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Deciphering the RNA Silencing Suppressor Function in the Potyvirus SPV2 †

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Abstract: In most eukaryotes, RNA silencing is a key element in the regulation of gene expression and defense against pathogens. Plants have developed a defensive barrier against exogenous microorganisms, such as plant-infecting viruses, by specifically targeting and degrading the viral RNAs and thus limiting the negative effects of the diseases caused by them. On the other hand, plant viruses encode for suppressor proteins that repress the host-silencing machinery, hence allowing viral replication and infection establishment. Our current project focuses on the characterization of gene products contributing to the RNA silencing suppressor (RSS) function of *Sweet potato virus 2* (SPV2), genus *Potyvirus*, family *Potyviridae.* SPV2 infects sweet potatoes (*Ipomoea batatas,* family *Convolvulaceae*), one of the most important staple food crops worldwide. Infections by potyvirids result in the high yield losses of sweet potatoes, especially from coinfection with unrelated viruses, and our final goal is to develop efficient control strategies. Our preliminary results analyzing the P1 and HCPro proteases of SPV2, transiently expressed in *N. benthamiana* together with a reporter GFP construct, revealed that HCPro constitutes a strong RSS. This is a novel finding, and we are currently characterizing the functions of other gene products.

Keywords: plant virus; potyvirus; SPV2; RNA silencing suppression