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Genetic and environmental factors determining heterogeneity in preservation stress resistance of *Aspergillus niger* conidia

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Stellingen

Propositions accompanying the thesis

Genetic and environmental factors determining heterogeneity in preservation stress resistance of *Aspergillus niger* conidia

1. Individual conidia differ in internal compatible solute composition, thereby causing heterogeneity in stress resistance and germination capacity which can be considered a bet-hedging strategy applied by the fungus (Chapter 7).
2. The differences in stress resistance and germination capacity of individual conidia within a spore population are also established inside the conidia themselves while attached to the spore chain, not only in the conidiophore or the preceding mycelium (Chapter 7 and Chapter 8, Wang *et al.* 2021).
3. The genetic diversity, mating-type distribution and the widespread heterokaryon incompatibility observed in *A. niger sensu stricto* are clear indications of the presence of a sexual cycle in this species existing in nature (Chapter 5).
4. Fundamental research on detailed regulatory mechanisms behind stress resistance responses in natural strains is a relevant research topic to study in food microbiology (Chapter 2).
5. Marker free and rapid genome editing by CRISPR/Cas9 allows researchers to 'think big', as they are no longer limited by the number of genes that can be deleted in a single strain (van Leeuwe *et al.* 2019, Arentshorst *et al.* 2021).
6. The way we as researchers handle, harvest and keep conidia in our day-to-day research should be considered with more care, since conidia kept in liquid are still transcriptionally active (Wang *et al.* 2021).
7. Genome wide association studies (GWAS) are useful for pinpointing potential relationships found between the genotype and phenotype of fungi. However, many studies describing relationships found with a GWAS approach need to be read with a certain level of skepticism, as the causality between the relationships found is often not confirmed experimentally (i.e. Stagnati *et al.* 2018; Han, G *et al.* 2020; Fan, Y *et al.* 2021).
8. The inclusion of students as co-authors to acknowledge their (significant) contribution to manuscripts should be encouraged to motivate a new generation of scientists.
9. Research is like biking into the unknown, it feels good to move fast on the pedals, but to get to your destination you will need to stop sometimes and see where you're going.