



FRANCE

NUTRITION BIOTECH: REVOLUTION IN MOTION

After pharmacy, plants and energy, biotechnology is now rubbing shoulders with the conservative agro-food industry. The objective is to develop health foods, which are located in a niche between nutrition and drugs. Christophe Ripoll, Scientific Director at Naturalpha, a health consulting and R&D company from Lille in the North of France and partner of Genfit, gives his views on the evolution of the sector in a context where regulations are in a state of flux.

BIOTECH FINANCES:

How would you characterize the demands on the agro-biotech industry?



Christophe Ripoll: The vast and eclectic character of the agro-food network in Europe offers particularly significant and as yet unexplored activity potential to the agro-biotech sector. Furthermore, it's a sector where sub-contracting has existed for a very long time, in contrast to the sectors of drugs research or plant biology, where the demand dates from the 1990s. The majority of deals signed today between innovative SMEs and large groups are split on two axes: the development of new food production methods, and the valuation of a product's health benefits. The typical projects include firstly the control on raw materials in order to guarantee the product's origin and purity; secondly the functional, nutritional and gustative modifications, with many projects centered around enzymes; thirdly the synthetic creation of a new food; and lastly the implementation of diagnostic tools, for example for demonstrating the health effects of certain products.

80% of 70 HEALTH CLAIMS recently submitted TO THE EFSA have been TURNED DOWN

BIOTECH FINANCES:

What is the relationship between the large groups and the biotech industry in this field?

C. R.: Traditionally, food research hasn't looked at biotechnology processes for its growth, but things have evolved fast in the last five years. Many academic players position themselves in this field, followed by some industrial parties, generally offering services with high added value. This double involvement allows researchers to progress quickly in their understanding of certain

product action mechanisms, which were until then completely unexplored. The number of scientific publications on the subject has also exploded, growing from just one or two per year in 2000 to nearly 30 today. This peak in research is a reaction to the demand for products with a certain health benefit. The rise of cardiometabolic diseases such as diabetes and obesity has generated an increased consumer awareness of products that are good for their health. Biotech has a lot to contribute in this area, whether it's in terms of prevention or action on a given illness.

BIOTECH FINANCES:

Who are the players in this sector?

C. R.: Currently, biotechnology has no SME presence, where the need for cultural integration is still very important. Business leaders don't know the sector very well, and don't yet see the benefits it could bring them. They don't feel the need to overturn their often well established processes, with their heavy and costly equipment. Only some new players, which are just starting out, turn their attention to biotech innovations to develop their activities. As a consequence, the sector's projects are mainly in the hands of academic research. There are also some collaborations between private and public projects, initiated amongst others by French competitive hubs such as Nutrition Santé Longévité, which has already approved over 60 projects for a total budget of more than 164 M€ Some large groups are beginning to recognize the potential of this market and have started to position themselves, such as Nestlé and DSM, which both work on the interaction of food and genes, or ingredients suppliers such as Roquette.

BIOTECH FINANCES:

To what extent will the advances made in pharmaceutical research be applicable in agro-biotechnology?

C. R.: The contribution of biotechnology will allow the food sector to progress with giant steps, similar to what happened in the plant or pharma industries. The objective is to gain a profound understanding of food, and to work

on the link between food and the body. The problem is that the markers that are currently used in agro-biotech are the same as those used in pharma. The latter have been developed for therapeutic indications, while in agro-biotech we're working on prevention. We will have to discover new genes and proteins that are more adapted to our areas of research. Setting up a specific approach for healthy food is our true target, which the sector will need to reach in the short term. In terms of the development plan there are big differences between the pharma and the agro-food industry. In pharma, business plans are highly standardized, with distinct and sequential research phases, and relatively uniform galenic formulations. In agro-biotech, research and development programs are much more transversal and very different depending on the targeted food. This implies the need to work in parallel, and to integrate the parameters linked to the final use early on.

BIOTECH FINANCES:

Do you think the trend of increasing regulatory strictness in red and white biotechnology will spread into the food sector?

C. R.: Until 2007 the industry was very free in its work, without the need to provide proof for the health aspects they attributed to their products. The regulatory authorities simply carried out their controls afterwards. Since then, European rules have been implemented on these health and nutritional claims (1924/2006/CE) (1) in order to centralize all EU requirements in this area. The industry is now required to present a declaration at the start of their projects, and fill in an extensive scientific dossier to receive the regulatory green light. This major overturn has been fatal for many programs: 80% of the 70 health claims recently received by the European Food Safety Authority (EFSA) have been turned down. Whatever the health claim was and in whichever area (esthetic, gastro-intestinal troubles, anxiety, cardiovascular wellbeing, cognitive vitality, etc.), the EFSA has rejected claims that didn't exactly match the latest regulatory requirements, notably including some with pertinent scientific proof. The only

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