

## **BIOTORK ANNOUNCES COLLABORATION WITH BASF**

## Harnessing the Power of Adaptive Evolution to Further Improve the Efficiency of Metabolic Engineering

Gainesville, Florida – June 12, 2012 – BioTork announces collaboration with BASF to optimize certain microbial strains for the industrial production of bio-based polymers and green chemicals. After six months of collaboration, BASF and BioTork came to the conclusion that a combination of their complementary approaches to strain development can improve the efficiency and resulting economics of biochemical production processes. The financial terms of the partnership have not been disclosed.

BASF has been conducting intensive research on the use of microorganisms for the production of proteins, enzymes, vitamins and other high value and low cost chemicals. In their natural environment, microorganisms generally synthesize these chemicals only to meet their own requirements for survival. The challenge faced by chemical companies is to push these microorganisms to produce these chemicals faster, in much larger quantities, and under industrial conditions that are different from the microorganisms' natural environment. This is the only way to use microorganisms for commercially viable production of chemical products. To achieve this goal, BASF is successfully using metabolic engineering techniques to make targeted modifications to certain microorganisms in order to optimize bioconversion capability, increase yield and eliminate bottlenecks.

"A recently completed pilot study between BioTork and BASF demonstrated that these engineered microorganisms could be further optimized for maximal industrial performance using adaptive evolution" says Tom Lyons, Chief Scientific Officer of BioTork. Dr. Lyons adds: "Laboratory results confirm a synergy effect between the metabolic modifications engineered by BASF and the proprietary adaptive evolution technology used by BioTork". BioTork is the holder of an exclusive, worldwide license to use the adaptive evolution technology of Evolugate, LLC in the fields of bio-based chemical and biofuel production.

The Evolugate adaptive evolution technology is a continuous culture apparatus that selects the fittest genetic variants from among a population under controlled environmental conditions that mimic those needed for the most economical industrial process. After rounds of selection—which can achieve success in a matter of weeks or months—the microorganisms acquire capabilities that were absent from the original strain. These new capabilities provide the microbe with the potential to enhance industrial performance and thereby improve the economics of the process. Examples of these newly acquired

properties could be a faster growth rate, the ability to grow at non-optimal temperatures, resistance to inhibitors or growth under nutrient limiting conditions.

"We are extremely pleased with the capacity of our technology to complement the metabolic modifications that are engineered by BASF" says Marc Penicaud BioTork Vice President for Business Development in Europe. He adds: "We will dedicate all the necessary resources to ensure BASF achieves

major advancements in the production of high value bio-based chemicals.

Created in 2008, BioTork LLC is a biotechnology company developing microbial strains to be used to produce biofuels and bio-renewable chemicals. The mission of BioTork is to achieve complete replacement of crude petroleum oil with biomass derived equivalents. BioTork is based in Gainesville,

FL. Further information on BioTork is available on the internet at www.biotork.com.

BASF is the world's leading chemical company: The Chemical Company. Its portfolio ranges from chemicals, plastics, performance products and crop protection products to oil and gas. BASF combines economic success, social responsibility and environmental protection. Through science and innovation BASF enables its customers in almost all industries to meet the current and future needs of society. BASF products and system solutions contribute to conserving resources, ensuring healthy food and nutrition and helping to improve the quality of life. BASF has summed up this contribution in its corporate purpose: "We create chemistry for a sustainable future." BASF reported sales of approximately €73.5 billion in 2011 and had more than 111,000 employees as of the end of the year. BASF shares are traded on the stock exchanges in Frankfurt (BAS), London (BFA) and Zurich (AN). Further information on BASF is

available on the Internet at www.basf.com.

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