## Dr. Guy della-Cioppa, Ph.D.

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Dr. della-Cioppa has 16 years of experience in the Plant Biotechnology Industry working initially in various positions at Monsanto Company (1984-1989) and later at Biosource Technologies, Inc. (1989-current). After completing his Ph.D. (UCLA) and an NIH Postdoctoral Fellowship at the Worcester Foundation for Experimental Biology (Shrewsbury, MA), Dr. della-Cioppa joined the Plant Molecular Biology Group at Monsanto Company (St. Louis, MO) and was a key member of the multi-disciplinary team that worked on the early development of Roundup Ready® crops. He has authored or co-authored numerous research papers, book chapters, invited review articles, as well as 12 issued US and European patents.

## Discovery of Genes Conferring Glyphosate Resistance: Old Technologies and Revolutionary Modern Approaches

Agricultural biotechnology has made it possible for growers to use safe, non-toxic herbicides (such as glyphosate) in a variety of cropping situations, thus making agricultural production more efficient and environmentally friendly. The decision in the early 1980s to engineer glyphosate tolerance into crop plants was truly visionary for its time. The introduction of the first glyphosate-tolerant crops in 1996 triggered the rapid decline of other less desirable crop chemicals, and simultaneously launched a new wave of generic glyphosate manufacturing to meet the demand for over-the-top applications in transgenic crops. The discovery of new genes conferring useful agronomic phenotypes (such as glyphosate resistance), however, has traditionally been bottlenecked by a slow, labor-intensive discovery process requiring the production of hundreds (to thousands) of individual transformation events. Plant viral vectors developed at Biosource represent breakthrough technology for achieving rapid, high-level expression of foreign genes in field grown plants. We have developed vectors based on plus-sense RNA viruses that can be packaged in the laboratory and used for large-scale transfection of the preferred crop species in the greenhouse or the field. Genomics applications of the technology involve high-throughput determination of unknown gene function based on sense and antisense production in the cytoplasm of uncharacterized RNA sequences. We have recently extended this technology into the field with the first outdoor release of a plant virus library. New discovery technologies such as this will feed the growing pipeline of advanced agbiotech products that are destined to greatly improve crop yield and quality, and enable the further use of safe and effective crop chemicals.