



WEINCAMPUS NEUSTADT

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Neustadt, 25.11.2025

Master's Thesis Opportunity

Effects of Various Must Treatments on the Expression of Thiol-Related Genes During Alcoholic Fermentation

Background

The expression of the genes *IRC7* and *STR3* in *Saccharomyces cerevisiae* is associated with the release of volatile thiols during alcoholic fermentation in wine. These volatile thiols contribute to fruity wine aroma profiles and are therefore of great interest to winemakers.

It is known that the expression of these genes is influenced by the redox potential of the fermenting must. This raises the question of whether the redox potential can be intentionally modified at the beginning of fermentation to enhance the formation of volatile thiols over the course of fermentation.

Objective of the Thesis

During the 2025 grape harvest, grape musts were treated with different amounts of air in the press tray, and the redox potential was recorded for each treatment. The aim of this thesis is to determine whether these treatments influence the expression of the genes *IRC7* and *STR3* during fermentation.

The Master's main task will be to establish and validate a qPCR-based method for quantifying gene expression. In a subsequent step, the student will evaluate the relationship between gene expression and the concentration of volatile thiols. The analytical determination of volatile thiols itself is not part of this thesis.

Organisational Details

Sampling for the experiment was completed during autumn 2025. All samples are frozen and available for analysis. The starting date of the thesis is therefore flexible, although the preferred laboratory period at the Weincampus is between March and June 2026.

Supervision will be provided by Prof. Maren Scharfenberger-Schmeer, Prof. Dominik Durner, and the associated research groups. Additional supervisors may be included depending on needs and interests.

The Master's thesis may be written in either German or English.

For further information or to express interest, please contact:

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