TRAVEL GRANT REPORT

19th International Conference on Bacilli and Gram-Positive bacteria			
Berlin, 11th - 15th June 2017			
Prokaryotic Biology			
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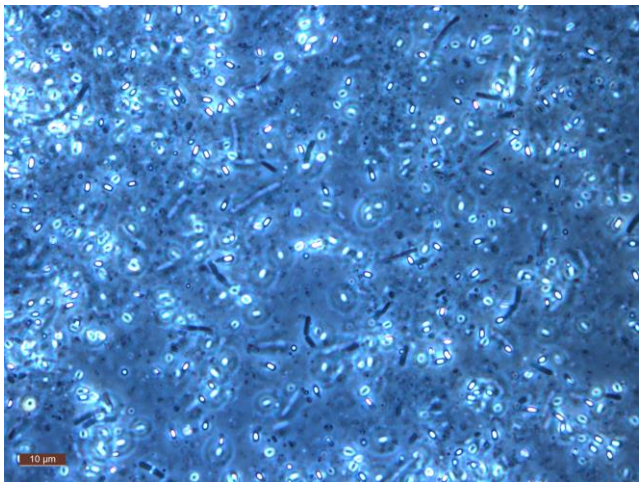
During the conference, the major advancements on Firmicute sporulation, cell division, stress response, biofilm formation, and pathogenicity were presented. In highlights, Richard Losick, as a keynote speaker, presented the latest discoveries on the onset of sporulation based on the stochastic activation of the *spo0A* gene, the master regulator of sporulation. He has shown for the first time how microfluidic technology could be applied to monitor the activation of this gene. Moreover, Carol Gross, presented the work of her laboratory on high throughput phenotyping of *B. subtilis* strain 168. She has highlighted the need to describe the complete gene functions and molecular pathways for the Gram positive model organism *Bacillus subtilis*, as it has been described in the past for the Gram negative model *Escherichia coli*.



The previously considered asporogenic genus *Kurthia* has been observed to form phase-bright spores at the contrast phase microscope. In this picture, *Kurthia* sp. strain 11kri321 is shown to sporulate after inoculation in a sporulation inducing medium.

At the 19th International conference on Bacilli and Gram-Positive bacteria, we presented our work on the genus *Kurthia*. We showed that this genus is a *cryptosporulant* lineage, rather than an *asporogenic* one. We have described the morphology of the vegetative cells (diderms) and the spores and we proposed a sporulation mechanism. The mechanism of sporulation differs significantly from that of *Bacillus subtilis*, but it is consistent with the morphology of the cell envelope. Our results confirm the existence of a missing derived cell envelope morphology in Firmicutes and the hypothesis that the last common ancestor of Firmicutes was a sporulating diderm. Our findings pave the path for further investigation in the origin of sporulation and the evolution of the cell envelope in Firmicutes.