

# MIKIAS H. WOLDETENSAE T.

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## EDUCATION

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| <b>BS</b> | University of Washington, Seattle<br>Molecular, Cellular & Developmental Biology<br>Minor in Mathematics | 2011 – 2016 |
| <b>BA</b> | University of Washington, Seattle<br>Psychology  | 2011 – 2016 |

## RESEARCH EXPERIENCE

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**Ziegler Lab** Aug 2019 – Present

Benaroya Research Institute

### Research Technician

- Validated & characterized 3 novel humanized mouse models for the study of Rhinoviruses. Performed In Vitro and In Vivo infections as proof of concept. Currently collecting data to publish.
- Characterized variability in various tissue-specific gene recombination mouse models. Developed PCR & qPCR protocols for discrimination and quantification of the gene products. Presented findings to lab and proposed solutions for a more informed selection of experimental & breeding mice. Thereby providing a correlative metric between outcome variables and gene knockout quantity and allowing for increased rigor and reproducibility of ongoing research.
- Maintained 50-70 mouse lines. Utilized primer design, PCR protocol optimization, 3D printing, and R scripts to increase efficiency.
- Reverse engineered & optimized silica column-based extraction of DNA, RNA and/or Protein to reduce cost and increase flexibility.
- As the lab Safety representative; Trained members on safety measures; ensured chemical, biological, and radioactive hazards were handled, stored, and discarded according to regulation; optimized lab guidelines for increased safety; Readjusted biosafety level rating of lab spaces in accordance with CDC recommendations; Updated & maintained lab's Institutional Biosafety Committee protocols.

### Human Photonics Lab

Sept 2011 – March 2013

UW Department of Mechanical Engineering

### Undergraduate Researcher

- Optimized power conditions of a proprietary Scanning Fiber Endoscope for the fluorescence induced apoptosis and necrosis of cancer cells treated with a cancer biomarker 5-aminolevulinic acid and its photosensitive metabolite, Protoporphyrin IX.
- Correlated movement patterns of endoscope to total area and distribution of cancer cell death, helping to identify non optimal functioning in certain mechanical components.

**Ed Kelly Lab**

June – Sept 2011

UW Department of Pharmaceutics

**Research Intern**

- Collected genotype and phenotype data on 4-Ipomeanol exposed, Cytochrome P450-4B1 knockout mice to determine the gene's involvement in the metabolism of 4-Ipomeanol into a pulmonary toxin.

**TEACHING EXPERIENCE**

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**University of Washington, Seattle**

June – Aug 2016

**Bioethics Instructor**, ALVA & Clean Energy, GenOM Summer Program

- Taught Bioethics to a group of incoming UW Freshmen students; covering a previously curated series topics to prepare them for laboratory and clinical research.
- Oversaw the certification of students for rodent handling at UW. Facilitated discussion about historical and/or theoretical bioethical concerns.
- Assigned and graded classwork, homework, and quizzes.
- Facilitated an official debate among the student groups about a bioethical event in recent news. Assessed and graded student performances as final exam.

**University of Washington, Seattle**

Sept – Dec 2015

**First-Year Interest Group Instructor**, UW First Year Programs

- Advised 17 Freshmen students on college life and resources.
- Created lesson plans and facilitated 1 class per week for 10 weeks.
- Assigned and graded classwork and projects.

**PUBLICATIONS**

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*Conference Papers*

(Abstract-Reviewed)

Mikias H. Woldetensae, Mark R. Kirshenbaum, Greg M. Kramer, Liang Zhang, Eric J. Seibel, "Fluorescence image-guided photodynamic therapy of cancer cells using a scanning fiber endoscope," Proc. SPIE 8576, Optical Fibers and Sensors for Medical Diagnostics and Treatment Applications XIII, 85760L (20 March 2013);

## HONORS AND AWARDS

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**Best First-Time Presenter (Poster)** 2012

- Louis Stokes Alliance for Minority Participation (LSAMP) conference at Oregon State University. “Comparison of 4-ipomeanol pneumotoxicity in Wild Type and Cyp4b1 KnockOut mice.”

**Best Oral Presentation** 2011

- UW Genomics Outreach for Minorities (GenOM) end of summer internal symposium. “Comparison of 4-ipomeanol pneumotoxicity in Wild Type and Cyp4b1 KnockOut mice.”

**Second Place; Molecular Modeling** 2011

- Northwest Association for Biomedical Research (NWABR) Student BioExpo; Molecular Modeling Category. “The Duo That Painted Tumors.”

## PRESENTATIONS

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**Oral Presentation**, “Fluorescence image-guided photodynamic therapy of cancer cells using a scanning fiber endoscope,” SPIE Photonics West; San Francisco, 2013.

**Poster Presentation**, “Fluorescence image-guided photodynamic therapy of cancer cells using a scanning fiber endoscope,” UW Undergraduate Symposium, 2013.

**Poster Presentation**, “Comparison of 4-ipomeanol pneumotoxicity in Wild Type and Cyp4b1 KnockOut mice,” UW Undergraduate Symposium, 2012.

**Poster Presentation**, “Comparison of 4-ipomeanol pneumotoxicity in Wild Type and Cyp4b1 KnockOut mice,” LSAMP Conference; Oregon State University, 2012.

**Oral Presentation**, “Comparison of 4-ipomeanol pneumotoxicity in Wild Type and Cyp4b1 KnockOut mice,” GenOM Symposium, 2011.

**Presentation of Molecular Model**, “The Duo That Painted Tumors,” NWABR Student BioExpo; Bellevue, 2011.

## SCIENTIFIC METHODOLOGIES

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Spectrophotometry, DNA/RNA & Protein Extraction, Mouse & Rat Handling, Primer Design, Sequencing, PCR/qPCR/RT-qPCR Design & Optimization, Single Cell Suspension, Primary Cell Cultures, Western Blot, ELISA, ELISpot, Cryosections, Immunocytochemistry, Immunohistochemistry, Immunofluorescence, Widefield Microscopy, Confocal Microscopy, Conventional Flow Cytometry, Spectral Flow Cytometry, Image Analysis, Basic Protein Folding & Modeling, Data Analysis, Clustering & Dimensionality Reduction.

**EXPERIENTIAL LEARNING PROGRAMS**

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**Summer Medical and Dental Education Program (SMDEP)**

[Duke University School of Medicine], June – July 2012

Courses in Math, Organic Chemistry, Biology and Physics. Workshops on study skills, admissions process, interviews, financial planning, health policy. Weekly shadowing experiences through medical departments.

**Summer Study Abroad; Tahiti (OMAD)**

[University of Washington], Aug – Sept 2012

Courses on the history of Tahiti. Broad exposure to Tahitian culture. Exploration of various Islands.

**Genomics Outreach for Minorities (GenOM)**

[University of Washington], June – Sept 2011

Courses in Math, Biology, Wetlab Skills and Bioethics. Workshops on study skills, college life and resources. Attained UW Rodent handling certification. Daily time spent helping with and developing a project in Ed Kelly Lab.

**SERVICE**

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**Benaroya Research Institute**

**Safety committee member**

Nov 2021 – Nov 2022

**Harborview Medical Center**

**ER Volunteer**

[4 hours/week]

Jan 2018 – Nov 2019

**Neighborhood House**

**6<sup>th</sup>-12<sup>th</sup> grade homework tutor.**

[2 hours/week]

Sept 2016 – Dec 2016

**Neighborhood House**

**Immigration exam prep tutor**

[2 hours/week]

Sept 2016 – Dec 2016

**GenOM/ALVA & Clean Energy Summer Program**

[Homework Tutor; 2x week], [Seattle], June – Sept 2014

**GenOM & ALVA Summer Program**

[Homework Tutor; 2x week], [Seattle], June – Sept 2013

## PROFESSIONAL TRAINING

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**Phlebotomy & Medical Assistant Certification**, [WA State Dept. of Health]  
June 2017 – October 2019

## LANGUAGES

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**Tigrinya**: Native language.

**Dutch**: Primary language 1999 – 2004. Fluent by 2003. (Fluency lost by 2010)

**English**: Primary language 2004 – present. (Fluent by 2006)

**French**: 2+ years of classes since high school. (Novice listener)

## SKILLS

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**Programming:** R (Data Wrangling, Visualization, Statistical Modeling),  
Python, HTML, XML

**Applications:** FlowJo, SnapGene, Genious, ImageJ/Fiji, RStudio, Anaconda,  
Spyder, PyCharm, ChimeraX, Blender, ColabFold, GraphPad  
Prism, ImageLab, Fusion360, Ultimaker, FACSDiva, SpectroFlo,  
MatLab, CellProfiler

**Platforms:** Windows, Macintosh, Android, Linux

**Miscellaneous:** 3D printing, Phone & Computer Repair, Soldering,  
Bicycles/Motorcycles/Car Parts Replacement & Maintenance, Car  
Engine Disassembly & Reassembly, Garage Door Opener Repair,  
Lawnmower Repair, Basic Plumbing, Carpentry, Metal Work &  
Pottery

## COMPLETE EMPLOYMENT HISTORY

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**Ziegler Lab**, Benaroya Research Institute  
**Research Technician** Aug 2019 – Present

**Bloodworks Northwest**, North Seattle  
**Phlebotomy Technician** June 2017 – Aug 2019

**Jiffy Lube**, Everett  
**Lube Technician** Oct 2016 – May 2017

<b>York Building Services Inc., Everett</b> <b>Sanitation Technician</b>	Nov 2016 – March 2017
<b>Point S Tire &amp; Auto, Everett</b> <b>Tire Technician</b>	Sept – Oct 2016
<b>UW GenOM ALVA &amp; Clean Energy, UW Seattle</b> <b>Bioethics Instructor</b>	June – Aug 2016
<b>First-Year Programs, UW Seattle</b> <b>First-Year Interest Group Instructor</b>	Sept – Dec 2015
<b>UW GenOM ALVA &amp; Clean Energy, UW Seattle</b> <b>Resident Advisor/Counselor</b>	June – Aug 2015
<b>Radioshack, Northgate</b> <b>Sales &amp; Phone Repair Technician</b>	April 2013 – Nov 2014
<b>Human Photonics Lab, UW Seattle</b> <b>Undergraduate Researcher</b>	Sept 2011 – March 2013
<b>Ed Kelly Lab, UW Seattle</b> <b>Research Intern</b>	June – Sept 2011
<b>Albertsons, North Seattle</b> <b>Butcher Clerk</b>	Oct 2010 – June 2011
<b>Albertsons, North Seattle</b> <b>Courtesy Clerk</b>	May 2008 – Oct 2010