ESRA D. CAMCI

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EXPERIENCE

2017-2020 **Postdoctoral Fellow** — **University of Washington**
Supervised by Ed Rubel and Dave Raible
Bloedel Hearing Research Center
Department of Otolaryngology

Studied the molecular mechanisms underlying hearing loss and protection.
- Set up and optimized a mouse cochlear explant tissue culture system.
- Designed, optimized, and performed IHC in mouse, chick and zebrafish tissue.
- Conducted high resolution in vivo and ex vivo microscopy.
- Performed dose response and protection experiments.
- Worked on the small molecule otoprotectant, ORC-13661.

2011-2016 **Graduate Research Assistant** — **University of Washington**
Supervised by Tim Cox
Seattle Children's Research Institute
Department of Oral Health Sciences

Studied the genetics underlying midface dysmorphology in mouse models.
- Designed and conducted PCR, qPCR, RNAseq, molecular biology experiments.
- Conducted bioinformatic analysis of WGS, RNAseq.
- Maintained and coordinated mutant mouse colonies.
- Acquired and analyzed 3D μCT scan renderings.

EDUCATION

2016	Ph.D.	Oral Biology	University of Washington
2011	B.S.	Biochemistry and Molecular Biology	Penn State
2011	B.A.	Philosophy	Penn State

AWARDS AND FELLOWSHIPS

2018	Bloedel Scholarship	Northwest Auditory and Vestibular Research Meeting
2017-2019	Postdoctoral Traineeship	UW Auditory Neuroscience Training Grant
2015-2016	Predoctoral Traineeship	UW Oral Health Sciences Research Training Grant
2014	Science Communication Fellowship	Pacific Science Center
2011-2012	Top Scholar Award	Graduate School University of Washington

AREAS AND SKILLS

Inner ear sensory hair cell function and protection

Aminoglycoside toxicity: Investigated the role of lysosomal sequestration in gentamicin toxicity, and confirmed the conservation of differential mechanisms of aminoglycoside toxicity between mammalian and zebrafish models.

Ex vivo: Established and optimized a mouse cochlear explant culture system at the University of Washington; developed methods for live imaging of cultures; further validated ORC-13661 protection in avian vestibular culture system; managed animal, reagents, and equipment resources to ensure a consistent flow of explants for experimentation; proven microdissection, sterile technique, and troubleshooting skills.

In vivo: Extensive experience with mouse handling and colony management; worked with the zebrafish lateral line to screen compounds in vivo for further testing in mammalian and avian ex vivo models; limited experience assisting with IP injections of aminoglycosides in mice.

Drug development: Contributed to the preclinical target-identification work supporting ORC-13661 and in mouse, chick, and zebrafish systems.

Genetic models of heritable conditions

Mouse models of craniofacial conditions: Maintained multiple colonies of mice carrying genetic mutations of interest; characterized the effect of the mutation on skull shape and connective tissue architecture; designed and performed PCR genotyping assays and set up complementation experiments.

Gene expression and sequence analysis: Utilized tools like Geneious, the NCBI database, IGV, and the UCSB Genome Browser to align and analyze genome data, design primers and plasmids, and check sequencing results.

Identification of previously uncharacterized transcription factor binding sites: Identified putative binding sites for a transcription factor of interest, using sequence, ChIPseq and evolutionary conservation data; designed and executed promoter bashing assays to assess TF-sequence binding potential.

Downstream effects of mutations in regulatory regions: Identified and validated mutations in mouse models; extracted and performed QC on high quality DNA and RNA from microdissected tissue for downstream sequencing analysis; analyzed and validated the effects of the mutation on downstream gene expression via RNAseq and qPCR.

Microscopy, μCT and 3D imaging

Tissue labeling: Routinely developed and carried out immunohistochemistry and histology protocols on fixed section and whole-mount tissues from mammalian, avian, and zebrafish experiments.

Microscopy: Utilized widefield, spinning disc and standard confocal microscopes to image fluorescent signals in live and fixed tissue; conducted qualitative and quantitative image analysis.

µCT imaging and 3D analysis: Collaborated with researchers in Computer Science and Electrical Engineering on 3D shape analysis programs; designed and performed 3D morphometric analysis; segmented tissue and generated mesh models for downstream analysis; assisted external users with scanning, reconstruction, analysis, and troubleshooting; developed SOPs for scanning common biological structures.

Postnatal developmental trajectories: Quantitatively characterized the postnatal development of mutant midface shape and asymmetry in µCT scan renderings; screened models for post-cranial deformations.

OPT imaging and whole mount histology: Generated skeletal preps for whole-mount Optical Projection Tomography scanning.

PUBLICATIONS

Dissertation

Camci ED. Mechanisms in Midface Development and Dysmorphology. University of Washington, 2016. .

Articles

Davis SN, Wu P, Camci ED, Simon JA, Rubel EW, and Raible DW. Chloroquine kills hair cells in zebrafish lateral line and murine cochlear cultures: Implications for ototoxicity. Hear Res 2020;395. .

Kitcher SR, Kirkwood NK, Camci ED, et al. ORC-13661 protects sensory hair cells from aminoglycoside and cisplatin ototoxicity. JCI Insight 2019;4. .

Vora SR, Camci ED, and Cox TC. Postnatal Ontogeny of the Cranial Base and Craniofacial Skeleton in Male C57BL/6J Mice: A Reference Standard for Quantitative Analysis. Front Physiol 2016;6. .

Aneja D, Vora SR, Camci ED, Shapiro LG, and Cox TC. Automated Detection of 3D Landmarks for the Elimination of Non-Biological Variation in Geometric Morphometric Analyses. Proc IEEE Int Symp Comput Based Med Syst 2015. .

Cox TC, Camci ED, Vora SR, Luquetti DV, and Turner EE. The genetics of auricular development and malformation: New findings in model systems driving future directions for microtia research. Eur J Med Genet 2014;57. .

Rolfe SM, Camci ED, Mercan E, Shapiro LG, and Cox TC. A new tool for quantifying and characterizing asymmetry in bilaterally paired structures. Conf Proc IEEE Eng Med Biol Soc 2013. .

Conference Proceedings

Camci ED and Cox TC. Early changes in morphology relevant to craniofacial research in C57BL/6J mice. In: Bruker MicroCT Americas Users Meeting. 2013.

Talks

Camci ED, Wu P, Simon J, Raible DW, and Rubel EW. Differentiating Mechanisms of Aminoglycoside Toxicity In Mammalian Cochlear Hair Cells. 2018 Northwest Auditory and Vestibular Research Meeting. Seattle, WA, 2018.

Camci ED and Cox TC. Early changes in morphology relevant to craniofacial research in C57BL/6J mice. Bruker MicroCT Americas Users Meeting, 2013.

Camci ED, Rolfe SM, Hassan MG, et al. New mouse models for investigating the pathogenesis of midfacial hypoplasia. 1st Seattle Children's Hospital Craniofacial Center Educational Retreat. Seattle, WA: Seattle Children's Hospital and Research Institute, 2013.

Poster Abstracts

Davis S, Wu P, Camci ED, Rubel EA, and Raible DW. Effects of Chloroquine Phosphate on Hair Cells: Implications for Ototoxicity Monitoring. ARO 43rd MidWinter Meeting. San Jose, NM, 2020.

Wu P, Camci ED, Ogelman R, et al. Studying Cisplatin Toxicity Using a Fluorescently Tagged Platinum Compound in Zebrafish and Mouse Hair Cells. ARO 43rd MidWinter Meeting. San Jose, NM, 2020.

Camci ED, Wu P, Simon J, Raible DW, and Rubel EW. Differentiating Mechanisms of Aminoglycoside Toxicity In Mammalian Cochlear Hair Cells. ARO 42nd MidWinter Meeting. Baltimore, MD, 2019.

Kitcher SR, Camci ED, Raible DW, Rubel EW, Richardson GP, and Kros CJ. ORC-13661 is a Permeant Blocker of the Hair-Cell's MET Channels and Protects Mouse Outer Hair Cells from Gentamicin and Cisplatin. ARO 41st MidWinter Meeting. San Diego, CA, 2018.

Camci ED and Cox TC. Deletion of an evolutionarily conserved chromatin insulator element associated with elevated retinoid signaling as the genetic basis for an oavs-like presentation in mice. 38th Annual David W. Smith Workshop on Malformations and Morphogenesis. Stowe, VT, 2017.

Camci ED and Cox TC. A unique mouse model of Oculo-Auriculo-Vertebral Spectrum: evidence for the role of elevated retinoic acid signaling as the underlying mechanism. 39th Annual Meeting of the Society of Craniofacial Genetics and Developmental Biology. Boston, MA, 2016.

Camci ED and Cox TC. A new mutant mouse lines provides support for the vascular hypothesis underlying Oculo-Auriculo-Vertebral Spectrum. Talk given by TC Cox. Madison, WI, 2014.

Camci ED, Vora SR, and Cox TC. A new mutant mouse lines provides support for the vascular hypothesis underlying Oculo-Auriculo-Vertebral Spectrum. 3rd Annual Seattle Children's Hospital Craniofacial Center Educational Retreat. Seattle, WA, 2014.

Camci ED, Vora SR, and Cox TC. A new mutant mouse lines provides support for the vascular hypothesis underlying Oculo-Auriculo-Vertebral Spectrum. 73rd Annual Meeting of the Society for Developmental Biology. Seattle, WA, 2014.

Camci ED, Vora SR, and Cox TC. Abnormal chondrocyte morphology and synchondrosis ossification in a new model of craniofacial microsomia. Seattle, WA, 2014.

Camci ED, Park SS, and Cox TC. Obliteration of the intersphenoid synchondrosis affects cranial base angle but not cranial base and midface outgrowth in the *sbse* mouse mutant. Abstract no. 11. Boston, MA, 2013.

Camci ED, Park SS, and Cox TC. Obliteration of the intersphenoid synchondrosis affects cranial base angle but not cranial base and midface outgrowth in the *sbse* mouse mutant. Abstract no. 1. Seattle, WA, 2013.

Camci ED, Rolfe SM, and Cox TC. Maxillary and mandibular asymmetry, microtia, auricular atresia and cervical vertebral anomalies: A new mouse model for Craniofacial Microsomia? Talk given by TC Cox. Mont-Tremblant, Quebec, CA, 2013.

Camci ED, Rolfe SM, Hassan MG, et al. New mouse models for investigating the pathogenesis of midfacial hypoplasia. Abstract no. 177064. Seattle, WA, 2013.

Rolfe SM, Cox LL, Camci ED, Fu T, Shapiro LG, and Cox TC. A new landmark-independent tool for quantifying morphological variation. 17th International Congress of Developmental Biology. Cancun, MX, 2013.

Rolfe SM, Cox LL, Camci ED, Fu T, Shapiro LG, and Cox TC. A new landmark-independent tool for quantifying morphological variation. FaceBase Annual Meeting. Iowa City, IA, 2013.

SERVICE

Academic Service

2017, 2019	Discussion group leader	UW Biomedical Research Integrity Program
2015	Faculty meeting representative	UW Department of Oral Health Sciences
2014-2015	Reviewer	Journal for Emerging Investigators
2012-2015	Senator for Oral Biology	UW Graduate and Professional Student Senate
2010-2011	Community assistant, Nelson Hall	PSU Student Affairs/Resident Life
2009-2010	Resident assistant, McKean Hall	PSU Student Affairs/Resident Life

Community Service

2016-2020	Program assistant	Bailey-Boushay House
2011-2013	Dinner prep lead, shift volunteer	ROOTS Young Adult Shelter
2004-2008	Patient floor volunteer	Mount Nittany Medical Center