Microfluidic Approaches for High-Throughput Fungicide Screening and Sensitivity Testing

Fact Sheet

Project Information

MAHT-FunSST
Grant agreement ID: 843162

Status
Ongoing project

Funded under
H2020-EU.1.3.2.

Overall budget
€ 196,707,84

EU contribution
€ 196,707,84

Coordinated by
ELVESYS
France

Objective

Fungicide development and screening is stuck in an innovation gap, in which it incurs staggering expenses and takes many years to get a fungicide to market, furthermore, many pathogens develop resistance against fungicides which necessitates the sensitivity screening and recalled fungicides. The present proposal is conceptualized to bridge the gap for high throughput (HT) screening of fungicides effectively, by designing the novel lab-on-chip device. Specifically, we will assess (i) baseline sensitivity of fungicides against phyto-pathogenic fungi, (ii) response of fungi to different doses of fungicides, (iii) antifungal effects induced on fungal conidia, (iv) specific enzyme inhibition by fungicide. The fungicide screening lab-on-a-chip will address the large and currently unmet need to model fungicide screening device, regarding the spatial and mechanical cues important for conidia. The project will be
based on the state-of-the-art technical expertise of ELVESYS in microfluidic chip design and fabrication and will fully integrate the Experienced Researcher’s (ER) strong expertise with agricultural plant pathology, molecular plant-microbe interactions and fungicides design and screening to develop a HT fungicide screening chip. Testing and validation of the product will be by perfusion using a set of candidate fungicides. The development of lab-on-a-chip technology will result in increasing the pre- and in-field HT screening of fungicides for their efficacy, optimal dosing and toxicity. The device will minimize the cost of fungicide development and screening, thus reducing the economic burden in the EU area as well as having large implications on improving the production of food globally. Through this opportunity the ER will be immersed in a richly entrepreneurial environment at ELVESYS and exposed to marketing concepts. Together, these experiences will provide the ER with the optimal environment to become a leader in next generation tools for fungicide screening.

Field of science

/social sciences/economics and business/business and management/commerce
/medical and health sciences/basic medicine/pathology
/natural sciences/biological sciences/microbiology/mycology
/natural sciences/biological sciences/microbiology/mycology/ethnomycology
/natural sciences/biological sciences/biochemistry/biomolecules/proteins/enzymes

Programme(s)

Topic(s)

Call for proposal

H2020-MSCA-IF-2018

Funding Scheme

MSCA-IF-EF-SE - Society and Enterprise panel

Coordinator

ELVESYS