

Biotech in Portugal: promoting private initiative and foreign investment should be the next priorities. Then what people in Portugal need to do is to venture-out and believe in their capacities.

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In March 2002 EU leaders gave full backing to the European Commission's life sciences and biotechnology strategy at the Barcelona Summit. They have followed their Stockholm commitments on biotech. The recognized fact is that no other technology offers the same potential for job creation, innovation and growth. Biotechnology is a broad economic opportunity in healthcare, food and industrial applications and offers considerable environmental and sustainability benefits. While Europe has now more biotech companies than the US, European companies produce fewer products, employ fewer people and have less finance to develop the industry. Even though 2000 was the best year yet for European biotech, the USA increased their lead. The European Commission estimates that by 2005 the European biotechnology market could be worth over € 100 billion. By the end of the decade, global markets including sectors where life sciences and biotechnology will constitute a major portion of the new technology applied could amount to over € 2000 billion (equivalent to the 2001 GDP of Germany). Such a highly dynamic market relies on highly innovative and even more dynamic Small and Medium Enterprises (SME), that initially started as small companies (start-ups) with only a few people, virtually structured and scarcely financed.

A nurturing and favourable environment is essential for the establishment and expansion of a young start-up. The key factors for a nurturing environment are related to the availability of sound infrastructures e.g. bioincubators, sectorial clusters, skilled labour, adequate legislation and above all and most importantly, a sophisticated and knowledgeable venture capital industry, which plays a key role in such nurturing environment.

In environments where the venture capital industry is well developed e.g. the USA and some European Countries, companies are usually financed by attracting local investment that will in most start-up cases, allow them to learn and understand the market where they play, gain experience, develop their technology right and understand what was wrong in cases where the things don't work out as planned. Contrary, in an environment such as Portugal where the financing pillar for a knowledge-based or "brain intensive" industry such as Biotech is not developed at all, starting-up a company is all about creating the conditions for attracting foreign investment. That is however not a trivial task as we are faced with a typical "chicken & egg" type of situation, that is, even when you have top-notch science and people, how do you start-up, create those conditions and further build a company when you DON'T HAVE the right financial resources, the right infrastructure, the right nurturing environment and above all, the right investor? Most cases of success in the biotech sector come from countries where start-ups are able to have competitive access to laboratories infrastructures, "true" venture capital and well-structured governmental or regional policies at all levels i.e. legal, fiscal financial, academic, ethical and industrial, that enables biotech to develop as an industry.

In Portugal it exists a highly developed “upstream” infrastructure promoted by the government, but where is the “downstream” infrastructure for companies creation and for turning science into products?

The lack of start-ups in Portugal is somehow linked to a lack of a nurturing environment for promotion of bioentrepreneurship. To my opinion that fact is due to the lack of stimulation of the sector downstream, *i.e.* at the level of companies creation, incubation and at the level of helping and advising young scientists/entrepreneurs in turning “good-science into good products”. The cultural aspects don’t help either. The “fear of failure” attitude, existing amongst investors, scientists, entrepreneurs, university staff and governmental bodies is the hindering fact behind the development of such an industry.

This is odd for people once renowned to be fearless seafarers. Even more odd is the fact all the basic infrastructure upstream of the market seems to be in place, and Portugal is renowned for the high quality of its science and the ability for establishing international collaborations (Sabine Louët, March 2000 Volume 18 Number 3 pp 276 - 277). Also in regulatory and legal terms Portugal is compliant with the rest of the European legislation and in most cases it has successfully transposed most of the sector directives that have not yet been transposed in other European countries.

Strong government support for high technology has been a focus for the Portuguese government since the early 90’s. Even though R&D spending was only 0.68% of the gross domestic product (GDP) in 1997 compared with an average of 1.84% in other EU countries in 1996, the Portuguese authorities have recently significantly increased spending. Thus, the budget devoted to research centers more than tripled between 1995 and 1999 from US \$7.3 million to US \$29.3 million. Following a nationwide consultation on future science and technology development, the total budget for science and technology in 2000 was estimated to be US \$509 million—a 20% increase compared with the previous year. Furthermore Forty percent of Portuguese graduates obtain their PhDs abroad—an unusually high figure for a European country (Sabine Louët, March 2000 Volume 18 Number 3 pp 276 - 277).

Although the government never seem to have had a well-structured and well-defined biotech development policy, some measures were created by the government or by agencies set to manage government funds, like the Innovation Agency (ADI). ADI gives priority in the funding of projects in consortium between universities and companies. Also a law for awarding substantial tax incentives to R&D companies, was created and is enforced by the same agency. Another valuable measure was the the creation of grant incentives given to companies, for employment of Ph.D. and M.Sc. level researchers. In the later scheme, the salary and social costs of each scientist subsidised in 75% during the first year, 45% during the second year and 25% during the third year of their employment period. This shows the willingness of the government to create opportunities for the growing pool of new PhDs, which over the past 10 years have increased at an average rate of 10% per year for all areas and over 16% per year for biology based fields. However the crude reality is that most of these PhD’s will be jobless, unless the government promotes the creation of a “downstream” market for employment of this highly skillful workforce in which it has invested over a decade. It is nevertheless clear the non-utilization by industry of this growing pool of qualified PhDs increasingly available.

More private as well as public initiatives are needed for promoting the creation of companies.

The Portuguese Bioindustries Association (APBio) has been over the last few years the main and probably the only driver for the creation of new biotech companies, not only by direct support but also by setting up initiatives for promoting entrepreneurship. To my knowledge no University in Portugal teaches scientists at universities to become entrepreneurs.

A good example of an initiative that promoted the development of an entrepreneurship behaviour in qualified human resources and the creation of new start-ups was the The Iberian Bioentrepreneurship Competition. APBio with the help of ICEP – The Portuguese Institute for External Commerce which is a body of the Ministry of Economy, created during 2001 a competition between graduate and pos-graduate students and professionals in the biotechnology and economic fields, from both Portugal & Spain. During this contest the most interesting and lucrative idea/business in the biotechnology sector were presented to a jury in the form a business plan which were then studied and evaluated by venture capitalists. Finalists teams were pre-selection and an entrepreneurship workshop was organized for them to improve their business plans for the final presentation. In last year's contest the jury selected 5 finalist teams of which two were the winners of the Bioentrepreneurship Contest 2001 this were awarded cash for their company incorporation as a reward.

Taguspark the main science & technology park in Portugal, representing an investment well over US \$250 million has a track record in not only fostering start-ups in Biotech but also in helping them out in expanding their business plan. A recent initiative of Taguspark has been to support first-tier companies in their respective sectors by investing directly into their equity. Recently Taguspark has directly invested in a Biotech company located in the science park, which is a sign that private initiatives of this kind are now starting to appear in the biotech sector and are considered to be an alternative to the lack of venture capital for this sector.

In Portugal there exists some 7 or 8 biotech companies active in biotechnological fields, ranging from "green" to "red" biotech, some are young start-ups and only one or two are reasonably mature biotech companies and in total, this sector would employ up to 100-120 people in Portugal. Thus, a clear disproportion exists between the lack of entrepreneurs and managers and the growing pool of qualified PhDs and MSc's as well as graduates available. Therefore on a *per-capita* basis, biotech in Portugal is not a very efficient industry despite the successful governmental achievements in helping creating a skillful workforce and a first class R&D environment.

Portugal is finding its entrepreneurs amongst ambitious people that either contacted directly with the biotech sector both at nationally and abroad, through scientists that carried out their studies abroad and were largely influenced by an entrepreneurial culture or activity from other countries. The fact is that there are not many entrepreneurs in the biotech sector in Portugal probably due to the lack of a nurturing environment and lack of a direct "contagious" of academic researchers by the "entrepreneurship bug", as one would find in other countries. Unfortunately, when some of these academic researcher venture out to become potential entrepreneurs and try to take an idea from their labs to a potential market, they immediately are faced with the "chicken & egg" type of situation and they therefore are obliged to give up on their endeavours after a while. I personally know of 3 or 4 examples in which that happened. Instead and quite understandably, these scientists are faced with the only solution for

carrying out their projects, which is to live under the umbrella of research grants. These however are not often adequately structured, nor suitable for industrial biotech projects and again these potential projects don't even get on the path that would potentially allow them reach the market. Even on rare occasions, when these grants can be the only solution for achieving certain degree of funding, that may complement certain private investment raised, the lengthy analysis time, the evaluation criteria linked to academic objectives and highly cumbersome administrative process associated to these grants eventually kill the momentum for a good project to take off.

Where are the true "Venture Capitalists"?

If you ask what is the venture-funding climate for biotechnology in Portugal? And how do budding entrepreneurs secure funding for latter stage biotechnology projects? Unfortunately the answers that I would have to give you are "what venture funding climate?" and "they don't! At least not from national investors". The lack of a "true" venture capital industry is in my opinion the major bottleneck for the development of a cost-intensive industry such as biotech. Despite the large availability of investment funds, especially governmental funds, the problems that are easily identified for the lack of their investment are linked to a complete lack of understanding by national investment firms, of the biotech industry its dynamics as well as its long lasting and substantially large burning rates, but as well its highly profitable nature. Despite the establishment of governmental funds managed by governmental related institutions, early-stage and especially expansion investment is almost non-existent in Biotech in Portugal. Such a scenario obviously raises the question if the problem in Portugal is the actual lack of "venture capital" or the lack of "venture capitalists?". Not until the existing investment funds start to invest on themselves so that a certain degree of specialisation, sophistication and understanding of the biotech industry is attained, I am afraid that Biotech as an industry will never develop in Portugal. Instead Biotechnology will continue to have a misleading connotation as being a science and not an industry. I am however confident that the negative climate for funding Biotech as an industry in Portugal, will change in the near future as Portugal will have absolutely no choice other than to make a better and more efficient use of its existing scientific and technological institutions and infrastructures. This effective utilisation of science & technology is most commonly observed in the UK, France, Denmark, Holland among other countries and especially in the USA where top level institutions do create value for themselves by producing, patenting and further licensing their results. From a national perspective, the need for transforming the technological potential into real products with a real contribution to the quality of live of citizens will be certainly the driver for attracting specialised investment and investors into the field. These will be either national or foreign. Most importantly an effective value creation at these scientific and technological institutions and infrastructures, will be the only solution for helping existing researchers in keeping their jobs, as funds will not be around forever.

It will thus be ironic not to include Portugal as a contributor for the aims set at the EU Summit in Lisbon in March 2000, where the European Heads of State declared that: **"By 2010 Europe is to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable growth with more and better jobs and greater social cohesion"**. Personally I think that for Portugal to be part of such an objective, all that young entrepreneurs in this country need to do, is to venture-out and to believe in their own capabilities, provided that a nurturing scenario is available to them.