Bio-Incubation: a private/public partnership based approach

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Life sciences and particularly biotech seems to be an incredible opportunity for growth. The industry structure is characterized by the presence, inside the value chain of different actors with different roles.
The beginning of the value chain, is particularly interesting for the really important role played by patents and valorisation of scientific results in general. Several actors are involved: universities, scientists, patents experts, technology transfer organizations, Science Parks, Incubators, small companies etc.
The experience of Science Parks and Incubators demonstrates that there is a need for system integrator in this process: a role that they can play, being the "place" where the process of value creation is at the basis of a company creation.
Integrating this fact, Discovery, the Bioindustry Park's incubator, has opted for a triple helix approach based on a public/private partnership and on a strong international network, in order to foster and secure the creation of innovative biotech companies.

1. Incubation: theoretical model VS. reality

Incubation is a concept that is roughly 20 years old. It rapidly became a popular economic tool since the creation of small businesses was recognized as an important factor to the economic growth of a region. Incubation was one of the most efficient ways to reduce the probability of failure and to speed-up the process of business creation.
However, many of the principles on which the model was originally developed have changed radically over time. For example in the past, the objective of incubators was to reduce the costs of making businesses, basically through affordable working spaces, while today, the incubation objective is mainly to reduce time to market. Another major difference is that today, they are becoming more and more support structures able to provide specific skills and competences through services focused on the particular needs of companies operating in a certain sector. This means that, to be highly capable, Incubators are becoming more and more specialized and selective.

In opposition with a generalist incubation approach, Bio-Incubators represent this new generation of highly specialized incubators. They have been set-up in order to respond to the specific needs that characterize biotech start-ups.

If we try to make a synthesis of their incubation approach, we can define a theoretical BIO-incubation process that can be summarized in 3 main steps:

- *The selection*: selection of entrepreneurial ideas based on promising scientific results having the highest probability of being transformed into an economic value. Such selection is based on the scientific and technological contents of the project presented to the incubator, but not only. The patentability, the market conjuncture, the temporality, etc., represent other factors that should be taken into account when the objective is not only to create a new company but to create an innovative company with a high probability of success. In fact, a crucial point is to evaluate not only the innovativeness of a project, but also its sustainability on the market. In the evaluation step, the "selection committee" keeps clear in mind that the objective is to select projects for which the unavoidable risks taken during the creation of Hi-Tech start-ups could be minimized as much as possible.

- *The start-up*: the creation and the support of the company is the second important step. It requires several competences such as for example in Intellectual Property management, in Business Development, Financing, etc., but also a strong network of collaborators and partners that could offer and provide the competences needed by the company that the incubator or the science park cannot afford.

- *The way-out*: At the end of the incubation time, mainly 3 options can be considered by the entrepreneur:
    - To continue the development of his company
    - To license or sale some IP rights to big companies that have the financial resources for a further development of the technology
    - To sell the entire company to a big company.

All the incubation process could be summarized into this 3 simple steps. But is-it so simple ?
The answer is for sure no as it could be simply demonstrated by the fact that roughly 75% to 85% of the start-ups fail during the incubation phase. And there are plentiful reasons amongst which 2 principals.

The first reason depends on the fact that Scientists are not Managers. It means that often, the new entrepreneur has no idea of how to run a company. That is a critical point and the entrepreneur absolutely needs to be helped in his transformation into a businessman. That is probably one of the most difficult and risky work to do when you are supporting a start-up, also if problems could be minimized by adding a new criteria to the selection step: the human criteria. An important thing not to forget is that, when a company is created, the investment is not only made on a project but also in peoples that must have to demonstrate their motivation and their commitments in making business.

A second reason is related to the fact that there is a lack of Risk Capitalists ready to invest in biotech start-ups. Why? Principally because the risk is really high and the economic return comes very late. The fact is that the way in which the investment has to

be seen is completely specific to the sector: biotech companies need a huge amount of money and in parallel, also if the financing return for the investors has the particularity to be potentially very big, it can come only a decade after.

To summarize, there is a huge divergence between the theoretical model of incubation in the biotech sector and the complexity of implementation of the process. In trying to secure and to foster the creation and development of biotech start-ups, the bioincubator has to offer a panel of skills and competences in order to act as a "mutagenic agent", trying to transform scientists in managers. At the same time, it should be able to anticipate and to find solutions to funding problematic.

2. The Bioindustry Park (BiPCa) - A Life Science Park devoted to the valorization of scientific results

The Bioindustry Park Canavese is a science and technology park dedicated to biotechnology. The park is situated near Turin in the Piedmont Region in the north of Italy and is operative since 1998.
It aims to promote and develop research in the Life Sciences field by bridging Academic and Industrial research and with the objective to further the birth and the growth of innovative companies. It offers settlement opportunities, research laboratories and specialized consulting services as company check-up, feasibility study and technology-transfer.

The Park is oriented toward Italian and foreign SME's, that intend to settle their pilot production and research activities in the field of chemistry, pharmaceutics, diagnostic, veterinary, agro-food, bioinformatics, etc.

The Bipca project, kept by the Piedmont Region as a priority in the regional industrial politic, has been select to benefit from the European Regional Development Fund – in a co-financing regime State and Region – that allowed the realization of a total investment of around 52 m€. The construction of the park began in 1995 and the first companies settled in 1998 from which Bipca S.p.A, a Joint-Stock Company with 8,9 m€ of capital, that manage the park activities.

The Park objectives are summarized in 3 kind of activities:
- Company settlement and laboratory construction;
- Technology Transfer activities and valorization of research results;
- Creation and start-up of innovative companies: the Discovery initiative.

Concerning the creation and start-up of new companies, the park has developed its own incubation model in order to bypass and/or to anticipate specific problematic linked to biotech companies.

3. From Science To Business: The Discovery Approach

In life sciences, successful companies are those in which innovation capability and efficiency in R&D are coupled with strong management skills. Bioindustry Park Canavese has learned well its lesson and has applied it through its Discovery Initiative.

The Discovery initiative, the bio-incubation project of the Bioindustry Park, was launched in 2005, with the support of the Piedmont Region and thanks to European funds within a European project framework.
Objective: to create and support the birth of innovative companies with high technological contents in the field of Biotechnology.

Regarding the approach, Bipca tried to think to all the necessary elements you have to combine in order to foster the creation and development of biotech start-ups.
This elements were identified as mainly 3:

- A physical incubator especially thanked for biotech companies; with mainly laboratory spaces dedicated to single companies and common spaces with common instrumentation that could be use by every incubated start-ups;
- A system of selection, tutoring and promotion of the companies settled in the incubator. The idea is to be able as incubator and science park to offer a certain number of services and competences necessary to a successful launch of biotech start-ups. To do it, the incubator/science park needs to create a strong network of potential partners;
- A capital risk that could invest into the entrepreneurial projects that could be selected in order to anticipate funding problematic.

To set-up a bioincubation approach based on such elements, the Bioindustry Park felt that partnering publics with privates should be the best solution.
That's why, from one hand, the park has involved public authorities, as Piemonte Region and European Union to invest at a rate of around 3M€. This money was first of all used for the construction of the physical bioincubator but also to allow Bipca to provide general services.
In the other hand a 100% private seed capital company, Eporgen Venture, was created by bringing together non-institutional investors. The first year (2005), Eporgen Venture represented a 3M€ capital company completely dedicated to the investment in biotech start-ups selected for Discovery. One year after, they multiple by 2 their capital with 6M€ to invest. Actually, Eporgen Venture represent one of the main particularity of the Discovery approach since this company is fully integrated in the incubation process from the selection of the innovative entrepreneurial projects to the support of start-ups. In fact, beyond the financing support, Eporgen is also involved in the management support, providing for example a business developer to the young start-ups.
Recently, Piemontech, the holding company of the Torino Wireless Cluster that provides Venture Capital to the most promising Piedmont-based companies, is entered in the Discovery process providing, in collaboration with Eporgen, a financial and managerial support.
Today for 1€ spend by Public, 2€ were invested by privates (see figure 1 below).

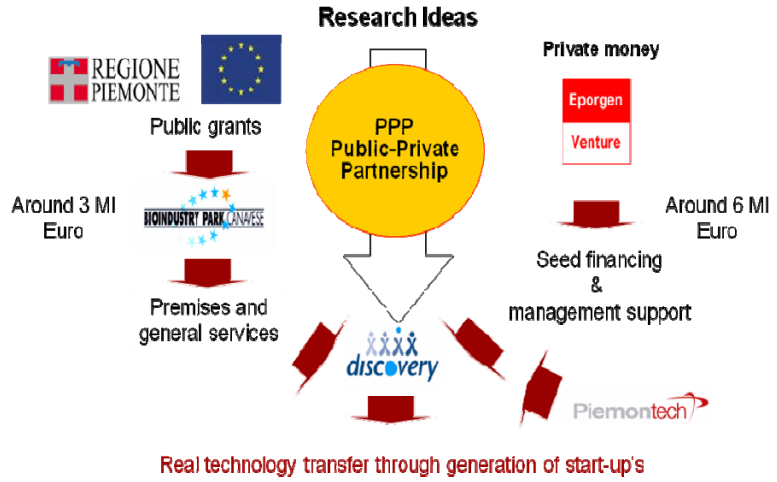

Figure1: The public/private partnership based approach of the Discovery Bio-incubator

Moreover Bioindustry Park assume the fact that networking is a critical point for the development of its incubator and consequently of the start-ups. That's why the park is actively involved in offering a package of services through an innovative and flexible network of collaboration and cluster with seed capital providers, technology experts, patent experts, etc in order to assure to a particular company and to the territorial system a clear exploitation paths for scientific results in biotech.
The system is also completed by an international dimension based on partnership agreement with ADEBAG Grenoble and BioAlps Geneva (Transalpine Biocluster) and 4 Bioincubators, in Italy (ToscanaLifeScience), Spain (Bilbao Science Park), USA (Technology Centre of New Jersey), and Israel (Rad Biomed). The exchange of experiences and good practices with such partners can, for sure, offer the opportunity to Discovery to become more and more highly capable.
Furthermore, DISCOVERY has been coupled with a socio-cultural initiative, KITE, in order to stimulate creativity in the Park, an idea strategically linked with Bioindustry Park activities in exploiting scientific results and doing technology transfer.

Last but not least, the Discovery's incubation approach has been recognise several times as one of the best and most promising approach. To give some example, at the European Enterprise Awards 2006, Discovery was between the 50 best practices at European level to support the growth of new companies - Also in the 2006 Competition for the Best Science based Incubator, Discovery has resulted in a top 10 position in the category "Most promising New Incubator" by Science Alliance - and finally in the context of CEBR – Council of European Bioregions - Discovery has been selected as one of the best practices, at European level, in supporting the growth of Biotech start-ups.

To Summarize Discovery is typically representing a model in which public and private can cooperate to foster innovation through valorization of scientific results: public resources are used in order to create a “positive” environment and private money is used to create innovative companies. Thereby the incubator/science park represents the system integrator that, through this partnership, can foster the economic development of a territory mainly by creating new businesses. The Discovery’s “triple helix approach”, based on public and private partners and on a national/international network, allowed the creation of already 8 start-ups (see Figure 2 below) and the selection is still opened…

Company	Description
Aethia S.r.l	www.aethia.com Aethia ("etia") provides systems and services to industrial and academic research groups that require high computing power.
Apavadis S.r.l.	www.apavadis.com APAvadis explores new technological tools to specifically target tumors through the bloodstream.
Bionucleon S.r.l.	www.bionucleon.com Bionucleon is dedicated to the exploitation of nucleic acid technologies, an area of increasing importance for scientists in the academic, pharmaceutical, biotechnology and diagnostic markets.
Biopaint S.r.l.	www.biopaint.it Biopaint is engaged in identifying and developing new ingredients to add to antifouling paints for the naval and sailing industry.
Creabilis Therapeutics S.p.A	www.creabilistherapeutics.com It is a drug discovery and development biotech company which has the aim to discover, select, develop and bring to commercial fruition novel and highly innovative therapeutic agents, in the fields of inflammation/immunology, kinase inhibition and cytokine networking, mainly in the area of "Skin Pathologies".
HMG Biotech S.r.l.	www.hmgbiotech.com HMGBiotech investigates the cellular mechanisms of the effects of HMGB1 and provides reagents, services and intellectual property.
Narvalus S.r.l.	www.narvalusbiotech.com Narvalus has developed an innovative single-cell electroporation technology, combining cell and molecular biology with semiconductor technology.
Notopharm S.r.l.	www.notopharm.com Notopharm develops diagnostic kits that improve predictive and differential diagnosis of several systemic autoimmune diseases.
Spider Biotech S.r.l.	www.spiderbiotech.com SpiderBiotech is engaged in the discovery and development of therapeutic multimeric peptides and peptidomimetics in the fields of bacterial infections.
Target Heart Biotech S.r.l.	www.thbiotec.com The company carries out preclinical development activities related to a cardiac muscle specific protein, Melusina, who as proved able to prevent heart failure in experimental animal models.

Figure 2: The 8 start-ups created during the first 2 years of Discovery.