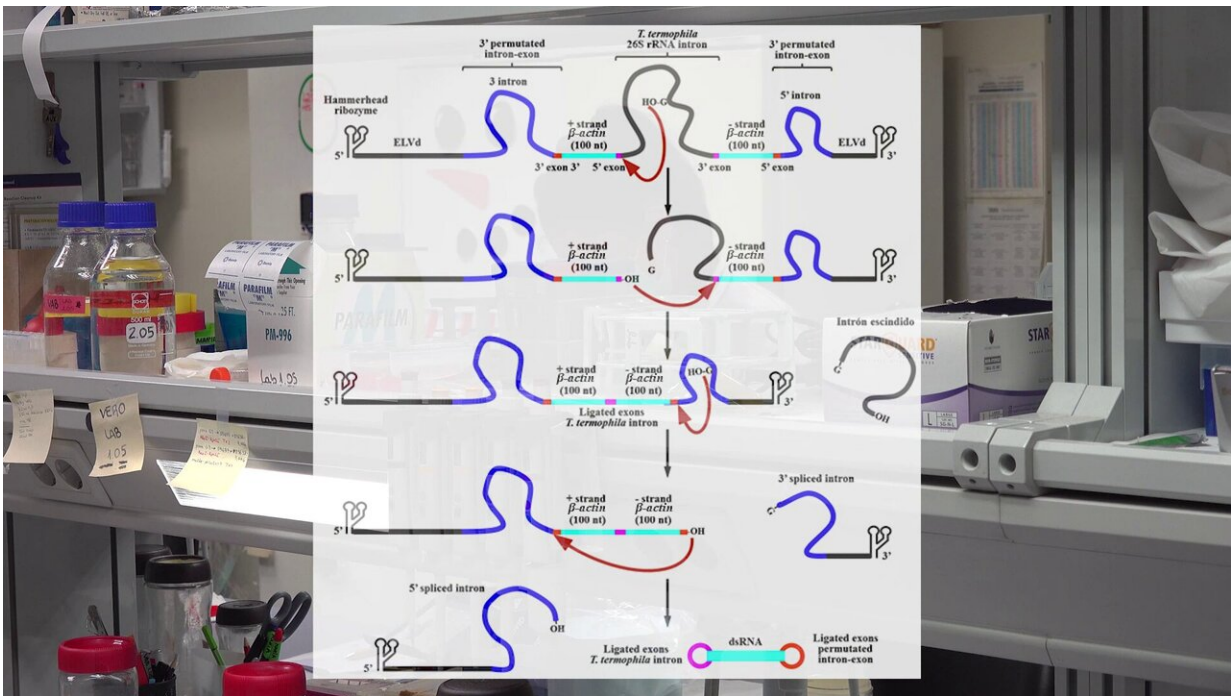


New technology to fight plagues and pathogens in crops

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Credit: Asociación RUVID

Researchers at the Institute of Plant Molecular and Cellular Biology (IBMCP), mixed center of the Polytechnic University of Valencia and the Spanish National Research Council (CSIC), have developed a new technology that will help fight, in a natural way that is respectful towards the environment, against the plagues and pathogens that affect crops.

The team of the IBMCP, coordinated by José Antonio Darós, scientific researcher at the CSIC, has patented a new method that makes it possible to produce, in a fast and affordable way, large amounts of dsRNA. This substance is a natural molecule that can act in an extraordinarily selective and efficient way against [pathogens](#) and plagues, silencing their genes and thus preventing them from affecting crops.

"If a nematode, insect or any other arthropod ingests these dsRNA [molecules](#), they can end up dying or, in the best case, have their growth altered. By silencing its genes, the dsRNA molecule can end the life of the pathogen or plague, or at least drive it away so that it does not choose that plant to feed on," explains Darós.

A new generation of phytosanitary products

Thus, these molecules represent a natural alternative with great potential compared to chemical pesticides. It is a new generation of phytosanitary products that are respectful towards the environment. The issue is that, in order to obtain it, either via in-vitro transcription or chemical synthesis, the price is prohibitive. "Our method overcomes this handicap and makes it possible to obtain these molecules at a really low cost when compared to traditional methods," says José Antonio Darós.

To obtain these molecules, the team of the IBMCP has used Escherichia coli (E. coli) bacteria as a biofactory, a model organism in molecular biology, which can very easily be grown and manipulated.

Use

Regarding the way of using it on [crops](#), José Antonio Darós says that it is a developing field. The idea is that they may be used on [plants](#) the same way as other phytosanitary and growth-regulating products, thus leaving

the dsRNA molecules on the leaf of the crop, acting directly against the insects.

"They can also be associated to nanomaterials that facilitate their entry into the plant. In this case, they could selectively attack the pathogens that become implanted in the crop, as well as with other types of plagues, such as sucking or stinging insects. It would be a nanomedicine of sorts that releases in a controlled way the natural phytosanitary substance—the dsRNA—thus protecting the crop," says Darós.

Provided by Asociacion RUVID

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