Brandon C. Cox, Ph.D.

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Springfield, IL 62702 bcox@siumed.edu

EDUCATION

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

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

PROFESSIONAL EXPERIENCE

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 & date)

R01 DC014441 (Cox) 6/1/2016 – 5/31/2021
NIH/National Institute on Deafness and other Communicative Disorders
Title: Mechanisms that regulate hair cell survival
Role: PI

W81XWH-19-1-0017 (D. Caspary, SIUSOM) 7/15/2019-7/14/2022
Department of Defense
Title: Nicotinic Receptor Pathology in Tinnitus: Auditory Cortex and Selective Desensitizing Nicotinic Agents
Role: Co-investigator

R01 DC00151 (D. Caspary, SIUSOM) 12/15/2015-11/30/2020
NIH/National Institute on Deafness and other Communicative Disorders
Title: Coding in Auditory Neurons: Effects of Amino Acids
Role: Co-investigator

R01 DC13771 (J. Stone, University of Washington) 4/1/2019 – 3/31/2024
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/Sub-award contract

R03 HD097543 (J. Amack, SUNY Upstate Medical Univ.) 2/1/2019 – 1/31/2021
NIH/National Institute of Child Health and Human Development
Title: Identification of mechanisms that regulate pH in embryonic cilia
Role: Unpaid 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

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

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

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

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

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

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

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

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

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

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

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
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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

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
*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

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
*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

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

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
*authors contributed equally
-image chosen for journal cover
-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 Dieters' cells to immature hair cells by Atoh1 ectopic expression. *J Neurosci* 32: 6600-6610. DOI: 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

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 α6 and β3 subunits. *J Neurochem* 105: 1924-1938. DOI: 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

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 Zoolog A Comp Exp Biol* 296: 98-107. DOI: 10.1002/jez.a.10248

REVIEWS AND BOOK CHAPTERS

Duncan JS and **Cox BC** (2020) Anatomy & Development of the Inner Ear. In *The Senses: A Comprehensive Reference, 2nd edition*. B. Fritzsch, 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

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

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 – present 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

Instructor in Sophomore Medical Curriculum, Neuromuscular and Behavior Unit

2014 – present Problem-based learning group facilitator

Lectures given on the following topics:

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

Instructor in the Senior Medical Curriculum

2014 – present Research in sensory pharmacology elective

Instructor in PHRM-530: Advanced Pharmacology & Neuroscience (Ph.D. course)

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

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

Lectures given on the following topics:

2016 – present Antihistamines, Antitussives, Expectorants, Mucolytics, & Nasal Decongestants
2015 – present Neuromuscular blockers & spasmolytics
2015 – present Substance abuse
2013 – present NSAIDs, Antipyretics, & Anti-inflammatory
2013 – present Opioids, NSAIDs, & Pain
2013 – present Migraine
2013 – 2018 Mouse genetics
2013 Drug/receptor interactions

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

Lectures given on the following topics:

2015 – present Neurotransmitters
2015 – present Neurotransmitter receptors
2013 – present Cellular components of the nervous system
2013 – present Neurotransmitter release

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

<u>Georgetown University</u>

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

2020 Reviewer, Foundation 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
Experimental Cell Research
Experimental Gerontology
Hearing Research
International Journal of Audiology
Journal of the Association for Research in Otolaryngology
Journal of Neuroscience
Journal of Visualized Experiments
Molecular Neurobiology
Neuroscience
Neuroscience Letters
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
2019 – present Member, Program committee
2018 – present 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