

# Raphael Kirchgaessner, PhD Candidate

📍 Portland, OR | 📞 (503) 206-2762 | ✉️ kirchgaessner.ra@icloud.com | 🌐 [ORCID](#)

## Professional Summary

Ph.D. candidate in Biomedical Engineering with a background in software engineering and entrepreneurship. Experienced in machine learning, bioinformatics, and product development, with a strong record of leading cross-functional, high-impact projects. Passionate about leveraging computational tools to solve complex biological and real-world problems.

## Core Skills

**Languages & Tools:** Python, C#, SQL, Git, Unix, Angular

**ML & Data:** TensorFlow, PyTorch, MLFlow, Scikit-learn, Data Visualization

**Cloud & DevOps:** Azure, Vector Databases, CI/CD

**App Development:** Ionic/Capacitor

## Education

### Ph.D. Biomedical Engineering

*Oregon Health & Science University, Portland, OR*

*2019 – Sep 2025 (expected)*

Advisors: Dr. Jeremy Goecks, Dr. Kyle Ellrott

**Focus:** Proteomics, Machine Learning, Deep Learning, Vector Databases, Cancer Biology, Multiplex Tissue Imaging

### B.Sc. Business Information Systems

*University of Applied Sciences, Karlsruhe, Germany*

*2013 – 2017*

Thesis: Geolocation Framework for Customer Acquisition

## Professional Experience

### Student Mentor (Freelance)

*Aug 2022 – Present*

- *Provided tutoring and mentoring in Python, ML, web development, and exam prep for undergraduates.*

### Partner – [AnoBrain.ai](#) (AI Consulting Firm)

*May 2022 – Present*

- *Co-founded and co-led a consulting firm delivering AI-driven solutions to small businesses and academic institutions.*
- *Designed and deployed IT infrastructure, CI/CD pipelines, and scalable cloud architectures tailored to client needs.*

- Delivered custom AI software products, including [ScheduleGenius](#) (academic scheduling automation) and [PhD Tracker](#) (student progress tracking and analytics).

### **CIO & Co-Founder – [Origin Audio LLC](#)**

Feb 2021 – Present

- Designed and implemented the company's full IT infrastructure using Azure Cloud services.
- Built secure and scalable pipelines for audio processing and client delivery.
- Managed continuous integration workflows and optimized operational efficiency.
- Oversaw SEO and website strategy, increasing conversion rates by 30%.
- Trained & Deployed ML models for audio classification and stem isolation.

### **Graduate Researcher – Oregon Health & Science University (OHSU)**

Sept 2019 – Present

- Applied ML/DL to high-dimensional multi omics datasets.
- Researched multimodal data integration and vector database-based similarity metrics to identify similar patients on a holistic patient level.
- Developed novel imputation strategies for multiplex tissue imaging data.
- Developed predictive models to classify patient response to therapy, uncovering molecular features associated with treatment efficacy.

## **Selected Publications**

- Raphael Kirchgaessner, Kaya Keutler et al.  
**Aggregating multimodal cancer data across unaligned embedding spaces maintains tumor of origin signal** (2025).  
[bioRxiv](#)
- Kirchgaessner R, Watson C, Creason A, et al.  
**Imputing Single-Cell Protein Abundance in Multiplex Tissue Imaging** (2025).  
[Nature Communications](#)
- Brian Karlberg, Raphael Kirchgaessner, et al.  
**SyntheVAEiser: augmenting traditional machine learning methods with VAE-based gene expression sample generation for improved cancer subtype predictions** (2024).  
[Genome Biology](#)

