

Department of Biology  
100 South Road, CB 3280  
University of North Carolina  
Chapel Hill, NC 27599 USA

sburmeister@unc.edu  
919-843-5105 (office)  
www.burmeisterlab.org



## Education

---

2001-2005	NRSA Postdoctoral Research Fellow, Stanford University (advisor: RD Fernald)	
2001	University of Texas, Neuroscience (advisor: W Wilczynski)	Ph.D.
1994	New College of Florida, Biology	B.A.

## Professional Experience

---

2022-present	Professor of Biology, University of North Carolina	
2017-2021	Director of Faculty Diversity Initiatives, College of Arts and Sciences, University of North Carolina	
2015-2017	Associate Chair for Diversity, Dept. of Biology, University of North Carolina	
2012-2021	Associate Professor of Biology, University of North Carolina	
2006-2011	Assistant Professor of Biology, University of North Carolina	
2005	Research Assistant Professor of Biology, University of North Carolina	

## Honors

---

2015	University Research Council Award	
2010	University Research Council Award	
2009	UNC Junior Faculty Development Award	
2002	Ruth Kirschstein National Research Service Award, NIH	
2002	Outstanding Doctoral Dissertation Award (Honorable Mention), University of Texas Graduate school	
2000	Grants-in-Aid of research, Society for Integrative and Comparative Biology	
2000	Student Poster Award (Honorable Mention), Society for Integrative and Comparative Biology	
2000	Travel Award, Society for Behavioral Neuroendocrinology	
2000	Professional Development Award, University of Texas Graduate School	
1999	Professional Development Award, University of Texas Graduate School	

1999	University Co-Operative Society Fellowship, University of Texas Graduate School
1998	Best Student Paper, Society for Integrative and Comparative Biology
1998	A. M. Wenner Strong Inference Award, Society for Integrative and Comparative Biology
1997	Professional Development Award, University of Texas Graduate School
1994	Grant-in-Aid of Research, Sigma Xi

## Publications

---

### Book Chapters

- Burmeister SS. 2019. Neuroethology: Methods. In Encyclopedia of Animal Behavior, 2nd Edition (Jae Choe, ed). Elsevier.
- Wilczynski W, Burmeister SS. 2016. Effects of Steroid Hormones on Hearing and Communication in Frogs. In: Springer Handbook of Auditory Research: Hearing and Hormones. (A. Bass, J. Sisneros, A. Popper, & R. Ray, eds).
- Burmeister SS. 2010. Modern Methods in Neuroethology. In Encyclopedia of Animal Behavior (M. Breed & J. Moore, eds). Elsevier.

### Refereed Publications (published, in press, or accepted)

- Khatiwada S, Burmeister SS. 2021 Quantity discrimination in a poison frog. *Animal Cognition*. in press.
- Burmeister SS, Rodriguez Moncalvo VG, Pfennig KS. 2020 Differential encoding of signals and preferences by noradrenaline in the anuran brain. *Journal of Experimental Biology*, 223, jeb214148.
- Liu Y, Jones CD, Day LB, Summers K, Burmeister SS. 2020 Cognitive phenotype and differential gene expression in a hippocampal homologue in two species of frogs. *Integrative and Comparative Biology*, 60:1007-1023.
- Liu Y, Day LB, Summers K, Burmeister SS. 2019. A cognitive map in a poison frog. *Journal of Experimental Biology*, 222: jeb197467.  
Highlighted as JEB's "Editor's Choice"  
Covered by: Inside JEB, National Geographic online, Cosmos, Earth.com, etc.
- Ventura RE, Liu Y, Burmeister SS. 2019. Reconsidering sex differences during place learning in the túngara frog. *Current Zoology*, 65:317-321.
- Burmeister SS, Rodriguez Moncalvo VG, Pfennig KS. 2017. Monoaminergic integration of diet and social cues in the brains of juvenile spadefoot toads. *Journal of Experimental Biology*, 220: 3135-3141.
- Burmeister SS. 2017. Neurobiology of mate choice in frogs: auditory filters and valuation. 2017. *Integrative and Comparative Biology*, 57(4):857-864. (invited paper)
- Liu Y, Burmeister SS. 2017. Sex differences in associative learning in the túngara frog. *Animal Behaviour* 128:61-67.
- Liu Y, Day LB, Summers K, Burmeister SS. 2016. Learning to learn: advanced behavioural flexibility in a poison frog. *Animal Behaviour* 111:167-172.
- Chakraborty M, Burmeister SS. 2015. Effects of estradiol on neural responses to social signals in female túngara frogs. *Journal of Experimental Biology* 218:3671-3677.

- Garcia NW, Pfennig KS, **Burmeister SS**. 2015. Leptin manipulation reduces appetite and causes a switch in mating preference in the Plains spadefoot toad. *PLoS One*. 10(4): e0125981.
- Pfennig KS, Rodriguez Moncalvo VG, **Burmeister SS**. 2013. Diet alters ontogeny of species recognition in juvenile toads. *Biology Letters* 9:20130599.
- Rodriguez Moncalvo VG, **Burmeister SS**, Pfennig KS. 2013. Social signals increase monoamine levels in the tegmentum of juvenile Mexican spadefoot toads (*Spea multiplicata*). *Journal of Comparative Physiology A* 199:681-691.
- Mangiamele LA, **Burmeister SS**. 2011. Auditory selectivity for acoustic features that confer species recognition in the túngara frog. *Journal of Experimental Biology* 214:2911-2918.

Covered by: Inside JEB

- Arch VS, **Burmeister SS**, Feng AS, Shen J-X, Narins PM. 2011. Ultrasound-evoked immediate early gene expression in the brainstem of the Chinese torrent frog, *Odorrana tormota*. *Journal of Comparative Physiology A* 197:667-675.
- \*Chakraborty M, \*Mangiamele LA, **Burmeister SS**. 2010. Neural activity patterns in response to interspecific and intraspecific variation in mating calls in the túngara frog. *PLoS One* 5(9):e12898. \*authors contributed equally
- Chakraborty M, **Burmeister SS**. 2010. Sexually dimorphic androgen and estrogen receptor mRNA expression in the brain of túngara frogs. *Hormones and Behavior* 58:619-627.
- Mangiamele LM, \*Thomson CJ, Lebonville CL, **Burmeister SS**. 2010. Characterization of the plasticity-related gene, *Arc*, in the frog brain. *Developmental Neurobiology* 70:813-825. \*undergraduate author
- Burmeister SS**, Munshi RG, Fernald RD. 2009. Cytoarchitecture of a cichlid fish telencephalon. *Brain, Behavior and Evolution* 74:110-120.
- Chakraborty M, **Burmeister SS**. 2009. Estradiol induces sexual behavior in female túngara frogs. *Hormones and Behavior* 55:106-112.
- Mangiamele LA, **Burmeister SS**. 2008. Acoustically evoked immediate early gene expression in the pallium of female túngara frogs. *Brain, Behavior and Evolution* 72(3):239-250.
- Burmeister SS**, Mangiamele LA, Lebonville CL. 2008. Acoustic modulation of immediate early gene expression in the auditory midbrain of female túngara frogs. *Brain Research*, 1190:105-114.
- Burmeister SS**. 2007. Genomic responses to behavioral interactions in an African cichlid fish: mechanisms and evolutionary implications. *Brain, Behavior and Evolution* 70:247-256. (invited paper)
- Harbott LK, **Burmeister SS**, White RB, Vagell M, Fernald RD. 2007. Androgen receptors in the cichlid fish *Astatotilapia burtoni*: Structure, localization and expression levels. *Journal of Comparative Neurology* 504:57-73.
- Burmeister SS**, \*Kailasanath V, Fernald RD. 2007. Social dominance regulates expression of androgen and estrogen receptor genes. *Hormones and Behavior* 51:164-170. \*undergraduate author
- Burmeister SS**, Jarvis ED, Fernald RD. 2005. Rapid behavioral and genomic responses to social opportunity. *Public Library of Science Biology* 3(11):1996-2004.
- Burmeister SS**, Fernald RD. 2005. Evolutionary conservation of the egr-1 immediate-early gene response in a teleost. *Journal of Comparative Neurology* 481(2):220-232.
- Burmeister SS**, Wilczynski W. 2005. Social signals regulate gonadotropin-releasing hormone neurons in the green treefrog. *Brain, Behavior and Evolution* 65:26-32.
- Hoke KL, **Burmeister SS**, Fernald RD, Rand AS, Ryan MJ, Wilczynski W. 2004. Functional mapping of the auditory midbrain during mate call reception. *Journal of Neuroscience* 24(50):11264-11272.

- Kime NM, **Burmeister SS**, Ryan MJ. 2004. Female preferences for socially variable call characters in the cricket frog (*Acris crepitans*). *Animal Behaviour* 68:1391-1399.
- Burmeister SS**, \*Ophir A, Ryan MJ, Wilczynski W. 2002. Information transfer during cricket frog contests. *Animal Behaviour* 64:715-725. \*undergraduate author
- Burmeister S**, Wilczynski W. 2001. Social context influences androgenic effects on calling in the green treefrog (*Hyla cinerea*). *Hormones and Behavior* 40:550-558.
- Burmeister S**, Somes C, Wilczynski W. 2001. Behavioral and hormonal effects of exogenous arginine vasotocin and corticosterone in the green treefrog. *General and Comparative Endocrinology* 122:189-197.
- Burmeister S**, Wilczynski W. 2000. Social signals influence hormones independently of calling behavior in the treefrog (*Hyla cinerea*). *Hormones and Behavior* 38(4): 201-209.
- Burmeister S**, \*Konieczka J, Wilczynski W. 1999. Agonistic encounters in a cricket frog (*Acris crepitans*) chorus: behavioral outcomes vary with local competition and within the breeding season. *Ethology* 105:335-347. \*undergraduate author
- Burmeister S**, Wilczynski W, Ryan MJ. 1999. Temporal call changes and prior experience affect graded signalling in the cricket frog. *Animal Behaviour* 57:611-618.
- Burmeister S**, Couvillon PA, Bitterman ME. 1995. Performance of honeybees (*Apis mellifera*) in analogues of the rodent radial maze. *Animal Learning & Behavior* 23(4): 369-375.

### Other Non-refereed Publications

- Burmeister SS**, Liu Y. 2020. Integrative and comparative cognition: can neurobiology and neurogenomics inform comparative analyses of cognitive phenotype? *Integrative and Comparative Biology*, 60:925-928.
- Burmeister SS**. 2005. Sex differences in the brain: plasticity and constraints. Focus on: Androgen-induced vocal transformation in adult female African clawed frogs. *Journal of Neurophysiology* 94:33-34.
- Burmeister, SS**. 2001. Behavioral Neuroendocrinology of the Green Treefrog (*Hyla cinerea*). Doctoral Dissertation. University of Texas at Austin.

## Grants and Awards

---

### Active Awards

Duration	Title	Source, total costs	Role
2022-2024	<i>MCA: Functional genomics of spatial memory</i>	NSF \$382,770	PI, 18% effort

### Completed Awards

Duration	Title	Source, total costs	Role
2019-2020	<i>Interdisciplinary research and training in the life sciences: molecular neurobiology of parental care</i>	UNC System, \$74,997	co-PI, 33% effort
2005-2011	<i>Neural biases for elaborate male traits</i>	NSF, \$708,999	PI, 33% effort

2009-2010	<i>Neuroendocrine regulation of female sexual behavior in túngara frogs</i>	NSF, DDIG, \$12,397	PI
2002-2004	<i>Neural circuit for social control of reproduction</i>	Postdoctoral NRSA, NINDS, \$125,496	PI, 100% effort

#### Supplementary Awards

2009	NSF Research Experience for Undergraduates Supplementary Award, \$6,000	PI
2008-2009	NSF Research Experience for Teachers Supplementary Award, \$14,675	PI

#### *Pending Awards*

<b>Duration</b>	<b>Title</b>	<b>Source, total costs</b>	<b>Role</b>
2022-2026	<i>Frognition: Genetic and Neural Mechanisms of Memory in Poison Frogs</i>	NSF, \$1,688,679	PI

## Teaching

#### *Courses Taught (previous 3 years)*

Fall 2020	Biol 801; Faculty Success Program, graduate seminar; 8 graduate students
Summer 2020	Biol 455; Behavioral Neuroscience, 18 undergraduates
Spring 2020	Biol 455; Behavioral Neuroscience, 43 undergraduates
Fall 2019	Biol 801; Faculty Success Program, graduate seminar; 5 graduate students
Summer 2019	Biol 455; Behavioral Neuroscience, 14 undergraduates
Spring 2019	Biol 455; Behavioral Neuroscience, 42 undergraduates
Fall 2018	Biol 690; Animal Cognition, 10 undergraduate and graduate students
Summer 2018	Biol 455; Behavioral Neuroscience, 18 undergraduates
Spring 2018	Biol 455; Behavioral Neuroscience, 53 undergraduates

#### *Graduate Students Supervised*

Cody Sorrell	2018-present	
Sunil Khatiwada, M.A.	2018-2020	Quantity discrimination in poison dart frogs ( <i>Dendrobates auratus</i> )
Robert Ventura, M.A.	2016-2018	Sex differences in cue use during place learning in túngara frogs
Yuxiang Liu, Ph.D.	2010-2016	Comparative analyses of spatial cognition in frogs
Nicholas Garcia, M.A, Lisa Mangiamele, Ph.D.	2009-2014 2005-2010	Leptin's effects on amphibian sexual behavior Neural mechanisms of conspecific call recognition and female preferences in túngara frogs, <i>Physalaemus pustulosus</i>
Mukta Chakraborty, Ph.D.	2005-2010	Neuroendocrine regulation of female mate recognition behavior in túngara frogs

## Service

---

### ***Professional Service to Discipline***

Associate Editor, Encyclopedia of Animal Behavior, 2nd Edition (Jae Choe, Editor-in-Chief), 2019, Elsevier.

#### Ad Hoc Reviewer

Grants: National Science Foundation, National Fellowship Committee for Graduate Women in Science

Journals: *Biology Letters*; *Journal of Comparative Physiology A*; *American Naturalist*; *Scientific Reports*; *PLoS One*; *Comparative Biochemistry and Physiology*; *Journal of Experimental Biology*; *Journal of Experimental Zoology Part A: Ecological Genetics and Physiology*; *Frontiers in Neuroendocrinology*; *PLoS Biology*; *Hormones and Behavior*; *Philosophical Transactions of the Royal Society B: Biological Sciences*; *Behavioral Neuroscience*; *Journal of Neurophysiology*; *Journal of Comparative Neurology*; *Animal Behaviour*; *Integrative and Comparative Biology*; *Comparative Biochemistry and Physiology*; *Brain, Behavior and Evolution*; *Behavioral Ecology and Sociobiology*; *Ethology*; *Anatomical Record*, *Australian Journal of Zoology*; *Journal of Herpetology*; *Physiology and Behavior*; *Journal of Evolutionary Biology*; *Functional Ecology*.

Book Chapters: Anuran Communication (Michael J. Ryan, editor).

#### Grant Panel Member

2019, Reproduction, Andrology and Gynecology Study Section, National Institute for Child Health and Human Development

2015, Neural Systems Cluster, National Science Foundation

2008, Animal Behavior Program, National Science Foundation

2007, National Science Foundation, Doctoral Dissertation Improvement Grant Panel

#### Other Professional Service

Symposium organizer (2019-2020): Society for Integrative and Comparative Biology Program committee (2007-2010): J.B. Johnston Club

Program committee (2007): Frog Hearing and Acoustic Communication Satellite Meeting of the International Congress of Neuroethology.

### ***Professional Service Within UNC-CH***

Director of Faculty Diversity Initiatives (2017-present)

University Diversity Equity and Inclusion Council (2020-present)

Strategic Lead, *Carolina Next*, Building our Community Together (2020-present)

Diversity Liaison Task Force, Co-Chair (2015-2016)

Diversity Officer, Biology (2013-2015)

Diversity Liaison, Biology (2013-2017)

Equal Opportunity Officer, Biology (2013-2017)

#### Committees

Dean's Diversity Advisory Committee, College of Arts & Sciences (2017-present)

Undergraduate Admissions Advisory Committee (2012-2015)  
Faculty Development and Mentoring (Chair) (2013-2017)  
Chair's advisory committee (2008-2018)  
Department Space Committee (2010-2018)  
Executive Committee, UNC Neurobiology Curriculum (2008-2013)  
UNC-SPGRE Program, Biology Department representative (2006-2013)  
Search committee, Department Business Officer/Manager (Spring 2009)  
MCDB graduate admissions committee for BBSP (2007/2008)  
Quantitative biology committee (2007/2008)  
Undergraduate advising committee (2005/2006-2009/2010)  
Biology department graduate admissions committee (2005/2006; 2006/2007)  
Departmental seminar committee (2006/2007-2010/2011)  
Faculty secretary (Spring 2007)  
Faculty search committee for assistant professor (Spring 2007)