

# ESRA D. CAMCI

@ esracamci@gmail.com

esracamci.github.io

esra-camci

## EXPERIENCE

4/22 -

**Scientist I**

Genetic Hearing Loss

**Prime Medicine, Inc.**

9/21 - 4/22

**Scientist I**

Analytical Development - NGS/Genomics

*Developed NGS-based methods for the assessment of AAV vector purity.*

**Homology Medicines, Inc. and  
Oxford Biomedica Solutions**

1/17 - 2/20

**Postdoctoral Fellow**

Supervised by Ed Rubel and Dave Raible

**University of Washington**

Bloedel Hearing Research Center  
Department of Otolaryngology

*Studied the molecular mechanisms underlying hearing loss and protection.*

- Established and ran mouse cochlear and chick vestibular tissue culture systems.
- 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 for the otoprotectant ORC-13661.

7/11 - 12/16

**Graduate Research Assistant**

Supervised by Tim Cox

**University of Washington**

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.
- Acquired and developed methods to analyze 3D  $\mu$ CT 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

Predocotrinal 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; worked on analytical methods for industrial AAV vector sequencing.

## Molecular biology

**Next generation sequencing** Preparation and analysis of AAV vector genomes for PacBio long read sequencing; implemented and adapted Python-based workflows for sequence analysis; prepared and analyzed samples for RNAseq.

**Gene expression and sequence analysis:** Designed, optimized, and executed PCR and qPCR experiments; 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.

## 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.

**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, $\mu$ CT 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.

**$\mu$ CT 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  $\mu$ CT 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 Dymorphology. 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.

## 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