

SEARCH COMMITTEE  
UNIVERSITY OF PITTSBURGH  
KENNETH P. DIETRICH SCHOOL OF ARTS AND SCIENCES  
DEPARTMENT OF BIOLOGICAL SCIENCES

**Application for Teaching Professor in Computational Biology (Job #24007997)**

Dear Search Committee,

I am writing to express my enthusiasm for the Teaching Professor in Computational Biology position (Job #24007997) at the University of Pittsburgh. I hold a Ph.D. in Chemical Engineering from the University of Pittsburgh and have extensive teaching and research experience in computational biology and chemistry. I am excited about the opportunity to contribute to your department's dedication to excellence in education and innovation.

As a postdoctoral associate in the Department of Biological Sciences at the University of Pittsburgh, I designed and delivered undergraduate courses from the ground up, such as Computational Biology (BIOSC 1540) and Computational Biology Seminar (BIOSC 1630). These courses introduced undergraduate students to foundational and advanced concepts, including genome assembly, differential gene expression, protein structure prediction, molecular simulations, and computer-aided drug design. My teaching philosophy centers on creating inclusive, engaging, and adaptive learning environments that empower students to connect theoretical principles with real-world applications. I emphasize active learning strategies, such as scaffolded problem-solving and inquiry-based projects, to ensure students develop the critical thinking and computational skills necessary for academic and professional success.

My dedication to education extends beyond the classroom. With the Investing Now program, I developed hands-on modules for historically underrepresented high school students, sparking their interest in STEM. This experience reinforced my commitment to fostering diversity, equity, and inclusion in all educational settings. I actively mentor students from diverse backgrounds, guiding them through technical challenges in computational biology and chemistry while providing professional development tailored to their goals. My mentorship approach combines structured weekly check-ins with continuous availability for personalized support, emphasizing computational expertise and essential soft skills. By curating a supportive and adaptable mentoring environment, I aim to inspire confidence, resilience, and a sense of belonging in every student I work with.

In addition to teaching, my research background equips me with a unique perspective that enhances my instructional approach. My doctoral research under Dr. John Keith focused on integrating quantum chemistry, machine learning, and molecular simulations to investigate solvated reaction mechanisms. This work provided me with a solid foundation in computer science, mathematics, numerical methods, high-performance computing, and physical chemistry—invaluable skills in computational biology. As a postdoctoral associate, I have continued to explore computational methods in structural biology, drug design, and software development. My work focuses on molecular

simulations of protein dynamics and protein-ligand interactions, virtual screening, and machine learning. Furthermore, I have helped nurture collaborative projects that span structural biology (Dr. Andrea Berman and Dr. Joel Rosenbaum), vaccine development (Dr. Doug Reed), and gene therapy (Dr. Leah Byrne and Dr. Miguel Betegon). Additionally, I develop and maintain research software using Python, JavaScript/TypeScript, and Rust to facilitate accessible, innovative approaches to computational challenges. These experiences inform my ability to teach cutting-edge topics in computational biology, ensuring students are prepared for the field's dynamic demands.

Enclosed are my CV, teaching portfolio, and diversity statement detailing my qualifications and approach to inclusive education. I welcome the opportunity to discuss how my experiences and vision align with your department's goals. Thank you for considering my application.

Best Regards,

A handwritten signature in black ink that reads "Alex Maldonado". The signature is written in a cursive style with a large, sweeping arch over the first few letters.

**Alex Maldonado, PhD** (he/him/his)