

CURRICULUM VITAE

Jacqueline E. Lebenzon, PhD

Department of Integrative Biology, University of California Berkeley

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Research area

I aim to understand the cellular and physiological basis for animal survival in challenging environments.

Current position

2022- **Postdoctoral Scholar**
University of California Berkeley, USA.
Regulation of flight muscle histolysis in wing polymorphic crickets
Advisor: Dr. Caroline Williams

Academic Training

2015-2022 **Doctor of Philosophy, Biology**
University of Western Ontario, London, Ontario, Canada.
Supervisor: Dr. Brent Sinclair
Dissertation Title: *“Mechanisms of diapause and cold tolerance in the Colorado potato beetle”*

2010-2014 **Bachelor of Science, Honour’s specialization in Biology**
University of Western Ontario, London, Ontario, Canada.
Supervisor: Dr. Brent Sinclair
Thesis title: *“Development of an artificial diet for gut loading in the fall field cricket”*

Pedagogical Training

2022 **Pathways to Scientific Teaching Certificate, University of California Berkeley**

Awards

2022 **T.W.M Cameron Outstanding PhD Thesis Award**
Canadian Society of Zoologists, *To be awarded May 2023*

2022 **Detwiler Award**
Dept. Biology, University of Western Ontario, *Awarded to the top PhD thesis in Biology*

2021 **Rene R. Roth Memorial Award**
Dept. Biology, University of Western Ontario, *Awarded to one grad student on the basis of substantial academic and research achievements*

- 2019 **Entomological Society of Ontario President's Prize**
Best student talk at the ESO annual meeting
- 2019 **SICB Division of Comparative Biochemistry and Physiology Best Poster Award**
Best student poster at the Society for Integrative and Comparative Biology meeting
- 2018 **Malcolm Ferguson Award in Life Sciences**
Department of Biology, University of Western Ontario, *Awarded to one grad student for substantial research and academic achievements*
- 2017 **Canadian Society of Zoologists Helen Battle Award**
Best student poster at the annual meeting

Scholarships & Fellowships

- 2023- **NSERC Postdoctoral Fellowship**
Held at University of California Berkeley
- 2020 **Ian Clarke Graduate Scholarship**
Dept. Biology, University of Western Ontario, *Awarded to one grad student for research excellence*
- 2018 **NSERC Post Graduate Scholarship**
University of Western Ontario, *Awarded to top 40% of applicants for research ability, academic achievements and leadership ability.*
- 2017 **Ontario Graduate Scholarship**
University of Western Ontario, *Awarded to top 30% of applicants for academic merit*
- 2017 **Journal of Experimental Biology Travelling Fellowship**
Company of Biologists, *Awarded to conduct collaborative research in a lab in the Czech Republic*
- 2016 **NSERC Canada Graduate Scholarship, Master's**
University of Western Ontario, *Awarded for research ability, achievements and leadership ability*
- 2015 **PSAC Local 610 Academic Achievement Award**
Local 610 Union, *Awarded for one grad student for exceptional academic achievements.*

Publications

*undergraduate mentee

- 8) **Lebenzon, J.E.**, Overgaard, J., Bjerregaard-Jørgensen, L. (2023) Chilled, starved or frozen: insect mitochondrial adaptations to overcome the cold. *Submitted April 2023 to Current Opinion in Insect Science (COINSCI-D-23-00046)*.
- 7) **Lebenzon, J.E.**, Denezis, P.W.*, Mohammad, L.*, Turnbull, K.F., Mathers, K.E., Staples J.F. and Sinclair, B.J. (2022) Reversible mitophagy drives metabolic suppression in diapausing beetles. *Proceedings of the National Academy of Sciences of the U.S.A.* 119: e2201089119.
- 6) **Lebenzon, J.E.**, Torson, A., and Sinclair, B.J. (2021) Diapause differentially modulates the transcriptomes of fat body and flight muscle in the Colorado potato beetle. *Comparative Biochemistry and Physiology D*, 40: 100906.

- 5) **Lebenzon, J.E.**, Toxopeus, J., Anthony, S.E and Sinclair, B.J. (2020) *De novo* assembly and characterisation of the Beringian pseudoscorpion transcriptome, *Canadian Entomologist*, 153: 301-313.
- 4) **Lebenzon, J.E.**, Des Marteaux, L.E. and Sinclair, B.J. (2020) Reversing sodium differentials between the hemolymph and hindgut speeds chill coma recovery, but reduces survival in the fall field cricket, *Gryllus pennsylvanicus*. *Comparative Biochemistry and Physiology A*, 244: 110699.
- 3) Karsten, M., **Lebenzon, J.E.**, Sinclair, B.J. and Terblanche, J.S. (2018) Does loss of ion homeostasis explain chill coma and impaired dispersal ability in false codling moth *Thaumatotobia leucotreta* (Lepidoptera: Tortricidae)? *Comparative Biochemistry and Physiology A*, 229: 40-44.
- 2) Ferguson, L.V., Dhakal, P., **Lebenzon, J.E.**, Heinrichs, D.E., Bucking, C. and Sinclair, B.J. (2018) Seasonal shifts in the insect gut microbiome are concurrent with changes in cold tolerance and immunity. *Functional Ecology*, 32: 2357-2368.
- 1) Toxopeus, J., **Lebenzon, J.E.**, McKinnon, A.H. and Sinclair, B.J. (2016) Freeze tolerance of *Cyphoderris monstrosa* (Orthoptera: Prophalangopsidae). *Canadian Entomologist*, 148: 668–672.

Invited Seminars

- 2) **Lebenzon, J.E.** A balance of power: Shifts in mitochondrial homeostasis during insect dormancy (Oct 2022) *Department of Biology, Sonoma State University, California, USA.*
- 1) **Lebenzon, J.E.** Regulation of metabolic suppression during insect diapause (Dec 2022) *Department of Biology, Fresno State University, California, USA.*

Invited Conference Symposium Talks

- 3) **Lebenzon, J.E.** Induced state of mind: Understanding insect overwintering physiology through diapause induction (2022) *Canadian Society of Zoologists Virtual Meeting, CPB Section Symposium.*
- 2) **Lebenzon, J.E.** Regulation of mitochondrial homeostasis during insect dormancy (2022) *American Physiological Society Intersociety Meeting in Comparative Physiology, San Diego, California, U.S.A.*
- 1) **Lebenzon, J.E.** Mitochondrial homeostasis and metabolic suppression during insect diapause (Nov 2022) *Entomological Society of America and Entomological Society of Canada Joint Annual Meeting, Vancouver, Canada.*

Selected Conference presentations

+Mentee.

- 14) Martins, L.M.⁺, **Lebenzon, J.E.**, Treidel, L.A. and Williams, C.M. Using wing polymorphic crickets to understand how climate change will impact life –history evolution (2022) *American Physiological Society*. [Poster]

- 13) Lacsamana, M⁺, **Lebenzon, J.E.** and Williams, C.M. Using Artificial Selection Lines to Identify the Genetic Basis of Morph Determination in *Gryllus lineaticeps* Crickets (2022) *Annual Biomedical Research Conference for Minoritized Scientists*. [Poster]
- 12) **Lebenzon, J.E.**, and Sinclair, B.J. Suppress to impress: Mechanisms underlying diapause and metabolic suppression during diapause in the Colorado potato beetle (2021) *Society for Integrative and Comparative Biology Virtual Meeting*. [Oral]
- 11) **Lebenzon, J.E.**, and Sinclair, B.J. How to lock down without even trying: Mechanisms underlying diapause in the Colorado potato beetle (2020) *Canadian Society of Zoologists Virtual Meeting, Runner up for Hoar Award*. [Oral]
- 10) **Lebenzon, J.E.**, Sinclair, B.J. Beetle, it's cold outside! The metabolomic and transcriptomic changes that drive cold tolerance in the Colorado potato beetle (2019) *Entomological Society of Ontario, Bark Lake, ON, Canada. Winner of President's Prize*. [Oral]
- 9) **Lebenzon, J.E.**, Denezis, P.W.⁺, Mohammad, L.⁺, Turnbull, K.F., Mathers, K.E., Staples, J.F. and Sinclair, B.J. Burning down the powerhouse: Does mitophagy drive metabolic suppression during diapause in the Colorado potato beetle? (2019) *Canadian Society of Zoologists Meeting, Windsor, ON, Canada. Runner up for Hoar Award*. [Oral]
- 8) **Lebenzon, J.E.**, Denezis, P.W.⁺, Mohammad, L.⁺, Turnbull, K.F., Mathers, K.E., Staples, J.F. and Sinclair, B.J. Reversible mitophagy drives metabolic suppression during diapause in the Colorado potato beetle (*Leptinotarsa decemlineata*) (2019) *International Congress of Comparative Physiology and Biochemistry, Ottawa, ON, Canada. Runner up for best student presentation*. [Oral]
- 7) **Lebenzon, J.E.**, Mohammad, L.⁺, Turnbull, K.F., Mathers, K.E., Staples, J.F. and Sinclair, B.J. Burning down the powerhouse: Does mitophagy drive metabolic suppression during diapause in the Colorado potato beetle? (2018) *Society of Integrative and Comparative Biology, Tampa, FL, USA. Winner of best student poster award*. [Poster]
- 6) **Lebenzon, J.E.**, Toxopeus, J. and Anthony, S.E. Not just another cute chelicerate: *De novo* assembly of the Beringian pseudoscorpion transcriptome reveals putative venom proteins (2018) *Entomological Society of Ontario, Bark Lake, ON, Canada*. [Poster]
- 5) **Lebenzon, J.E.** and Sinclair, B.J. Some like it cold: The functional role of heat shock proteins in diapause and cold tolerance in the Colorado potato beetle. (2018) *Canadian Society of Zoologists Meeting, St. John's, Canada*. [Oral]
- 4) **Lebenzon, J.E.**, Turnbull, K.F., Mathers, K.E., Staples, J.F. and Sinclair, B.J. Does mitophagy drive metabolic suppression during diapause in the Colorado potato beetle? (2017) *International Symposium on the Environmental Physiology of Ectotherms, Tartu, Estonia*. [Oral]
- 3) **Lebenzon, J.E.**, Turnbull, K.F., Mathers, K.E., Staples, J.F. and Sinclair, B.J. Let's break it down: Mitophagy drives metabolic suppression during diapause in the Colorado potato beetles. (2017) *Canadian Society of Zoologists Meeting, Winnipeg, MB, Canada. Winner of Helen Battle Award*. [Poster]
- 2) **Lebenzon, J.E.** and B.J. Sinclair. Manipulating cryoprotectants to investigate cold tolerance in the Colorado potato beetle (2016) *Canadian Society of Zoologists Meeting, London, ON, Canada*. [Poster]
- 1) **Lebenzon, J.E.**, Des Marteaux, L.E. and Sinclair, B.J. Pass the salt: Sodium gut loading affects cold tolerance in the fall field cricket, *Gryllus pennsylvanicus* (2015) *Canadian Society of Zoologists Meeting, Calgary, AB, Canada 2015. Finalist for Helen Battle Award*. [Poster]

Teaching

Department of Biology, University of Western Ontario

2021, 2022 **Guest lecturer, Biology 4602 (Thermal physiology)**

Lectured on the heat shock response to 20 fourth year biology students

2020 **Lead administrative teaching assistant, Biology 2601 (Organismal physiology)**

Managed online lecture and lab content for 400 students, designed and prepared asynchronous pre-lab content.

2018, 2019 **Guest lecturer, Biology 3602 (Animal physiology)**

Lectured on metabolic suppression (2018) and muscle atrophy (2019) to 80 upper year biology students, wrote and evaluated exam questions based on lecture content.

2016-2019 **Teaching assistant, Biology 3602**

Led six "Journal Club" style tutorials with 80 upper year biology students, facilitated student discussion on primary research papers, wrote and evaluated short answer questions about comparative physiology concepts, nominated for Teaching award 2 years in a row.

2015 **Teaching assistant, Biology 2601**

Led physiology wet labs, gave feedback on and evaluated student research papers,

2015 **Teaching assistant, Biology 1002 (Introductory biology)**

Led writing tutorials, evaluated student short answer assignments about introductory biology concepts.

Beat Your Course, London, Ontario, Canada

2016-2017 **Biology exam prep course developer and instructor**

Developed review packages for first year biology courses and taught basic biological concepts to 100 students at a time to enhance their comprehension of course material, wrote 200 comprehension-based multiple choice exam questions.

Mentoring

Independent undergraduate researcher mentor (University of California Berkeley)

Developed experimental design skills, trained on wet lab techniques and data analysis, developed primary literature reading skills, provided extensive feedback on conference abstracts and presentations.

2023- Tomas Diaz and Isabella Ramsay, 1st and 2nd year Molecular Cell Biology Research Apprentices. Project: Development of RNA interference in wing polymorphic crickets.

2022 Mark Lacsamana, 4th year Integrative Biology student
Project: Artificial selection of a wing polymorphism in the variable field cricket, *Gryllus lineaticeps*, co-author on a poster presentation at a national conference.

2022 Mumin Sabha, 4th year Integrative Biology student
Project: Gene expression profiling of flight muscle histolysis in the variable field cricket, *Gryllus lineaticeps*

Honour's student mentor (University of Western Ontario)

Developed experimental design skills, trained on wet lab techniques and data analysis, provided extensive feedback on written documents (proposal, thesis, conference abstract) and presentations.

- 2019-2020 Claire Baragar, **now an MSc student at McMaster University**
Thesis: "*Mitochondrial function after freezing in freeze-tolerant crickets*", Presented at Ontario Biology Day 2019 and Entomological Society of Ontario 2019.
- 2018-2019 Peter Denezis, **now an MD student at the University of Western Ontario**
Thesis: "*Does knocking down Parkin affect metabolic suppression and mitochondrial breakdown during diapause in the Colorado potato beetle?*", presented at Ontario Biology Day 2019, Canadian Society of Zoologists Annual Meeting 2019 and co-author on a publication.
- 2017-2018 Lamees Mohammad, **now a PhD student at the University of Western Ontario**
Thesis: "*Expression of mitophagy-related genes during diapause in the Colorado potato beetle*", Presented at Ontario Biology Day 2018 and co-author on a publication.

Honour's student advisory committee member (University of Western Ontario)

Examined a proposal defense and thesis, provided extensive feedback on written proposal and final thesis.

- 2018-2019 Emma Barbu, **now a consultant.**
- 2019-2020 Jameela Joseph, **now an MSc student at the University of Western Ontario.**
- 2019-2020 Carol Xin, **now a dental student.**
- 2020-2021 Anastassia Mena, **now a researcher at the Centre for Addiction and Mental Health.**

Undergraduate student intern mentees (University of Western Ontario)

Trained on wet lab techniques, developed critical thinking and experimental design skills.

- 2017-2018 Adam Smith, **now works as a medical associate at Bayer Pharmaceuticals.**
Projects: Tracking metabolic rate during diapause in the Colorado potato beetle,
Assessing the effects of thiacloprid on gene expression in *Drosophila melanogaster*.

Leadership

- 2018, 2019 **London Bug Day Chair**
Entomological Society of Ontario
Organized and executed London Ontario's annual "Bug Day", an outreach event with over 600 participants. Managed a committee of 20 volunteers, secured funding for the event and managed the budget, oversaw event marketing.
- 2016-2017 **Mustang Bioinformatics Club Finance officer**
University of Western Ontario
Maintained the club finances and balanced the budget. Organized and executed bioinformatics workshops for 100 graduate students.
- 2015-2016 **Society of Biology Graduate Students Chair**
University of Western Ontario

Managed 20 student representatives on 11 different student governing committees, administered finances and balanced the society budget, attended faculty meetings as a liaison between graduate students and faculty.

Outreach

- 2022 **Affinity group discussion facilitator**
University of California Berkeley, Integrative Biology “iBio Diversity workshop”
Facilitated discussions on diversity in academia with graduate students, postdocs and faculty members.
- 2022- **Organizer of Integrative Biology undergraduate research mixers**
University of California Berkeley
Organized and executed monthly events to engage discussion between prospective undergraduate researchers and graduate students/postdocs. Balanced the event budget.
- 2019 **Toronto junior naturalists field guide**
Toronto, Ontario, Canada
Led a hike through Toronto’s “Crother’s woods” to teach kids aged 5-12 about overwintering insects.
- 2016-2018 **“Boo-seum” insect outreach coordinator**
London Children’s Museum, London, Ontario, Canada
Organized and executed yearly insect and spider themed outreach events.
- 2016-2017 **Virtual researcher on call**
VROC, London, Ontario, Canada
Skype called classes grades K-12 to answer questions about biology.
- 2016 **Women in STEM expo volunteer**
University of Western Ontario
Ran live demonstrations on how to study insect cold tolerance and educated undergraduate attendees on how to pursue research.
- 2015 **Let’s Talk Science volunteer**
London, Ontario, Canada
Facilitated science outreach programs at the Boys and Girls club of London.

Media

- 2022 *PNAS* paper garnered national and international attention. Western’s press release was among the Top 3 most impactful media hits in July (<https://tinyurl.com/yu3thnxxm>), the article was featured in “Outside JEB” (<https://doi.org/10.1242/jeb.243523>), UK-based “New Scientist” magazine wrote a full length feature article on the research (<https://tinyurl.com/mpan99c2>), and I was interviewed on CBC across Canada (<https://tinyurl.com/435fu684>) and AM770 news in Alberta (<https://tinyurl.com/yxzd8w6z>) on how beetles regrow muscles on demand.

Jacqueline E. Lebenzon

- 2019 Interview on CBC London about organizing “London Bug Day” and insect outreach, <https://tinyurl.com/vjm72rn6>
- 2019 Interview on insect diapause and cold tolerance featured in the “Western Gazette”, <https://tinyurl.com/h7esy2xm>.
- 2018 Interview on research and communicating science featured on “Gradcast” podcast, <https://tinyurl.com/22tbsez4>.
- 2018 3 Minute Thesis competitor at University of Western Ontario <https://www.youtube.com/watch?v=uM63tGuj7ZU&t=123s>

Service

Peer Reviewing

American Journal of Physiology, Regulatory, integrative and comparative physiology
Comparative Biochemistry and Physiology A
Current Research in Insect Science
European Journal of Entomology
Functional Ecology
Journal of Experimental Biology
Journal of Thermal Biology
Peer J
PLoS Biology
Proceedings of the Royal Society B
Scientific Reports

Departmental Service

- 2017-2018 **Biology Graduate Education Committee**
Department of Biology, University of Western Ontario
Ranked student grad school and national scholarship applications, hosted grant proposal writing workshops for students.
- 2016-2017 **Social Committee**
Department of Biology, University of Western Ontario
Planned and executed all departmental fundraising and social events.
- 2015-2016 **Seminar Committee**
Department of Biology, University of Western Ontario
Coordinated weekly mixers with invited seminar speakers and grad students.
- 2015-2017 **Biology Graduate Research Forum conference organizing committee**
Department of Biology, University of Western Ontario
Organized graduate student-run conference.

University Service

- 2018-2019 **Principal biology student councilor**
Society of Graduate Students, University of Western Ontario

Jacqueline E. Lebenzon

Attended monthly meetings for the graduate student council at Western University, and acted as the principal liaison between the larger graduate student society and the department of biology.

2017-2019 **Social Committee**

Society of Graduate Students, University of Western Ontario

Planned and executed social events for all graduate students at UWO.

Society Service

2015-2016 **Canadian Society of Zoologists conference local organizing committee**

Canadian Society of Zoologists

Made and maintained the conference website, produced all marketing and promotional materials for the conference, ran day-to-day operations of the conference.

Professional membership

American Physiological Society

Canadian Society of Zoologists

Entomological Society of America

Entomological Society of Ontario

Society for Integrative and Comparative Biology

Professional references

Dr. Brent Sinclair (PhD Supervisor)

Professor

University of Western Ontario, Department of Biology

Email: bsincla7@uwo.ca Telephone: +1 519 661-2111 ext. 83138

Dr. James Staples (PhD Advisory Committee)

Professor

University of Western Ontario, Department of Biology

Email: jfstaple@uwo.ca Telephone: +1 519 661-2111 ext. 84057

Dr. Caroline Williams (Postdoctoral Advisor)

Associate Professor

University of California Berkeley, Department of Integrative Biology

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