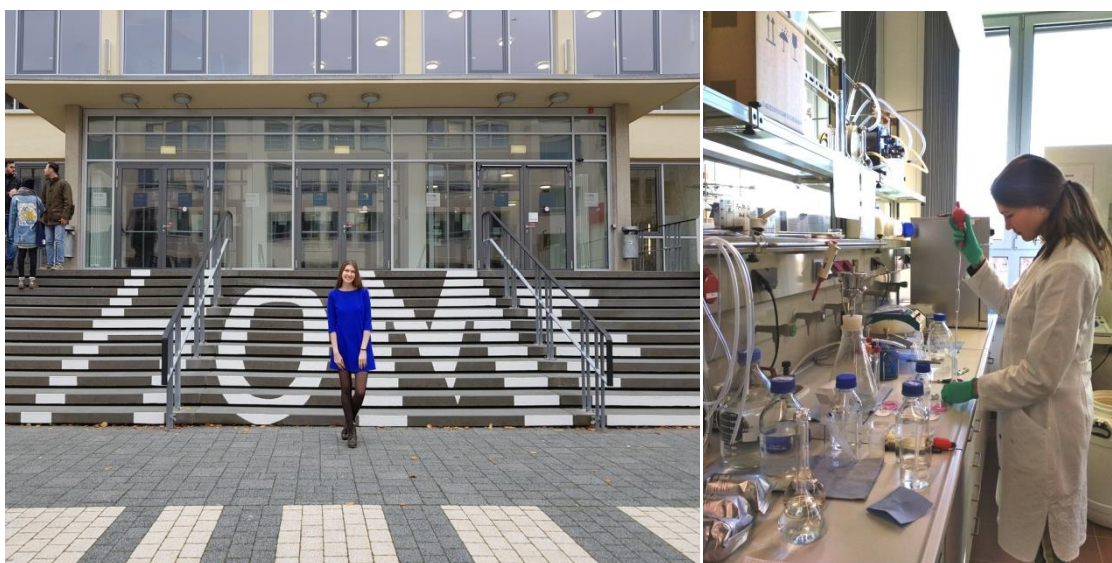


REPORT prepared by *Rashitova Elena, Ufa State Petroleum Technological University*

In the period of time from Sep 17th to Nov 23rd, 2018, I had a great opportunity to complete an internship at the University of Applied Sciences in Merseburg, Germany. This internship became possible due to the cooperation of Ufa State Petroleum Technological University with Hochschule Merseburg on the basis of obtaining DAAD scholarship. Despite the short period and tight deadlines, I got a huge experience in the field of ecology, biotechnology, and microbiology.



At Hochschule Merseburg, I worked in the field of microbiology under the supervision of Professor Würdermann and her team. Together with laboratory engineer Anja Narr our task was to install four reactors to cultivate two types of microorganisms in different conditions: anaerobic and aerobic; and also providing the most sterile environment for growing the culture. A large number of experiments were carried out to observe the fermentation of microorganisms, their growth and life cycle.

Two types of microorganisms were used: *Saccharomyces cerevisiae* and *Escherichia coli*. After we had started the reactors, for several weeks I was taking samples to analyze the content and also to measure amount of such products as ethanol, phosphates, organic acids, and glucose. For a deeper analysis the polymerase chain reaction and electrophoresis took place, the samples were purified, the DNA was separated from the supernatant, and after several temperature cycles we could observe the conformity to the content of the reactors or not. A quantitative polymerase chain reaction was also performed using different primers in order to identify which of those are most suitable for further experiments.

Both cultures were observed under a microscope, several methods were used to count the number of cells in a certain volume of sample. There have also been many experiments for optical density measurements using devices such as the *Portable Datalogging Spectrophotometer* HACH DR/2010, CERTOMAT H/S *B. Braun Biotech International*. Samples from all four reactors were used, and further comparative analysis was performed. My task was completely focused on the cultivation of microorganisms, ranging from the preparation of the nutrient medium to the cultivation of cultures in the laboratory. However, I was engaged not only in the chemical and biological part of the process, but also in the mechanical part of the installation of reactors – fixing the stirrers, constructing the pipes for aeration, providing the system with the necessary filters and air supplies, etc. This experience gave me a greater understanding of how the system works, and helped me develop engineering skills, as well.

In conclusion of all these experiments I can add that the main goal of preparing the material and reactors for students' practical work was successfully achieved. The project we worked on during two months is already running and I was lucky enough to attend two first classes of them and participate in the process. It was exciting to see that the experiments I worked on were being done by students.

My studying part was not limited just by working in the laboratory. I had two more courses as German language for beginners and Germany in the international context. From these two months my German significantly improved and knowledge about the German culture broadened.

Of course, such a productive work would not have been possible without the support of the International Office of the University, which also provided indispensable assistance in organizing accommodation and adaptation in a foreign country. Frau G. Meister was personally interested in how well the things were going on and how comfortable the stay has been. Moreover, International office always supported the idea to expand international students' experience by visiting other cities in order to get acquainted with the German culture more. Buddies were always open and helped a lot in time when there were questions or difficulties. The international community consisted of very friendly and united group of people with whom various trips were organized.

I visited some German cities such as Weimar, Halle, Chemnitz, and Munich, where I learned more about the history of Germany. One of the most unforgettable events for me was a visit to the Oper Leipzig to listen to the opera “Tannhauser” of a famous German composer Richard Wagner. And the other one – a visit to the Halle State Museum of Prehistory that impressed me of organizing different thematic exhibitions every year.

In addition to cultural leisure, the university offers to all students wonderful conditions for sport activities. In particular, I attended three different courses which I was able to choose myself according to my needs and preferences. They helped me to maintain a healthy lifestyle and stay fit during my internship abroad.

All in all, I would like to add that such student exchanges and close cooperation of universities make it possible to bring up the potential of young researchers, gain a work experience and, of course, motivate students for further development not only in the professional way but also to expand their way of thinking and widen personal vision of the world.