

EWA BOMBA-WARCZAK, PhD

Department of Physiology
Perelman School of Medicine at the University of Pennsylvania
620 Clinical Research Building
415 Curie Boulevard
Philadelphia, PA 19104
ewa.bombwar@gmail.com
ORCID: [0000-0002-1744-3516](https://orcid.org/0000-0002-1744-3516)

CURRICULUM VITAE

(updated October 2024)

EDUCATION

- 2010 – 2016 **Ph.D. in Neuroscience**, University of Wisconsin – Madison
2006 – 2010 **B.S. in Biological Sciences** (w/honors), University of Illinois at Chicago

APPOINTMENTS

- Jan 2025 - **Assistant Professor** | University of Pennsylvania, Philadelphia, PA
Department of Physiology
- 2017 – 2024 **Postdoctoral Fellow** | Northwestern University, Chicago, IL
Department of Neurology, Laboratory of Dr. Jeffrey N. Savas
Combining stable isotope pulse chase labeling with mass spectrometry and biochemistry to investigate mitochondrial proteome and genome in mammalian brain.
- 2010 – 2016 **Graduate Research Assistant** | University of Wisconsin – Madison, Madison, WI
Department of Neuroscience/HHMI, Laboratory of Dr. Edwin Chapman
(1) Investigating entry, trafficking, sorting, and transcytosis of clostridial neurotoxins in neurons.
(2) Elucidating the role of synaptotagmin-17 in neuronal development, axon morphology, and neurodevelopmental disorders.
- 2008 – 2010 **Undergraduate Research Assistant** | University of Illinois at Chicago, Chicago, IL
Department of Biological Sciences, Laboratory of Dr. Teresa V. Orenic
Genetic and molecular mechanisms directing spatially defined expression of the Hox gene *Sex combs reduced* (*Scr*) in the *Drosophila melanogaster* adult leg along the anterior/posterior axes.

FUNDING

- 2023 – 2027 **MOSAIC K99/R00 Postdoctoral Career Transition Award to Promote Diversity – NIH/NINDS**
(K99NS126639-01) Northwestern University, PI: [Bomba-Warczak](#)
Title: Mitochondrial Fidelity in Mammalian Neurons
- 2018 – 2019 **Ruth. L. Kirschstein National Research Service Award (NRSA) – NIH/NINDS**
(F32NS106812-02) Northwestern University, PI: [Bomba-Warczak](#)
Title: Investigating the role of extremely long-lived mitochondrial proteins in mammalian neurons.

PUBLICATIONS

Complete list of publications:

<https://www.ncbi.nlm.nih.gov/myncbi/ewa.bomba-warczak.2/bibliography/public/>

1. **Bomba-Warczak E.**, Velez K., Zhou L., Guillermier C., Edassery S., Steinhauser M., Savas J., Duncan F. *Exceptional longevity of mammalian ovarian and oocyte macromolecules throughout the reproductive lifespan.* **eLife** 13:RP93172 <https://doi.org/10.7554/eLife.93172.1>
2. Ramirez MA, Ninoyu Y, Miller C, Andrade LR, Edassery S, **Bomba-Warczak E.**, Ortega B, Manor U, Rutherford MA, Friedman RA, Savas JN. *Cochlear ribbon synapse maturation requires Nlgn1 and Nlgn3.* **iScience**. 2022 Jul 20;25(8):104803. doi: 10.1016/j.isci.2022.104803
3. Pegg, C.E., Zaichick, S.V., **Bomba-Warczak, E.** et al. *Herpesviruses assimilate kinesin to produce motorized viral particles.* **Nature** 599, 662–666 (2021). doi.org/10.1038/s41586-021-04106-w
4. **Bomba-Warczak E.**, Savas JN. *Long-lived mitochondrial proteins and why they exist.* **Trends in Cell Biology**. 2022 Aug;32(8):646-654. doi: 10.1016/j.tcb.2022.02.001.
5. **Bomba-Warczak E.**, Hark TJ., Edassey SL., Savas JN. *Long-lived mitochondrial proteins in mouse heart and brain.* **J Cell Biol** (2021) 220 (9): e202005193; doi: 10.1083/jcb.202005193
6. Hark TJ, Rao NR, Castillon C, Basta T, Smukowski S, Bao H, Upadhyay A, **Bomba-Warczak E.**, Nomura T, O'Toole ET, Morgan GP, Ali L, Saito T, Guillermier C, Saido TC, Steinhauser ML, Stowell MHB, Chapman ER, Contractor A, Savas JN. *Pulse-Chase Proteomics of the App Knockin Mouse Models of Alzheimer's Disease Reveals that Synaptic Dysfunction Originates in Presynaptic Terminals.* **Cell Syst**. 2021 Feb 17;12(2):141-158.e9. doi: 10.1016/j.cels.2020.11.007
7. Ruhl DA, **Bomba-Warczak E.**, Watson ET, Bradberry MM, Peterson TA, Basu T, Frelka A, Evans CS, Briguglio JS, Basta T, Stowell MHB, Savas JN, Roopra A, Pearce RA, Piper RC, Chapman ER. *Synaptotagmin 17 controls neurite outgrowth and synaptic physiology via two distinct cellular pathways.* **Nat Comm**. 2019 Aug 6;10(1):3532. doi: 10.1038/s41467-019-11459-4.
8. **Bomba-Warczak E.**, Brittain JM, Vevea JD, Figueroa-Bernier A., Tepp WH, Johnson EA, Yeh FL, Chapman ER. *Direct visualization of interneuronal transfer and action of tetanus toxin and botulinum neurotoxins A and D.* **Cell Rep**. 2016 Aug 16;16(7):1974-87. doi: 10.1016/j.celrep.2016.06.104
*(research featured in TIME magazine cover article: <http://time.com/4623409>)
9. Hullinger R., Li M., Wang J., Peng Y., Dowell J., **Bomba-Warczak E.**, Mitchell H. Burger C., Chapman R., Denu J., Li L., Puglielli L., *Increased expression of AT-1/SLC33A1 causes an autistic-like phenotype by affecting dendritic branching and spine formation.* **J Exp Med**. 2016 Jun 27;213(7):1267-84. doi: 10.1084/jem.20151776
10. Beetz C, Johnson A, Schuh AL, Thakur S, Varga RE, Fothergill T, Hertel N, **Bomba-Warczak E.**, Thiele H, Nürnberg G, Altmüller J, Saxena R, Chapman ER, Dent EW, Nürnberg P, Audhya A. *Inhibition of TFG function causes hereditary axon degeneration by impairing endoplasmic reticulum structure.* **Proc Natl Acad Sci U S A**. 2013 Mar 26;110(13):5091-6. doi: 10.1073/pnas.1217197110
11. Dean C., Dunning M., Lui H., **Bomba-Warczak E.**, Martens H, Bharat V, Ahmed S, Chapman ER. *Axonal and dendritic synaptotagmin isoforms revealed by pHluorin-syt functional screen.* **Mol Biol Cell**. 2012 May;23(9):1715-27. doi: 10.1091/mbc.E11-08-0707

SERVICE

Key contributions:

2021-present **Founder and organizer MITOchats**, an initiative to provide graduate students and postdoctoral fellows with a platform to share their research with broad audiences through monthly virtual seminars. **MITOchats** is a **MITOtalk** spinoff created in 2021 as a response to lack of in-person scientific meetings due to the pandemic, which contributed to disruptions in career transitioning

of trainees around the globe. Due to the success thus far, *MITOtalks* continue to host scientists, with its fourth season currently scheduled for Fall 2023.

2021-present **Organizer**, *MitoWomen*, an initiative aimed at making women working on mitochondria research more visible, contributing to equality and diversity in the field.

Other contributions:

- 2024 **Panelist**, Northwestern University Postdoctoral Association (NUPA), Professional Development Committee, Panel on NIH K99/R00. Northwestern U, Chicago IL
- 2023 **Task Force**: Abstract Programming Committee for Cell Bio 2023: Organelles and Membrane Biology.
- 2023 **Panelist**, NIH Blueprint D-SPAN Career Development Event: Mechanisms to transition postdocs to independence, BrainTrust Initiative, UCLA
- 2021 **Trainee**, Inclusive STEM Teaching Project: course designed to advance the awareness, self-efficacy, and the ability of faculty, postdocs, and doctoral students to cultivate inclusive STEM learning environments for all their students and to develop themselves as reflective, inclusive practitioners. Northwestern U.
- 2012 – 2016 **Teacher**, Precollege Enrichment Opportunity Program for Learning Excellence (PEOPLE) Program, UW – Madison
An instructor of neuroscience for a residential summer school program aimed at drawing young precollege high school students from disadvantaged or historically underrepresented backgrounds into STEM careers.
- 2011 – 2016 **Instructor and co-organizer**, Neuroscience Training Program Outreach, UW – Madison
Led and co-organized bimonthly outreach visits to local middle schools to present various neuroscience activities with a goal to engage and interest young students in STEM careers.

AWARDS and HONORS

- 2023 Leading Edge Symposium Fellow, HHMI/Janelia Farm
- 2023 MOSAIC Postdoctoral Career Transition Award to Promote Diversity (K99/R00)
- 2021 Elevator Pitch Competition Finalist, NU Postdoctoral Association
- 2018 – 2019 Ruth. L. Kirschstein National Research Service Award (F32)
- 2018 Jerzy Rose Award (most outstanding graduate thesis in Neuroscience, UW-Madison)
- 2015 Travel Award - The long and winding road: Neuronal Trafficking in Physiology and Disease, Janelia Farm HHMI conference, Ashburn VA
- 2010, '11, '13 Neuroscience Training Program Grant Fellow (T32-GM007507; UW-Madison)
- 2010 B.S. in Biological Sciences awarded with Honors (University of Illinois at Chicago)
- 2006 – 2010 Dean's List (University of Illinois at Chicago)

INVITED and SELECTED TALKS

- 2024 **Center for Women's Health and Reproductive Medicine**, University of Pennsylvania, Philadelphia, PA
- 2024 **Mitochondria Interest Group**, ASBMB Annual Meeting, San Antonio TX
- 2024 **Reproductive Aging Conference**, Cancun, Mexico
- 2023 **Department of Biochemistry and Molecular Biophysics**, Washington University in St. Louis, St. Louis MO
- 2023 **Metabolism and Nutritional Programming Seminar**, Van Andel Institute, Grand Rapids, MI
- 2023 **Department of Physiology**, Perelman School of Medicine, Univ. of Pennsylvania, Philadelphia, PA

- 2023 **Future Leaders in Biochemistry and Biophysics Symposium**, Department of Biochemistry and Biophysics, Perelman School of Medicine, Univ. of Pennsylvania, Philadelphia, PA
- 2023 **Neuroscience 2023 (SfN): Nanosymposium** Washington, D.C.
- 2023 **NEXT – Talks for the Future Generations**, Polish American Youth Council and The Consulate General of the Republic of Poland in Chicago, Chicago, IL
- 2023 **Post-Doc Rising Stars Symposium: Neurobiology Session**, University of Utah, Salt Lake City, UT
- 2023 **ACB Seminar Series**, Department of Anatomy and Cell Biology, University of Iowa, Iowa City, IA
- 2023 **NIH Blueprint D-SPAN Career Development Event: Mechanisms to transition postdocs to independence**, BrainTrust Initiative, UCLA (via zoom)
- 2023 **Leading Edge Symposium**, Janelia Farm HHMI conference, Ashburn, VA
- 2023 **Rising Stars in Metabolism Symposium**, Van Andel Institute, Grand Rapids, MI
- 2023 **Keystone Mitochondrial Dysfunction: From Ultra-Rare Diseases to Aging**, Breckenridge, CO
- 2023 **US HUPO: MS and Non-MS Strategies for Structural Biology**, Chicago, IL
- 2022 **Mitochondria Interest Group**, ASBMB Annual Meeting; (declined)
- 2021 **UCLA Mitochondria Symposium**; UCLA, Los Angeles, CA
- 2021 **3rd Annual Simpson Querrey Institute for Epigenetics Symposium**, Chicago, IL
- 2021 **MITOchat Online Seminar Series** (Online)
- 2017 **Interdepartmental Neuroscience Program (NUIN) Retreat**, NU, Chicago, IL
- 2015 **Janelia Farm / HHMI conference: The long and winding road: Neuronal Trafficking in Physiology and Disease**, Ashburn, VA

POSTER PRESENTATIONS

- 2024 **Symposium for Structural Proteomics**, Boston , MA
- 2023 **Cell Bio 23: ASCB and EMBO meeting**, Boston, MA
- 2023 **Keystone Mitochondrial Dysfunction: From Ultra-Rare Diseases to Aging**, Breckenridge CO
- 2019 **Society for Neuroscience (SfN) Conference**, Chicago IL,
- 2019 **American Society for Mass Spectrometry Conference**, Atlanta GA,
- 2019 **Gordon Research Conference: Mitochondria in Health and Disease**, Ventura CA,
- 2018 **American Society for Mass Spectrometry Conference**, San Diego CA,
- 2015 **Janelia Farm HHMI conference: The long and winding road: Neuronal Trafficking in Physiology and Disease**, Ashburn VA,
- 2015 **Neuroscience Research Symposium**, Madison WI
- 2010 **UIC Student Research Forum Presentation**, Chicago IL,

TEACHING EXPERIENCE

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|-------------|-----------------------|--|
| 2012 – 2016 | Instructor | Neuroscience Segment for PEOPLES Program, UW-Madison |
| 2010 – 2016 | Volunteer, Instructor | Neuroscience Outreach Program, UW-Madison, |
| 2016 | Volunteer, Instructor | Brain Awareness Week Campaign, Madison, WI |
| 2008 | Teaching Assistant | Honors College, University of Illinois at Chicago |

MENTORING

Thesis Committee Member

Karen Velez, MS; (2020-2022) Master of Science in Reproductive Science and Medicine Program (MS-RSM) at Northwestern University, advisor: Francesca E. Duncan, PhD (current position: PhD student, Cell and Molecular Biology, University of Chicago).

Graduate Research Mentor

Emily Dexter (Northwestern University, 2024; NUIN graduate student at NU)

Elly Yeom (Northwestern University, 2024; NUIN graduate student at NU)
James Coy-Dibley (Northwestern University, 2019; NUIN graduate student at NU)
Andrew Fleming (Northwestern University, 2019; NUIN graduate student at NU)
Nalini Rao, MS (Northwestern University, 2019; NUIN graduate student in Savas lab at NU)
Andrew Sheldon (UW-Madison, 2011; Clinical Fellow; Yale Child Study Center)
Alex Rodriguez (UW-Madison, 2011; Associate Research Scientist at PPD)
Jack Hunt (UW-Madison, 2014; Resident Physician, UCSD Department of Psychiatry)

Undergraduate Research Mentor

Natalia Jackowski (Marquette University, Summer 2023)
Jeremy Bernstein (Northwestern University, Summer 2022)
David Graykowski (Northwestern University, 2019-2020; PhD Student at UCL, UK)
Lap-Heng Keung (Northwestern University, 2017-2018; MD student at Medical College of Wisconsin)
Emma Watson (UW-Madison, 2015-2016; graduate student at UW-Madison)
Rasa Valiagua (UW-Madison, 2012-2014; MD/PhD Candidate at Loyola Stritch School of Medicine-Chicago)

Research Technician Mentor

Anika Wilen (Northwestern University, 2022 – present)
Natalia Khalatyan (Northwestern University, 2017-2019; GDP graduate student at NU)
Kamil Gebis (Northwestern University, 2022 – present)
Cecilia Flores (Northwestern University, 2023 – present)
Sam Smukowski (Northwestern University, 2016-2018; Graduate student at University of Washington)

SOCIETIES AND MEMBERSHIPS

Society for Neuroscience (2017 – present)
American Society for Cell Biology (2022 – present)
American Society for Biochemistry and Molecular Biology (2023-present)