# MIGHTY BACTERIA IN A CIVILISED WORLD

*Prepared by Amy Wooding*

The 2013 FABI/ CTHB UPwithScience project was coordinated by Markus Wilken, Osmond Mlonyeni, Mmatshepho Phasha, Teboho Letsoalo and Amy Wooding. The inspiration for this year's UPwithScience project came from the ever-increasing number of antibacterial products being advertised. The aim was to explore the idea created by these products that bacteria are everywhere and out to get you! The five Grade 11 learners involved in the project this year did this by testing whether all bacteria can survive in every environment; will bacteria isolated from the UP Botanical Gardens survive in motorbike oil? The project allowed the Grade 11 learners to delve into the fascinating world of bacteria, and find out just how resilient (or not) these amazing microorganisms are.

As with many projects in FABI, the 2013 UPwithScience project kicked off with a field trip! The learners collected bacterial swabs from different environments including the UP Botanical Gardens, the LC Dam, the Pretoria Bowls Club and each other's ears. These samples were cultured in a nutritious medium in order to quickly grow colonies of the bacteria sampled. The learners were amazed by the diversity of bacteria they collected and had great fun selecting the most interestingly shaped and brightly coloured colonies for use in the rest of the project.

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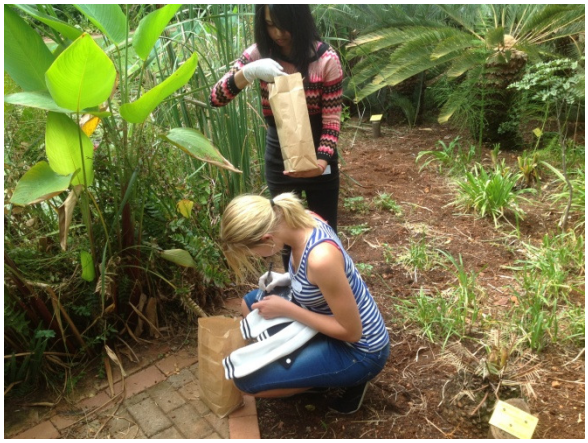
2 

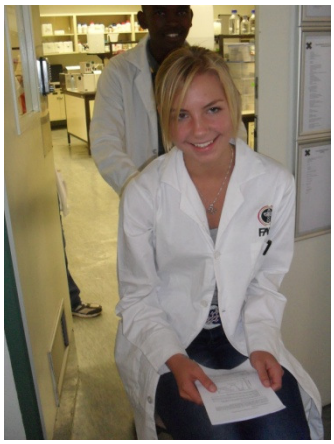
**Grade 11 learners collecting samples from the UP botanical garden:** 1. Morné (front) and Mathew. 2. Kirsten (front) and Shalona.

The learners discovered that some of the bacteria they had selected for the remainder of the project, had been collected in the past from some very interesting environments, including glaciers and bioreactors by other researchers. One interesting finding was that many of their

bacteria had not yet been described to species level. Using the information that they were able to find about their bacteria, the learners proceeded to test whether their chosen bacteria could survive under some alternative growth conditions. Among the 'media' tested were essence of flower, paint, biltong juice and motorbike oil. The learners found that some bacteria could indeed survive in a wide variety of environments. Can bacteria isolated from the UP Botanical Gardens survive in motorbike oil? Most definitely! Can it survive in other environments? Not always.

Over the six month duration of the project, the learners were able to apply the scientific method and discovered just how important it is to not only ask as many questions as possible, but also to carefully consider the way that experiments are designed to answer those questions. The learners were exposed to many aspects of science, ranging from field work to lab work to research. Some even tried their hand at reading a few scientific articles, an activity which many undergraduates are daunted by. I am also happy to report that two of the learners, Shalona and Kirsten took the project to the Eskom Regional Science Expo in August this year.

Many people are unaware of the multitude of avenues of study in the biological sciences. This year's UPwithScience project allowed us to introduce the learners to a small number of the plethora of options available to them in the biological sciences. The UPwithScience programme provides researchers with a platform to improve their ability to communicate complicated scientific ideas to the general public, and learn a few things in the process!

1  2 

**Fun times in the lab:** 1. Mathew and Kirsten (front) discover a new mode of transport. 2. Shalona (left), Dhivyaa, Morné, Mathew and Kirsten (right) delve into the nitty gritty of lab work; tip packing.