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PRESS RELEASE

Potential applications of plant biotechnology against SARS CoV-2

A multinational team of scientists from the UK, Germany, and Spain, have published an authoritative article in the prestigious scientific journal Trends in Plant Science discussing how plant biotechnology can assist in the international response to pandemics, including COVID-19.

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a novel coronavirus responsible for the current COVID-19 pandemic. There is a massive international effort underway to develop diagnostic reagents, vaccines and antiviral drugs in a bid to slow down the spread of the disease and save lives. One part of that international effort involves the plant science research community, uniting researchers and commercial enterprises from around the world to achieve the rapid supply of protein antigens and antibodies for diagnostic kits, and scalable production systems for the emergency manufacturing of vaccines and antiviral drugs. The article looks at some of the ways in which plants can be and are being used in the fight against COVID-19.

Why plants?

Plants have been used to produce pharmaceutical proteins for more than 30 years, an approach often described as molecular farming. The main advantages of plants are economy, scalability and safety because plants can be cultivated inexpensively on a large scale and do not support the growth of human pathogens. However, the biologics manufacturing industry was built up around cell-based production platforms and most of the infrastructure is designed for fermentation. This makes it difficult to scale up production quickly, and means that very large scale production is prohibitively expensive. Plants can address both these drawbacks, with transient expression systems allowing production to be scaled up in a few weeks to meet sudden and unforeseen demand, and transgenic plants allowing even larger-scale production on a long-term basis.

In the Trends in Plant Science article, Capell and colleagues discuss the multiple strategies plant scientists are using to address the pandemic. These focus on efforts to develop diagnostic reagents, vaccine candidates and antiviral drugs that can be produced on a global scale in the face of a rapidly spreading pandemic disease.

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Cultivation of plants for the production of e.g. diagnostics, vaccines or antivirals.
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