

## Exploring the role of IRC7 in yeast thiol biotransformation to enhance beer flavour profiles

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### Project summary

The brewing industry has undergone significant advancements in raw material selection and fermentation techniques, yet the biotransformative potential of yeast remains an area with untapped potential. One such opportunity lies in the release of aromatic thiols—volatile sulfur compounds that contribute desirable tropical fruit aromas to beer. A key determinant in this biotransformation is the *IRC7* gene, which encodes a  $\beta$ -lyase responsible for liberating thiols from their cysteinylated and glutathionylated precursors. Notably, *IRC7* occurs in two allelic forms: a long allele (functional) and a short allele (truncated), with the former being more prevalent in brewing yeast strains. The potential to exploit yeast-driven thiol biotransformation offers brewers a novel approach to enhance beer flavor profiles without direct fruit additions. The identification of high-thiol-producing brewing strains, alongside an improved understanding of precursor availability in hops, could pave the way for new beer styles leveraging yeast metabolism for flavor innovation.

This project aims to explore the gene expression characteristics of *IRC7* gene within a range of brewing strains. The student will utilise a range of both microbiological and molecular biological techniques, including microbial cell culture, RT-PCR and polysome analysis to carry out this research.

### Specific skills and experience required for this project

*Please also refer to the advert on our jobs pages for the person specification for these internships*

The student should be studying for an undergraduate degree in a discipline of biological sciences and have some experience of working in a biological sciences lab. Knowledge of techniques such as RT-PCR, SDS-PAGE gels and Western Blotting is desirable but full training will be given during the placement. The intern will perform experiments on yeast cells to characterise the expression pattern of the *IRC7* gene in a range of yeast cells. They will gain lab experience of working within a research group and will perform techniques such as microbial cell culture, SDS-PAGE and western blotting and polysome analysis.

### Project location

City Campus

### Project delivery

This project would ideally be carried out on a full-time basis but provision can be made for part-time.