

S4T4**Conserving the microbiome - Underpinning Phytobiome Research**

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Abstract

There is a fundamental need to underpin Phytobiome research through the provision of a supporting infrastructure. The EU Microbiome Support CSA has started to define key requirements, including the development of standards; the need to deposit material and supply cultures, samples and associated data for future research in both academia and industry. Importantly this will also provide a mechanism to protect intellectual property, and help researchers adhere to legislative and regulatory requirements including the Nagoya Protocol of the CBD. Integral to the above is the need to preserve soil and plant samples and their microbiota. Historically, culture collections have used cryopreservation at ultra low temperature and freeze drying protocols to preserve 'axenic' microbes. The microbiome presents a more challenging conundrum - how do we translate the methodology to complex samples that may contain many thousands of different species? The answer lies in our understanding of how microbial cells respond to the stresses encountered during freezing, thawing and recovery and how methods can be optimized to retain physiological and genomic integrity for different taxa and cell types. Using this approach, we can start to predict the components of the microbiome that may retain viability and, importantly, retain their functional potential. In this talk an overview will be provided of how state-of-the-art technologies are applied and adapted for complex microbial samples and synthetic consortia for the UK Crop Microbiome Cryobank and how biobanking, culture collection and data networks can come together to support biobanking for Phytobiome research in academia and industry.

