

# How fungi discriminate

**Different cultures of the same fungus fight one another, which is a problem for growers, says geneticist Ben Auxier.**

He discovered one of the genes that play a role in the recognition of another fungus as 'non-self'. This opens up possibilities for a solution. Auxier, a researcher in the Laboratory of Genetics, recently obtained his doctorate with distinction for this work. 'When we started the project, we didn't know which genes would be involved in that recognition,' says Auxier. Working with the Mushroom Research group, he tracked down the gene by crossing fungal spores with the parent fungus in sexual reproduction. 'So a kind of inbreeding,' he explains. Repeating this a number of times produced offspring that are genetically highly similar to the parent but are still recognised as different by the parent.

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'We compared the genetic make-up of those individuals and were able to identify the gene in the small section of the genome where there were differences.' The

'recognition gene' looks like known 'NLR genes' that are found in other organisms and are related to immunity. Auxier: 'In other words, reacting to individuals that are different to you. A crucial difference is that our gene is divided into three parts on the genome, while in other organisms the gene is a single whole.'

Knowledge of how the recognition mechanism works opens up new possibilities in fungi breeding. Auxier: 'In a breeding programme, you could select individuals that have the same recognition genes but differ in their growth properties. They would then be compatible, meaning you can mix them. But we're not that far yet.' RK