

Report for ESCMID Training in a Foreign Institution

Kati Vuorenoja, M.Sc.
National Institute for Health and Welfare (THL)
Antimicrobial resistance unit
Turku, Finland

I had the training period in Reference Centre for Detection of Antimicrobial Resistance, Department of Microbiology and Infection control, University Hospital of North Norway from 18 to 22 January 2010. The aim of my trip to Norway was to learn a specific technique, S1 nuclease plasmid characterization, and set up the same method in Turku, Finland. I have been studying the resistance genetics of extended-spectrum β -lactamases (ESBL)-producing *Enterobacteriaceae* in Finland. And because these ESBL-resistant isolates are spreading all over the world, it is becoming a major concern and there is a need for better understanding the mechanisms of bacterial antibiotic resistance. Typically antibiotic resistance genes spread via plasmids. Plasmid sizes can vary 1 to over 1000 kilobase pairs and large plasmids need complicate methods to separate them. Therefore we need this method in our laboratory to detect large plasmids.

In Norway they are expert in this specific technique and they taught me the method during my trip. The Norwegians provided me with the protocols and I send our ESBL-strains there beforehand. My programme dealt mainly with the steps in doing this laboratory work. The S1 nuclease plasmid linearization of *E.coli* method we used is based on an enzyme that is isolated from the mold *Aspergillus oryza*. This enzyme adheres only to single-stranded DNA, breaks DNA and converts plasmids to full-length linear molecules.

The procedure in the laboratory:

- Making agarose plugs from the Finnish ESBL-strains for the pulsed field gel electrophoresis (PFGE).
- S1 nuclease plasmid linearization for plugs and PFGE run.
- Vacuum blotting.
- Preparing a DIG labelled probe.
- Hybridization.

Training in Norway went as planned: I got good knowledge about the S1 nuclease plasmid characterization method and now I have the information how to set up method in our laboratory. The ESCMID travel grant for training in foreign institutions was used to support my travel in Norway and gave me a great opportunity to learn this new technique. I am grateful to ESCMID for the travel grant and to Dr M. Umaer Naseer for the teaching I received in the laboratory.