Stellenbosch UNIVERSITY IYUNIVESITHI UNIVERSITEIT

SAGWRI South African Grape and Wine Research Institute

# The reduction of protein haze in Sauvignon Blanc by *Saccharomyces cerevisiae* high chitin strains

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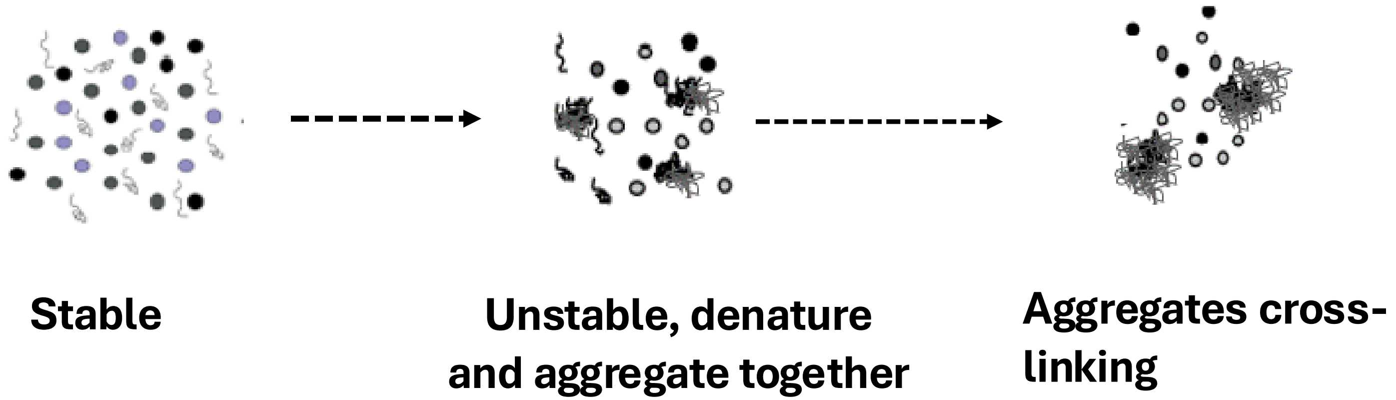
# Protein haze formation in white wines

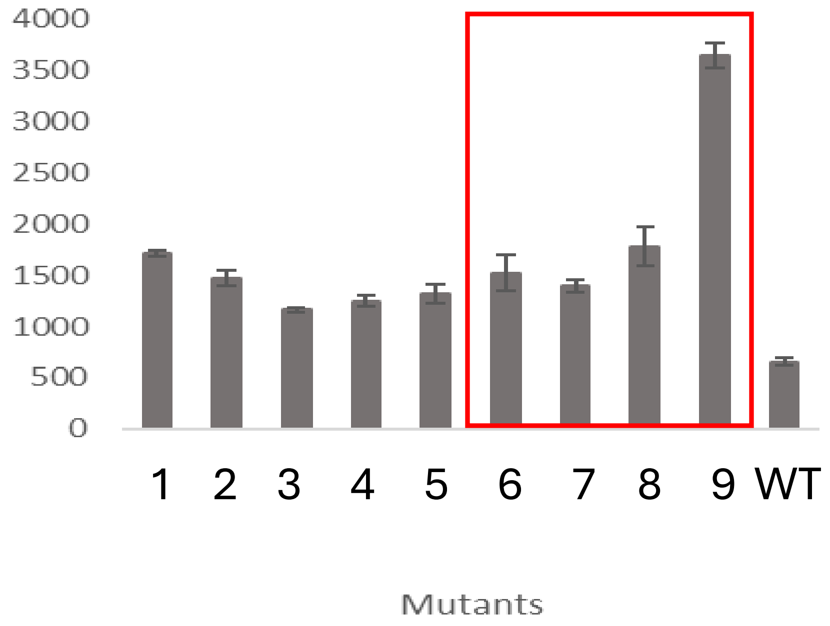
- Chitinases have suggested to be the **major contributors** of haze development
  - Lower denaturation temperature
  - Can not renature to their original conformation
  - Likely initiate the protein haze formation process



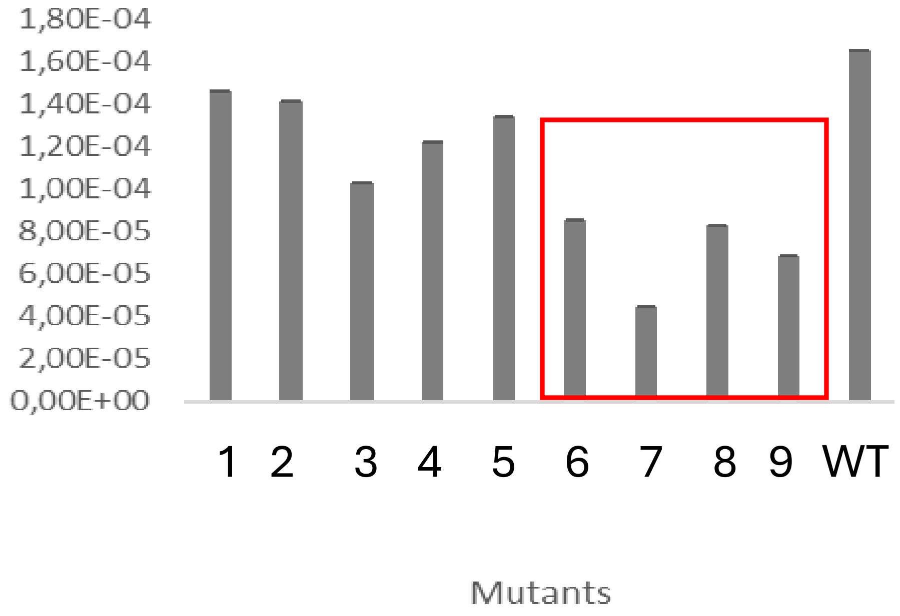

McRae et al. 2018; Pocock and Waters, 2006; Siebert et al. 1996Boller and Felix, 2009; Van Sluyter et al. 2015; Seo et al. 2019

# Chitinase assay shows high chitin strains binds more chitinases than strains with low chitin

CW fluorescence level (a.u): Chitin level



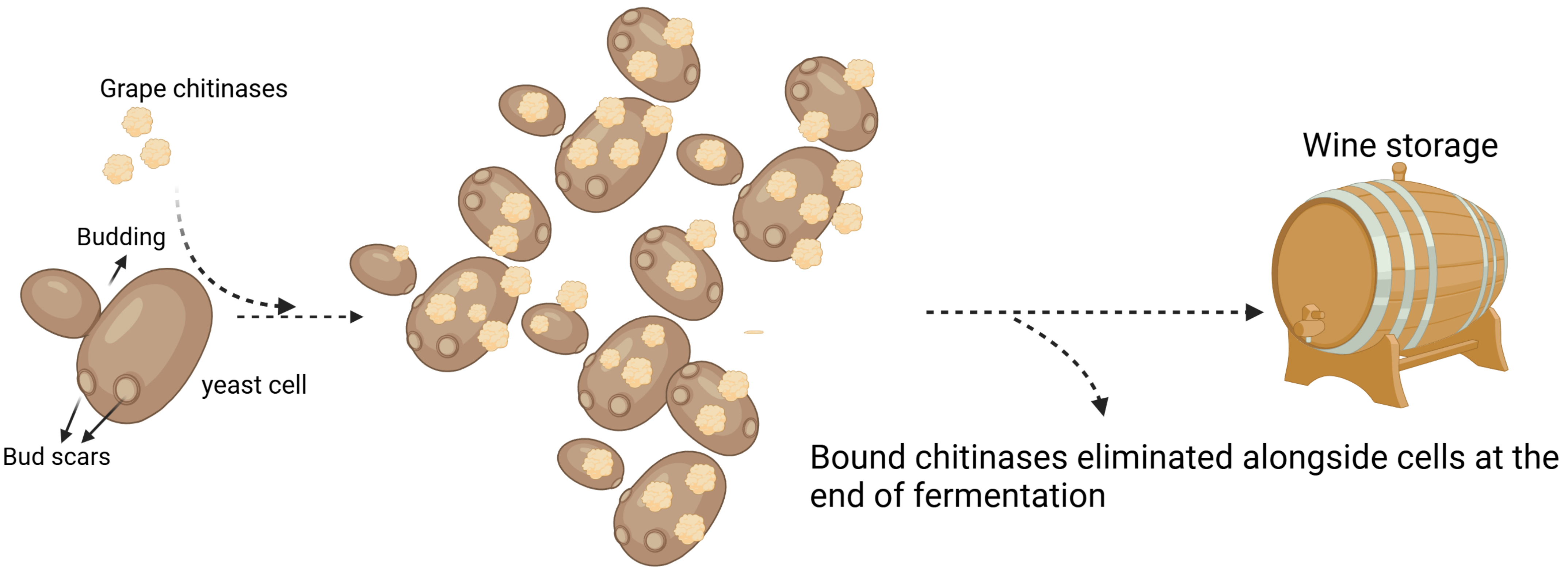

Enzyme assay activity (µmol/ml)




- Chitin rich strains bound more chitinases than the WT strain, however the correlation was not linear

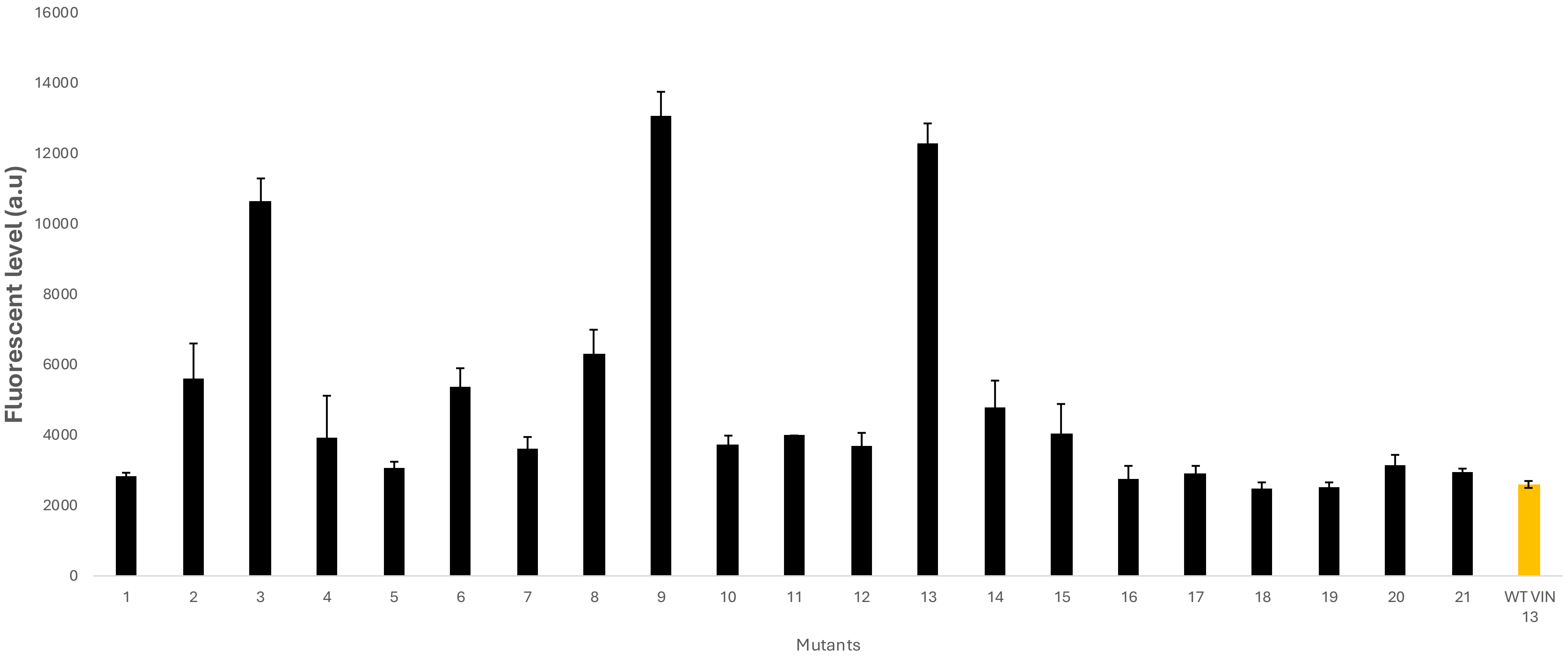
Chuene et al. 2024; Ndlovu et al. (2018; 2019)

# This study's proposed haze reduction strategy: Wine making process with high cell wall chitin strains

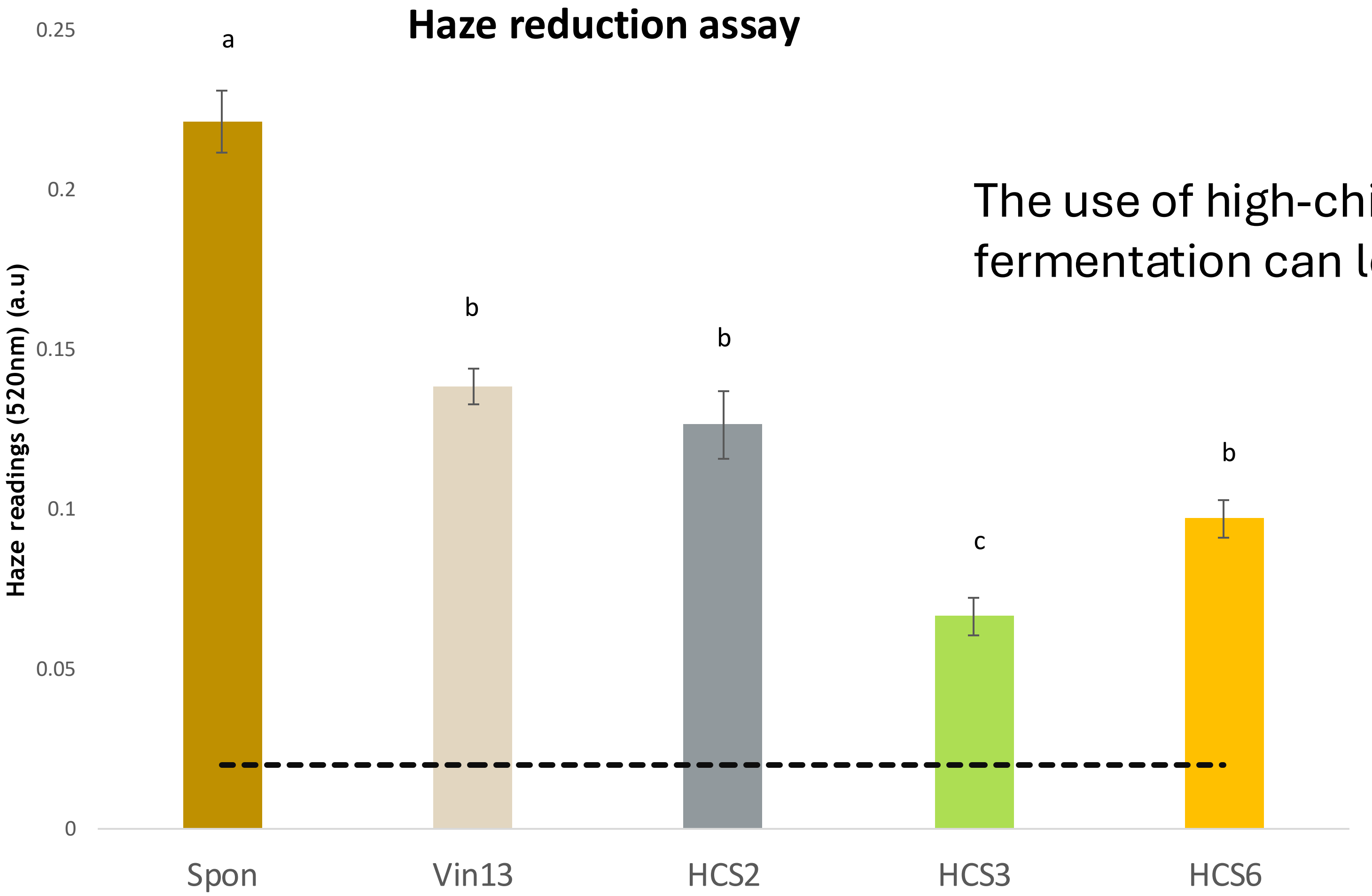



Created using BioRender.com

# Generated high chitin mutants from industrial *S. cerevisiae* Vin13

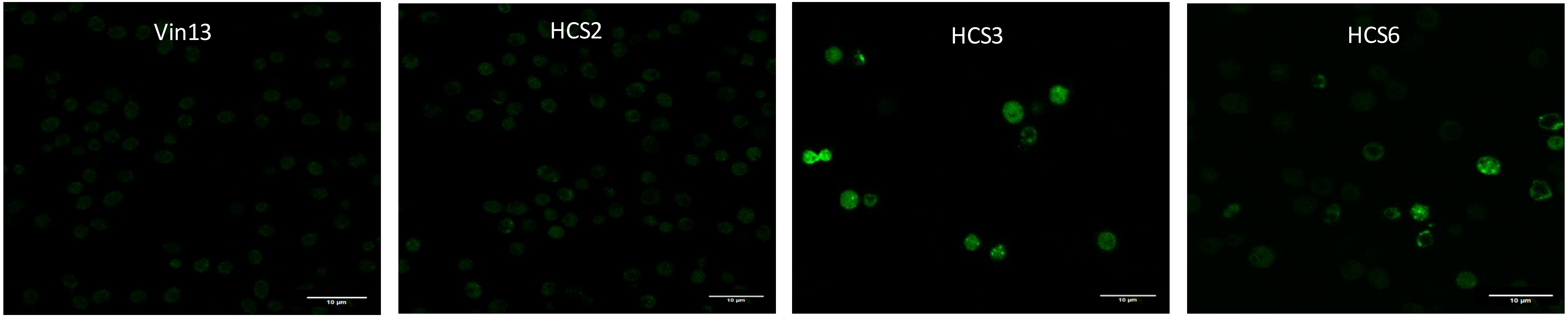


# Haze reduction in Sauvignon Blanc wine: HCS3 was most efficient at reducing haze




The use of high-chitin yeast strains (HCS) during alcoholic fermentation can lead to reduced haze formation

# Assessing chitinase binding on high chitin mutants using grape derived GFP-tagged chitinase




- The data show **differences in the localisation of bound GFP-chitinases** between the three high chitin mutants and the WT strain

# Acknowledgements

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**Agriscience stuff and students**

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Photo by Stefan Els

# FACS enrichment and screening for high chitin mutants:

More than 100 colonies were screened (at 70% were chitin rich)