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Development of innovative antifungal biological solutions

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Fungal contamination is the main cause of crop losses. Fungal plant diseases cause 3.5 billion \$ losses to US farmers alone. Moreover, fungi are also a safety concern due to their potential of mycotoxin production. Vineyards are particularly affected and represent 20% of phytosanitary compounds consumption for only 3% of cultivated surfaces in the World. However, there is a strong demand of consumers for products devoid of pesticides and international regulations are more and more demanding. Up to now, most of the biofungicides are live microorganisms (bacteria or fungi); they are environmentally friendly and production costs are low; however, since they are living organisms, their efficacy varies upon various biotic and abiotic factors and their action may be too slow. Consequently, new environmentally friendly

and efficient solutions are still needed for protection of crops against fungal pathogens. Proteus has applied its expertise in enzymes and microorganisms to the screening of antifungal natural compounds. Two kinds of compounds have been evaluated: enzymes and bacterial metabolites. Enzymes are particularly promising due to their specificity, biodegradability and robustness, demonstrated by decades of usage in harsh industrial conditions. The identified compounds have different specificities and can be combined together to increase their efficiency or widen their specificity. They can also be mixed with chemical fungicides to decrease the efficient dose. Up to now, the screening has been performed in vitro, using cultures of representative fungal strains.

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