

## **THE SYSTEMIC ACQUIRED RESISTANCE (SAR) IN PLANTS: AN INDUCED, BROAD SPECTRUM DISEASE RESISTANCE STUDY OF HIS TRANSDUCTION PATHWAY**

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Plants have evolved a wide variety of defense strategies against most attacking pathogens, including both constitutive and inducible, non-specific and specific mechanisms. One inducible, specific response to an infection by a particular race of pathogen is the hypersensitive response. This response is characterized by a quick cell death at the infection site and the production of resistance factors in surrounding cells, resulting in the appearance of necrotic lesions and the restriction of the spread of the pathogen (Bowles, 1990). Usually this local defense is followed by a long-lasting, broad-spectrum resistance to a subsequent infection. This resistance is expressed locally as well as distally from the initial infection site and is known as the Systemic Acquired Resistance or SAR, Ryals et al. (1994). One major characteristic of SAR is the systemic accumulation of some isoforms of pathogenesis-related (PR) proteins which all show antimicrobial activities.

The systemic expression of these proteins imply the emission of a signal from the initial infection site to the distal tissues. The nature of this signal is still unknown, but salicylic acid is involved in the signal transduction pathway, Klessig and Malamy (1994). In attempt to explore the SAR transduction pathway, we cloned several tomato PR genes. We found two clusters of highly conserved PR genes. Clustering of PR genes has only been reported in cucumber, Lawton et al. (1993). Among these PR genes clusters, one contains a new PR1 gene and the second one shows a new PR2 gene. The two new genes are very similar to already published PR genes.

We are studying the promoters of these genes by gene fusion with the Green Fluorescent Protein (GFP) marker gene in transgenic plants in order to localize cis-acting elements and trans-acting factors.

This approach should provide some informations on the latest steps involved in the signaling pathway leading to SAR and could lead to a new effective method of protecting crops plants against phytopathogen attacks .

### **Références**

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