

Research Highlight: Jianning Wei, Ph.D.

This month, the College of Medicine interviewed Jianning (Jenny) Wei, Ph.D., associate professor of Biomedical Science. Dr. Wei is part of a multi-disciplinary team, recently awarded a four-year \$1.3 million grant from the National Institutes of Health (NIH) for a neuroprosthetic study exploring how feedback loops contribute to the neural regeneration of neural pathways. The research team has been collaborating for the past two years. The goal of the study, *Virtual Neuroprosthesis: Restoring Autonomy to People Suffering from Neurotrauma*, is to improve the tactile function of amputees fitted with neuroprosthetic limbs, ultimately improving the quality of life of these individuals. Dr. Wei's role is to prepare the peripheral neurons in the microfluidic chamber device and to investigate their regeneration properties under different stimulation protocols adapted from amputees. She and the other team members have been receiving emails from amputees who are excited and curious about the possible outcomes of this first-of-its-kind study.

Dr. Wei's main research interest is Huntington's disease (HD), a devastating neurodegenerative disorder often onset at middle age, of which rapid decline occurs, commonly resulting in death within 17 years of diagnosis. With support through NIH and the FAU Brain Institute, Dr. Wei is currently studying signaling pathways that are effected by HD. Recently, she has focused on applying microfluidics and studying axonal transport in HD. Using the microfluidic chamber device with electric stimulation, Dr. Wei is able to study activity-dependent axonal transport in HD neurons. "I have never been able to look at this transport before, but now I can with the same device used in the robotic hand study," Dr. Wei explained. Since HD has no treatment or cure, it is important for researchers, like Dr. Wei, to explore therapeutic targets that may help those who are suffering from this disease. "The next steps are to determine if HD might have a lower stress threshold, which causes HD neurons to become more vulnerable to external insults," Dr. Wei said.

Dr. Wei's passion for research developed during her undergraduate studies. She majored in Organic Chemistry, and was afforded the opportunity to work in a lab for the first time. It was then, that she developed an interest in biology. Her lab project was to synthesize a compound that helps deliver DNA into the cells and was the experience that ultimately contributed to her decision to pursue a Ph.D. in Biochemistry with a Neuroscience focus.

For students who wish to become medical researchers, Dr. Wei offers the following advice. "First you need to find a real research interest. Second you should really develop your independent thinking and analytical skills. You can teach people how to conduct lab work, but you need to be able to go past just doing the steps and critically think about the research."