



Plant Biology

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Society of Plant Physiology

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My scientific career began in 1990 with the accomplishment of the Degree in the Department of Plant Physiology at the University of Salamanca. Later I got FPI scholarship for the accomplishment of the Doctoral Thesis in the same Department. When I finished my doctoral period I was contracted as Postdoc in the framework of a European Project that was developed between the Department of Plant Physiology at the University of Salamanca and the Laboratory of Plant Breeding at the University of Wageningen (The Netherlands). Throughout this period my research was aimed to study enzymes from the cell wall that were involved in cell wall loosening and expansion processes. In 2000 I joined to the group of Carbohydrate Metabolism at Agrobiotechnology Institute (IdAB) led by Dr. Pozueta. In 2003 I obtained a “Ramón y Cajal” contract and in 2006 I got a permanent position as Tenured Scientist (CSIC). My research topics in the IdAB were focused on the starch and glycogen metabolism and our group have provided clear evidences that in both, plants and bacteria, exist alternative sources of ADPglucose to those conventionally established. In 2009 we reported that enhancing Sucrose Synthase activity in transgenic Potato plants was a useful strategy for increasing starch accumulation and yield in potato tubers. This technology was protected by a patent (PCT / ES2005 / 070010) and is one of the pillars of the Iden Biotechnology, a biotechnological company that was created by our research group in 2005. In the course of our research in the starch field we found that volatile compounds emitted by phylogenetically diverse rhizosphere and non-rhizosphere bacteria and fungi (including plant pathogens and microbes that do not normally interact mutualistically with plants) promote the accumulation of exceptionally high levels of starch in leaves, growth and flowering of various plant species, including crops. This phenomenon, designated as MIVOISAP (Microbial Volatiles Induced Starch Accumulation Process) is the consequence of a metabolic reprogramming at transcriptional and post-transcriptional level. Our scientific/technical objectives in the medium/long term are focused to understand the physiological and molecular mechanisms involved in this process, working in new research lines that will enable us to understand this phenomenon and design biotechnological strategies to produce genetically modified crops showing growth, flowering and fruiting accelerated. Also, the analysis of volatile exometabolome of different microorganisms, allow us to obtain new biostimulants that could act on diverse metabolic processes, promoting growth and flowering and increasing the final yield of crops.