

Brandon C. Cox, Ph.D.

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Springfield, IL 62702

(217) 545-7351
bcox@siumed.edu

EDUCATION

2008 Ph.D., Pharmacology, Georgetown University, Washington, DC

1999 B.S. Biology, University of Richmond, Richmond, VA

PROFESSIONAL EXPERIENCE

2019 – present Director of the Pharmacology and Neuroscience Graduate Program,
Department of Pharmacology, Southern Illinois University School of
Medicine, Springfield, IL

2018 – present Associate Professor with Tenure, Department of Pharmacology, Southern
Illinois University School of Medicine, Springfield, IL

2018 – present Editorial Board Member, *Hearing Research*

2017 – present Consultant, Turner Scientific, LLC, Jacksonville, IL

2014 – present Cross appointment to the Department of Otolaryngology, Southern Illinois
University School of Medicine, Springfield, IL

2018 – 2019 Consultant, Otonomy, Inc., San Diego, CA

2013 – 2018 Assistant Professor, Department of Pharmacology, Southern Illinois University
School of Medicine, Springfield, IL

2008 - 2013 Postdoctoral Research Associate, St. Jude Children's Research Hospital,
Memphis, TN
Mentor: Jian Zuo, Ph.D.

2002 - 2008 Graduate Student, Georgetown University, Washington, DC
Dissertation Title: Neuronal Nicotinic Acetylcholine Receptors in the
Visual System.
Mentor: Kenneth J. Kellar, Ph.D.

2000 – 2002 Clinical Research Coordinator for psychiatric and neurological disorders,
Chicago Center for Clinical Research, Protocare Trials (currently known as
Radiant Research), Chicago, IL

1999 – 2000 Research Assistant, Chicago Center for Clinical Research, Protocare Trials
(currently known as Radiant Research), Chicago, IL

1997 – 1999 Undergraduate Research, University of Richmond, VA
Expression of heat shock proteins in the gorgonian, *Leptogorgia virgulata*

FUNDING

Active Research Support (by role)

W81XWH-22-1-0674 (Cox/Jacques) 8/2022 – 7/2025
Department of Defense
Title: Development of new therapies that stimulate hair cell regeneration
Role: Co-PI

R01 AG073151 (Cox/Walters) 8/2021 – 4/2026
NIA/National Institute on Aging
Title: The role of *Pou4f3* in age-related vestibular dysfunction
Role: Co-PI

Decibel Therapeutics, Inc. (Cox) 4/2021-10/2022
Title: Decibel Sponsored Research
Role: PI

W81XWH-19-1-0017 (D. Caspary, SIUSOM) 7/2019-7/2023
Department of Defense
Title: Nicotinic Receptor Pathology in Tinnitus: Auditory Cortex and Selective Desensitizing
Nicotinic Agents
Role: Co-investigator

R01 DC13771 (J. Stone, University of Washington) 4/2019 – 3/2024
NIH/National Institute on Deafness and other Communicative Disorders
Title: Fate acquisition and function of type I and II vestibular hair cells in mammals
Role: Co-investigator

R01 DC00151 (D. Caspary, SIUSOM) 12/2015-11/2022
NIH/National Institute on Deafness and other Communicative Disorders
Title: Coding in Auditory Neurons: Effects of Amino Acids
Role: Co-investigator

R01 MH129749 (B. Richardson, SIUSOM) 7/2022-6/2027
NIH/National Institute of Mental Health
Title: Cerebellar granule cell dysfunction in Shank3 mutant mice
Role: Consultant

ACADEMIC & PROFESSIONAL HONORS

2018 Rising Star in the 2018 class of Researchers to Know, Illinois Science and
Technology Coalition
2016 Invited speaker at the Gordon Research Conference on the Auditory System,
Bates College, Lewiston, ME
2016 Forty under 40 in Springfield, *Springfield Business Journal*, Springfield, IL

- 2016 Young Medical Innovator Award, Sangamon County Medical Society, Springfield, IL
- 2015 Invitation to AAMC's Early Career Women Faculty Professional Development Seminar, Denver, CO (competitive application process)
- 2014 1st place poster presentation at the 5th Annual Symposium on Teaching and Learning, Southern Illinois University School of Medicine, Springfield, IL
- 2013 Nominated for the Presidential Early Career Award for Scientists and Engineers (PECASE) by the Office of Naval Research
- 2012 Invitation to the NIH/NIGMS Workshop for Postdocs Transitioning to Independent Positions, NIH, Bethesda, MD (competitive application process)
- 2007 Invitation to the National Graduate Student Symposium, St. Jude Children's Research Hospital, Memphis, TN (competitive application process)
- 2006 "Spinning the Spider Web" Award, given for service as the Washington DC alumni chapter president from the University of Richmond
- 2005 & 2006 Medical Center Graduate Student Organization Travel Grant, Georgetown University, Washington, DC
- 2000 Certification in Alzheimer's Disease Assessment Scale (ADAS), Rush-Presbyterian St. Luke's Medical Center, Chicago, IL
- 1996 Beta Beta Beta Biology Honor Society Induction, University of Richmond, VA

PEER-REVIEWED PUBLICATIONS

Heuermann ML, Matos S, Hamilton D, and Cox BC (2022) Regenerated hair cells in the neonatal cochlea are innervated and the majority co-express markers of both inner and outer hair cells. *Front Cell Neurosci* 16:841864. DOI: [10.3389/fncel.2022.841864](https://doi.org/10.3389/fncel.2022.841864)

Stone JS, Pujol R, Nguyen TB, **Cox BC** (2021) The transcription factor Sox2 is required to maintain the cell type-specific properties and innervation of type II vestibular hair cells in adult mice. *J Neurosci* 41(29):6217-6233. DOI: [10.1523/JNEUROSCI.1831-20.2021](https://doi.org/10.1523/JNEUROSCI.1831-20.2021)
-image chosen for journal cover

Chrysostomou E, Zhou Z, Darcy YL, Graves KA, Doetzlhofer A, and **Cox BC** (2020) The Notch ligand Jagged1 is required for the formation, maintenance, and survival of Hensen's cells in the mouse cochlea. *J Neurosci* 40(49):9401-9413. DOI: [10.1523/JNEUROSCI.1192-20.2020](https://doi.org/10.1523/JNEUROSCI.1192-20.2020)
-image chosen for journal cover

Beebe NL, Sowick CS, Kristaponyte I, Galazyuk AV, Vetter DE, **Cox BC**, Schofield BR (2020) Generation of a *ChAT^{Cre}* mouse line without the early onset hearing loss typical of the C57BL/6J strain. *Hearing Res* 388:107896. DOI: [10.1016/j.heares.2020.107896](https://doi.org/10.1016/j.heares.2020.107896)

Hicks KL, Wisner SR, **Cox BC**, and Stone JS (2020) Atoh1 is required in supporting cells for regeneration of vestibular hair cells in adult mice. *Hearing Res* 385:107838. DOI: [10.1016/j.heares.2019.107838](https://doi.org/10.1016/j.heares.2019.107838)

Naples JG, Ruckenstein MJ, Singh J, **Cox BC**, and Li D (2020) Intratympanic Diltiazem-Chitosan Hydrogel as a Novel Otoprotectant against Cisplatin-Induced Ototoxicity in a Mouse Model. *Otol Neurotol* 41(1):115-122. DOI: [10.1097/MAO.0000000000002417](https://doi.org/10.1097/MAO.0000000000002417)

Warchol ME, Massoodnia R, Pujol R, **Cox BC**, and Stone JS (2019) Development of hair cell phenotype and calyx nerve terminals in the neonatal mouse utricle. *J Comp Neurol* 527(11): 1913-1928. DOI: [10.1002/cne.24658](https://doi.org/10.1002/cne.24658)

McGovern MM, Randle MR, Cuppini CL, Graves KA, and **Cox BC** (2019) Multiple supporting cell subtypes are capable of spontaneous hair cell regeneration in the neonatal mouse cochlea. *Development* 146(4):pii DOI: [10.1242/dev.171009](https://doi.org/10.1242/dev.171009)

Stone JS, Wisner SR, Bucks SA, Mellado Lagarde MM, and **Cox BC** (2018) Characterization of adult vestibular organs in 11 CreER mouse lines. *J Assoc Res Otolaryngol* 19(4):381-399. DOI: [10.1007/s10162-018-0676-6](https://doi.org/10.1007/s10162-018-0676-6)

McGovern MM, Zhou L, Randle MR, and **Cox BC** (2018) Spontaneous hair cell regeneration is prevented by increased Notch signaling in supporting cells. *Front Cell Neurosci* 12:120. DOI: [10.3389/fncel.2018.00120](https://doi.org/10.3389/fncel.2018.00120)

Cai, R, Montgomery SC, Graves KA, Caspary DM, and **Cox, BC** (2018) The FBN rat model of aging: investigation of ABR waveforms and ribbon synapse changes. *Neurobiol Aging* 62:53-63. DOI: [10.1016/j.neurobiolaging.2017.09.034](https://doi.org/10.1016/j.neurobiolaging.2017.09.034)

Sottile SY, Ling L, **Cox BC**, and Caspary DM (2017) Impact of aging on postsynaptic neuronal nicotinic neurotransmission in auditory thalamus. *J Physiol* 595(15):5375-5385. DOI: [10.1113/JP274467](https://doi.org/10.1113/JP274467)

Bucks SA, **Cox BC**, Vlosich BA, Manning JP, Nguyen TB and Stone JS (2017) Supporting cells remove and replace sensory receptor hair cells in a balance organ of adult mice. *eLife* 6:e18128 DOI: [10.7554/eLife.18128](https://doi.org/10.7554/eLife.18128)

McGovern MM, Brancheck J, Grant AC, Graves KA, and **Cox BC**. (2017) Quantitative analysis of supporting cell subtype labeling among CreER lines in the neonatal mouse cochlea. *J Assoc Res Otolaryngol* 18(2): 227-245. DOI: [10.1007/s10162-016-0598-0](https://doi.org/10.1007/s10162-016-0598-0)
-image chosen for journal cover

Montgomery SC and **Cox BC** (2016) Whole mount dissection and immunofluorescence of the adult mouse cochlea. *J Vis Exp* 107:e53561. DOI: [10.3791/53561](https://doi.org/10.3791/53561)

Walters BJ*, Liu Z*, Crabtree M*, Coak E, **Cox BC**, and Zuo J. (2014) Auditory hair cell-specific deletion of p27^{Kip1} in postnatal mice promotes cell-autonomous generation of new hair cells and normal hearing. *J Neurosci*, 34:15751-15763. DOI: [10.1523/JNEUROSCI.3200-14.2014](https://doi.org/10.1523/JNEUROSCI.3200-14.2014)

*authors contributed equally

Cox BC, Dearman JA, Brancheck J, Zindy F, Roussel MF, and Zuo J. (2014) Generation of Atoh1-rtTA transgenic mice: a tool for inducible gene expression in hair cells of the inner ear. *Sci Rep* 4:6885. DOI: [10.1038/srep06885](https://doi.org/10.1038/srep06885)

Cox BC*, Chai R*, Lenoir A, Liu Z, Zhang L, Nguyen D, Chalasani K, Steigelman KA, Fang J, Rubel EW, Cheng AG, and Zuo J. (2014) Spontaneous hair cell regeneration in the neonatal mouse cochlea in vivo. *Development* 141:816-829. DOI: [10.1242/dev.103036](https://doi.org/10.1242/dev.103036)

*authors contributed equally

Mellado Lagarde, MM, **Cox BC**, Fang J, Taylor R, Forge A, and Zuo J. (2013) Selective ablation of pillar and Deiters' cells severely affects cochlear postnatal development and hearing function in mice. *J Neurosci* 33:1564-1576. DOI: [10.1523/JNEUROSCI.3088-12.2013](https://doi.org/10.1523/JNEUROSCI.3088-12.2013)

Liu Z, Walters BJ, Owen T, Brimble MA, Steigelman KA, Zhang L, Mellado Lagarde MM, Valentine MB, Yu Y, **Cox BC**, and Zuo J. (2012) Regulation of p27^{Kip1} by Sox2 maintains quiescence of inner pillar cells in the murine auditory sensory epithelium. *J Neurosci* 32:10530-10540. DOI: [10.1523/JNEUROSCI.0686-12.2012](https://doi.org/10.1523/JNEUROSCI.0686-12.2012)

Burns J*, **Cox BC***, Thiede BR, Zuo J, and Corwin JT. (2012) In vivo proliferative regeneration of balance hair cells in newborn mice. *J Neurosci* 32:6570-6577. DOI:

[10.1523/JNEUROSCI.6274-11.2012](https://doi.org/10.1523/JNEUROSCI.6274-11.2012)

*authors contributed equally

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-selected by Faculty of 1000: Groves A: 2012. <http://f1000.com/715348057#eval790903108>

Liu Z, Dearman JA, **Cox BC**, Walters BJ, Zhang L, Ayrault O, Zindy F, Gan L, Roussel M, and Zuo J. (2012) Age-dependent in vivo conversion of mouse cochlear pillar and Deiters' cells to immature hair cells by Atoh1 ectopic expression. *J Neurosci* 32: 6600-6610. DOI:

[10.1523/JNEUROSCI.0818-12.2012](https://doi.org/10.1523/JNEUROSCI.0818-12.2012)

-selected by Faculty of 1000: Groves A & Fekete D: 2012.

<http://f1000.com/715348058#eval790903109>

Yu Y, Weber T, Yamashita Y, Liu Z, Valentine MB, **Cox BC**, and Zuo J. (2010) In vivo proliferation of postmitotic cochlear supporting cells by acute ablation of the retinoblastoma protein in neonatal mice. *J Neurosci* 30: 5927-5936. DOI: [10.1523/JNEUROSCI.5989-09.2010](https://doi.org/10.1523/JNEUROSCI.5989-09.2010)

Cox BC, Marritt AM, Perry DC, and Kellar KJ. (2008) Transport of multiple nicotinic acetylcholine receptors in the rat optic nerve: High densities of receptors containing $\alpha 6$ and $\beta 3$ subunits. *J Neurochem* 105: 1924-1938. DOI: [10.1111/j.1471-4159.2008.05282.x](https://doi.org/10.1111/j.1471-4159.2008.05282.x)

Marritt AM, **Cox BC**, Yasuda RP, McIntosh JM, Xiao Y, Wolfe BB, and Kellar KJ. (2005) Nicotinic cholinergic receptors in the rat retina: simple and mixed heteromeric subtypes. *Mol Pharmacol* 68: 1656-1668. DOI: [10.1124/mol.105.012369](https://doi.org/10.1124/mol.105.012369)

Kingsley RJ, Affif E, **Cox BC**, Kothari S, Kriechbaum K, Kuchinsky K, Neill AT, Puri AF, and Kish VM. (2003) Expression of heat shock and cold shock proteins in the gorgonian *Leptogorgia virgulata*. *J Exp Zool A Comp Exp Biol* 296: 98-107. DOI: [10.1002/jez.a.10248](https://doi.org/10.1002/jez.a.10248)

REVIEWS AND BOOK CHAPTERS

Cox, BC, Brigande JV, and Walters BJ (*in press*) Genetic and epigenetic strategies for promoting hair cell regeneration in the mature mammalian inner ear. In JS Stone, M Warchol, RR Fay, & AN Popper (Eds.) *Hair Cell Regeneration: The Springer Handbook of Auditory Research volume 67*. Springer

Duncan JS and **Cox BC** (2020) Anatomy & Development of the Inner Ear. In *The Senses: A Comprehensive Reference, 2nd edition*. B. Fritzsche, editor, Cambridge, Massachusetts: Elsevier Inc. Chapter 2.16

Walters BJ and **Cox BC** (2019) Approaches for the study of epigenetic modifications in the inner ear and related tissues. *Hearing Res* 376:69-85. DOI: [10.1016/j.heares.2019.01.007](https://doi.org/10.1016/j.heares.2019.01.007)

Cox BC, Liu Z, Mellado Lagarde MM, and Zuo J. (2012) Conditional gene expression in the mouse inner ear using Cre-loxP. *J Assoc Res Otolaryngol* 13:295-322. DOI: [10.1007/s10162-012-0324-5](https://doi.org/10.1007/s10162-012-0324-5)

TEACHING EXPERIENCE

Southern Illinois University School of Medicine

Course director and Instructor in PHRM-540: Responsible Conduct of Research (Ph.D. course)

2017	Course director
2017 – 2019	Animal use in research session

Instructor in Sophomore Medical Curriculum, Cardiovascular, Renal, & Respiration Unit

Lecture given on the following topics:

2015 – present	Antihistamines, Antitussives, Expectorants, Mucolytics, & Nasal Decongestants
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Instructor in Sophomore Medical Curriculum, Neuromuscular and Behavior Unit

2014 – present	Problem-based learning group facilitator
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Lectures given on the following topics:

2014 – present	NSAIDs, inflammation & gout
2014 – present	Substance abuse (using flipped classroom method)
2015 – 2020	Neuromuscular blockers & spasmolytics
2014 – 2020	Opioids, pain & migraine

Instructor in the Senior Medical Curriculum

2014 – present	Research in sensory pharmacology elective
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Course director & Instructor in PHRM-530: Advanced Pharmacology (Ph.D. course)

2019 – present	Course director
2020 – present	Series of discussion sessions on Mouse Genetics
2014 – 2018	Series of discussion sessions on Developmental Biology

Course director & Instructor in PHRM-550A & B: Principles of Pharmacology (Ph.D. and master's course)

2019 – present	Course director
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Lectures given on the following topics:

2016 – present	Antihistamines, Antitussives, Expectorants, Mucolytics, & Nasal Decongestants
2015 – present	Substance abuse
2013 – present	NSAIDs, Antipyretics, & Anti-inflammatory
2013 – present	Migraine
2015 – 2019	Neuromuscular blockers & spasmolytics
2013 – 2019	Opioids, NSAIDs, & Pain

2013 – 2018 Mouse genetics
2013 Drug/receptor interactions

Course director & Instructor in PHRM-577: Principles of Neuroscience (Ph.D. and master's course)

2019 – present Course director
Lectures given on the following topics:
2015 – present Neurotransmitters
2013 – present Cellular components of the nervous system
2013 – present Neurotransmitter release
2015 – 2019 Neurotransmitter receptors

Instructor in the Neuroscience course for Neurology & Neurosurgery Residents

Lecture given on the following topics:
2014 – present Cellular & subcellular components of the nervous system

Instructor in the Otolaryngology Resident Program

Lecture given on the following topics:
2014 – present Research updates on auditory & vestibular topics

Georgetown University

Instructor in NURS-204: Principles of Pharmacology (nursing school course)

Lecture given on the following topic:
2007 Reproductive pharmacology

Instructor in BIOL-370: Neurobiology (undergraduate course)

Lecture given on the following topic:
2006 - 2007 Drugs of abuse

Instructor in PHAR-516: Neuropharmacology (Ph.D. and master's course)

2006 - 2007 Cannabinoids

2006 **Course director** of ICOS-325: Diseases and Disorders of the Brain
(undergraduate course)

Instructor in ICOS-325: Diseases and Disorders of the Brain (undergraduate course)

Lectures given on the following topics:
2005 - 2006 Mood and anxiety disorders
2005 Alzheimer's disease

Instructor in PHAR-511: Fundamentals of Pharmacology (Ph.D. and master's course)

Lecture given on the following topic:
2005 Reproductive pharmacology

GRANT REVIEW SERVICE

2022 Ad Hoc Reviewer, NIH/NIDCD AUD Study Section
2020 Reviewer, Fondation Pour l'Audition

2018	Reviewer, Department of Defense, Army Medical Research Materiel Command Broad Agency Announcement
2018	Reviewer, Medical Research Council, UK
2018	Reviewer, NIH/NIDCD Special Emphasis panel
2017	Reviewer, Department of Defense, Congressionally Directed Medical Research Program (DOD CDMRP)
2014 & 2016	Reviewer, Action on Hearing Loss Foundation

REVIEWER SERVICE FOR PEER-REVIEWED JOURNALS

Aging Cell
Cell Proliferation
Cell & Tissue Research
Comparative Medicine
Development
Experimental Cell Research
Experimental Gerontology
Frontiers in Cell and Developmental Biology
Hearing Research
International Journal of Audiology
Journal of the Association for Research in Otolaryngology
Journal of Cell Science
Journal of Neuroscience
Journal of Visualized Experiments
Molecular Neurobiology
Neuroscience
Neuroscience Letters
PLOS Biology
PLOS One
Scientific Reports

OTHER SERVICE

Southern Illinois University School of Medicine
2019 – present Director, Graduate Program, Department of Pharmacology
2019 – present Vice Chair, Laboratory Animal Care and Use Committee
2018– present Member, Promotion and Tenure Committee
2018– present Member, Research Policy Committee
2019 Member, SIUSOM Veterinarian Search Committee
2013 – 2019 Member, Laboratory Animal Care and Use Committee
2014 – 2019 Member, Graduate Program Committee, Department of Pharmacology
2017 – 2018 Member, Population Science and Health Steering Committee
2016 – 2018 Member, Associate Dean for Research Search Committee
2016 Co-chair, Research Collaboration Retreat Committee
2014 – 2017 Member, Information Management Policy Committee
2014 – 2017 Member, Grant Review Committee
2014 – 2016 Member, Somani Award Committee, Department of Pharmacology
2013 – 2016 Interviewer, Medical School Admissions Committee
2016 Presenter, Library Lightning Talks, *Publishing a Video Article in JoVE (the*

Journal of Visualized Experiments)

- 2016 Presenter, *Navigating the New Animal Protocol Forms*
2015 Member, Research Collaboration Retreat Committee
2014 Presenter, *Creating an Educational Video: Putting the Pieces Together*

Department of Defense

- 2016 – present Member, Pharmaceutical Interventions for Hearing Loss (PIHL) working group

Association for Research in Otolaryngology

- 2020 Member, Nominating committee
2019 – 2022 Member, Program committee
2018 – 2021 Member, Long Range Planning committee
2018 – 2019 Member, Membership committee
2017 Moderator, 40th annual midwinter research meeting. Regeneration I session.
2015 Moderator, 38th annual midwinter research meeting. Development I session.
2011 Moderator, 34th annual midwinter research meeting. Development III session.

St. Jude Children's Research Hospital

- 2009 – 2013 Abstract writer for www.Cure4Kids.org

S.C.R.A.P.S., a monthly publication for Scientists, Clinicians and Researchers Affiliated with the Postdoctoral Society

- 2010 – 2013 Contributing author
2009 – 2010 Editor

Postdoctoral Association Council

- 2010 – 2011 Vice Chair of Benefits
2009 – 2010 Vice Chair of Communications
2008 – 2009 Vice Chair of Volunteer Activities

Other Service Activities

- 2006 – 2008 President, University of Richmond Washington DC alumni chapter
2005 Member, Richmond Council, University of Richmond, Richmond, VA
2004 – 2006 Student representative, Pharmacology Department, Georgetown University, Washington, DC
2002 – 2006 Co-chair, University of Richmond Washington DC young alumni chapter

SCIENTIFIC OUTREACH

- 2013 – present Annual lab tours for IL EPA staff and IEPA Governor's Environmental Corps Interns
2015 – present Annual lab tour for University of Illinois Springfield clinical lab science Students
2019 Podcast on my research and career path, Transnetyx Inc.
2019 Podcast on my research, Illinois Science and Technology Coalition
2018 Lab tour for Chinese delegation of the American Council of Young Political Leaders
2018 Lab tour for Franklin high school students

2016 & 2018	Lab tour for Western Illinois University pre-health club
2017	Lab tour for Leadership Springfield
2016	Presentation on hearing loss to employees of Transnetyx, Inc, Cordova, TN
2016	Lab tour for Illinois State Representative, Sara Jimenez
2015	Presentation on hearing & hair cell regeneration to Medical Explorers (high school students), Southern Illinois University School of Medicine, Springfield, IL
2015	Podcast on hearing & hair cell regeneration (middle & high school level), Science Sound Bites, Memphis, TN
2015	Presentation on hearing to 8-13 year olds, SIU Take Your Kids to Work Day, Southern Illinois University School of Medicine, Springfield, IL
2015	Article for Teacher Tools e-magazine, Supporting Success for Children with Hearing Loss Foundation, Tampa, FL
2015	Lab tour for SIU alumnus (Dr. David Riesenberger '79) & his grandson