CAROLINE CVETKOVIC

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To Whom It May Concern:

I recently completed my Ph.D. in Bioengineering in the laboratory of Professor Rashid Bashir at the University of Illinois at Urbana-Champaign, and am seeking a postdoctoral position beginning mid-spring to summer 2017. My research interests include tissue engineering, skeletal and neuromuscular systems, 3D printing, tissue-on-a-chip, and biomaterial fabrication.

My research has been focused on developing methods to build forward-engineered cellular systems with the ability to sense and process information, respond to external stimuli, and produce force. I am a leader in the field of bio-inspired robotics, contributing to the first demonstrations of 3D printed biological machines powered by electrically and optically stimulated skeletal muscle. These results have been highlighted in major news outlets worldwide and adapted for use with undergraduate bioengineering classes.

Outside of my formal training, I have 5+ years of interdisciplinary experience as part of multi-institutional traineeships. Through a NSF-funded Science and Technology Center (Emergent Behaviors of Integrated Cellular Systems), I have collaborators and co-authors at MIT, University of Georgia, and Georgia Tech, as well as myriad non-curricular experiences in K-12 and community outreach, mentoring of graduate and undergraduate students, and professional development. I have presented my work at conferences both in the U.S. and abroad. Through opportunities such as a GEM4 Cellular and Molecular Mechanics Summer School at Imperial College in London and a research exchange at the Mechanobiology Institute in Singapore, I have been exposed to cutting-edge global scientific discoveries. While on campus, I was engaged in leadership positions both within my department as well as university-wide. I was selected as one of 20 graduate students across campus to participate in the Provost and Graduate College Student Advisory Board. We provided feedback on programs, administrative and academic policies, and initiatives, while generating ideas for programs and activities to enhance the academic, professional, and social experience of graduate and professional students.

At the forefront of my research is a demand for translation into clinical outcomes. The biological components comprising most high-level cellular systems have been assembled to date as individual modules. My recent efforts include coordinating multiple cell types to develop biological machines with greater functionality. With a variation in engineered tissue construction, I developed a method to integrate motor neurons with skeletal muscle within the foundation of the machines. Thus far, my research has emphasized the development of cell- and biomaterial-based tools and platforms as building blocks for biological machines. In the near future, I desire to shift my scientific focus to emphasize translation into medically relevant applications, such as the demonstration of a functional muscle-neuron machine as a highly relevant platform for the study of neuromuscular disorders (which necessitate a non-destructive and real-time microenvironment encompassing both cell types), for example. This technology could also serve as a basis for target applications such as micro-scale tissue fabrication for organ-on-a-chip mimics of neurodegenerative diseases and dynamic biocompatible medical implants.

However, my interaction with such opportunities throughout my training has been limited. Recently, I was selected to participate in a Clinical and Translational Research Course for Ph.D. Students at National Institutes of Health Clinical Center. The introduction provided by this course impelled an interest in pursuing a career in clinical and translational research while building on my background in both engineering and biology. In a post-doctoral position, I hope to gain the skills and expertise involved in translating biomedical advancements into clinical applications utilized in hospital, research, industrial, or pharmaceutical settings. Additionally, I aspire to understand the tools necessary to pursue a PI role in academia or government labs, from securing funding for translational work, to designing studies and protocols required for basic investigation in this type of research, to knowledge transfer and public dissemination of scientific discovery to wide variety of audiences. With my unique background and interdisciplinary education, I will then be well poised to bridge the gap between biomedical research and translation.

I look forward to hearing from you.

Sincerely,

Caroline Cvetkovic

Caroline Cvetkovic, Ph.D

References available upon request.