

JAMES RENNIE BEQUEST

REPORT ON EXPEDITION / PROJECT / CONFERENCE

Expedition/Project/

Conference Title: Tallinn University of Technology Biomedicine Winter Internship

Travel Dates: 05/01/2025 – 12/01/2025

Location: Tallinn, Estonia

Group member(s): Karol Skupien

- Aims:**
1. To perform microbiological experiments to investigate the probiotic features of two novel *Ligilactobacillus salivarius* strains
 2. To conduct immunohistochemical stainings of mouse liver sections to analyse the role of human pathogen *Helicobacter pylori* in liver diseases

Photography consent form attached: Yes
(please refer to your award letter) No

OUTCOME (a minimum of 500 words):-

The purpose of my visit to Tallinn was to join the Biomedicine research group at Tallinn University of Technology to investigate the probiotic features of two novel *L. salivarius* strains and to perform immunohistochemical analysis of mouse liver sections to analyse the role of the human pathogen *H. pylori* in liver diseases.

The idea for this placement came about due to wanting to broaden my understanding of biomedical research and different fields of study to get a better idea of which direction I would like to take my future career in. During the short internship, I participated in laboratory work and group meetings within the Biomedicine research group, and I also had the opportunity to speak to researchers from other groups at the University as well as speak to Biotechnologists at the local start-up ÄIO.

I have built up a basic understanding of immunohistochemical analysis thanks to a prior internship, which meant that I could take the opportunity during this placement to further develop my skills in histology. This was a particularly insightful experience as I have only performed these IHC staining in one particular context, therefore this was an excellent opportunity to see how my existing skills and knowledge transfer into a different environment, as well as to consolidate prior learning further. Participating in researching the probiotic features of two novel *L. salivarius* strains helped to show me how many different experiments and investigations can be used to piece together a larger puzzle, as for this I used techniques I was already familiar with, as well as some new approaches to me.

During my international mobility, I had the opportunity to visit the headquarters of ÄIO, an Estonian biotechnology startup which aims to develop sustainable alternatives to animal fats, palm and coconut oil by using yeast to convert waste products into valuable ingredients. This experience showed me how biological science can not only be used to understand and cure infection and disease but to also make consumer products such as cooking oil and lip balm.

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Lastly, an unforgettable experience during my mobility was when I got immersed in Estonian culture by making a local friend. I met an Estonian my age who was about to leave for his hometown to complete his national service in the next coming days, as all males must serve for 8-11 months in the army between the ages of 18-27. After hours of conversation I, he invited me to join him and his childhood friend at a concert of his favourite artist, where they were saying farewell to each other for the last time until he left for the army. This was an extremely eye-opening experience where I immersed myself in a culture different from my own and saw how different the realities of life look like for someone so similar to me in a different country.

Overall, during this international mobility, I experienced the day-to-day life of a research group in Estonia, where I participated in research and discussions. This was a particularly valuable experience to improve my existing skills and learn how different areas of research fit into the bigger picture. My half day at ÄIO demonstrated to me how biological research can be used to make and improve consumer goods. A particularly valuable part of the experience was seeing how different life looks to someone living in a different country. After this experience, it's clear to me that Estonia can be seen as a leader in biomedical research and biotechnology with warm people.

I would like to thank my internship supervisor, Dr. Pirjo Spuul, as well as the James Rennie Bequest and its committee without whom this mobility wouldn't be possible.