Enzymes companies on the verge of new niches

A spotlight-view on small and medium enterprises in Western Europe

Industrial biotech has a long track record in the food and chemical industry. There are many success stories where modern biotechnological production methods have been able to be implemented in industrial processes like transglutaminase for fruit juice clarification, amylases in the brewing or production of Vitamin B2. Now it is time to have a look at how small and medium enterprises (SMEs) are developing in Western Europe. This article focuses on the established sector of enzyme manufacturers.

Selected SMEs in Europe, which work in the field of industrial biotech or are closely related to the sector, are illustrated in the map (figure 1). As one can see, the hot spots of industrial biotech are located in the Netherlands and the DACH countries, Germany, Austria and Switzerland. Enterprises specialising in protein- and enzyme-production (green dots) are differentiated here from other industrial biotech companies (red dots). In total 381 companies are marked, 143 of these in Germany. There are 301 dedicated companies, meaning companies with their main activity in the application of biotechnological techniques, 38 of which are protein or enzyme manufacturers. The majority of technology-driven SMEs supply niche markets such as animal health, biomaterial, food additives and natural products.

Figure 1: Map of selected Industrial Biotech SMEs in Western Europe

Green dot: protein/enzyme manufacturer
Red dot: industrial biotech company (excluding protein/enzyme manufacturer)
Yellow dot: supplying industry
source: industrial biotech database from BCNP, map: EasyMap 9.2

Companies are broadly divided into those working with naturally occurring microorganisms and companies working with genetically manipulated organisms (GMOs). One leading example for natural based products is the probiotic Lactobacillus strain of Organobalance. They signed a license agreement on development, production and commercialisation of products containing their strain with Swiss company Lonza in April 2011. Based in Berlin, Germany, Organobalance has been known for the development of probiotic products by screening collections of microorganisms. An example for a company working with GMOs is AMSilk, located in Munich, Germany. They introduced spider genes into a microorganism to produce the innovative biopolymer spider silk used for medical devices such as implants or drug delivery systems and for cosmetics. The company is currently developing an industrial process for the production of the biopolymer in 100 kg

scale. They plan to market three products already this year – in the fourth year after founding. Both companies are simultaneously examples for successful business models in industrial biotech for SMEs: it is not only about technology but also scale-up and production.

User industries for enzymes

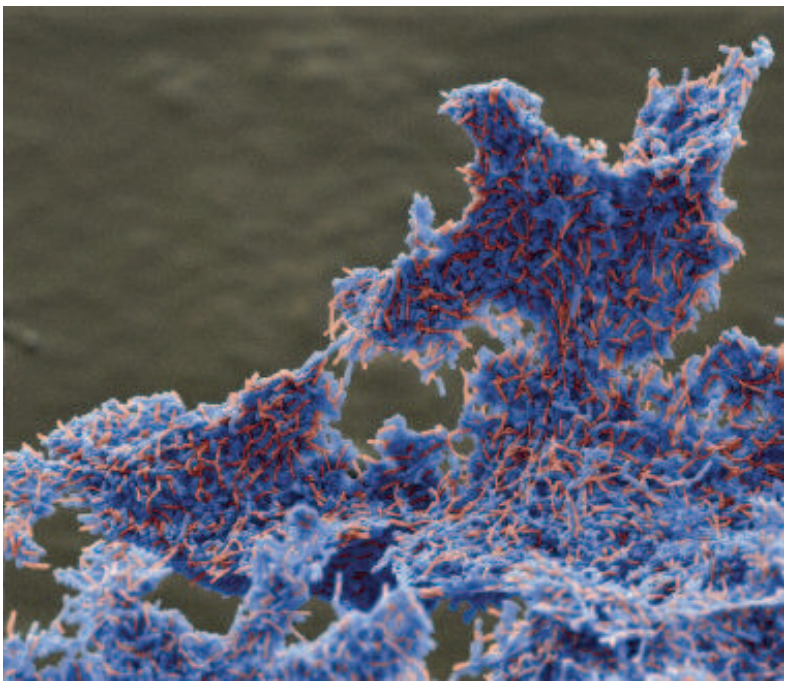
A characteristic of enzyme manufacturers is the broad range of industries which can be supplied by a single company: food & feed, the chemical industry and the healthcare market. The food sector was the first where industrial biotech started to establish itself with companies such as Genencor (now Danisco) and DSM. But with the establishment of industrial biotech methods for industrial purposes and the emergence of new technologies these companies also started to open up their customer portfolio to new industries. Dr. Maurer, Director Business Development of AB Enzymes in Darmstadt, Germany, a subsidiary of Associated British Foods, defines his growth perspective: "We are growing faster on our markets than the food, feed and textiles business markets, but we also want to grow in our new business areas like detergents and biofuels."

Dr. Karl-Heinz Maurer, Director Business Development, AB Enyzmes

Enzymes are expected to be a driver of future markets, explains Dr. Thorsten Eggert, CEO of evocatal located in Dusseldorf, Germany: "Industrial biotechnology will contribute to the major challenges of the future e.g. the global switch towards renewable feedstock and the need for green and sustainable processes within a growing bio-based economy." This global switch determines as well that enzyme manufacturers operate internationally. Taking the same line, Dr. Ulf Menyes, CEO of Enzymicals in Greifswald, Germany, sees his costumers mainly in Europe, the U.S., India and Japan. But these markets cannot be met by SMEs on their own. "We intend to continuously launch new products on the marketplace together with our industry partners and as a result see very dynamic future growth potential for our company", Dr. Marc Struhalla, CEO of c-LEcta in Leipzig, Germany, highlights the importance of cooperation. Partners do fill gaps within a value chain from technology to product. These partners are called "supplying industries" and deserve a closer look.

Dr. Ulf Menyes, CEO, Enzymicals

Dr. Marc Struhalla, CEO, c-LEcta



Co aggregate of Lactobacillus anti-pylori
Photo: ORGANOBALANCE

Supplying industries

SMEs, which support industrial biotech companies (figure 1, yellow dots) are broken down into enterprises, which supply the research and development (R&D) process and those, which support the path from development to production process. Examples for R&D suppliers are companies like Biotage in Sweden, Biolumine in France or Finnzymes in Finland, who develop and commercialise kits for biochemical analysis. Another example is Crelux, a service provider for protein analysis, located in the IZB innovation centre in Munich, Germany. Process development is mainly conducted by experienced medium or large enterprises focusing on engineering and plant construction. The development and construction for Citrico Deutschland GmbH (now Cargill Group) of a biotechnological industrial process for pectin has been carried out by Linde KCA in Dresden, Germany.

Barriers to overcome

European SMEs in industrial biotech have to face challenges from many directions. “One challenge for small and medium sized enterprises is the increasing requirements in regulatory matters on a global scale, but right now especially in Europe”, Dr. Maurer points out. Other challenges are finding and penetrating their niche-market or initiating strategic cooperation, as Dr. Menyes explains: “To find the right partner for basic financing with profound knowledge about the pharmaceutical and chemical market and customers is the basis for marketing the first products, achieving market penetration and building up the trust of customers.” One of the biggest challenges seems to be financing. Dr. Struhalla explains that “service-based business models are not suited to create company value as needed in VC-funded enterprises.” So it’s understandable that from Dr. Eggert’s experience “scouting new market niches and expanding strategic collaborations with academic and industry partners to develop a product pipeline and processes”, are the key drivers to attract investors to finance growth strategies.

Dr. Thorsten Eggert, CEO, evocatal

Outlook

Industrial biotechnology and enzyme manufacturers are certainly well-established in markets for the production of food and chemicals and could apply products to industrial niches. In experts’ opinion, new markets will be met by strategic partnerships. There is a bright future for innovations from industrial biotechnology.

Ulrike Gerecke