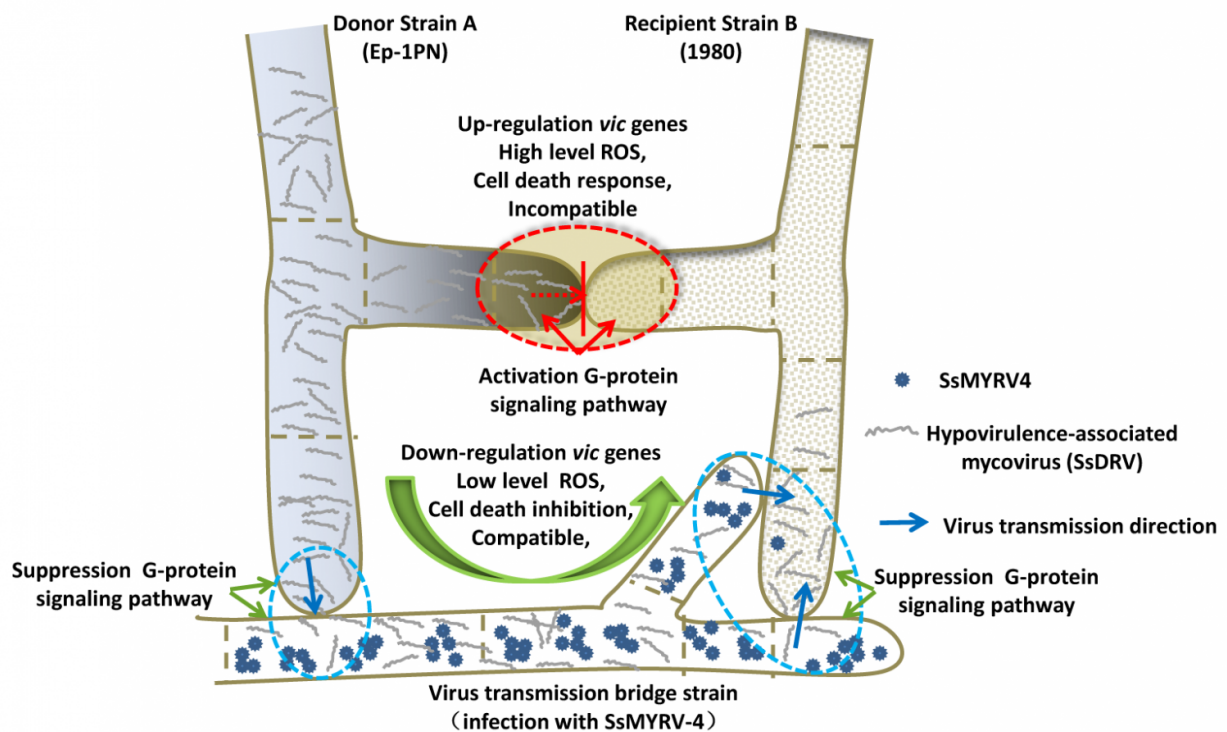


# Novel virus breaks barriers between incompatible fungi

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SsMYRV4-mediated enhancement of horizontal transmission between different VCGs effectively prevents and controls Sclerotinia diseases. Credit: Wu S, et al. (2017)

Scientists have identified a virus that can weaken the ability of a fungus to avoid pairing with other incompatible fungi, according to new

research published in *PLOS Pathogens*. By promoting fungal pairing, the virus could aid transmission of additional unrelated viruses between fungi.

Fungi, like all other organisms, can recognize foreign substances; such non-self recognition can help protect against pathogens. Some [fungi](#) also use non-self recognition to avoid pairing and sharing genetic material with incompatible strains. The fungus *Sclerotinia sclerotiorum*, which infects hundreds of plant species worldwide, employs this strategy, which is known as vegetative incompatibility.

While studying *S. sclerotiorum*, Jiatao Xie of Huazhong Agricultural University, China, and colleagues discovered a [virus](#) they named *Sclerotinia sclerotiorum mycoreovirus 4* (SsMYRV4). To better understand this novel virus, they grew infected *S. sclerotiorum* alongside other vegetatively incompatible strains and investigated the molecular effects.

The researchers found that SsMYRV4 decreased expression of *S. sclerotiorum* genes that promote vegetative incompatibility. Vegetative incompatibility is a molecular process that normally causes [cell death](#) when two incompatible strains touch each other; in this study, Xie's team found a reduction in the amount of cell death that normally occurs in intermingled colonies of incompatible strains.

*S. sclerotiorum* infected with SsMYRV4 successfully made connections with incompatible [strains](#) by fusing filamentous structures known as hyphae. To investigate the consequences, the scientists grew SsMYRV4-infected fungi alongside fungi infected with other unrelated viruses. They found that the unrelated viruses were able to pass through the fused hyphae, crossing between fungal pairs.

Vegetative [incompatibility](#) is considered a significant obstacle to using

viruses to effectively control fungal diseases. These new findings could point to a new strategy that uses SsMYRV4 to weaken barriers between fungi. They could also improve understanding of virus ecology and evolution.

**More information:** Wu S, Cheng J, Fu Y, Chen T, Jiang D, Ghabrial SA, et al. (2017) Virus-mediated suppression of host non-self recognition facilitates horizontal transmission of heterologous viruses. *PLoS Pathog* 13(3): e1006234. [DOI: 10.1371/journal.ppat.1006234](https://doi.org/10.1371/journal.ppat.1006234)

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