

Mark Verba, Ph.D.

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SUMMARY

Ph.D. Biomedical Scientist and American Heart Association awardee with a strong multi-disciplinary technical foundation spanning immunology, oncology, pharmacology, and neurology. Expert in the epigenetic regulation of the blood-brain barrier (BBB), applying innovative thinking to advance drug delivery across the BBB into the CNS. Combines deep scientific proficiency and strong analytical abilities with advanced technical writing skills to support key objectives and advance projects.

EDUCATION

Doctor of Philosophy (Ph.D.), Molecular, Cellular & Biochemical Pharmacology University of Cincinnati College of Medicine Cincinnati, OH	Apr 2026
Master of Science (M.S.), Applied Safety Pharmacology & Drug Toxicology University of Cincinnati College of Medicine Cincinnati, OH	2020
Bachelor of Science (B.S.), Biology Widener University Chester, PA	2017

PROFESSIONAL EXPERIENCE

Cincinnati Children's Hospital Medical Center Research Scientist Doctoral Research	Jun 2020 - Apr 2026 Cincinnati, OH
• Authored and secured a nationally recognized, highly competitive American Heart Association (AHA) Predoctoral Fellowship to fund innovative research investigating the epigenetic regulation, chromatin remodeling architectures, and structural mechanics of the blood-brain barrier (BBB) in health and disease. • Pioneered the characterization of Znhit1-mediated regulation of receptor tyrosine kinase (RTK) pathways within the CNS microvasculature, uncovering a novel mechanism controlling brain microvascular permeability and neuroinflammation. • Deciphered the regulatory gene network triggering cell-junction breakdown at the blood-brain barrier (BBB) by deploying CRISPR/Cas9, lentiviral vectors, and shRNA knockdown strategies to validate targets. • Resolved scientific concerns from expert peer reviewers by authoring clear, point-by-point rebuttal letters that secured alignment and agreement on the core claims and conclusions of the project and manuscript. • Modeled complex tumor microenvironments <i>in-vivo</i> via stereotactic DIPG injections to map vascular alterations during combination therapy with the biologic bevacizumab in mouse models.	
University of Cincinnati College of Medicine Research Associate Master's thesis	Jun 2018 - Jun 2020 Cincinnati, OH
• Profiled Type I interferon cascades in Systemic Lupus Erythematosus (SLE) via TLR7/TLR8 activation with resiquimod (R-848), isolating key disease drivers to establish the baseline required to develop and protect novel autoimmune therapies. • Co-authored a peer-reviewed study evaluating aripiprazole tolerability in a 277-patient pediatric cohort, applying safety pharmacology and pharmacokinetic principles to determine how CYP2D6 phenocopy and drug-drug interactions drive adverse effects and treatment discontinuation. • Demonstrated advanced technical writing skills by authoring a comprehensive Master's thesis on autoimmune signaling pathways. • Proficient in next-generation CAR-T and CAR-NK platforms, with experience evaluating receptor-ligand interactions, scFv antigen-binding domains, and CD28 costimulatory pathways.	
Mercy Health West Regional Hospital Medical Laboratory Scientist (Part-time)	Aug 2018 – Jun 2020 Cincinnati, OH
• Streamlined high-throughput diagnostic workflows within a fast-paced diagnostic laboratory environment, optimizing turnaround times (TAT) to provide physicians with quick and reliable diagnostic results.	

- Participated in the initial implementation and onboarding of the COVID-19 molecular diagnostic protocol, collaborating within the team to scale testing capacity while ensuring absolute adherence to hospital compliance guidelines.

University of Cincinnati College of Medicine

Aug 2018 - Jun 2020

Dermatology Laboratory Coordinator (Part-time)

Cincinnati, OH

- Transcribed real-time pathological findings dictated during dermatological slide readings, accurately inputting diagnoses and pathologist observations into Epic EHR to ensure medical record integrity.

Ungerer and Company

Aug 2017 - Jun 2018

Regulatory Affairs Specialist

Lincoln park, NJ

- Screened proprietary chemical mixtures against global regulatory inventories (including TSCA, REACH, and IFRA) using WERCS Studio to calculate component percentages and automate hazard classifications.
- Investigated manufacturing derivation pathways and extraction techniques of natural aroma isolates to certify regulatory classification status under FDA CFR Title 21.
- Authored regulatory deliverables, including Safety Data Sheets (SDS), Technical Data Sheets (TDS), and Certificates of Analysis (CoA).

LEADERSHIP AND AWARDS

- American Heart Association (AHA) Predoctoral Fellowship, securing two years of independent research funding based on scientific merit and innovation.
- Graduate Student Representative and HSGA program representative, responsible for coordinating student advocacy efforts and collaborating across institutional teams.
- Awarded Top 10 poster at the Graduate Research Symposium at the University of Cincinnati College of Medicine.
- Led the technical training and onboarding of junior researchers on advanced experimental methods.
- Academic honors and Dean's list recognition by the College of Arts and Sciences at Widener University.

RELEVANT SKILLS

Scientific Expertise: Molecular Pharmacology | Neurovascular Biology | Blood-Brain Barrier (BBB) | Immunology | Oncology | Safety Pharmacology | Drug Toxicology | Autoimmune Pathogenesis | PK/PD studies | Bioavailability | Mechanism of Action (MoA) characterization.

Molecular & Cellular Assays: CRISPR/Cas9 gene editing | lentiviral vectors | shRNA/siRNA knockdowns | Transient transfections | Western blotting | Multiplex ELISA | Dual-luciferase reporter assays | Primary cell isolation (Endothelial cells, T-cells, and Microglia) | scRNA-seq | Xenograft models | ChIP-seq.

Therapeutic Modalities & Drug Categories: Small Molecule Therapeutics | Monoclonal Antibodies (mAbs) | Polyclonal Antibodies | Bispecific Antibodies | Cellular Immunotherapies (CAR-T & CAR-NK Platforms) | Biotechnology-Derived Pharmaceuticals | Nanoparticles & Lipid Drug Delivery Platforms | Gene & Cellular therapy | Routes of administration.

Advanced Drug Delivery & Barrier Strategies: Receptor-Mediated Transcytosis (RMT) | Ultrasound-Mediated Delivery | Active Carrier Transport | Blood-Brain Barrier (BBB) Tight-Junction Modulation.

PUBLICATIONS

1. **Verba, M.** (2026). Chromatin Remodeling Architectures and Endothelial Signaling in Neurovascular Barrier Integrity (Doctoral dissertation, University of Cincinnati / Cincinnati Children's Hospital Medical Center).
2. **Verba, M.**, et al. (in-review). Chromatin remodeling architectures and Znhit1 in neurovascular barrier integrity. Angiogenesis.
3. Thompson, M., Sakabe, M., **Verba, M.**, Hao, J., Meadows, S. M., Lu, Q. R., & Xin, M. (2023). PRDM16 regulates arterial development and vascular integrity. *Frontiers in Physiology*, 14, 1165379.
4. Sakabe, M., Thompson, M., Chen, N., **Verba, M.**, Hassan, A., Lu, R., & Xin, M. (2022). Inhibition of adrenergic β 1-AR/G α s signaling promotes cardiomyocyte proliferation through activation of RhoA-YAP axis.
5. Jallaq, S. A., **Verba, M.**, Strawn, J. R., Martin, L. J., DelBello, M. P., & Ramsey, L. B. (2021). CYP2D6 Phenotype Influences Aripiprazole Tolerability in Pediatric Patients with Mood Disorders. *Journal of Child and Adolescent Psychopharmacology*, 31(1), 56-62.
6. **Verba, M.** (2020). The Role of IRF7 in Systemic Lupus Erythematosus (SLE) (Master's thesis).