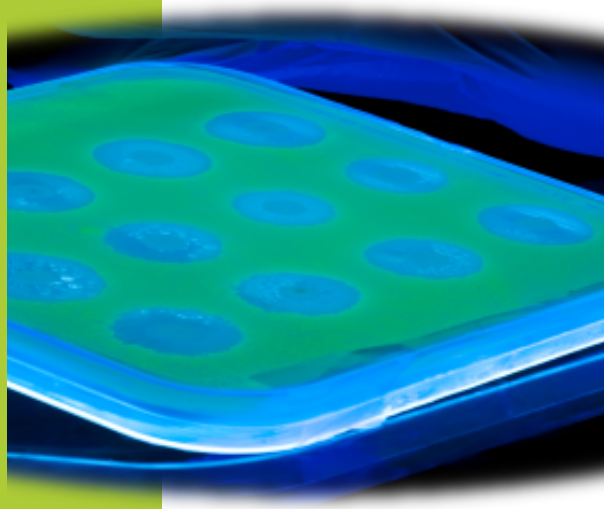
ROTHAMSTED RESEARCH

Science Initiatives Catalyst Awards

Microbial natural product discovery pipeline for next generation fungicides

By Tim Mauchline and George Lund

CAPABILITY



This inhibition assay shows a type of bacteria, Pseudomonas fluorescens, inhibiting the growth of the fungus Zymoseptoria tritici- a wheat leaf pathogen that costs over €1 billion (£890 million) to control each year

How did the funding enable you to do something new?

The Science Initiatives Catalyst Funding enabled us to bring together a range of Rothamsted scientists from a variety of disciplines at Rothamsted (microbiology, analytical chemistry, plant pathology, molecular biology and bioinformatics) to establish a novel microbial natural product discovery platform, building and expanding upon previous work from George Lund's PhD project. Within this project, a number of antifungal candidates were identified including a putatively novel siderophore with suppressive activity against Z. tritici was identified through a combination of predictive bioinformatics and functional screening in the lab.

What were the benefits for science of being able to do something new?

The main benefit of the new science is the development of novel antifungal chemistry which is of fundamental importance for control of important plant pathogens where fungicide resistance to existing chemistry is widespread. Furthermore, this research is developing new chemistry driven approaches for fungal pathogen control which is not dependent on the successful establishment of biocontrol isolates in the plant phyllosphere.

What were the wider follow-on benefits of having the funding ?

A key legacy outcome has been the implementation of the research platform developed in this project in the Growing Health ISP- contributing to WP1 and WP2, with the microbial natural product discovery pipeline for novel fungicides effective against Z. tritici being highlighted as a use case study within the submission to the BBSRC. In addition, new international collaborations have been established in with established microbial natural products research teams at DTU, Denmark and Wageningen University, The Netherlands. These collaborations have resulted in the sharing of resources and knowledge, and will contribute towards publications, exchanges of techniques, and funding applications thereby increasing capacity and capability at Rothamsted.