**S010**

**2-hour Symposium**

**Hot topics in culture-based diagnostics**

## Automation of bacteriology: what is new?

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Automation of bacterial cultures, including digital imaging, has now been widely introduced worldwide. Implementation of automation has been important in standardization of inoculation, incubation times, and exact zone measurements in Disk Diffusion AST. Shorter incubation combined with MALDI Tof MS has reduced time to result by at least 24 hours regarding identification. Even disk diffusion incubation times can be shortened for some bacteria/antibiotic combinations. All leading to a timely, high quality result to target antibiotic therapy, which is essential in an era of increasing resistance

Moving from the early adopter phase to the early majority users it is time for innovation to move on and focus on the further possibilities of digital imaging. Having gotten used to working with images the next step is using artificial intelligence to help us improve culture results. Automated bacterial growth detection, colony morphology recognition, automated colony picking for ID using MALDI ToF MS or molecular methods are just a few examples the near future will bring us.

Imagine having your plates pre-read with a preliminary result attached to it. Although we will still need experts to interpret what the relevance of this preliminary report is, we will have a more complete picture of what is actually growing, including the relative quantities. This way it might be easier to detect for example small-colony variants which presumably are often missed in routine cultures.

By looking at cultures at earlier stages (6, 10, 12 hours) we might detect growth of species that will be overgrown by others after the classical overnight incubation.

Digital imaging, as part of automation, will also allow us to reach out to those areas in the world where basic bacteriology is still lacking. By expanding the network of telebacteriology we can support capacity building and knowledge transfer all over the world. This, in particular, is important for worldwide AMR surveillance.