Patrick Wu, MD, PhD

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Professional Summary

Quantitative physician-scientist with over 5 years of experience developing new approaches to leverage real-world health data for biomedical research

- Analyzed large health data sets using SQL, Python, and R
- Created and evaluated a resource to map ICD-10 billing codes to biologically meaningful phenotypes for genotype-phenotype association analyses in large biobanks
- Collaborated effectively with cross-functional teams to produce 6 publications

Education

2022 MD Vanderbilt University School of Medicine, Nashville, TN
2021 PhD in Biomedical Informatics, Vanderbilt University School of Medicine, Nashville, TN
2020 MS in Biomedical Informatics, Vanderbilt University School of Medicine, Nashville, TN
2011 BS in Biological Sciences, Cornell University, Ithaca, NY

Skills and Techniques

Domain expertise
- Developed and applied methods for analyzing real-world data from EHRs
- Experience working with next-generation sequencing data

Math & statistics: experience in applying linear/non-linear regression models, dimensionality reduction, and clustering methods

Coding skills: Python, R, SQL

Experience

MD/PhD student, Vanderbilt University School of Medicine   2014 – May 2022
PhD in Biomedical Informatics   Advisor: Wei-Qi Wei, MD, PhD
- Pioneered a computational approach combining diverse datasets, including longitudinal health data, to generate drug repurposing hypotheses
- Created and evaluated a resource to transform ICD-10 billing codes to computable phenotypes for genotype-phenotype association analyses in large biobanks
- Worked collaboratively with a cross-functional team of clinicians, data scientists, and statisticians to improve cardiovascular event prediction using machine learning

Service

Representative of the Student Advisory Committee   2021 – May 2022
MD/PhD program, Vanderbilt University School of Medicine
- Partnered with 3 faculty members and 23 classmates to resolve arising problems, address important questions, and facilitate programming in the MD/PhD program

President   2018 - 2020
American Physician Scientists Association Vanderbilt Chapter
- Invited and planned visits for 4 physician-scientist speakers
- Reviewed and submitted applications from 8 students for the national physician-scientist conference

Selected Publications

Wu P, Feng Q, Kerchberger VE, Nelson SD, Chen Q, Li B, et al. Integrating gene expression and clinical data to identify drug repurposing candidates for hyperlipidemia and hypertension. Nat Commun. 2022;13: 46.

Zhao J, Feng Q, **Wu P**, Lupu RA, Wilke RA, Wells QS, et al. Learning from Longitudinal Data in Electronic Health Record and Genetic Data to Improve Cardiovascular Event Prediction. Sci Rep. 2019;9: 717.

Wu P, Gifford A, Meng X, Li X, Campbell H, Varley T, et al. Mapping ICD-10 and ICD-10-CM Codes to Phecodes: Workflow Development and Initial Evaluation. JMIR Med Inform. 2019;7: e14325.