Biotechnology: Hundreds of Thousands of Jobs Possible

May 30 2007

Biotechnology is already making a visible contribution to the economic performance of important sectors, according to the results of a recent study by the Fraunhofer Institute for Systems and Innovation Research in Karlsruhe, Germany.

In the chemical industry, in 2004 4 to 6 percent of revenue is based on biotechnology, with 11 to 18 percent in the pharmaceutical industry and between 13 and 18 percent in the area of environmental biotechnology. By the year 2020 the revenue share driven by biotechnology in important application sectors (chemicals, pharmaceuticals, foodstuffs, agriculture, environmental biotechnology) will increase significantly, by as much as 200 percent in individual branches. "Germany is well positioned as a location for many biotechnology segments and therefore has an excellent chance to play a central role in future international competition," says ISI project director Dr. Michael Nusser. This follows from the study, which evaluated the strengths, weaknesses, opportunities and risks of the biotechnology location Germany.

Among other things the strengths include highly qualified personnel, a widely diversified research landscape, competitive strength in industrial application sectors, high domestic market sales potential and good access to export markets. But there are also risks involved: Thus for example the future will most likely see shortages of qualified personnel; International comparison also shows German industry and the German State investing too little in future-oriented education, research and development. The greatest risk for the future development of

biotechnology in Germany is therefore failure to keep up with the pace of the international dynamic.

Only joint and focused efforts on the part of all actors involved will make it possible to fully exploit the innovation, growth and employment potentials Germany offers as a location for biotechnology. The actual magnitude of the employment effects has until now been investigated for the most part only for small biotechnology companies and their equipment suppliers. "As a result the actual employment potentials of the biotechnology industry have been significantly underestimated," adds Nusser.

In the past there has been a lack of complete employment figures in particular in the case of downstream application industries and upstream supplier sectors. The Fraunhofer ISI has closed this research gap and applied its proven Input Output Model ISIS in a comprehensive investigation of the employment outlook for all biotechnology subsegments (provision, application, input) for the years 2004 and 2020:

• There is a current employment potential of approximately 90,000 direct biotechnology jobs (not including advance input effects) for the provision of biotechnology expertise in research facilities, universities, small and medium-sized biotechnology companies and biotechnology equipment suppliers as well as plant breeders. Moderate growth of 10 to 20 percent is to be expected by 2020.

• A considerably larger employment potential is associated with the use of biotechnology in important application sectors. Combining the numbers, the direct employment effects in the downstream application sectors (pharmaceuticals, chemical and foodstuffs industries as well as agriculture and environmental biotechnology) will rise by 2020 to approximately 272,000 in case of slow biotechnology market penetration, and to approximately 483,000 in case of rapid market

penetration. The ISI experts also concluded that the indirect employment potentials of biotechnology in the upstream supplier industries are larger than for direct application: In 2020 the number of these jobs in supplier sectors will be somewhere between 369,000 and 682,000.

Source: Fraunhofer-Institute for Systems and Innovation Research (ISI)