

Megan M. Mahoney

Associate Professor

University of Illinois
Department of Comparative Biosciences 3639
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EDUCATION

Ph.D. 2003
Dual degrees in Zoology and Ecology, Evolutionary Biology and Behavior (EEBB)
Michigan State University

Bachelor of Arts in Biology 1995
Bates College (1993-1995)
Smith College (1991-1993)

EDUCATION

Associate Professor 2016-current
University of Illinois
Comparative Biosciences, Program in Neuroscience

Assistant Professor 2008-2016
University of Illinois
Comparative Biosciences, Program in Neuroscience

Assistant Research Scientist 2006-2008
University of Michigan
Department of Psychology

Postdoctoral Research Fellow 2005-2006
University of Michigan
Toxicology Program
Department of Pediatrics
Advisor: Dr. Vasantha Padmanabhan

Postdoctoral Research Fellow 2003-2005
University of Michigan
Reproductive Sciences Program
Department of Psychology
Advisor: Dr. Theresa Lee

Graduate Assistant 1997-2003
Michigan State University
Department of Zoology, Psychology
Advisor: Dr. Laura Smale

Research Assistant

1995-1997

*The Children's Hospital**Harvard Medical School*

Joint Program in Neonatology

Supervisor: Dr. Kenneth Huttner

HONOR AND RECOGNITIONS

Dr. Gordon and Mrs. Helen Kruger All-Round Excellence Award	2020
Arnold O. Beckman Award for Research Excellence, University of Illinois	2012
Research Academy Member, College of ACES,	2012
University of Illinois: 2 semester intensive program for junior faculty	
Arnold O. Beckman Award for Research Excellence, University of Illinois	2008
Young Investigator Award, Society for Behavioral Neuroendocrinology	2006
National Research Service Award	2005-2006
Environmental Toxicology Training Grant 5T32ES007062-23	
National Research Service Award	2003-2005
Reproductive Endocrinology Training Grant 5T32HD007048-32	
Conference on Neural Control of Behavior full travel award	2004
Graduate School dissertation completion fellowship	2002
Vessa Notchev Fellowship from Graduate Women in Science	2002
NIMH-Society for Behavioral Neuroendocrinology travel award	2001
Society for Research on Biological Rhythms student travel award	1998
EEBB Program Michigan State University, Research Award	1997-2002
Zoology Department Michigan State University, Research Award	1997-2002
College of Natural Sciences Recruiting Fellowship	1997

RESEARCH SUPPORT

1R01ES032163-01 J. Flaws (PI), I. Bagchi (PI), M. Mahoney (PI) 8/17/2020-5/31/2024

NIH

Gender and sex differences in phthalate-induced toxicity in the reproductive system
 This project examines the mechanisms by which a phthalate mixture impacts male and female reproductive physiology and behaviors.

Center for Social and Behavioral Science Small Grant Program, University of Illinois at Urbana Champaign

M. Mahoney (lead PI), C. Davies (Co-PI), J. Flaws (Co-I) and R. Smith (Co-I) 7/31/2020-7/31/2021

Companion Animal Research Grant Program

1/2020-12/2020

The Association of Urinary Phthalate Metabolites with Feline Hyperthyroidism
 \$9,312

Role: PI

Carle Illinois Collaborative Research Seed Funding Program 8/2017-8/2021
Impact of hormonal changes and environmental chemicals on sleep disruptions in a population of menopausal women
\$50,000
Role:PI

University of Illinois Campus Research Board 1/2013-12/2013
Arnold O. Beckman Award: This project determined the developmental period when estradiol modifies circadian rhythms
\$23,244
Role:PI

University of Illinois Campus Research Board 1/2011-12/2012
This project determined the role of ovarian hormones on the development and expression of circadian rhythms
\$9,250
Role:PI

Morris Animal Foundation First Investigator Award 10/2010-10/2011
This research examines metabolic, immune and endocrine rhythms in cats housed in light:dark and constant light environments.
\$50,000
Role:PI

University of Illinois Campus Research Board 1/2011-12/2011
This research profiled miRNA expression in the hearts of mice which cannot produce estradiol (aromatase deficient) and wildtype animals
\$3,800
Role: Co-PI Bunick (PI)

University of Illinois Campus Research Board 9/2008
Arnold O. Beckman Award: To examine the role of estrogen in the regulation of vasoactive intestinal polypeptide receptor expression on gonadotropin releasing hormone neurons.
\$16,000
Role: PI

TEACHING AWARDS AND EXPERIENCE

Awards

Kuhlenschmidt Innovative Teaching Award Fall 2017
College of Veterinary Medicine

Dr. Erwin Small Teaching Excellence Award in Veterinary Medicine Spring 2016

Faculty Mentor for Teaching Fall 2012-current
Nominated to mentor faculty in their teaching careers College of Veterinary Medicine

Outstanding Instructor Award Spring 2012

Chicago Veterinary Medical Association

List of Teachers Ranked as Excellent

Every Fall and Spring

University of Illinois, must achieve a 4.4/5 pt scale 2010-current

Excellence-In-Teaching Citation

2003

University level award given to 6 graduate students (out of 7000+) each year
Michigan State University

Excellence-in-Teaching Citation

2003

Michigan State University
College of Natural Science

Service

Graduate College Executive Committee, UIUC

2020-current

Admissions Committee Chair, Neuroscience Program

2019-current

Executive Committee, Neuroscience Program

2019-current

Seminar Committee Chair, Neuroscience Program

2019-current

Director of Graduate Studies, Comparative Biosciences

2019-current

Chair, Educational Policy Committee, College of Veterinary Medicine

2019-2021

Educational Policy Committee, Department of Comparative Biosciences

2009-current

Educational Policy Committee, College of Veterinary Medicine

2009-2015, 2016-2021

Faculty Course Coordinator VM 602: Structure and Function I

2009-current

Faculty Course Coordinator VM 604: Structure and Function III

2017-current

Comparative Biosciences Department Seminar Coordinator (Spring)

2017-current

Structure and Function I, III: Neurobiology material

2009- current

University of Illinois Urbana Champaign Department
of Comparative Biosciences

College of Veterinary Medicine (130+ first year students) Every fall and spring semester since 2009

Structure and Function I: Clinical Correlations

2009-current

Graduate Research Mentor

Ongoing

University of Illinois Urbana Champaign

- 1 Ph.D. student finished 2012
- 1 Ph.D. student finished 2014
- 1 Ph.D. student finished 2020
- 1 Ph.D. student to finish 2022

Undergraduate Research Mentor

Ongoing

University of Illinois Urbana Champaign
Molecular and Cellular Biology, Comparative Biosciences, Integrative Biology and Animal Science
students (>20 total)

- Of 26 graduated students: 6 in medical school, 3 in veterinary school, 11 in graduate school

Summer Research Opportunity Program (SROP) Summer 2012, 2011, 2009
Undergraduate Research Advisor

- 3 students all matriculated to Ph.D programs

Merial Summer Research Training Program for Veterinary Students Summer 2013, 2012, 2009
Research Advisor

Biological Rhythms and Behavior Spring 2008, Fall 2006
University of Michigan
Dept. of Psychology (50 students)

Hormones and Behavior Spring and Fall 2007, Fall 2005
University of Michigan
Dept. of Psychology (50 students)

Animal Behavior Fall 2003
University of Michigan
Dept. of Psychology (150 students)

Animal Behavior Summer 2002
Michigan State University
Dept. of Zoology (50 students)

OUTREACH

Project NEURON 2010-2016
(Novel Education for Understanding Research on Neuroscience)
NSF SEPA funded project develops online interactive lessons, high school curricula, and professional development for participating high school teachers.

Brain Awareness Day 2012-current (Annually)
Interactive presentations on biological rhythms
Coordinator of Brain Awareness Day 2018, 2019

PUBLICATIONS

1. Hatcher KM, Smith RL, Chiang C, Li Z, Flaws JA, Mahoney MM. Associations of phthalate exposure and endogenous hormones with self-reported sleep disruptions: results from the Midlife Women's Health Study. *Menopause*. 2020. Epub 2020/08/03. doi: 10.1097/GME.0000000000001614. PubMed PMID: 32740484.

2. Balachandran RC, Hatcher KM, Sieg ML, Sullivan EK, Molina LM, Mahoney MM, Eubig PA. Pharmacological challenges examining the underlying mechanism of altered response inhibition and attention due to circadian disruption in adult Long-Evans rats. *Pharmacol Biochem Behav.* 2020;193:172915. Epub 2020/04/01. doi: 10.1016/j.pbb.2020.172915. PubMed PMID: 32224058.
3. Dailey, M.J. and M.M. Mahoney, Circadian Changes in Gut Peptide Levels and Obesity, in *Neurological Modulation of Sleep: Mechanisms and Function of Sleep Health*, R.R. Watson and V.R. Preedy, Editors. 2020, Academic Press.
4. Hatcher KM, Royston SE, Mahoney MM. Modulation of circadian rhythms through estrogen receptor signaling. *Eur J Neurosci.* 2020;51(1):217-28. Epub 2018/10/03. doi: 10.1111/ejn.14184. PubMed PMID: 30270552.
5. Hatcher, K. M., Willing, J., Chiang, C., Rattan, S., Flaws, J. A., & Mahoney, M. M. (2019). Exposure to di-(2-ethylhexyl) phthalate transgenerationally alters anxiety-like behavior and amygdala gene expression in adult male and female mice. *Physiol Behav*, 207, 7-14. doi: 10.1016/j.physbeh.2019.04.018
6. Hatcher, K. M., & Mahoney, M. M. 2018. Circadian Rhythms-Male. In M. K. Skinner (Ed.), *Encyclopedia of Reproduction* (Vol. 1, pp. 436-441): Academic Press.
7. Smith, R. L., Flaws, J. A., and Mahoney, M. M. 2018. Factors associated with poor sleep during menopause: results from the Midlife Women's Health Study. *Sleep Med*, 45, 98-105.
8. Robertson AL, Balachandran RC, Mahoney MM, Eubig PA. 2017. Circadian disruption affects initial learning but not cognitive flexibility in an automated set- shifting task in adult Long-Evans rats. *Physiol Behav* 179:226-234
9. Royston SE, Bunick D, Mahoney MM. 2016. Oestradiol exposure early in life programs daily and circadian activity rhythms in adult mice. *Journal of Neuroendocrinology* 28(1).
10. Blattner MS, Mahoney MM. 2015. Changes in estrogen receptor signaling alters the timekeeping system in male mice. *Behav Brain Res* 294:43-49.
11. Royston, S. E., A. G. Kondilis, S. V. Lord, N. Yasui, J. A. Katzenellenbogen and M. M. Mahoney. 2014. ESR1 and ESR2 differentially regulate daily and circadian activity rhythms in female mice. *Endocrinology* 155(7): 2613-2623.
12. Blattner, M. S. and M. M. Mahoney. 2014. Estrogen receptor 1 modulates circadian rhythms in adult female mice. *Chronobiology International* 31(5): 637- 644
13. Ayelet Ziv-Gal, A. Flaws, J.A., Mahoney, M., Miller, S.R, Zacur, H.A. and L. Gallicchio. 2013. Genetic polymorphisms in the AHR signaling pathway and CLOCK may be associated with sleep disturbances in midlife women. *Sleep Medicine* 14(9) 883-7
14. Blattner, M. and M. Mahoney. 2013 Phase response curve and cellular activation in response to light-pulse in the suprachiasmatic nucleus of two strains of mice with impaired

responsiveness to estrogens. *Journal of Biological Rhythms* 28(4), 291-300.

15. Blattner, M. and M. Mahoney. 2012. Circadian parameters are altered in two strains of mice with transgenic modifications of estrogen receptor subtype 1. *Genes, Brain and Behavior*. 11(7), 828-36.
16. Steinberg, G. Byron, J. and M. Mahoney. 2012. A retrospective study of circadian and seasonal presentations of dogs with congestive heart failure: 119 cases (1997-2009). *Journal of Veterinary Emergency and Critical Care*. 22(3): 341-6. Doi: 10.1111/j.1476-4431.2012.00748.x.
17. Colby, L.A., H.G. Rush, Mahoney, M, and T.M. Lee, *The Degu*, in *The Laboratory Rabbit, Guinea Pig, Hamster and Other Rodents*, M. Suckow, R.P. Wilson, and K.A. Stevens, Editors. 2012, Elsevier.
18. Mong, J.A., Baker, F.C., Mahoney, M.M., Paul, K.N., Schwartz, M.D., Semba, K., Silver, R. 2011, Sleep, rhythms, and the endocrine brain: influence of sex and gonadal hormones. *J Neurosci*. 31, 16107-16.
19. Brockman, R., Bunick, D. and M. Mahoney. 2011. Estradiol deficiency during development modulates the expression of circadian and daily rhythms in male and female aromatase knockout mice. *Hormones and Behavior*. 60(4), p. 439- 47.
20. Mahoney, M.M. Rossi, B.V, Hagenauer, M. H. and T. Lee. 2011. Characterization of the estrous cycle in *Octodon degus*. *Biology of Reproduction*. 84(4):664-71.
21. Mahoney, M.M. and V. Padmanabhan. 2010. Developmental programming: Impact of fetal exposure to endocrine disrupting chemicals on gonadotropin- releasing hormone and estrogen receptor mRNA in sheep hypothalamus. *Toxicology and Applied Pharmacology*. 247(2):98-104.
22. Mahoney, M.M. 2010. Shift work, jet lag, and female reproduction. *International Journal of Endocrinology*. Epub 2010 March 8.
23. Mahoney, M.M., Ramanathan, C., Hagenauer, M.H. Thompson, R. Lee, T., and L. Smale. 2009. Daily rhythms and sex differences in vasoactive intestinal polypeptide, VIPR2 receptor, and arginine vasopressin mRNA in the suprachiasmatic nucleus of a diurnal rodent, *Arvicanthis niloticus*. *European Journal of Neuroscience*. 30(8): 1537-43.
24. Mahoney, M.M., Smale L., and T. Lee. 2009. Daily immediate early gene expression in the suprachiasmatic nucleus of male and female *Octodon degus*. *Chronobiology International*. 26(5): 821-83.
25. Gorton, L.M., Mahoney, M.M., Magorien, J.E., Lee, T.M. and R.I. Wood. 2009. Estrogen receptor immunoreactivity in late-gestation fetal lambs. *Biology of Reproduction*. 80(6): 1152-1159.
26. Mahoney, M.M., Ramanathan, C. and L. Smale. 2007. Tyrosine hydroxylase positive neurons and their contacts with vasoactive intestinal peptide-containing fibers in the hypothalamus of the diurnal murid rodent, *Arvicanthis niloticus*. *Journal of Chemical Neuroanatomy*. 33:131-139.

27. Hummer, DH, Jechura T., Mahoney, M.M., and T. Lee. 2007. Gonadal Hormone Effects on Entrained and Free-Running Circadian Activity Rhythms in the Developing Diurnal Rodent, *Octodon degus*. *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology*. 292(1):R586-597.
28. Jechura, T.J., Mahoney, M.M., Stimpson, C.D. and T. Lee. 2006. Odor specific effects on reentrainment following phase advances in the diurnal rodent *Octodon degus*. *American Journal of Physiology: Regulatory, Integrative and Comparative Physiology*. 292(6):R1808-1816.
29. Mahoney, M.M. and L. Smale. 2005. Arginine vasopressin and vasoactive intestinal polypeptide fibers make appositions with gonadotropin releasing hormone and estrogen receptor cells in the diurnal rodent *Arvicanthis niloticus*. *Brain Research*. 1049:156-164
30. Mahoney, M.M. and L. Smale. 2005. A daily rhythm in mating behavior in a diurnal murid rodent *Arvicanthis niloticus*. *Hormones and Behavior*. 47:8-13
31. Lee, T.M., Hummer, D.L., Jechura, T.J and Mahoney, M.M. 2004. Pubertal Development of Sex Differences in Circadian Function: an Animal Model. *New York Academy of Sciences*, 1021:262-275.
32. Mahoney, M. M., C. L. Sisk, Ross, H. E. and L. Smale. 2004. Circadian regulation of gonadotropin-releasing hormone neurons and the preovulatory surge in luteinizing hormone in the diurnal rodent, *Arvicanthis niloticus*, and in a nocturnal rodent, *Rattus norvegicus*. *Biology of Reproduction*, 70(4):1049-54.
33. Mahoney, M. M. 2003. Sex, surges and circadian rhythms: the timing of reproductive events in a diurnal rodent. *Zoology*. East Lansing, Michigan State University: 111.
34. Nunes, S., McElhinny, T.L., Mahoney, M.M., and L. Smale. 2002. Effects of photoperiod on the reproductive condition of Nile grass rats from an equatorial population. *African Journal of Ecology*, 40:295-302.
35. Mahoney, M.M., Bult, A., and L. Smale. 2001. Phase response curve and light induced Fos expression in the suprachiasmatic nucleus and adjacent hypothalamus of *Arvicanthis niloticus*. *Journal of Biological Rhythms*, 16(2):149- 162.
36. Mahoney, M.M., Nunez, A.A., and L. Smale. 2000. Calbindin and Fos within the suprachiasmatic nucleus and the adjacent hypothalamus of *Arvicanthis niloticus* and *Rattus norvegicus*. *Neuroscience*, 99(3):565-575.
37. Blanchong, J., McElhinny, T.L., Mahoney, M.M., and L. Smale. 1999. Nocturnal and diurnal rhythms in the unstriped Nile rat, *Arvicanthis niloticus*. *Journal of Biological Rhythms*, 14: 364-377.
38. Rose, S. Novak, C., Mahoney, M.M., Nunez, A. and, L. Smale. 1999. Fos expression within vasopressin-containing neurons in the suprachiasmatic nucleus of diurnal compared to nocturnal rodents. *Journal of Biological Rhythms*, 14:37-46.
39. Huttner, KM, Brezinski-Caliguri, DJ, Mahoney, M.M., and G. Diamond. 1998.

Antimicrobial expression is developmentally regulated in the ovine gastrointestinal tract. *Journal of Nutrition*, 128 (2 suppl.) 297S-299S