



## SHORT TERM MISSIONS

Short Term Missions (STMs) are small travel grants with the aim of:

- Sharing scientific expertise, methodologies, equipment and facilities to harmonise the existing approaches and methodologies within the large
- OHEJP European network
  Driving the research forward in a collaborative and non-duplicative fashion to strengthen both the scientific capacity within the OHEJP
- Contributing to the future prevention, preparedness, detection and response of the EU to foodborne and other emerging threats across human-animal-environmental sectors.

## Tolerance of biofilm forming bacteria to disinfectants after repeated disinfectant exposure



My personal and professional confidence grew during the STM. The information shared has been invaluable to my learning and development. I have gained experience in a wider range of methods used in biofilm and disinfectant research, as well as with a species of bacteria. We exchanged skills and to allow harmonisation of approaches. The methods and techniques learnt will be applied to ongoing and future projects back at my home institute...."

Emma Brook APHA, UK Theme:

Home Institute: Mission Hosting Institute: Duration of Mission: One Health Missions- Veterinary, Food, Medical and/or Environmental research Animal and Plant Health Agency (APHA), UK Norwegian Veterinary Institute (NVI), Norway 3 weeks

The aim of this mission was to test methods for measuring disinfectants efficacy, after repeated use on bacteria that survived treatment due to the formation of biofilms. Methods for disinfectant efficacy testing against planktonic foodborne bacteria are well established, yet methods for efficacy of disinfectants for biofilms are still novel, particularly the effect of repeated exposure to disinfectants on the survivability of bacteria in biofilms. This STM aimed to promote harmonisation of current test methods and models used in biofilm and disinfectant testing.

During this mission, biofilms of Staphylococcus aureus were exposed to different concentrations of Benzalkonium chloride disinfectant. Following neutralisation of the disinfectant, biofilm was removed via mechanical action. Persisting bacteria were enumerated and isolated to prepare next-generation biofilms. These were then exposed to further disinfection using the same concentration to which they were previously exposed. This was repeated over nine consecutive experiments. The results have shown that increased tolerance to biocides by biofilm forming bacteria can occur. However, conflicting statistical results suggest the need for further investigation. Future studies should expand on the data collected in this study, to help develop knowledge on the role of biofilm producing bacteria in the dissemination of biocide resistance and factors affecting the variability in biofilm behaviour.

The STM has improved on the relationship between two existing One Health EJP partners and enhanced both current and future collaborations between the partner institutes. The STM has supported collaborative research in the current project (BIOPIGEE) through improvements of working arrangements and understanding of the used methods.

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