restore walking in a spinal cord hemisection model", *Journal of Neural Engineering*, vol 15(5), **2018**.
14. S Farsinezhad, A Mohammadpour, M Benlamri, **AN Dalrymple**, K Shankar, "The morphology of TiO_2 nanotube arrays grown from atomically peened and non-atomically peened Ti films", *Journal of Nanoscience and Nanotechnology*, vol 17(7), pp. 4936-4945, **2017**.
15. S Farsinezhad, **AN Dalrymple**, K Shankar, "Toward single-step anodic fabrication of monodisperse TiO_2 nanotube arrays on non-native substrates", *Physica Status Solidi A*, vol. 211(5), pp. 1113-1121, **2014**.
16. S Farsinezhad, A Mohammadpour, **AN Dalrymple**, J Geisinger, P Kar, MJ Brett, K Shankar, "Transparent anodic TiO_2 nanotube arrays on plastic substrates for disposable biosensors and flexible electronics", *Journal of Nanoscience and Nanotechnology*, vol. 13(4), pp. 2885-2891, **2013**.

BOOK CHAPTERS

1. **AN Dalrymple**, VK Mushahwar, "Stimulation of the spinal cord for the control of walking", In *Neuroprosthetics: Theory and Practice*. Series on Bioengineering and Biomedical Engineering, vol. 8:811-849, World Scientific. Editors: KW Horch and DR Kipke, **2017**.

TECHNICAL WRITING

1. IEEE Brain Initiative, "Future Neural Therapeutics: Technology Roadmap White Paper", version 2. Role: Technical consultant and co-author. Dec **2020**.

OPEN-SOURCE SOFTWARE AND DATA REPOSITORIES

1. SpontaneousClassification
2. Open Science Framework (OSF) data from "A Supervised Machine Learning Approach to Characterize Spinal Network Function"
3. PavlovianWalking

CONFERENCE PUBLICATIONS

1. **AN Dalrymple**, "Engineering needs more women, now", *American Society for Engineering Education Annual Conference & Exposition*, Baltimore, MD, USA, **2023**. Submitted.
2. R Kubicek, R Basdeo, V Webster-Wood, N Gomez, C McComb, **AN Dalrymple**, "Recognizing outreach: a program towards increasing and quantifying impactful outreach activities", *American*

Society for Engineering Education Annual Conference & Exposition, Baltimore, MD, USA, **2023**. Submitted.

3. **AN Dalrymple**, LE Fisher, DJ Weber, "Transcutaneous spinal cord stimulation to reduce phantom limb pain", *Society for Neuroscience*, San Diego, CA, USA, **2022**.
4. JE Ting, **AN Dalrymple**, CA Hooper, S Correa, DJ Weber, "Frequency-dependent reduction of Aα/Aβ fiber recruitment during continuous dorsal root ganglion stimulation in rats", *Society for Neuroscience*, San Diego, CA, USA, **2022**.
5. O Refy, **AN Dalrymple**, B Blanchard, A Miller-Peterson, O Mo, S Panthangi, EH Bedoy, A Reinhart, H Geyer, DJ Weber, "Probing H-reflexes during split-belt adaptation in healthy humans", *Society for Neuroscience*, San Diego, CA, USA, **2022**.
6. D Sarma*, **AN Dalrymple***, R Bose*, BA Petersen, AC Nanivadekar, E Helm, M Capogrosso, LE Fisher, DJ Weber, "Evaluating the myoelectric effects of epidural stimulation for the restoration of physiologic function in trans-tibial amputees", *Society for Neuroscience*, San Diego, CA, USA, **2022**.
7. **AN Dalrymple**, CA Hooper, MG Kuriakose, M Capogrosso, DJ Weber, "High frequency transcutaneous spinal cord stimulation: what's all the buzz about?", *Whitaker Neuroengineering Workshop*, Cambridge, UK, **Aug 2022**.
8. D Sarma, A Nanivadekar, B Petersen, R Bose, **AN Dalrymple**, E Helm, M Capogrosso, LE Fisher, DJ Weber, "Evaluating the effects of epidural stimulation for the restoration of physiologic function in trans-tibial amputees", *Whitaker Neuroengineering Workshop*, Cambridge, UK, **Aug 2022**.
9. JE Ting, **AN Dalrymple**, CA Hooper, JS Correa, DJ Weber, "Recruitment of Aα/β fibers decreases in a frequency-dependent manner during continuous dorsal root ganglion stimulation in rats", *Whitaker Neuroengineering Workshop*, Cambridge, UK, **Aug 2022**.
10. J Woods, A Singer, Z Yu, J Ting, **A Dalrymple**, D Weber, K Yang, JT Robinson, "Wireless battery-free neurostimulation using a network of miniature magnetoelectric implants", *Rice Neuroengineering Initiative Conference*, Houston, TX, USA, **May 2022**.
11. C O'Sullivan, S Mirkiani, DA Roszko, P Faridi, DS Hu, DG Everaert, A Toossi, R Kang, D Fang, N Tyreman, **AN Dalrymple**, K Robinson, RRE Uwiera, HM Shah, R Fox, PE Konrad, VK Mushahwar, "Mapping the Motor Networks in the Spinal Cord: Investigating the Safety of Future Research in Humans", *International Functional Electrical Stimulation Society*, Virtual, Sept **2021**.
12. **AN Dalrymple***, JE Ting*, R Bose, JK Trevathan, S Nieuwoudt, M Franke, KA Ludwig, AJ Shoffstall, LE Fisher, DJ Weber, "Dorsal Root Ganglion Stimulation with the Injectrode", *Society for Neuroscience*, Virtual, Nov **2021**, cancelled. *These authors contributed equally
13. JK Trevathan, BE Knudsen, S Nieuwoudt, S Periyasamy, **AN Dalrymple**, M Franke, DJ Weber, AJ Shoffstall, KA Ludwig, "Minimally Invasive Delivery of an Injectable Electrode in a Large Animal Model of Dorsal Root Ganglion Stimulation", *Society for Neuroscience*, Virtual, Nov **2021**.

14. C O'Sullivan, S Mirkiani, DA Roszko, P Faridi, DS Hu, DG Everaert, A Toossi, R Kang, D Fang, N Tyreman, **AN Dalrymple**, K Robinson, RRE Uwiera, HM Shah, R Fox, PE Konrad, VK Mushahwar, "Safety of Mapping the Motor Networks in the Spinal Cord", *Society for Neuroscience*, Virtual, Nov **2021**.

15. **AN Dalrymple**, DA Roszko, RS Sutton, VK Mushahwar, "Machine Learning for Overground Walking Using Intraspinal Microstimulation", *The BRAIN Initiative Investigators Meeting*, Virtual, June **2021**.

16. C O'Sullivan, S Mirkiani, DA Roszko, P Faridi, DS Hu, DG Everaert, A Toossi, R Kang, D Fang, N Tyreman, **AN Dalrymple**, K Robinson, RRE Uwiera, HM Shah, R Fox, PE Konrad, VK Mushahwar, "Safety of Mapping Spinal Cord Motor Networks for Human Application", *The BRAIN Initiative Investigators Meeting*, Virtual, June **2021**.

17. **AN Dalrymple**, DA Roszko, RS Sutton, VK Mushahwar, "Online Predictions for Pavlovian Control During Overground Walking Using Intraspinal Microstimulation", *North American Neuromodulation Society – Neural Interfaces Conference Joint Meeting*, Virtual, June **2021**.

18. JE Ting*, **AN Dalrymple***, R Bose, S Nieuwoudt, M Franke, KA Ludwig, AJ Shoffstall, LE Fisher, DJ Weber, "The Injectrode for DRG Stimulation", *North American Neuromodulation Society – Neural Interfaces Conference Joint Meeting*, Virtual, June **2021**. *Joint first author

19. C O'Sullivan, S Mirkiani, DA Roszko, P Faridi, DS Hu, DG Everaert, A Toossi, R Kang, D Fang, N Tyreman, **AN Dalrymple**, K Robinson, RRE Uwiera, HM Shah, R Fox, PE Konrad, VK Mushahwar, "Safety of Mapping the Motor Networks in the Spinal Cord of Humans", *North American Neuromodulation Society – Neural Interfaces Conference Joint Meeting*, Virtual, June **2021**.

20. D Sarma, AC Nanivadekar, BA Petersen, B Barra, **AN Dalrymple**, M Capogrosso, LE Fisher, DJ Weber, "Recruitment of Lower Limb Muscles by Epidural Stimulation of Lumbosacral Spinal Cord in Trans-tibial Amputees", *North American Neuromodulation Society – Neural Interfaces Conference Joint Meeting*, Virtual, June **2021**.

21. **AN Dalrymple*** and MK Jantz*, on behalf of the Rehab Neural Engineering Labs at the University of Pittsburgh, *IEEE EMBS Conference on Neural Engineering Diversity and Inclusion Award*, **2021**.
    -Won the top award for outstanding contributions to the mission of inclusion and diversity

22. **AN Dalrymple**, JE Ting, R Bose, S Nieuwoudt, M Franke, KA Ludwig, AJ Shoffstall, LE Fisher, DJ Weber, "Recruitment of Primary Afferent Neurons by DRG Stimulation using the Injectrode", *IEEE EMBS Conference on Neural Engineering*, Virtual, May **2021**.
    -Won 2nd place for best paper award

23. RK Shepherd, PM Carter, **AN Dalrymple** JB Fallon, "Chronic Electrical Stimulation at High Charge Densities: Platinum Dissolution, Tissue Response and Neural Survival", *Association for Research in Otolaryngology MidWinter Meeting*, Virtual, Feb. **2021**.

24. UA Aregueta Robles, M Huynh, **A Dalrymple**, B Nayagam, J Fallon, R Shepherd, R Green, L Poole-Warren, "Conductive Hydrogel-Coated Cochlear Implants Improve Electrical Performance In Vivo", *Materials Research Society*, Boston, Massachusetts, USA, Dec. **2019**.

25. **AN Dalrymple**, DA Roszko, RS Sutton, VK Mushahwar, "Prediction-based control of walking in a hemiplegia model using intraspinal microstimulation", *International Functional Electrical Stimulation Society*, Toronto, ON, Canada, Jun. **2019**.
26. DS Hu, DG Everaert, A Toossi, **AN Dalrymple**, RRE Uweria, K Robinson, PE Konrad, H Shah, VK Mushahwar, "Safety of Intraoperative Intraspinal Microstimulation – Implications Towards Functional Mapping of the Spinal Cord", *International Functional Electrical Stimulation Society*, Toronto, ON, Canada, Jun. **2019**.
27. **AN Dalrymple**, DG Everaert, RS Sutton, VK Mushahwar, "Online Prediction of Phases of the Gait Cycle for Control of Intraspinal Microstimulation", *Society for Neuroscience*, San Diego, CA, USA, Nov. **2018**.
28. DS Hu, DG Everaert, A Toossi, **AN Dalrymple**, RRE Uweria, K Robinson, PE Konrad, H Shah, VK Mushahwar, "Safety of Intraoperative Intraspinal Microstimulation – Implications Towards Functional Mapping of the Spinal Cord", *Society for Neuroscience*, San Diego, CA, USA, Nov. **2018**.
29. **AN Dalrymple**, DG Everaert, A Toossi, VK Mushahwar, "A Speed-Adaptable Intraspinal Microstimulation Controller to Restore Walking in a Spinal Cord Hemisection Model", *International Functional Electrical Stimulation Society*, London, UK, Jul. **2017**.
30. **AN Dalrymple**, DG Everaert, VK Mushahwar, "An Adaptable Intraspinal Microstimulation Controller to Restore Walking after a Hemisection Spinal Cord Injury", *North American Neuromodulation Society – Neural Interfaces Conference Joint Meeting*, Baltimore, MD, USA, Jun. **2016**.
31. **AN Dalrymple**, VK Mushahwar, "Intraspinal Microstimulation to Improve Walking after Incomplete Spinal Cord Injury", *Neuromodulation*, vol 17(5), **2014**.

ORAL PRESENTATIONS

LOCAL

1. **AN Dalrymple**, "Transcutaneous Spinal Cord Stimulation: Waveform Options and Application for Phantom Limb Pain", *Engineering Brain Plasticity for Recovery Speaker Series*, University of Pittsburgh, Pittsburgh, PA, USA, Online, Dec. 2022.
2. **AN Dalrymple**, Edoardo D'Anna, "How to Build a Professional Website", *Rehab Neural Engineering Labs Professional Development Seminar Series*, Pittsburgh, PA, USA, Online, Oct. 2020.
3. **AN Dalrymple**, "Pavlovian control of walking", *Tea Time Talk*, Alberta Machine Intelligence Institute, Edmonton, Alberta, Canada, Online, Aug. 2020.
4. **AN Dalrymple**, M Huynh, "In vitro and in vivo testing of coatings for improving electrochemical performance", *Bionics Institute Seminar Series*, Melbourne, Australia, Jul. 2019.
5. **AN Dalrymple**, "Machine Learning Control of Intraspinal Microstimulation to Restore Walking", *Bionics Institute Seminar Series*, Melbourne, Australia, Feb. 2019.

6. **AN Dalrymple**, PA Johnson, "Integrating Technology to Restore Function and Prevent further Injuries in People with Spinal Cord Injury", *Project SMART Talk Series*, University of Alberta, Edmonton, AB, Canada, Nov. 2018.
7. **AN Dalrymple**, SA Sharples, VK Mushahwar, PJ Whelan, "The Characterization of Spontaneous Spinal Cord Motor Activity using Supervised Machine Learning", *Neuroscience Research Day*, University of Alberta, Edmonton, AB, Canada, Mar. 2017.
8. **AN Dalrymple**, DG Everaert, VK Mushahwar, "An Intraspinal Microstimulation Controller to Restore Walking after a Hemisection Spinal Cord Injury", *Neuroscience Research Day*, University of Alberta, Edmonton, AB, Canada, Mar. 2016.
9. Finalist (Top 20/84), *Falling Walls Lab Competition*, University of Alberta, "Breaking the Wall of Deep Vein Thrombosis", Sept. 2014.
10. **AN Dalrymple**, S Sridar, "Development of a Smart, Stable, and Reliable ISMS Implant", *Project SMART Talk Series*, University of Alberta, Edmonton, AB, Canada, Jul. 2014.
11. **AN Dalrymple**, D Driedger, K Mead, A Nilson, "XInC2 Vital Signs Monitor", *Electrical and Computer Engineering Final Design Project Competition*, University of Alberta, Edmonton, AB, Canada, Apr. 2013.

REGIONAL

1. **AN Dalrymple**, "Invasive and Non-Invasive Neural Interfaces for Neuromodulation", *Visiting Speaker*, University of Utah, Salt Lake City, UT, USA, May 2022.
2. **AN Dalrymple**, "Translating Neural Engineering: My Travels from Preclinical to Clinical Studies", *Visiting Speaker*, West Virginia University, Morgantown, WV, USA, Virtual, Oct. 2021.
3. **AN Dalrymple**, "Traveling Along the Path of Translation in Neural Engineering", *Visiting Speaker*, Case Western Reserve University, Cleveland, OH, USA, Virtual, June 2021.
4. **AN Dalrymple**, "Neural Engineering: My Travels Along the Path of Translation", *Visiting Speaker*, West Virginia University, Morgantown, WV, USA, May 2021.
5. **AN Dalrymple**, DA Roszko, RS Sutton, VK Mushahwar, "Prediction-based control of intraspinal microstimulation to produce over-ground walking", *Alberta Biomedical Engineering Conference*, Banff, AB, Canada, Oct. 2018.
6. **AN Dalrymple**, DA Roszko, RS Sutton, VK Mushahwar, "Machine learning control of intraspinal microstimulation to produce over-ground walking", *Alberta Motor Control Neurohike*, Kananaskis, AB, Canada, Sept. 2018.
7. **AN Dalrymple**, DG Everaert, DS Hu, VK Mushahwar, "Restoring Walking in a Hemisection Spinal Cord Injury Model using Intraspinal Microstimulation and Supervised Machine Learning", *Alberta Motor Control Neurohike*, Jasper, AB, Canada, Sept. 2017.
8. **AN Dalrymple**, P Boulanger, RS Sutton, VK Mushahwar, "Restoring Walking after Incomplete Spinal Cord Injury: Guidance from a Computational Model", *Alberta Biomedical Engineering Conference*, Banff, AB, Canada, Oct. 2016.

9. **AN Dalrymple**, DG Everaert, VK Mushahwar, "An Intraspinal Microstimulation Controller to Restore Walking after a Hemisection Spinal Cord Injury: Pilot Studies", *Alberta Biomedical Engineering Conference*, Banff, AB, Canada, Nov. 2015.
10. **AN Dalrymple**, DG Everaert, VK Mushahwar, "Developing an Intraspinal Microstimulation Controller to Restore Walking after Hemisection Spinal Cord Injury", *Alberta Motor Control Neurohike*, Jasper, AB, Canada, Sept. 2015.

NATIONAL

1. **AN Dalrymple**, DG Everaert, A Toossi, VK Mushahwar, "A Speed-Adaptable Controller to Restore Walking in a Spinal Cord Hemisection Model using Intraspinal Microstimulation", *Canadian Spinal Cord Injury Meeting*, Toronto, ON, Canada, May 2017.

INTERNATIONAL

1. **AN Dalrymple**, "Invasive and Non-Invasive Neuromodulation to Restore Function After Neural Injury", *Guest Speaker*, Dalhousie University, Halifax, NS, Canada, Virtual, July 2022.
2. **AN Dalrymple**, "Invasive and Non-Invasive Neuromodulation to Restore Function After Neural Injury", *Guest Speaker*, University of British Columbia – Okanagan, Kelowna, BC, Canada, Virtual, July 2022.
3. **AN Dalrymple**, "Neural Interfaces: Exploratory, Preclinical, to Clinical Studies", *Guest Speaker*, Clinical Neuroscience Grand Rounds, University of Saskatchewan, Saskatoon, SK, Canada, Virtual, Jan. 2022.
4. **AN Dalrymple**, "Neural Engineering: My Travels Along the Path of Translation", *Visiting Speaker*, iCORD, Vancouver, BC, Canada, Virtual, June 2021.
5. **AN Dalrymple**, JE Ting, R Bose, S Nieuwoudt, M Franke, KA Ludwig, AJ Shoffstall, LE Fisher, DJ Weber, "Recruitment of Primary Afferent Neurons by DRG Stimulation using the Injectrode", *IEEE EMBS Conference on Neural Engineering*, Virtual, May 2021.
6. **AN Dalrymple**, "Machine Learning to Characterize Motor Patterns and Restore Walking after Spinal Cord Injury", *Visiting Speaker*, University of Pittsburgh, Pittsburgh, PA, USA, Oct. 2018.
7. **AN Dalrymple**, DG Everaert, A Toossi, VK Mushahwar, "A Speed-Adaptable Intraspinal Microstimulation Controller to Restore Walking in a Spinal Cord Hemisection Model", *International Functional Electrical Stimulation Society*, London, UK, Jul. 2017.
8. **AN Dalrymple**, "Restoring Walking after Incomplete Spinal Cord Injury using Intraspinal Microstimulation", *Guest Speaker*, Bionics Institute, Melbourne, VIC, Australia, Nov. 2016.

INVITED SPEECHES AND PRESENTATIONS

1. **AN Dalrymple**, "Spinal cord interfaces for producing walking, evoking sensations, and reducing pain", *Invited Speaker, University of Utah Robotics Seminar*, Virtual, Oct. 2022.
2. Panelist and Speaker, University of Alberta Virtual Open House, Oct 2021
3. **AN Dalrymple**, "Transcutaneous spinal cord stimulation: non-invasive neuromodulation", *Invited Speaker, International Online Spinal Cord Injury Research Seminars (I-OSCIRS)*, Virtual, Sept. 2021.

4. **AN Dalrymple**, Cristin Welle, Joan Greve, Ellis Meng, "Diversity in the neural interfaces field", *Invited Speaker and Panelist, Neural Interfaces Conference Pre-Conference Session,* Virtual, June 2021.
5. **AN Dalrymple**, DJ Weber, "Interfacing with the brain and spinal cord", *Invited Speaker, Neurosurgery Research Group, West Virginia University*, Online, Dec. 2020.
6. **AN Dalrymple**, DA Roszko, RS Sutton, VK Mushahwar, "Pavlovian control of intraspinal microstimulation to produce over-ground walking", *Invited Speaker, Neuroprosthetics Summer School*, Online, Jul. 2020.
7. **AN Dalrymple**, VK Mushahwar, "Intraspinal Microstimulation: An FES Technique for Restoring Over-ground Walking", *Invited Speaker, CanCon (A Canadian Conversation about Functional Electrical Stimulation*), Edmonton, AB, Canada, Jun. 2018.
8. **AN Dalrymple**, "How a spinal cord implant could help you walk again", *Invited Speaker, Spinal Cord Injury Alberta Virtual Peer Talk*, Feb. 2018.
9. **AN Dalrymple**, T Chan, "Spinal Cord Injury: Steps Towards Restoring Walking", *Invited Speaker, Sensorimotor Rehabilitation Neuroscience News and Views, Division of Physical Medicine and Rehabilitation Grand Rounds,* Glenrose Rehabilitation Hospital, Edmonton, AB, Canada, Nov. 2017.
10. Keynote Speaker, *Wetaskiwin Composite High School Graduation*, May 2017.
11. **AN Dalrymple**, "My Journey: From ECE to Graduate Studies", *Invited Speaker*, Engineering First Year Night, Mar. 2016
12. **AN Dalrymple**, "Electrical Engineering in Neural Interfaces", *Invited Speaker*, Electrical and Computer Engineering (ECE) Week Technical Talk, Jan. 2016.
13. **AN Dalrymple**, "Electrical Engineering in Neural Interfaces", *Invited Speaker*, Electrical and Computer Engineering (ECE) Week Technical Talk, Jan. 2015.

POSTER PRESENTATIONS

LOCAL

1. **AN Dalrymple**, RS Sutton, VK Mushahwar, "Prediction of Phases of the Gait Cycle for Control of Intraspinal Microstimulation", *Neuroscience Research Day*, University of Alberta, Edmonton, AB, Canada, Mar. 2018.
2. **AN Dalrymple**, VK Mushahwar, "Intraspinal Microstimulation for Incomplete SCI", *Neuroscience Research Day*, University of Alberta, Edmonton, AB, Canada, Mar. 2014.

NATIONAL

1. **AN Dalrymple**, DA Roszko, RS Sutton, VK Mushahwar, "Machine Learning for Overground Walking Using Intraspinal Microstimulation", *The BRAIN Initiative Investigators Meeting*, Virtual, June 2021.
2. **AN Dalrymple**, DG Everaert, RS Sutton, VK Mushahwar, "Online Prediction of Phases of the Gait Cycle for Control of Intraspinal Microstimulation", *CanCon (A Canadian Conversation about Functional Electrical Stimulation*), Edmonton, AB, Canada, Jun. 2018.

3. **AN Dalrymple**, DG Everaert, A Toossi, VK Mushahwar, "Intraspinal Microstimulation to Improve Walking after Incomplete Spinal Cord Injury", *Canadian Spinal Cord Injury Meeting*, Banff, AB, Canada, Apr. 2015.

INTERNATIONAL

1. **AN Dalrymple**, LE Fisher, DJ Weber, "Transcutaneous spinal cord stimulation to reduce phantom limb pain", *Society for Neuroscience*, San Diego, CA, USA, 2022.
2. **AN Dalrymple**, DA Roszko, RS Sutton, VK Mushahwar, "Online Predictions for Pavlovian Control During Overground Walking Using Intraspinal Microstimulation", *North American Neuromodulation Society – Neural Interfaces Conference Joint Meeting*, Virtual, June 2021.
3. **AN Dalrymple**, DA Roszko, RS Sutton, VK Mushahwar, "Online Prediction of Phases of the Gait Cycle for the Control of Intraspinal Microstimulation", *Society for Neuroscience*, San Diego, CA, USA, Nov. 2018.
4. **AN Dalrymple**, RS Sutton, VK Mushahwar, "Machine Learning Control of Intraspinal Microstimulation to Produce Over-ground Walking in a Hemiplegia Model", *Spinal Cord and Spinal Trauma Summer School*, Glasgow, Scotland, UK, Jul. 2018.
5. **AN Dalrymple**, DG Everaert, VK Mushahwar, "An Adaptable Intraspinal Microstimulation Controller to Restore Walking after a Hemisection Spinal Cord Injury", *North American Neuromodulation Society – Neural Interfaces Conference Joint Meeting*, Baltimore, MD, USA, Jun. 2016.
6. **AN Dalrymple**, VK Mushahwar, "Intraspinal Microstimulation to Improve Walking after Incomplete Spinal Cord Injury", *Neural Interfaces Conference*, Dallas, TX, USA, Jun. 2014.

RESEARCH-RELATED SERVICE

GRANT REVIEWING

1. Reviewer, National Center of Neuromodulation for Rehabilitation (NM4R) Pilot Grant, 2021
2. Reviewer, National Center of Neuromodulation for Rehabilitation (NM4R) Pilot Grant, 2023

JOURNAL REFEREEING – AD HOC REVIEWER

1. Reviewer, *IEEE Trans. on Neural Systems and Rehabilitation Engineering*, 2022 (n = 2)
2. Reviewer, *Journal of Mechanisms and Robotics*, 2021-2022 (n = 1)
3. Reviewer, *Neurorehabilitation and Neural Repair*, 2021 (n = 1)
4. Reviewer, *Journal of Neural Engineering*, 2021-2022 (n = 3)
5. Reviewer, *Micromachines*, 2021 (n = 1)
6. Co-Reviewer, *Journal of Neuroscience*, 2020 (n = 1)
7. Reviewer, *Scientific Reports*, 2020-2022 (n = 3)
8. Reviewer, *Neural Regeneration Research*, 2020-2022 (n = 2)
9. Reviewer, *Chiropractic & Manual Therapies*, 2020 (n = 1)
10. Co-reviewer, *Neuromodulation: Technology at the Neural Interface*, 2020 (n = 1)
11. Co-reviewer, *Journal of Comparative Neurology*, 2019 (n = 1)

CONFERENCE PAPER REFEREEING

1. Reviewer, *IEEE EMBS Conference on Neural Engineering*, 2023 (n = 5)

TEACHING AND LECTURES

Jul. 2022 BME	Mock Lecture, Public, "Logistic Regression" Biomedical Engineering, Dalhousie University
Jul. 2022 HES	Mock Lecture, Public, "Contractile Properties of Skeletal Muscle" School of Health and Exercise Sciences, University of British Columbia - Okanagan
Mar. 2022 BME 553	Guest Lecturer, "Invasive and Non-Invasive Spinal Cord Stimulation" Rehabilitation Engineering: Assisted Movement After Injury, Department of Biomedical Engineering, University of Alberta
Oct. 2021 86-783	Guest Lecturer, "Evoked Responses Part II" Neural Engineering Laboratory, Biomedical Engineering (cross-listed with Mechanical Engineering, Neuroscience Institute), Carnegie Mellon University.
Mar. 2021 BME 553	Guest Lecturer, "Stimulation of the Spinal Cord and Related Structures" Rehabilitation Engineering: Assisted Movement After Injury, Department of Biomedical Engineering, University of Alberta
Oct. 2020 BIOENG 2900	Guest Proctor, "Grant Reviewing" Graduate Fellowships and Proposal-Writing Workshop, Department of Bioengineering, University of Pittsburgh
Oct. 2018 KIN 302	Guest Lecturer, "Locomotion: Circuits and Physiology" Human Motor Control, Faculty of Kinesiology, Sport, and Recreation, University of Alberta
Mar. 2015, 2016, 2017, 2018 BME 553	Guest Lecturer, "Intraspinal Microstimulation to Restore Walking after Spinal Cord Injury" Rehabilitation Engineering: Assisted Movement After Injury, Department of Biomedical Engineering, University of Alberta
Jan. 2017 BME 321	Guest Lecturer, "The Spinal Cord and Reflexes" Human Anatomy and Physiology: Systems, Department of Biomedical Engineering, University of Alberta

COURSE DEVELOPMENT

Fall 2021	Neural Engineering Laboratory, Biomedical Engineering (cross-listed with Mechanical Engineering, Neuroscience Institute), Carnegie Mellon University. Co-developer and Guest instructor.

PEDAGOGY AND COURSE DESIGN PREPARATION

Mar 2022	Future Faculty Program, Eberly Center for Teaching Excellence and Educational Innovation, Carnegie Mellon University

STUDENT MENTORSHIP

* Note: where funding source is listed, I helped write the application

Charli Ann Hooper Sept. 2021–Present	Undergraduate student, Biomedical Engineering, Carnegie Mellon University, Pittsburgh, PA, USA
Jordyn Ting Sep. 2019–Present	PhD student, Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, USA
Dailyn Despradel Sept. 2021–Present	PhD student, Department of Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, USA Funding: GEM Fellowship Program
Minna Kuriakose Sept. 2021–May 2022	Undergraduate student, Bioengineering, University of Pittsburgh, Pittsburgh, PA, USA
Rohit Bose Jun. 2020–Nov. 2021	PhD student, Department of Bioengineering, University of Pittsburgh, Pittsburgh, PA, USA
David Roszko Jan.–Dec. 2018	Undergraduate student, Department of Electrical and Computer Engineering; Masters student, Neuroscience and Mental Health Institute, University of Alberta, Edmonton, AB, Canada
Adrian Lopera Valle Apr.–Dec. 2018	PhD student, Department of Chemical and Materials Engineering, University of Alberta, Edmonton, AB, Canada
Mason Schindle May–Aug. 2018	Undergraduate student, Neuroscience and Mental Health Institute, University of Alberta, Edmonton, AB, Canada Funding: Branch Out Neurological Foundation Summer Studentship
David Hu Aug. 2017–Dec. 2018	Masters student, Neuroscience and Mental Health Institute, University of Alberta, Edmonton, AB, Canada
Calvin Howard May–July 2017	Undergraduate student, Neuroscience and Mental Health Institute, University of Alberta, Edmonton, AB, Canada
Carlos Jarquin Sept–Dec 2013	Undergraduate student, Department of Electrical and Computer Engineering, University of Alberta, Edmonton, AB, Canada Funding: Undergraduate Research Initiative

AWARDS AND RECOGNITIONS

2021	Society for Neuroscience Trainee Professional Development Award (Declined due to resignation from meeting)
2021	Diversity Attendance Award, Neural Interfaces Conference
2021	Best paper award, 2nd place, IEEE EMBS Neural Engineering Conference
2021	Top award for outstanding contributions to the mission of inclusion and diversity, IEEE EMBS Neural Engineering Conference
2018	Graduate Students' Association Academic Travel Award
2017	Faculty of Graduate Studies and Research Profiling Alberta's Graduate Students
2017	Neuroscience and Mental Health Institute Travel Award
2017	Graduate Students' Association Academic Travel Award
2016	Neuroscience and Mental Health Research Day Speaker Prize
2015	Alberta Biomedical Engineering Most Outstanding Presentation, 2nd
2015	Graduate Students' Association Rising Star Award for Academic Potential
2013	Eleven Engineering Design Project Trophy for Best Capstone Project
2013	Engineering Students' Society Golden Geer Award for Leadership
2013	Engineering Students' Society Travel Award
2013	Students' Union Lorne Calhoun Memorial Award for Leadership
2012	University of Alberta Undergraduate Leadership Award

ADDITIONAL CONFERENCES AND MEETINGS

Jan 2021	Virtual Attendee, AIMBE Equity and Anti-Racism Summit: A Roadmap to Transformation in BME
Dec 2020	Virtual Attendee, Spinal Cord Plasticity in Motor Control Meeting, National Center of Neuromodulation for Rehabilitation
May 2020	Virtual Attendee, Dynamic Walking Online Conference
Apr. 2020	Virtual Attendee, NYC Neuromodulation Online Conference, North American Spinal Cord Injury Consortium
Jan. 2020	Attendee, North American Neuromodulation Society Annual Meeting, Las Vegas, NV, USA

Oct. 2018	Organizer and Panel Moderator, Driving Innovation Through Feedback – Neuroprosthetics, Campus Alberta Neuroscience Symposium, Edmonton, AB, Canada
Jun. 2018	Volunteer, CanCon (A Canadian Conversation on Functional Electrical Stimulation), Edmonton, AB, Canada
Oct. 2017	Attendee, Campus Alberta Neuroscience Symposium, Calgary, AB, Canada
Sept. 2016	Attendee, Alberta Motor Control Neurohike, Kananaskis, AB, Canada
Jun. 2015	Volunteer, Reinforcement Learning and Decision Making, Edmonton, AB, Canada
Oct. 2014	Attendee, Alberta Biomedical Engineering Conference, Banff, AB, Canada
Oct. 2014	Attendee, Campus Alberta Neuroscience Symposium, Edmonton, AB, Canada
Sept. 2014	Attendee, Alberta Motor Control Neurohike, Kananaskis, AB, Canada
Oct. 2013	Attendee, Alberta Biomedical Engineering Conference, Banff, AB, Canada
Sept. 2013	Attendee, Alberta Motor Control Neurohike, Jasper, AB, Canada
Sept. 2012	Volunteer, International Functional Electrical Stimulation Society, Banff, AB, Canada
Oct. 2011	Attendee, Alberta Biomedical Engineering Conference, Banff, AB, Canada

SERVICE AND VOLUNTEERISM

UNIVERSITY

Dec. 2020 – Present Member and Chair for Diversity, Equity, and Inclusion TaskForce, Mechanical Engineering, Carnegie Mellon University, Pittsburgh, PA, USA

Subcommittees: Mentorship, Outreach (Chair)

- Consolidated outreach opportunities for sharing on our webpage and outreach mailing list
- Initiated the MEOS (Mechanical Engineering Outreach Star) Program to award outreach efforts
- Created a grant to fund outreach supplies to students
- Developed Professional Development seminar and workshop series for students and postdocs

Jun. 2020 - Present	Member of Diversity, Equity, and Inclusion Committee, Rehab Neural Engineering Labs (RNEL), University of Pittsburgh, Pittsburgh, PA, USA

Subcommittees: Youth Outreach (former leader), Undergraduate Outreach, Funding

- Designed and delivered Python Programming workshops to youth (18-24) at a group housing program
- Delivered an Adult Coding class using Python through the University of Pittsburgh Community Engagement Center
- Created undergraduate mentorship plan and training workshops
- Wrote a grant (awarded) to fund outreach and training initiatives

Aug. 2018	Guest Judge for Posters and Oral Presentations, Undergraduate Neuroscience Conference, University of Alberta, Edmonton, AB, Canada
Sept 2017 – Apr. 2018	Organizer, Sensorimotor Rehabilitation Neuroscience Trainee Journal Club, University of Alberta, Edmonton, AB, Canada
Sept. 2015, 2014	Volunteer, Run for Brain Research, Neuroscience Graduate Students' Association, University of Alberta, Edmonton, AB, Canada
Mar. 2013	Representative, Electrical Engineering, Department of Electrical and Computer Engineering accreditation meeting
May 2011 – Apr. 2013	President, Electrical Engineering Club, University of Alberta, Edmonton, AB, Canada
May 2011 – Apr. 2013	Director, Engineering Students' Society Board of Directors, University of Alberta, Edmonton, AB, Canada
Sept. 2012	Orientation Presentation Facilitator, Orientation, Students' Union, University of Alberta, Edmonton, AB, Canada
Sept. 2011	Panelist and Orientation Presentation Facilitator, Orientation, Students' Union, University of Alberta, Edmonton, AB, Canada
Sept. 2010 – Apr. 2011	Junior Executive, Computer Engineering Club, University of Alberta, Edmonton, AB, Canada

SCIENTIFIC

Sept. 2021	Seminar Moderator, International Online Spinal Cord Injury Research Seminars (I-OSCIRS), Virtual
Mar. – Oct. 2018	Organizing Committee, Campus Alberta Neuroscience Symposium: Translating Neuroscience - From Idea to Impact, Edmonton, AB, Canada

Mar. 2014	Volunteer, Spinal Cord Injury Treatment Center Society (SCITCS) Casino Fundraiser for ReWalk Exoskeleton, Edmonton, AB, Canada

COMMUNITY

Mar. 2021	Judge, Pittsburgh Regional Science and Engineering Fair, Pittsburgh, PA, USA, Virtual
Sept. – Oct. 2020	Canvasser for registering voters for federal election, EmPower and The Black Political Empowerment Project, Pittsburgh, PA, USA
Jul. 2020	Virtual Guest Mentor, DiscoverE Camp, Faculty of Engineering, University of Alberta, Edmonton, AB, Canada, "My Experiences in Biomedical Engineering"
1997 – 2018	Student (Nidan), Peace Hills Karate, Wetaskiwin, AB, Canada
2015 – 2018	Certified Instructor: Japan Karate Association of Canada
2014 – 2017	Communication Director, Board of Directors, Peace Hills Karate, Wetaskiwin, AB, Canada
Jul. 2017	Guest Mentor, DiscoverE Camp, Faculty of Engineering, University of Alberta, Edmonton, AB, Canada, "Bio-signals"
Jul. 2016	Guest Mentor, DiscoverE Camp, Faculty of Engineering, University of Alberta, Edmonton, AB, Canada, "How to Become a Machine Learning Agent"
Apr. 2016, 2015	Judge, Edmonton Regional Public Schools Science Fair, Edmonton, AB, Canada
Oct. 2015	Guest Reader, various elementary schools, Spruce Grove, AB, Canada
Jul. 2015	Guest Mentor, DiscoverE Camp, Faculty of Engineering, University of Alberta, Edmonton, AB, Canada, "Functional Electrical Stimulation in Rehabilitation"
Feb. 2015	Judge, Aurora Elementary School Science Fair, Edmonton, AB, Canada
Feb. 2014	Guest Reader, various elementary schools, Edmonton, AB, Canada
Feb. 2014	Mentor, Nellie McClung Science Olympics, Edmonton, AB, Canada
Feb. 2014	Guest Mentor, Girls Engineering and Mentorship (GEM) Club, DiscoverE, Faculty of Engineering, University of Alberta, Edmonton, AB, Canada, "Neuroscience and Electrical Stimulation"
Nov. 2013	Role Model, WISEST (Women in Scholarship, Engineering, Science, & Technology) SET Conference, Edmonton, AB, Canada
Feb. 2013	Guest Mentor, Girls Engineering and Mentorship (GEM) Club, DiscoverE, Faculty of Engineering, University of Alberta, Edmonton, AB, Canada, "Electrical Engineering in Everyday Devices"

Aug. 2012	Guest Mentor, Girls Engineering and Mentorship (GEM) Club, DiscoverE, Faculty of Engineering, University of Alberta, Edmonton, AB, Canada, "Medical Imaging Methods"
Feb. 2011, 2010	Activity Coordinator, WISEST (Women in Scholarship, Engineering, Science, & Technology) Choices Conference, Edmonton, AB, Canada
Sept. 2009 – Apr. 2011	Mentor, Girls Engineering and Mentorship (GEM) Club, DiscoverE, Faculty of Engineering, University of Alberta, Edmonton, AB, Canada
Jul. – Aug. 2010	Environmental Sustainability Volunteer, International Student Volunteers, Bay of Plenty, New Zealand

MEMBERSHIPS AND CERTIFICATIONS

MEMBERSHIPS

2018, 2021 – 2022	Society for Neuroscience
2016 – 2018	Spinal Cord Injury Treatment Center Society
2013 – 2019	APEGA Engineer in Training
2016, 2020	North American Neuromodulation Society

CERTIFICATIONS

2020	CITI Biomedical Research
2020	CITI Health Privacy
2020	CITI Information Security
2020	CITI GCP for Clinical Investigation of Devices
2020	CITI Revised Common Rule
2020	CITI Investigators, Staff, Students
2020	CITI Responsible Conduct of Research
2020	CITI Essentials for IACUC Members
2020	CITI Lab Animal Research
2020	CITI Reducing Pain and Distress in Lab Mice and Rats
2020	CITI Working with Non-Human Primates in Research Settings
2019	CITI Biomedical Human Subjects Research
2019	CITI Conflicts of Interest
2018	Basic Surgical Skills, University of Alberta Surgical Medical Research Institute
2017	Swine Handling, University of Alberta

2017	Aseptic Techniques in Surgery, University of Alberta Surgical Medical Research Institute
2014	Fundamentals of Engineering Examination
2013	Cat Handling, University of Alberta
2013	Canadian Council on Animal Care Programme, NIAUT
2013	Environment Health and Safety Laboratory Biosafety, University of Alberta
2013	Graduate Ethics, Faculty of Medicine, University of Alberta
2012	WHMIS, University of Alberta

MEDIA

PODCAST

Dec. 2021	Guest story, Grad School Confessional

ONLINE ARTICLE

Jun. 2018	Canadian Spinal Research Organization, Education and Research
	"Intraspinal microstimulation: A functional electrical stimulation technique for restoring overground walking"

NEWSPAPER ARTICLE

Jan. 2015	Sarah Swenson, Wetaskiwin Times Advertiser, initiated by University of Alberta Faculty of Medicine and Dentistry
	"Student working to restore walking in people with spinal cord injury"

TELEVISION

Jun. 2011	Breakfast Television, City TV, Edmonton, AB, Canada, as a DiscoverE Instructor
	"Light and Shadows"

ADDITIONAL INFORMATION

Jul. 2007	Alumni of Shad Valley International, Trent University, Peterborough, ON, Canada
	Theme: Zero Waste Technology