

## Diversifying the Yeast Biomolecule Portfolio – from Bioethanol to Biomaterials

The yeast *Saccharomyces cerevisiae* is at the heart of traditional and modern biotechnology. First domesticated and applied for production of fermented beverages at least 5000BC, modern variants of the species are still used for production of wines, beers and spirits. This versatile microbe also became a model for the nascent field of molecular genetics in the 1970's and 1980's and was the first microbe to be engineered for commercial production of biopharmaceuticals in 1985. Since the 1970's, yeast was used for production of bioethanol in Brazil and more recently for the large-scale production of corn-based ethanol, particularly in the USA. In the past five years, huge advances in strain engineering have led to the development of second generation, or cellulosic, ethanol where strains engineered to use pentose sugars are deployed to convert lignocellulose to bioethanol. Ethanol, however, is a relatively low value product and the current challenge and opportunity is to design and build yeast strains that produce commercially viable levels of high value metabolites, to be used as for health applications, or as molecules that can replace petrochemicals as a source of building blocks for biomaterials. This presentation will address how this transition to higher-value products is being driven by academia and industry and will highlight some of the successes and challenges as well as providing a forward-looking perspective on the topic.