Throughout the Mediterranean, olive trees are drying out, but not for lack of water. The cause? Xylella fastidiosa, a plant pathogen bacterium that is spread by insects, killing plants where it goes. A cure to X. fastidiosa is essential. Xylencer uses phage therapy to treat X. fastidiosa, bringing us closer to a cure for it.

To automate detection of X. fastidiosa, we designed a plant mimic. Insects carrying X. fastidiosa that feed on the plant can thereby transfer the bacterium. This can be detected using Loop-mediated isothermal AMPification (LAMP).

A chassis bacterium carries the phage on a plasmid, repressed by dCas9. This can be detected using Loop-mediated isothermal AMPification (LAMP). A chassis bacterium carries the phage on a plasmid, repressed by dCas9. This can be detected using Loop-mediated isothermal AMPification (LAMP).

To be able to reach a large number of plants with the cure, chitin-binding (CB) proteins are fused to the Xylencer phage capsid. This will allow the phage to spread from plant to plant via insects.

We injected Xanthomonas-infected plants with flg22. Disease symptoms were measured in the days after (days 3, 4 and 5).

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Machine learning identification of a chassis bacterium. Regulation of a synthetic Lambda circuit by dCas9 and Acrs.