Joshua Schaaf

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Education

Temple University, PSM (Professional Science Masters) in Bioinformatics (Contact) Sept 2020 – May 2022
- GPA: 4.0/4.0 (Diploma) Philadelphia PA, USA
- **Relevant Coursework -** Machine Learning, Biostatistics, Biological Models in Python, Genomics

Temple University, BS in Biochemistry, Computer Science Minor Sept 2017 – May 2021
- GPA: 3.88/4.0 (Diploma) – *Magna Cum Laude*, With Distinction Philadelphia PA, USA
- **Relevant Coursework -** Data Structures, Calculus, Organic Chemistry, Physical Chemistry, Biochemistry

Language

English – Native, Fluent | **Finnish –** Beginner | **Spanish –** Beginner

Experience

Bioinformatics Programmer Analyst II, HJF WHIRC – Annandale, VA, USA January 2023 – Present
Support bioinformatic efforts in a cancer proteomics laboratory: Early Career (Stage I)
- Develop, deploy, and publish **ProteoMixture**, a tool to determine relative abundance of tissue types from bulk High-Grade Serous Ovarian Cancer samples
- Design and develop machine learning (ML) methods for classifying/regressing against patient clinical variables using multiomic data
- Lead the development of computer vision-based tissue collection automation efforts
- Develop and maintain statistical data analysis workflows for proteomic, transcriptomic, and clinical data levels for projects spanning multiple cancer types
- Analyze peptide spectral match data from tandem mass tag (TMT) mass spectrometry experiments to generate comprehensive protein abundance reports

Data Analyst, FOXO Technologies – Remote – Davis CA, USA July 2021 – November 2022
Developed tools to aid identification of epigenetic biomarkers.
- Developed, maintained, and tested **RAPA** (Robust Automated Parsimony Analysis), a Python package leveraging auto-ML platform Data Robot, to perform and plot intra-model recursive feature reduction
- Created interactive dashboards for comparing clustering algorithms of methylation array data

Undergraduate Genetic Researcher, Balciunas Lab – Philadelphia PA, USA December 2018 – May 2021
- Created a genetically modified (floxed) zebrafish line to study the role of a transcription factor in cardiac tissue regeneration
- Analyzed ChIP-seq data to identify binding locations/motifs of transcription factors in the zebrafish genome

Undergraduate Biochemistry Researcher, Wang Group – Philadelphia PA, USA May 2018 – September 2018
- Performed solid-phase peptide synthesis to generate antibody-drug conjugate linkers

Publications

ProteoMixture: A cell type deconvolution tool for bulk tissue proteomic data March 2024
iScience, Volume 27 (3)
Authors: Pang-ning Teng, ***Joshua Schaaf***, ... Nicholas W. Bateman
DOI – 10.1016/j.isci.2024.109198

Mapping three-dimensional intratumor proteomic heterogeneity in uterine serous carcinoma by multiregion microsampling January 2024
Clinical proteomics, Volume 21 (1)
Authors: Allison L. Hunt, ... ***Joshua Schaaf***, ... Thomas P. Conrads
DOI – 10.1186/s12014-024-09451-2

Presentations

(Abstract accepted) **Predicting Immune Cell Admixture in Bulk Proteomics Data Using ProteoMixture** ASMS – June 2025

- Abstract ID – 323107
- Poster Session – Informatics: Algorithms and Statistical Advances

Evaluating the Performance of ProteoMixture, a Proteomics-Based Cell Deconvolution Tool in Pan-Cancer Data for > 1000 Patient Tumors ASMS – June 2024

- Abstract ID – 318970
- Poster Session – Informatics: Algorithms and Statistical Advances

Conditional Mutagenesis of Zebrafish *tcf21* TU URP Symposium – 2019

- Temple University Undergraduate Research Program research symposium

Awards and Honors

Honors

- Temple University Honors Program (2018 – 2021)
- College of Science and Technology Dean's List (2017 – 2021)
- Latin Honors *Magna Cum Laude* (2021)
- Distinction in Major (2021)

Awards

- Science Scholars Program (2019 – 2021)
- Natan Luehrmann-Cowen Memorial Award (2021)
- Temple University Diamond Marching Band Scholarship (2017 – 2018)
- Temple University Tuition Scholarship (2017 – 2021)

Skills and Technologies

Python | R | Machine Learning (`sklearn`, `pytorch`, `tensorflow`, `keras`) | Data Visualization (`seaborn`, `matplotlib`, `ggplot2`) | Computer Vision | Proteomics | git | JavaScript | C | Linux | Mass Spectrometry

Science Outreach and Communication

Letters to a Pre-Scientist (LPS) September 2024 – Present

I am a pen-pal for a middle-school student from a school in a lower-income community. I help de-mystify science and scientists, and hopefully inspire my student to further consider a career that may have felt out of reach.