



2023 ASBC Research Council Grantee

Principal Investigator: David Bean

Academic Institution: Federation University Australia, Australia

Project Title: “Development of cheap and simple non-proprietary molecular assay for the detection of foodborne pathogens in low-alcohol beer”

Project Intro: Alcohol consumption among OECD countries is decreasing. Consumers are looking for healthier options and low/no alcohol beers are filling that niche. The low- and no-alcohol sector is the fastest growing sector with a global market estimated at US\$10 billion in 2021 and strong projected growth. Low- and no-alcohol products do not have the same microbial stability as their alcoholic counterparts. While “full strength” beer is relatively safe from a microbiological food safety perspective, this cannot be extended to low- and no-alcohol beers. Indeed, previous work conducted at our university has shown that pathogens such as Salmonella can persist in alcohol free beer. Pathogen detection in food requires specialized and expensive laboratory equipment which is well out of scope for many breweries. The proposed research will optimize and evaluate an inexpensive and portable nucleic acid amplification technique known as LAMP (loop-mediated isothermal amplification) for the detection of pathogens in beer. LAMP does not require expensive equipment outlay and has the potential to be interpreted rapidly. Our research group has developed LAMP methods for pathogen detection in field settings. These techniques could be readily transferred to a brewery. The technology described is not tied to existing commercial platforms, allowing breweries to implement the technology without committing to a specific provider. The assay will allow breweries to assure product safety and validate their HACCP plans.

Project Objectives: To develop a non-proprietary technique for the detection of foodborne pathogens in beer. The technique will be simple and inexpensive to perform. Time to result will be less than 90 minutes.