

Investigating the link between metal homeostasis, sporulation, and solvent production in the *Clostridial* ABE fermentation process

"This study advanced understanding of metal requirements for commercial and research and development processes."

Durham O GreenBiologics Peter Chivers, Durham University; Liz Jenkinson, GBL

OUTCOMES: Biomass samples were collected by GBL at 3-h intervals for metal content analysis and RNA isolation. An asporogenic mutant that did not show changes in metal content was sampled in parallel to understand the genetic requirements for changes in metal homeostasis. The project also provided key knowledge transfer – the metal content and RNA sample analysis were carried out at Durham by a GBL scientist. The informal communications during the 3-week visit will enhance future work at both sites.



AIMS: Solventogenic Clostridia were first used for fermentative acetone-butanol-ethanol (ABE) production roughly 100 years ago. The project focused on establishing a detailed picture of the changes in metal utilisation and homeostasis at the onset of sporulation using a combination of RNASeq and ICP-MS to correlate initiation of the sporulation genetic program and the role of metalloenzymes and proteins.

• Understanding metal utilisation during sporulation could lead to improved control of fermentation processes







Biotechnology and Biological Sciences Research Council