# PAUL WOLUJEWICZ, Ph.D., MPH

Assistant Professor of Biomedical Sciences & Medical Sciences

**Quinnipiac University**
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## ACADEMIC APPOINTMENTS & RESEARCH AFFILIATIONS

**Assistant Professor *(Tenure-Track)*** | *July 2023 – Present*
**Department of Biomedical Sciences, School of Health Sciences**
*Joint Appointment:* Department of Medical Sciences, Frank H. Netter MD School of Medicine
**Quinnipiac University**, Hamden, CT

**Adjunct Assistant Professor of Neuroscience** | *July 2023 – Present*
**Brain and Mind Research Institute**
**Weill Cornell Medicine**, New York, NY

**CAES Research Affiliate** | *November 2025 – Present*
**The Connecticut Agricultural Experiment Station (CAES)**
New Haven, CT

## EDUCATION

**Ph.D. in Physiology, Biophysics & Systems Biology** | *2022*
**Weill Cornell Graduate School of Medical Sciences**
New York, NY
*Thesis: A genomic characterization of human neural tube defect risk*

**M.S. in Neuroscience** | *2015*
**Rutgers Biomedical and Health Sciences**
Newark, NJ

**M.P.H. in Biostatistics & Epidemiology** | *2013*
**Rutgers School of Public Health**
Piscataway, NJ

**B.S. in Biophysics** | 2008
**University of Scranton**
Scranton, PA

# RESEARCH EXPERTISE & FOCUS

### *Primary Research Areas*

• **Neural Tube Defects:** Systems biology approaches to congenital CNS malformations
• **Metagenomics:** Vector-borne pathogen detection and public health surveillance
• **Computational Neurogenomics:** Genomic, multi-omic and AI driven analyses of complex disorders
• **AI / Machine Learning Approaches:** ML tools and pipelines for variant pathogenicity prediction and interpretation
• **Public Health Genomics:** Integrating genomic technologies with epidemiological approaches to study susceptibility to complex disorders

# PROFESSIONAL EXPERIENCE

**Postdoctoral Associate in Neuroscience**
***September 2022 – June 2023***
**Brain and Mind Research Institute, Weill Cornell Medical College**
**Computational Neurogenomics Research:**
*Developed and deployed AI/ML and systems biology pipelines for variant detection, pathogenicity prediction, and structural variant interpretation across multiple neurogenetic disorders.*

**Clinical Genomics & Precision Medicine:**
*Applied advanced genomic analysis frameworks to support precision diagnosis and mechanistic interpretation of neurogenetic disorders.*
• Served as the primary computational genomics specialist for the Center for Neurogenetics (CNG), performing variant interpretation across pediatric and adult cases
• Collaborated with neurologists, genetic counselors, and pathologists to integrate genomic findings with clinical phenotypes
• Authored comprehensive genomic interpretation reports for complex neurodevelopmental and neurodegenerative conditions

**Ph.D. Research**
***June 2018 – August 2022***
**Weill Cornell Graduate School of Medical Sciences**
**Mentors:** Dr. Margaret Elizabeth Ross (Director, Center of Neurogenetics) & Dr. Olivier Elemento (Director, Englander Institute for Precision Medicine)
*Conducted multi-omic and computational analyses to identify genomic risk factors for neural tube defects, integrating population genomics, regulatory genomics, and systems-level network analysis.*

**Research Teaching Specialist IV**
***May 2014 – August 2016***
**New Jersey Medical School, Department of Microbiology, Biochemistry and Molecular Genetics**

• **Mentor**: Dr. Mona Batish
• Conducted advanced molecular biology research on Spinach2 RNA aptamer systems for live-cell RNA imaging applications
• Developed and optimized single-molecule fluorescence in situ hybridization (smFISH) protocols for cancer research
• Optimized gene reporter and nuclear protein assays with imaging techniques to predict mesenchymal stem cell differentiation via intracellular dynamic organization

## TEACHING & CURRICULUM DEVELOPMENT

***Curriculum Innovation:***
*Designed and launched new computational genomics and machine learning courses for the medical sciences and biomedical sciences graduate programs.*

• **Machine Learning in Medical Sciences** (BMS622 / MED740) – *Spring 2026*
• **Computational Biomedicine** (BMS519 / MED700) – *Spring 2025*
• **Biomedical Genomics** (BMS312) – *Fall 2024, 2025*
• **Neurogenetics** (BIO500) – *Summer 2024*

***Course Instruction***

• **Cellular Basis of Neurobiological Disorders** (BMS578) – *Fall 2025*
• **Biotechnology** (BMS472) – *Spring 2024, 2025, 2026*
• **Seminar in Healthcare Disparities** (BMS556) – *Spring 2025, Spring 2026*
• **Genetics** (BIO282) – *Fall 2023, 2024, 2025*
• **Immunology & Immunology Lab** (BMS522/L) – *Fall 2023, 2024*
• **Neurobiology** (BIO329) – *Spring 2023, 2024*
• **Biology Journal Club** (BIO250) – *Fall 2023*

## PEER-REVIEWED PUBLICATIONS

Stankovic, I., Smit, P., Cross, J., Rai, A., **Wolujewicz, P.**, Greening, D., & Colak, D. (2025). Extracellular vesicle profiling reveals novel autism signatures in patient-derived forebrain organoids. *Translational psychiatry*, *15*(1), 393. https://doi.org/10.1038/s41398-025-03607-w

**Wolujewicz, P.**, Aguiar-Pulido, V., Thareja, G., Suhre, K., Elemento, O., Finnell, R. H., & Ross, M. E. (2024). Integrative computational analyses implicate regulatory genomic elements contributing to spina bifida. *Genetics in medicine open*, *2*, 101894. https://doi.org/10.1016/j.gimo.2024.101894

Stankovic, I., Notaras, M., **Wolujewicz, P.**, Lu, T., Lis, R., Ross, M. E., & Colak, D. (2024). Schizophrenia endothelial cells exhibit higher permeability and altered angiogenesis patterns in patient-derived organoids. *Translational psychiatry*, *14*(1), 53. https://doi.org/10.1038/s41398-024-02740-2

Crane-Smith, Z., De Castro, S. C. P., Nikolopoulou, E., **Wolujewicz, P.**, Smedley, D., Lei, Y., Mather, E., Santos, C., Hopkinson, M., Pitsillides, A. A., Genomics England Research Consortium, Finnell, R. H., Ross, M. E., Copp, A. J., & Greene, N. D. E. (2023). A non-coding insertional mutation of Grhl2 causes gene over-expression and multiple structural anomalies including cleft palate, spina bifida and encephalocele. *Human molecular genetics*, *32*(17), 2681–2692. https://doi.org/10.1093/hmg/ddad094

Allen, M., Huang, B. S., Notaras, M. J., Lodhi, A., Barrio-Alonso, E., Lituma, P. J., **Wolujewicz, P.**, Witztum, J., Longo, F., Chen, M., Greening, D. W., Klann, E., Ross, M. E., Liston, C., & Colak, D. (2022). Astrocytes derived from ASD individuals alter behavior and destabilize neuronal activity through aberrant $Ca^{2+}$ signaling. *Molecular psychiatry*, *27*(5), 2470–2484. https://doi.org/10.1038/s41380-022-01486-x

Aguiar-Pulido, V., **Wolujewicz, P.**, Martinez-Fundichely, A., Elhaik, E., Thareja, G., Abdel Aleem, A., Chalhoub, N., Cuykendall, T., Al-Zamer, J., Lei, Y., El-Bashir, H., Musser, J. M., Al-Kaabi, A., Shaw, G. M., Khurana, E., Suhre, K., Mason, C. E., Elemento, O., Finnell, R. H., & Ross, M. E. (2021). Systems biology analysis of human genomes points to key pathways conferring spina bifida risk. *Proceedings of the National Academy of Sciences of the United States of America*, *118*(51), e2106844118. https://doi.org/10.1073/pnas.2106844118

**Wolujewicz, P.**, Steele, J. W., Kaltschmidt, J. A., Finnell, R. H., & Ross, M. E. (2021). Unraveling the complex genetics of neural tube defects: From biological models to human genomics and back. *Genesis (New York, N.Y. : 2000)*, *59*(11), e23459. https://doi.org/10.1002/dvg.23459

**Wolujewicz, P.**, Aguiar-Pulido, V., AbdelAleem, A., Nair, V., Thareja, G., Suhre, K., Shaw, G. M., Finnell, R. H., Elemento, O., & Ross, M. E. (2021). Genome-wide investigation identifies a rare copy-number variant burden associated with human spina bifida. *Genetics in medicine : official journal of the American College of Medical Genetics*, *23*(7), 1211–1218. https://doi.org/10.1038/s41436-021-01126-9

Chapman, L. M., Spies, N., Pai, P., Lim, C. S., Carroll, A., Narzisi, G., Watson, C. M., Proukakis, C., Clarke, W. E., Nariai, N., Dawson, E., Jones, G., Blankenberg, D., Brueffer, C., Xiao, C., Kolora, S. R. R., Alexander, N., **Wolujewicz, P.**, Ahmed, A. E., Smith, G., … Zook, J. M. (2020). A crowdsourced set of curated structural variants for the human genome. *PLoS computational biology*, *16*(6), e1007933. https://doi.org/10.1371/journal.pcbi.1007933

**Wolujewicz, P.**, & Ross, M. E. (2019). The search for genetic determinants of human neural tube defects. *Current opinion in pediatrics*, *31*(6), 739–746. https://doi.org/10.1097/MOP.0000000000000817

Felling, R. J., Covey, M. V., **Wolujewicz, P.**, Batish, M., & Levison, S. W. (2016). Astrocyte-produced leukemia inhibitory factor expands the neural stem/progenitor pool following perinatal hypoxia-ischemia. *Journal of neuroscience research*, *94*(12), 1531–1545. https://doi.org/10.1002/jnr.23929

Dhaliwal, A., Brenner, M., **Wolujewicz, P.**, Zhang, Z., Mao, Y., Batish, M., Kohn, J., & Moghe, P. V. (2016). Profiling stem cell states in three-dimensional biomaterial niches using high

content image informatics. *Acta biomaterialia*, *45*, 98–109. https://doi.org/10.1016/j.actbio.2016.08.052

Manuscripts in Preparation & Under Review:

Assi B, Khalil N, Matijevic J, Rogers E, Eggers CH, Molaei G, **Wolujewicz P.** Nanopore Sequencing Enables Broad Detection and Surveillance of Tick-Borne Pathogens in *Ixodes scapularis (submitted)*

# HONORS & AWARDS

**SHS Faculty Scholarship Grant**
*2025-2026*
*"Determining Transcriptional Programs Underlying Aberrant Neural Tube Closure"* (PI)

**Outstanding Mentor Award - Scholarly Reflection and Concentration Capstone (SRCC)**
*March 2025*
Frank H. Netter School of Medicine, Quinnipiac University

**Faculty Scholarship & Creative Works Impact Grant**
*2024-2025*
*"Functional Genomics Underlying Birth Defects of the Nervous System"* (PI)

**SHS Faculty Scholarship Grant**
*2024-2025*
*"Leveraging Metagenomics for Tick-Borne Pathogen Surveillance"* (PI)

**Timothy M. George Award for Excellence in Neural Tube Defect Research**
*2022*
12th International Neural Tube Defects Conference

**Weill Cornell Government and Community Affairs Distinguished Service and Leadership Award**
*2019*
Weill Cornell Medical College

**NIH T32 Training Grant in Developmental and Stem Cell Biology**
*2018-2019*
Weill Cornell Medical College

**NIH Big Data Coursework for Computational Medicine (BDC4CM)**
*2017*

# INVITED PRESENTATIONS & CONFERENCES

### *Invited Talks & Session Chair*

• **Society for Birth Defects Research and Prevention** (65th Annual Meeting) – *Invited Speaker & Mini-course Lead* | July 2025
*"AI in Genomics"* | Denver, CO

• **NEURON Conference** – *Session Chair & Workshop Speaker* | April 2025
*"AI Tools in Neurobiology"* | North Haven, CT

### *Recent Conference Presentations*

• **71st Annual Meeting Northeastern Mosquito Control Association** | December 2025
"Investigating the Feasibility of Nanopore Metagenomic Sequencing for Real-Time Vector-Borne Pathogen Surveillance" (platform)

• **13th International Conference on Neural Tube Defects** | August 2024
*"Evidence of Pathogenic Expansions in Myelomeningocele Case-Parent Trios"* (platform)

• **Cell Symposia: Engineering Development and Disease in Organoids** | August 2024
*"Validation of digenic interactions underlying human neural tube defects using single rosette neural tube organoids from isogenic iPSCs"* (poster)

• **Society for Neuroscience Annual Meeting** | October 2024
*"Behavioral Effects and Transcriptional Signatures of CD11b+ Microglia in Chronic Unpredictable Stress"* (poster)

• **America's Committee for Treatment and Research in Multiple Sclerosis (ACTRIMS) Forum** | February 2023
*"Polygenic Risk Scores Associate with Lesion Features on Quantitative MRI"* (poster)

# MENTORING & SERVICE

### *Student Mentoring (2023-Present)*

• **Master's Thesis Students:**
Natalie Grober (GBMS, 2025-2026)
Brandon Assi (GBMS, 2024-2025)

• **Medical Students** (SRCC Capstone mentor, Netter School of Medicine):
Alan Chai *(2024-present)*
Phil Smit *(2023-present)*
John Gribbin *(2022-2025)*

• **Quinnipiac University Interdisciplinary Program for Research and Scholarship (QUIP-RS):**
Jesse Matijevic *(2025)*
Jenna Visich *(2025)*
Kaylee Pettengill (*2024*)

• **Independent Study Students *(July 2023-Present)*:**
11 undergraduate/graduate students totaling 30 credits

### *Select School and University Service*

• **Dean's Generative AI in Healthcare Education Task Force** | Fall 2025 – Present

• **SHS Dean's Search Committee** | Fall 2024 – Spring 2025

• **SHS Scholarship Committee** | August 2024 – Present

• **NetGene Faculty Advisor** | September 2023 – Present
*Medical student genomics interest group*

## PROFESSIONAL MEMBERSHIPS

**Society for Birth Defects Research and Prevention (BDRP), Member** | 2025 – Present

**Global Alliance for Genomics & Health (GA4GH)**

• **Member, Genomic Knowledge Standards (GKS) Work Stream** | 2025 – Present