

Elizabeth M Waters

EDUCATION

1988-1994 University of Wisconsin – Madison, B.S. in Molecular Biology and East Asian Studies
 1998-2003 Oregon Health and Science University, Ph.D. in Neuroscience
 2003-2008 Postdoctoral Training, The Rockefeller University, Laboratory of Neuroendocrinology

POSITIONS HELD

1995-1998 Research Assistant, Department of Biology, University of Wisconsin-Milwaukee
 1995-1997 Teaching Assistant, Department of Biology, University of Wisconsin-Milwaukee
 2005-2006 Preceptor, Department of Neurobiology, Weill Cornell Medical College
 2009-2014 Research Associate, Laboratory of Neuroendocrinology, The Rockefeller University
 2010-2012 Adjunct Professor, Medical Laboratory Sciences Program, Hunter College
 2013 Adjunct Professor, Department of Biology, Stern College for Women
 2015-2017 Lead Scientist, Science Outreach Program, The Rockefeller University
 2017-2018 Community Partnership Manager, Iridescent Learning (currently Technovation)
 2018-2020 Associate Director, STEM Outreach, The Cooper Union
 2021 Adjunct Professor, The Cooper Union Albert Nerken School of Engineering
 2021-2024 Director, STEM Outreach, The Cooper Union
 2024- Managing Director MakerSpace, Co-Director Experiential Learning Center, New York University Tandon School of Engineering

CONTRIBUTIONS TO HIGH IMPACT STEM EDUCATION AND OUTREACH

2009-2015 Brain Awareness Week, K-8 Brain Fairs in NYC schools. Co-organized with Department of Neuroscience, Weill-Cornell Medical College and The Rockefeller University
 2016-2017 WORM SCHOOL, Introduction for basic science research for NYC public high school students in collaboration with Dr. Shai Shaham, project lead, The Rockefeller University
 2018 The Cooper Union Diversity and Inclusion Task Force, Committee member
 2018 Summer STEM symposia, “Expressing your work through video” Jackson Bird, transgender activist, The Cooper Union
 2018 Summer STEM symposia, “Design and Identity” Ari Melenciano, founder of Afrotectopia, The Cooper Union
 2019 Summer STEM symposia, “Augmented Reality for Activism” Glenn Cantave, founder of Movers and Shakers, Inc., The Cooper Union
 2019 “OUR BRAIN ON AI”, Panel discussion for Cooper Union neighbors and NYC middle and high school students, teachers and families featuring Jennifer Strong, Tara Chkvolski, Alexandra Ochoa Cohen, Karen Palmer, & Susan L Epstein, The Cooper Union
 2019 American Society for Engineering Education Mid-Atlantic Conference, The Cooper Union, Co-organizer
 2019-2021 “Mentoring diverse teams” workshop for STEM educators, The Cooper Union
 2020 “Community of Microbes”, an augmented reality exhibition exploring microbiology by Amanda Phingbodhipakkiya, curator, The Cooper Union
 2021 “The impacts of culture, identity and neurodiversity on communications” Summer STEM Instructor Training developed and facilitated with Quad Preparatory School, The Cooper Union

2021	"The Happiness Experience", an introduction to neuroscience exhibit by the New York Hall of Science, consultant
2022	"Black Housing Project", an interactive exhibition by DIVAS for Social Justice, curator, The Cooper Union
2023, 2024	Breakthroughs Conference for twice exceptional students, collaboration with <u>Quad Preparatory School</u> , The Cooper Union

PROFESSIONAL ACTIVITIES

Professional and Community Service:

2009- 2012	Neuroendocrinology Seminar Coordinator, The Rockefeller University
2011-present	Girl Scout Troop Leader, Girl Scouts of Greater New York
2013- 2014	Summer Undergraduate Research Fellows committee, The Rockefeller University
2013-2018	Institutional Animal Care and Use Committee Member, The Rockefeller University
2014-2015	Professional development educator, Neurobiology and physiology laboratories for middle and high school teachers, Math for America
2014-2019	Master Teacher screening committee member, Math for America
2015-2022	Executive committee member, BraiNY, The Greater New York Society for Neuroscience Chapter
2016-2017	Organizer, RockEdu Family Science programs, The Rockefeller University
2017	Teacher Trainer, civic engagement tools for elementary students, Inquiring Minds
2018	Title IX Investigator Certification, The Cooper Union
2018-2020	Social Justice in STEM Education Working Group Member, NYC STEM Education Network
2018-present	Board member, <u>Inquiring Minds Institute</u>
2020-2024	Research Partnership Manager, <u>STEM Pathways for Underrepresented Students to Higher Ed (PUSH) Network</u> , University of Pittsburgh
2021-2023	Steering Committee member, <u>NYC STEM Education Network</u>
2022-2023	Family Engagement Working Group Co-chair, NYC STEM Education Network
2023-2024	Co-Chair and founding member STEM PUSH Network Steering Committee, University of Pittsburgh
2024-	Board Member, <u>College & Community Fellowship</u>

Trainees:

Undergraduate:

Jolanta Gorecka, (2012-2014) Barnard College (entered Medical School)
Grace Mahoney, (2013) Harvard University

High school:

Sanoara Mazid (2008-2014) ER Murrow High School, Brooklyn, NY (entered Medical School)
Anatasia Bonner (2013), St. John's Preparatory School, Queens, NY (entered Medical School)
Fay Wong (2021) Townsend Harris High School, Queens, NY

Thesis Committee member:

Austin Wong (2019) Masters of Engineering, The Cooper Union

Research Supervisor:

Joanna Spencer (2006-2009) Rockefeller University, New York, NY

Fumio Soeda (2013), Kumamoto University, Kumamoto, Japan

Manuscript and grant review service:

Ad Hoc manuscript reviewer for *Brain Research*, *Neuroscience Letters*, *Neurobiology of Learning and Memory*, *Endocrinology*, *J. of Neuroendocrinology*, *Synapse*, *Physiology and Behavior*, Wellcome Trust

GRANTS, AWARDS, AND FELLOWSHIPS

1994-1995	Research Fellowship, Department of Zoology, University of Wisconsin – Madison
2006	Moody Foundation Research Fellowship, Portland, OR
2009	The Rockefeller University Center for Clinical and Translation Studies Pilot Project, Developing non-human models of menopause. Role: PI
2011-2013	NIA R21 BDNF-Estrogen Interactions with Perimenopausal Mood and Cognition, Role: PI
2014-2016	Dana Foundation: Brain Awareness Week Lending Library. Role: PI
2015	The Rockefeller University Center for Clinical and Translation Studies Pilot Project, Engaging high school students in basic science research. Role: PI
2017	TED Residency: “We are All Scientists”
2019-2020	The Cooper Union Grant Program: Precollege student teacher training grant. Role: Co-PI
2020	Cross Ridge Foundation Grant, STEM Outreach Program for High School Students - Teaching Fellows Program
2020	Hyde & Watson Foundation: Implementing virtual reality teaching tools for in person and virtual learning (Instrumentation grant)
2021	Cross Ridge Foundation Grant: Service Scholars Program for High School Students

INVITED STEM EDUCATION AND NEUROSCIENCE ADDRESSES

1. Waters, EM (2007) Rapid and long-term effects of estrogen on synaptic plasticity. Presented at the Department of Biological Sciences seminar series, Marquette University, Milwaukee, WI.
2. Waters, EM (2008) Estrogen's role in sex differences in the brain, Presented at Barnard College, New York, NY.
3. Waters, EM (2012) Humanized rodent models of aging, Presented to the Comparative Bioscience Center staff seminar, The Rockefeller University, New York, NY.
4. Waters, EM (2013) A lifetime of estrogen. Presented at the Department of Biology seminar series, Stern College, New York, NY.
5. Waters, EM (2016) Best practices for teaching STEM in communities of color. Presented as a panel member at the Digital Citizens Lab, New York, NY.
6. Waters, EM (2019) Teaching and mentoring high school students in out-of-school learning experiences, Presented to the Human Oncology and Pathogenesis Program, Memorial Sloan Kettering Cancer Center, New York, NY.
7. Waters, EM (2019) Careers for Scientists Panel, Presented as a panel member at the NYU Neuroscience Institute seminar series, New York, NY
8. Waters, EM (2020) Technology and Social Justice, Presented as a panel member at the Bank Street Faculty Conference, Bank Street School for Children, New York, NY.

STEM EDUCATION CONFERENCE PRESENTATIONS

1. Boothryd, C and Waters EM. (2015) Building a collaborative student/teacher/scientist enterprise. International Teacher Scientist Partnership Meeting, San Francisco, CA.

2. Garbarino J, Cohen A, Waters EM. Expanding your professional marketability through science outreach. (2015) Presented at the American Association for the Advancement of Science Annual Meeting, San Jose, CA
3. Leinberger-Jabari A, Waters EM, Khan Y, Garbarino J. (2015) Evaluating critical thinking skills and creating a collaborative learning community. Translational Science Annual Meeting, Washington D.C.
4. Waters, EM, Wallace S, Shaham S. (2015) Worm School: A collaborative research project engages high school students in authentic research. Society for Neuroscience Abstracts, 22.01, Chicago, IL
5. Waters EM, Wallace S, Shaham S. (2016) Worm School: Collaborative research with high school students. American Association for the Advancement of Science Annual Meeting, Washington D.C.
6. Waters EM, Woodson J. (2019) Work in Progress: Developing curriculum to support engineering college and career awareness and planning for high school students in out-of-school STEM programs. American Society for Engineering Education Zone 1 Annual Meeting, Niagara, NY.
7. Wong A, Waters EM, Delagrammatikas G. (2019) Using Human Centered Design to Drive Project Based Learning in a High School Summer STEM Course. American Society for Engineering Education Annual Meeting, Orlando, FL.
8. Giglia M, Waters EM. (2019) Makerspace curriculum development for high school student. American Society for Engineering Education Mid-Atlantic Annual Meeting, New York, NY.
9. Waters EM. (2019) Spatial visualization skills improve in high school students after learning to use the 3D drawing software Onshape in an engineering enrichment program. American Society for Engineering Education Mid-Atlantic Annual Meeting, New York, NY.
10. Dela-O'Connor L, Davis D, Patton A, Waters EM. (2020) Forwarding Equity and Justice in STEM through Culturally Sustaining Program Practices. STEM Learning Ecosystem Community of Practice Convenings Oct 19-20, 2020, Virtual.
11. Waters EM. (2022) Inclusive practices for STEM classrooms. Breakthroughs in Twice-Exceptional Futures Annual Conference, New York, NY.

NEUROSCIENCE CONFERENCE PRESENTATIONS

1. Waters EM, Ibanez MA, Simerly RB. (2000) Caspase mediated cell death and sexual differentiation of dopaminergic neurons in the AVPV of the rat hypothalamus. Society for Neuroscience Annual Meeting, Abstract 121.5.
2. Waters EM, Simerly RB. (2003) Estrogen mediated programmed cell death during development of a sexually dimorphic nucleus. Society for Neuroscience Annual Meeting, Abstract 33.5.
3. Waters EM, Herrick SP, McEwen, BS, Milner TA. (2005) Subcellular localization of progesterin receptor in the rat hippocampus Society for Neuroscience Annual Meeting, Abstract, 403.12.
4. Bulloch K, Spencer JL, Waters EM, Croft G, McEwen BS. (2005) Neuronal characterization of a mouse hippocampal cell line. Society for Neuroscience Annual Meeting, Abstract 940.7.
5. Waters EM, Milner TA, McEwen BS. (2005) Estrogen effects on hippocampal synaptic plasticity. Society for Behavioral Neuroendocrinology Annual Meeting, Austin, TX.
6. Waters EM, Spencer JL, Bloss EB, McEwen BS. (2006) Role of estrogen and progesterone in regulation of hippocampal presynaptic and postsynaptic molecules. Society for Neuroscience Annual Meeting, Abstract 659.11.
7. Waters EM, Romeo RD, Spencer JL, Bloss EB, McEwen BS. (2006) Regulation of hippocampal synaptic proteins by estrogen receptor agonists. Society for Behavioral Neuroendocrinology Annual Meeting, Pittsburgh, PA,
8. Waters EM, Mitterling KL, Spencer JL, McEwen BS, Milner TA. (2007) Estrogen receptor agonists, DPN and PPT, alter synaptophysin immunoreactivity in the hippocampus. Society for Neuroscience Annual Meeting, Abstract 625.2.

9. Waters EM, McCarthy KJ, Milne TA, Hunter RG, Allis CD, McEwen BS. (2008) Acute and sub-chronic estrogen or progesterone differentially regulate histone modifications. Society for Neuroscience Annual Meeting, Abstract 279.6.
10. McCarthy KJ, Waters EM, Hunter RG, Romeo RD, McEwen BS. (2008) Stress-induced changes hippocampal phospho-Lim kinase. Society for Neuroscience Annual Meeting, Abstract 187.22.
11. Wagner CK, Gonzales, KL, Milner, TA, McEwen, BS, Waters EM (2009) Transient expression of progesterone receptor in the developing dentate gyrus: A light and electron microscopic study. Society for Neuroscience Annual Meeting, Abstract 771.5.
12. Waters EM, McCarthy, KJ, McEwen, BS. (2009) Sex differences and gonadal steroid regulation of membrane progesterone receptors. Society for Neuroscience Abstracts, 771.6.
13. Goh J, Kauzner U, Vecchiarelli, H, Miller J, Waters E, McEwen, BS, Bulloch K. (2009) Co-localization of pTrkB and EYFP(+)bDC in fiber tracts and neurogenic areas. Society for Neuroscience Annual Meeting, Abstract 852.2.
14. Van Kempen, TA, Milner, TA, Waters, EM. (2010) Neuroinflammation and neurodegeneration in Accelerated Ovarian Failure: A novel mouse model of menopause. Society for Neuroscience Annual Meeting, Abstract 186.13.
15. Chapeau JD, Williams TJ, Waters EM, Thompson LI, Milner TA. (2010) Interactions between sex and acute stress on levels of phosphorylated mu opioid receptor-immunoreactivity in the rat hippocampus. Society for Neuroscience Annual Meeting, Abstract 186.12.
16. Khalid S, Chapeau JD, Williams TJ, Schierberl K, Guarjardo HM, Waters EM, Milner TA. (2010) Acute immobilization stress alters the subcellular distribution of mu opioid receptor immunoreactivity in hippocampal parvalbumin-containing interneurons of female rats. Society for Neuroscience Annual Meeting, Abstract 186.11.
17. Polston EK, Powell, NL, Gharehdaghi P, Manaye KF, Sobrian, S, Waters EM. (2011) Effects of prenatal exposure to valproic acid on serotonergic and noradrenergic projections to the amygdala in rats. Society for Neuroscience Annual Meeting, Abstract 151.4.
18. Gonzales, KL Willing J, Milner TA, McEwen BS, Wagner CK, Waters EM. (2011) Transient expression of progesterone receptors in the developing dentate gyrus may alter hippocampal dependent behaviors in adulthood. Society for Neuroscience Annual Meeting, Abstract 282.18.
19. Van Kempen TA, Waters EM, Milner TA. (2011) Slow pressor Angiotensin II-induced hypertension in the Accelerated Ovarian Failure mouse model of menopause Society for Neuroscience Annual Meeting, Abstract 283.09.
20. Milner TA, Marrone GF, Williams TJ, Schierberl KC, Waters EM, McEwen, BS, Gonzales KL. (2011) Chronic stress alters mu opioid receptor trafficking in parvalbumin-containing neurons in the female rat hippocampus. Society for Neuroscience Annual Meeting, Abstract 325.07.
21. Kauzner U, Vecchiarelli, HA, Goh, JL, Waters EM, McEwen BS, Bulloch K. (2011) Distribution and characterization of brain dendritic cells in the mouse pituitary Society for Neuroscience Annual Meeting, Abstract 926.10.
22. Waters EM (2011) Rapid estrogen signaling in the brain- implications for the fine-tuning of neural circuitry Society for Neuroscience Annual Meeting, Abstract 418.02.
23. Waters EM, Thompson LI, Patel P, Gonzales AD, Ye Z, Filardo EJ, Clegg DJ, Akama KT, McEwen BS, Milner TA. (2012) G protein-coupled estrogen receptor 1 (GPER1) is anatomically positioned to mediate synaptic plasticity in the mouse hippocampus. Society for Neuroscience Annual Meeting, Abstract 383.02.
24. Milner TA, Gonzalez AD, Wang G, Waters EM, Gonzales KL, Speth RC, Van Kempen, TA, Marques-Lopes J, Iadecola, C, Pickel, VM, Pierce JP. (2012) Distribution of angiotensin type 1a receptor containing cells in the brains of bacterial artificial chromosome transgenic mice. Society for Neuroscience Annual Meeting, Abstract 378.01.
25. Marques-Lopes J, Van Kempen, TA, Chatanf, P, Butler, SD, Young CN, Pickel, VM, Iadecola, C, Waters, EM, Davisson, RL, Miler TA. (2012) Changes in post-synaptic NMDA receptor trafficking in

the hypothalamic paraventricular nucleus are associated with an increased susceptibility to angiotensin-II hypertension in a mouse model of menopause. Society for Neuroscience Annual Meeting, Abstract 378.04.

26. Burstein SR, Williams TJ, Lane DA, Knudsen MG, Pickel VM, Waters EM, Milner TA. (2012) The influences of reproductive status and acute stress on the levels of phosphorylated delta opioid receptor immunoreactivity in rat hippocampus. Society for Neuroscience Annual Meeting, Abstract 899.14.
27. Waters EM, Soeda F, McEwen BS. Differential regulation of specific BDNF exons by sex and steroid treatment in the mouse dorsal hippocampus. (2013) Organization for the Study of Sex Differences Annual Meeting, Weehawken, NJ.
28. Waters EM, Zelli DA, Mazid S, McEwen BS, Nasca C. (2014) Young BDNFmet carrier mice show a positive effect to stress: Is such a positive effect lost with aging? Society for Neuroscience Annual Meeting, Abstract 79.04.
29. Waters EM, McEwen BS, Nasca C. (2014) Young BDNFmet carrier mice show a positive effect to stress: Is such a positive effect lost with aging? Society for Neuroscience Annual Meeting, Abstract, 79.04.

PEER REVIEWED PUBLICATIONS AND CHAPTERS (NCBI Bibliography)

1. Miao YS, Waters EM, Witten JL. (1998) Developmental and regional specific expression of FLRFamide peptides in the tobacco hornworm, *Manduca sexta*, suggests function at ecdysis. *Journal of Neurobiology*. 37(3): 469-85.
2. Morton, D. B., Hudson ML, Waters EM, O' Shea M. (1999) Soluble guanylyl cyclases in *Caenorhabditis elegans*: NO is not the answer. *Current Biology*. 9(15): R546-47.
3. Zup SL, Carrier H, Waters EM, Tabor A, Bengston L, Rosen GJ, Simerly RB, Forger NG. (2003) Overexpression of BCL-2 reduces sex differences in neuron number in the brain and spinal cord. *Journal of Neuroscience*. 23(6): 2357-62.
4. Forger NG, Rosen, GJ, Waters EM, Jacob D, Simerly RB, De Vries GJ. (2004) Deletion of eliminates sex differences in the mouse forebrain *Proc. Natl. Acad. Sci.* 101: 1366- 13671.
5. Romeo RD, Waters EM, McEwen BS. (2005) Steroid-induced hippocampal synaptic plasticity: sex differences and similarities. *Neuron Glia Biology*. 1:219-229.
6. Herrick SP, Waters EM, Drake CT, Alves SE, McEwen BS, Milner TA. (2006) Extranuclear estrogen receptor beta immunoreactivity is on doublecortin-containing cells in the adult and neonatal rat dentate gyrus. *Brain Research*. 112(1): 46-58.
7. Bloss EB, Hunter RG, Waters EM, Bernard K, McEwen BS. (2008) Behavioral and biological effects of chronic AMPA receptor modulation during aging. *Experimental Neurology*. 210(1): 109-17.
8. Bulloch K, Miller MM, Gal-Toth J, Milner TA, Gottfried-Blackmore A, Waters EM, Kaunzner UW, Liu K, Lindquist R, Nussenzweig, MC, Steinman RM, McEwen BS. (2008) CD11c/EYFP trans-gene illuminates a discrete network of dendritic cells within the embryonic, neonatal, adult, and injured mouse brain. *Journal of Comparative Neurology*. 508(5):687-710.
9. Spencer JL, Waters EM, Romeo RD, Wood GE, Milner TA, McEwen BS. (2008) Uncovering the mechanisms of Estrogen Effects on Hippocampal Function. *Frontiers in Neuroendocrinology*. 29(2):219-37.
10. Torres-Reveron A, Khalid S, Williams TJ, Waters EM, Drake CT, McEwen BS, Milner TA. (2008) Ovarian steroid modulate leu-enkephalin levels and target leu-enkephalinergic profiles in the female hippocampal mossy fiber pathway. *Brain Research*. 1232:70-84.
11. Milner TA, Drake, CT, Lessard A, Waters EM, Torres-Reveron A, Graustein B, Mitterling KL, Frys K, Iadecola C. (2008) Angiotensin II-induced hypertension differentially affects estrogen and

- progesterin receptors in central autonomic regulatory areas of female rats. *Experimental Neurology*. 212(2):393-406.
12. Wood GE, Norris EH, Waters EM, Stoldt JT, McEwen BS. (2008) Chronic immobilization stress alters aspects of emotionality and associative learning in the rat. *Behavioral Neuroscience*. 122(2): 282-92.
13. Spencer JL, Waters EM, Milner TA, McEwen BS. (2008) Estrous cycle regulates spatial memory and activation of hippocampal Akt, LIMK, and neurotrophin receptors in C57BL6 mice. *Neuroscience*. 155(4):1106-19.
14. Milner TA, Mitterling K, Iadecola C, Waters EM. (2008) Ultrastructural localization of extranuclear progesterin receptors relative to C1 neurons in the rostral ventrolateral medulla. *Neuroscience Letters*. 431(2):167-172.
15. Waters EM, Torres-Reveron AT, McEwen BS, Milner TA. (2008) Ultrastructural localization of extranuclear progesterin receptors in the rat hippocampal formation. *Journal of Comparative Neurology*. 511(1):34-46.
16. Torres-Reveron A, Williams TJ, Chapleau JD, Waters EM, McEwen BS, Drake CT, Milner TA. (2009) Ovarian steroids alter mu opioid receptor trafficking in hippocampal parvalbumin GABAergic interneurons. *Experimental Neurology*. 219(1):319-27.
17. Torres-Reveron A, Khalid S, Williams TJ, Waters EM, Jacome L, Luine VN, Drake CT, McEwen BS, Milner TA. (2009) Hippocampal dynorphin immunoreactivity increases in response to gonad I steroids and is positioned for direct modulation by ovarian steroid receptors. *Neuroscience*. 159(1):204-16.
18. Waters EM, Simerly RB. (2009) Estrogen induces caspase-dependent cell death during hypothalamic development. *Journal of Neuroscience*. 29(31):9714-8.
19. Waters EM, Mitterling KL, Spencer JL, Mazid S, McEwen BS, Milner TA. (2009) Estrogen receptor alpha and beta specific agonists regulate expression of synaptic proteins in rat hippocampus. *Brain Research*. 1290:1-11.
20. Milner TA, Thompson LI, Wang G, Kievits J, Martin E, McEwen BS, Pfaff DW, Waters EM. (2010) Cellular distribution of estrogen receptor beta expression in BAC transgenic mice. *Brain Research*. 1351:74-96.
21. Spencer JL, Waters EM, Milner TA, Lee FS, McEwen BS. (2010) BDNF variant Val66Met interacts with estrous cycle in the control of hippocampal function. *Proc. Natl. Acad. Sci*. 107:4395-4400.
22. Williams TJ, Mitterling KL, Thompson, LI, Torres-Reveron A, Waters EM, McEwen BS, Gore AC, Milner TA. (2011) Age- and hormone-regulation of opioid peptides and synaptic proteins in the rat dorsal hippocampal formation. *Brain Research*. 1379:71-85.
23. Spencer-Segal JL, Waters EM, Bath KG, Chao MV, McEwen BS, Milner TA. (2011) Distribution of phosphorylated TrkB receptor in the mouse hippocampal formation depends on sex and estrous cycle stage. *Journal of Neuroscience*. 31:6780-90.
24. Pfaff D, Waters EM, Khan Q, Zhang X, Numan M. (2011) Minireview: estrogen receptor-initiated mechanisms causal to mammalian reproductive behaviors. *Endocrinology*. 152:1209-17.
25. Waters EM, Yildirim M, Janssen WGM, Lou WYW, McEwen BS, Morrison JH, Milner TA. (2011) Estrogen and aging affect the synaptic distribution of estrogen receptor beta-immunoreactivity in the CA1 region of the female rat hippocampus. *Brain Research*. 1379:86-97.
26. Van Kempen TA, Milner TA, Waters EM. (2011) Accelerated ovarian failure: a novel, chemically induced animal model of menopause. *Brain Research*. 1379:176-87.
27. Gonzales KL, Chapleau JD, Pierce JP, Kelter DT, Williams TJ, Torres-Reveron A, McEwen BS, Waters EM and Milner TA. (2011) The influences of reproductive status and acute stress on the levels of phosphorylated mu opioid receptor immunoreactivity in rat hippocampus. *Frontiers in Endocrinology* 2:1-10.

28. Milner TA, Waters EM, Robinson DC, Pierce JP. (2011) Degenerating processes identified by electron microscopic immunocytochemical methods. *Methods Mol Biol.* 793:23-59.
29. Srivastava DP, Waters EM, Mermelstein PG, Kramár EA, Shors T J, and Liu F. (2011) Rapid estrogen signaling in the brain: implications for the fine-tuning of neuronal circuitry. *Journal of Neuroscience.* 31(45):16056-6.
30. Spencer-Segal JL, Tsuda MC, Mattei L, Waters EM, Milner TA, McEwen BS, and Ogawa S. (2012) Estradiol acts via estrogen receptors alpha and beta on pathways important for synaptic plasticity in the mouse hippocampal formation. *Neuroscience* 202:131-146.
31. McEwen, BS, Akama, KT, Spencer-Segal, JL, Milner, TA, and Waters, EM. (2012) Estrogen effects on the brain: actions beyond the hypothalamus via novel mechanisms. *Behavioral Neuroscience* 126:4-16.
32. Milner TA, McEwen BS, and Waters EM. (2013) Estrogen effects on hippocampal synapses. In: Structure of the Synapse, M. Segal and V.M. Pickel (book Eds.) and J. Johnson (Series Ed) Neuroscience-net. 1st Edition, Chapter 7.
33. Gonzalez, AD, Wang, G, Waters, EM, Gonzales, KL, Speth, RC, Van Kempen, TA, Marques-Lopes, J, Young, CN, Butler, SD, Davisson, RL, Iadecola, C, Pickel, VM, Pierce, JP, Milner, TA. (2012) Distribution of angiotensin type 1a receptor containing cells in the brains of bacterial artificial chromosome transgenic mice. *Neuroscience.* 13;226:489-509.
34. Coleman CG, Wang G, Faraco G, Marques Lopes J, Waters EM, Milner TA, Iadecola C, Pickel VM. (2013) Membrane trafficking of NADPH oxidase p47(phox) in paraventricular hypothalamic neurons parallels local free radical production in angiotensin II slow-pressor hypertension. *Journal of Neuroscience.* 6;33(10):4308-16.
35. Milner TA, Burstein SR, Marrone GF, Khalid S, Gonzalez AD, Williams TJ, Schierberl KC, Torres-Reveron A, Gonzales KL, McEwen BS, Waters EM. (2013) Stress differentially alters mu opioid receptor density and trafficking in parvalbumin-containing interneurons in the female and male rat hippocampus. *Synapse.* 67(11):757-72.
36. Van Kempen TA, Khalid S, Gonzalez AD, Spencer-Segal JL, Tsuda MC, Ogawa S, McEwen BS, Waters EM, Milner TA. (2013) Sex and estrogen receptor expression influence opioid peptide levels in the mouse hippocampal mossy fiber pathway. *Neuroscience Letters.* 552:66-70.
37. Pierce JP, Kelter DT, McEwen BS, Waters EM, Milner TA. (2014) Hippocampal mossy fiber leu-enkephalin immunoreactivity in female rats is significantly altered following both acute and chronic stress. *Journal of Chemical Neuroanatomy.* 55:9-17.
38. Marques-Lopes J, Van Kempen T, Waters EM, Pickel VM, Iadecola C, Milner TA. (2014) Slow-pressor angiotensin II hypertension and concomitant dendritic NMDA receptor trafficking in estrogen receptor beta-containing neurons of the mouse hypothalamic paraventricular nucleus are sex and age dependent. *Journal of Comparative Neurology.* 522(13):3075-90.
39. Van Kempen TA, Gorecka J, Gonzalez AD, Soeda F, Milner TA, Waters EM. (2014) Characterization of neural estrogen signaling and neurotrophic changes in the accelerated ovarian failure mouse model of menopause. *Endocrinology.* 155(9):3610-23.
40. Waters EM, Thompson LI, Patel P, Gonzales AD, Ye H, Filardo EJ, Clegg D, Gorecka J, Akama KT, McEwen BS, Milner TA. (2015) G protein-coupled estrogen receptor 1 (GPER1) is anatomically positioned to mediate synaptic plasticity in the mouse hippocampus. *Journal of Neuroscience.* 35(6):2384-97.
41. Marques-Lopes J, Lynch MK, Van Kempen TA, Waters EM, Wang G, Iadecola C, Pickel VM, Milner TA. (2015) Female protection from slow-pressor effects of angiotensin II involves prevention of ROS production independent of NMDA receptor trafficking in hypothalamic neurons expressing angiotensin 1A receptors. *Synapse.* 69(3):148-65.
42. Hara Y, Waters EM, McEwen BS, Morrison JH (2015) Estrogen effects on cognitive and synaptic health over the lifecourse. *Physiological Reviews.* 95(3):785-807.

43. Van Kempen TA, Narayan A, Waters EM, Marques-Lopes J, Iadecola C, Glass MJ, Pickel VM, Milner TA. (2016) Alterations in the subcellular distribution of NADPH oxidase p47(phox) in hypothalamic paraventricular neurons following slow-pressor angiotensin II hypertension in female mice with accelerated ovarian failure. *Journal of Comparative Neurology*: 524(11):2251-65
44. Mazid S, Hall BS, Odell SC, Stafford K, Dyer AD, Van Kempen TA, Selegue J, McEwen BS, Waters EM, Milner TA. (2016) Sex differences in subcellular distribution of delta opioid receptors in the rat hippocampus in response to acute and chronic stress. *Neurobiology of Stress*: 5:37-53
45. Marques-Lopes J, Tesfaye E, Israilov S, Van Kempen TA, Wang G, Glass MJ, Pickel VM, Iadecola C, Waters EM, Milner TA. (2017) Redistribution of NMDA Receptors in Estrogen-Receptor- β -Containing Paraventricular Hypothalamic Neurons following Slow-Pressor Angiotensin II Hypertension in Female Mice with Accelerated Ovarian Failure. *Neuroendocrinology*: 104(3):239-256
46. Newell AJ, Lalitsasivimol D, Willing J, Gonzales K, Waters EM, Milner TA, McEwen BS, Wagner CK. (2018) Progesterone receptor expression in cajal-retzius cells of the developing rat dentate gyrus: Potential role in hippocampus-dependent memory. *Journal of Comparative Neurology*: 526(14):2285-2300.
47. McAlinn HR, Reich B, Contoreggi NH, Kamakura RP, Dyer AG, McEwen BS, Waters EM, Milner TA. (2018) Sex Differences in the Subcellular Distribution of Corticotropin- Releasing Factor Receptor 1 in the Rat Hippocampus following Chronic Immobilization Stress. *Neuroscience*: 383:98-113.
48. Waters EM, Mazid S, Dodos M, Puri R, Janssen WG, Morrison JH, McEwen BS, Milner TA. (2019) Effects of estrogen and aging on synaptic morphology and distribution of phosphorylated Tyr1472 NR2B in the female rat hippocampus. *Neurobiology of Aging*: 73:200-210.
49. Ovalles AC, Contoreggi NH, Marques-Lopes J, Van Kempen TA, Iadecola C, Waters EM, Glass MJ, Milner TA. (2019) Plasma Membrane Affiliated AMPA GluA1 in Estrogen Receptor β -containing Paraventricular Hypothalamic Neurons Increases Following Hypertension in a Mouse Model of Post-menopause. *Neuroscience*: 423:192-205.
50. Contoreggi NH, Mazid S, Goldstein LB, Park J, Ovalles AC, Waters EM, Glass MJ, Milner TA. (2020) Sex and age influence gonadal steroid hormone receptor distributions relative to estrogen receptor β -containing neurons in the mouse hypothalamic paraventricular nucleus. *Journal of Comparative Neurology*. 529(9):2283-2310.
51. Rubin BR, Johnson MA, Berman JM, Goldstein E, Pertsovskaya V, Zhou Y, Contoreggi NH, Dyer AG, Gray JD, Waters EM, McEwen BS, Kreek MJ, Milner TA. (2020) Sex and chronic stress alter delta opioid receptor distribution within rat hippocampal CA1 pyramidal cells following behavioral challenges. *Neurobiology of Stress*. 13:100236.
52. Crain de Galarce P, Galarce Crain T, Holland DK, Waters EM. (2021) Grow Good Citizens: Educating for Civic Hearts and Minds in a Complex Democracy. *Oregon Journal for the Social Studies*. 9(1):43-51.