

Personal Report (Emrich Stefanie)

Overall impression of the research period

With the aid of the Marshall Plan scholarship I got the great chance to be part of a team which performs stem cell research to protect neurons for spina bifida and other neuronal diseases. This field is highly promising and I am very sure that investigating stem cells is one of the most important parts to push the medical development forward. There are a lot of technical opportunities to investigate cells and also exosomes (which is also very important for further stem cell investigations). But all these methods are relatively new and they are still prone to error. There is a huge potential for people which focusing on optimizing these methods. Making research easier in the field of stem cell research will help scientists all over the world.

First I wanted to focus on just one method for investigating PMSCs. The main method should have been flow cytometry but due to the lack of species specific antibodies I needed to switch methods to characterize cells. So I started making PCR as well as flow cytometry. So I learned growing cells for different applications and how to treat and stain them for further flow cytometry analysis in the first month. But then I got the chance to learn very quickly how to isolate RNA, how to make cDNA out of RNA and how to perform accurate PCR on an agarose gel. I got a feeling for time management because I had to thaw and seed cells. They needed to grow and expand to get enough material for all my tests and it was my responsibility to provide enough cells for all applications.

In addition I got the chance to perform ELISA testing on my own. This means I performed a new growing protocol. I focused not on the cells itself, I focused on the secreted cytokines in the media. It was a new application with new challenges, new protocols and new things I had to think and check about. I learned to know the cytokine array testing on a glass slide. This method is able to provide a flood of data by just one test but it is so extremely sensitive that I could have spent the whole three months just on optimizing this one test.

So all in all I had the chance to do many different things in my three months of internship at the UC Davis research laboratory. I learned a lot about the background of the tests. I got a feeling for the technical opportunities and limitations of the methods and I could see that there is a big potential for technicians to optimize testing systems. It would have been great to stay longer and I would have appreciated to spend more time on different testing methods to repeat them and minimize errors and increase accuracy. If I had more time I would have focused on enhancing quality on all my different testing methods. But I know that all these tests cost a lot of money and time was not the only limiting factor. My courses at home started at the beginning of May anyway so I had to go home and finish my bachelor degree.

Quality of the research institution

The research laboratory of the UC Davis medical center had high quality standards. The employs were well qualified and when I had questions about the test itself or the background I always got good explanations. My supervisor at the laboratory was Aijun Wang, he provided a lot of precious background information. He was often very busy but he told me who could help in case I needed some and so I had the chance to work with Lee Lankford the first month of my internship. He is an amazing guy with an incredible knowledge of flow cytometry, stem cells and I am sure a lot of more important things around the topic. Unfortunately he reduced his lab hours and it was a bit difficult to work without his support after the first month. I am glad that I had the chance to work a lot on my own, I could manage my time by myself. I would have preferred to have Lee on my side but this increased my self-confidence and I got aware that I can do much more than thought I was able to do on my own.

Integration in the research institution and organization

From the first day on I attended the lab meetings twice a week. I was always well informed and it was great to get a chance to get to know on what projects all the other students worked on and how they got forward. Two dogs were treated by the cell types I performed research on and every week I got information about their conditions and progress. I got great input from other scientist and I got an overall impression of the research laboratory itself. We talked about short and long term goals and what I can achieve in my three month internship.

I have to say that the organization of the university itself was not always good. The building I worked in had restricted access. Everybody needed a keycard to get into the building and I got mine a week before I left, I can't remember how often I asked about it. So I had to sneak into the building every day and this was really annoying.

Recommendations for future MPS scholars

When I contacted the lab first, they often did not respond my mails. Fortunately the leader of my degree program Geja Oostingh helped me and also wrote some mails to support my internship. I want to recommend to ask for help like this. Other MPS scholars should be aware that they have to organize themselves very well and the supervisor is not available permanently.

