

## National Academy of Science and Technology, Philippines

Statement on modern biotechnology  
August 6, 2013

If the science of chemistry provided much of the technological advances of great benefit to mankind during the 19th century, and while physics dominated the 20th century, there is a growing world-wide consensus that the 21st century is the “Century of Biology.”

A fuller understanding of the structure and function of deoxyribonucleic acid (DNA) which is the building block of the genes that determine inheritance in all living things has made possible the manipulation of this genetic material in the laboratory, and its insertion and beneficial expression in crops, livestock and microorganisms.

The initial wave of applications of genetic engineering is now with us. Aside from insulin which has helped millions of diabetes patients worldwide, some 40 genetically modified organism (GMO)-derived prescription drugs and products like interferons, tissue plasminogen activators (TPA), some cancer drugs, hepatitis vaccines, and diagnostic kits have been approved for use in the Philippines. In industry, enzymes produced by genetically modified microorganisms are used in animal feeds and in the manufacture of laundry detergents, textile, leather and pulp and paper, ethanol, and food products like cheese, high-fructose syrup, and fruit juices. Most soybean-based food products like soy sauce, tofu, hotdogs and about 200 other food preparations utilize ingredients from GM soybean.

Since 1996, a billion-and-a-half hectares of genetically modified corn, soybean, cotton, canola and other crops have been harvested worldwide bringing effective control of serious insect pests and pernicious weeds, which has minimized the use of chemical pesticides. These GM crops have brought about great economic benefit to the farmers, lowered the risk of exposure of farmers and consumers to pesticides and reduced damage to the environment.

These GM products have proven to be safe as pronounced by government regulators and by respected organizations such as the British Royal Society, the US National Academy of Sciences, and the World Health Organization, because up to now, not a single verified complaint of poisoning and allergy from GM crops has been reported. The biosafety regulators of the Philippines have been very strict and cautious in the implementation of our biosafety guidelines and regulations. Moreover, our biosafety regulatory system has been considered as a model system for Asia, Africa and South America.

Our own corn farmers, most of whom are small producers, planted more than 700,000 hectares of GMO corn in 2012, making the Philippines one of the leading countries in the developing world to take advantage of the new science of plant biotechnology. The technology is so effective and profitable that our farmers purchase *Bacillus thuringiensis* (Bt) corn hybrids even without subsidy from government.

As early as 1979, our national leadership recognized the potential of modern biotechnology to advance our country's purposes. In 1990, then President Corazon C. Aquino signed Executive Order (EO) 430 creating the National Committee on Biosafety of the Philippines (NCBP), probably one of the first among developing countries. The NCBP's mandate is to ensure that only biotechnology products safe for human food, health and the environment are introduced and researched upon in our country. The present administration of President Benigno S. Aquino III is providing substantial funds for modern biotechnology scientific research and technology development in the Department of Science and Technology (DOST), Department of Agriculture (DA) and in the University of the Philippines System (UP).

Fortunately, technology development in modern biology is relatively affordable even for developing countries like the Philippines. Unlike research in many fields of the basic sciences which often requires substantial outlays in equipment and laboratories, the instrumentation requirements in genetic engineering are not as expensive. What we need is an enlightened investment plan in human resources, which we have plenty of, and sustained support from government and private industry to enhance our capacity to innovate.

It is therefore in our national interest to develop our indigenous capabilities to ride the crest of this modern wave of technological progress. We should persevere in supporting our nascent R&D capability in biotechnology to keep pace with the rest of the developed world.