

New generation of RNA-based treatments for plants

CSIC and the Polytechnic University of Valencia have developed a new generation of highly specific RNA-based treatments that can be applied to plants in a non-transgenic manner to control genes of interest, as an alternative to current treatments based on traditional agrochemicals. This new technology will contribute to optimize the productivity and quality of crops in an environment-friendly way.

Industrial partners from the agrochemical and crop breeding industry are sought to collaborate through the co-development of a market application based on the offered technology in the framework of a patent licence agreement.

An offer for Patent Licensing

New generation of highly specific and eco-friendly RNA-based treatments, as an alternative to current treatments based on traditional agrochemicals

The technology allows the inactivation of plant genes in a continuous, highly specific and non-transgenic manner through the spray application of small RNA molecules called artificial microRNAs (ami-RNAs) produced by an innocuous virus applied to plants through spraying. Importantly, the size of the precursor molecules of the ami-RNAs has been reduced considerably, without affecting the activity of the ami-RNAs produced.

These treatments applied to crops can allow the selective inactivation of genes controlling traits of agronomic interest for increasing the productivity and quality of the crop and/or improving its capacity to adapt to environmental changes.



Nicotiana benthamiana plants untreated (left) or treated (right) with plant extracts that include artificial microRNAs that inactivate genes of the chlorophyll biosynthesis pathway and induce yellowing of treated tissues.

Main innovations and advantages

- Tailor-made design adapted to plant and the gene(s) of interest.
- The technology allows the selective inactivation of the expression of the genes of interest, so the treatments are highly specific with no off-target effects.
- Multiple treatments are not required as a single application is sufficient in a more cost-effective manner.
- The main applications are focused on the control of genes in crops for increasing their productivity and ability to adapt to environmental changes.

Patent Status

Priority patent application filed suitable for international extension.

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