

Mark Eschbach II

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Professional Summary

Dynamic and versatile scientist with extensive expertise in analytical chemistry, biochemistry, and laboratory operations, delivering innovative solutions in academic and industrial environments. Proficient in operating, maintaining, and troubleshooting advanced instrumentation, including HPLC, GC, LC-MS, and UV-Vis, alongside biological analysis techniques. Skilled in QA/QC, process optimization, data analysis, and delivering scientific presentations. Proven leader in team management, project execution, and electronic solutions development, with a track record of driving operational efficiency and research excellence. Passionate about leveraging interdisciplinary skills to solve complex challenges and advance scientific discovery.

Professional Experience

Consulting Specialist, Chemistry

University of Illinois Urbana-Champaign

Springfield, IL | Feb 2025 – Present (6 months)

- Optimized a pilot testing laboratory for the DEO Grant (DE-FE0031581), focusing on large-scale pilot testing of Linde-BASF advanced post-combustion CO₂ capture technology at a coal-fired power plant.
- Diagnosed and resolved equipment failures, validated analytical methods, and performed repairs to ensure operational reliability and data accuracy.
- Led a small team to streamline laboratory operations, achieving a steady-state efficient workflow.
- Conducted regular testing, analyzed results, and generated reports aligned with real-time plant conditions.

Scientific Specialist

Illinois Sustainable Technology Center

Urbana-Champaign, IL | Aug 2022 – Present (3 years)

- Served as lead project manager for operational overhauls and process management improvements.
- Initiated, organized, and led development teams for internal R&D projects.
- Performed field chemistry tasks, including sample collection, in-field testing, reporting, and collaborating with site engineers to implement changes in liquid-based energy systems.
- Organized and executed travel plans for site visits in compliance with contract requirements.
- Advised site engineers on chemical treatments, operations, and problem-solving for energy systems.

Founder

Approachable Fitness

Urbana-Champaign, IL | Feb 2019 – Present (6 years 6 months)

- Founded and managed a personal training business centered on client goals, supporting diverse backgrounds and fitness levels to achieve measurable results.

Research Specialist

University of Illinois at Urbana-Champaign

United States | Oct 2019 – Aug 2022 (2 years 11 months)

- Assisted in biochemical research, laboratory management, and student training.
- Managed laboratory instruments, including repairs and operations.
- Conducted sensitive synthesis and characterization of lipid molecules.
- Expressed, purified, characterized, and analyzed metabolisms using mammalian Cytochrome P450 proteins.
- Oversaw lab management, including training, conflict resolution, and leadership.
- Concluded research for publications and managed laboratory relocation projects.

Chemistry Technician

Aardsma Research & Publishing

Loda, IL | Mar 2017 – Sep 2019 (2 years 7 months)

- Supported research through chemical synthesis, analytical work using HPLC and MS.

- Managed laboratory supplies, inventory, and organizational systems.
- Reported and analyzed data to inform research outcomes.

Analytical Chemist

Isotech Laboratories, Inc.

Urbana-Champaign, IL | Jun 2016 – Mar 2017 (10 months)

- Isolated hydrocarbons for isotopic analysis based on client specifications.
 - Analyzed samples using mass spectrometry to determine isotopic ratios.
 - Developed and edited GC methods for enhanced accuracy.
 - Tracked sample progress via logbooks and software systems.
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Education

Bachelor's Degree in Chemistry

Greenville College

2013 – 2015

- Activities and Societies: Joy Hall Letterman (2014)

Associate's Degree in Science (General Studies)

Parkland College

2008 – 2012

Additional Coursework

University of Illinois Urbana-Champaign

- Plasma and Fusion Science, 2025
- Symbolic Logic, 2023
- Early Modern Philosophy, 2023
- Logic and Reasoning, 2022
- Modeling of Nuclear Energy Systems, 2022

edX, Udemy, and Coursera Online Courses

- Differential Equations, Udemy (Issued Jan 2025)
 - Partial Differential Equations, Udemy (Issued Jan 2025)
 - Linear Algebra, Udemy (Issued Dec 2024)
 - Access Basics for Excel, LinkedIn (Issued Mar 2024)
 - SQL for Data Science, University of California, Davis (Issued Feb 2024)
 - Complete Microsoft SQL Server Database Administration Course, Udemy (Issued Jan 2024)

 - C++ Tutorial for Complete Beginners, Udemy (Issued Dec 2023)
 - Fundamentals of Neuroscience, Part 1: The Electrical Properties of the Neuron, edX (Issued 2018)
 - Fundamentals of Neuroscience, Part 2: Neurons and Networks, edX (Issued 2018)
 - Fundamentals of Neuroscience, Part 3: The Brain, edX (Issued 2018)
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Skills

- Analytical Techniques: HPLC, GC, LC-MS, UV-Vis, Mass Spectrometry
 - Laboratory Management: QA/QC, Inventory Control, Equipment Repair
 - Research & Development: Biochemical Synthesis, Protein Expression/Purification, Data Analysis
 - Project Management: Team Leadership, Process Optimization, Field Testing
 - Software: Excel, Python, SQL, HTML, LLMs and AI (ChatGPT, Grok, Mistral)
 - Other: Personal Training, Fitness Coaching
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Licenses & Certifications

- Certified Personal Trainer (NASM-CPT), National Academy of Sports Medicine (Issued Mar 2023)
 - CPR & AED, American Safety Training Institute (Issued Feb 2023)
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Publications

- "Metabolites of Cannabigerol Generated by Human Cytochrome P450s Are Bioactive," *Biochemistry* (November 1, 2022)

- "Estrogen Metabolites Increase Nociceptor Hyperactivity in a Mouse Model of Uterine Pain," *JCI Insight* (May 23, 2022)
 - "Omega-3 Endocannabinoid Epoxide Enantiomers Formed by Human Cytochrome P450s Are Bioactive," *Biochemistry* (Submitted, Under Review)
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Honors & Awards

- David Jones Persuasive Speech Contest, Parkland College (3rd Place, 2011)
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Volunteer Experience

- SAC Representative, Illinois State Water Survey (Sep 2023 – Present): Fostered workplace community through event planning and networking.
 - Construction Volunteer, Rancho De Sus Ninos (2010): Assisted in building a school for orphans in Mexico.
 - Donation Sorting, Salt & Light Ministries (2007 – 2008): Sorted food and clothing donations.
 - Food Sorting, Central Illinois Foodbank (2006 – 2007): Sorted incoming food donations.
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Languages

- English (Native/Professional Proficiency)
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Organizations

- SAC @ IWS, Committee Member (Oct 2023 – Present): Promotes community building through planning and outreach.
- Association of Water Technologies (AWT), Member (Jan 2022 – Present): Supports water treatment professionals in industrial and commercial systems.