

Future by Quality
Life sciences and research.
The role of
Science and Technology Parks
Executive Summary

Piazza Navona, 114
00186 - Rome
Tel: +39 06 45.46.891
Fax: +39 06 67.96.377

Via Vincenzo Monti, 12
20123 - Milan
Tel: +39 02 99.96.131
Fax: +39 02 99.96.13.50

www.aspeninstitute.it

for
Aspen Institute Italia

by
CERGAS Bocconi

Executive Summary

This document highlights the main elements of interest and the results of the fourth phase of the multiannual research program “Future by Quality”, whose objective is to highlight the essential and growing importance of quality to build a sustainable future within the Life Sciences. This cycle is part of a path that, in the previous three years, was initially focused on the characteristics of Open Innovation models, aimed at enhancing the increasingly marked sectoral interdependencies. Subsequently, it explored the proposal of a model for Italy that looked to the future relying on the historical legacy of the pharmaceutical industry and enhancing the distinctive features that allowed Italy to become, in 2018, the top manufacturer of medicines. Finally, in 2019, it examined the world of start-ups in the Life Sciences, with particular attention to their growth potential and financing models.

The 2020 study has looked deeper into the theme of Science and Technology Parks (STP), with the aim of highlighting their characteristics, the specific traits in the field of Life Sciences and future challenges, also in view of the long-term upheavals caused by the recent pandemic.

Science and Technology Parks (STP) are “professional-run organizations that host and support the growth of host businesses by managing the flow of knowledge and technology generated by the interaction between universities, research and development institutions, businesses and the market” (IASP-International Association of Science Parks and Areas of Innovation, 2002). The STP are therefore widely used tools to promote innovation and technological development in the respective territorial contexts of reference (Petroni and Bianchi, 2004). It is for this reason that their establishment is often the result of initiatives by public actors to respond to industrial competitiveness problems (Prodi, 2020).

There are a number of common factors in all STP, at least in their traditional configuration. A STP is always an initiative based on a physical property, and management of its spaces is the basis of the establishment of a network of actors who share experiences, knowledge and skills facilitated by geographical proximity. A plurality of nodes coexist in all STP, with the aim of clustering a set of high potential companies and favor the spillover of knowledge. In addition, there is always a team in charge of managing park resources, offering a series of value added services to tenants and providing the hosted companies with the best possible conditions to exploit their potential, providing the actors who host the right conveniences at all levels.

While starting from common assumptions, as highlighted in the previous paragraph, over time the STP path of development has led to the proliferation of experiences characterized by similar objectives, but also by extremely varied tools and features of implementation, to the point that it is now difficult to make any kind of generalization. This heterogeneity is only partly conscious and attributable to the different objectives each park pursues, while in part also the daughter of strategic positions not premeditated. Just to give evidence of this heterogeneity in the positioning of STP, various tools aimed at generating clusters based on some variables of interest have spread.

The report discusses the solution proposed in 2010 by Luis Sanz, former president of IASP (International Association of Science Parks and Areas of Innovation), which has developed the *Strategigram*, a set of seven strategic axes requiring a specific position for each STP. It is important to note that the consistency of each position with the context of reference ultimately determines the success of the park itself. This tool clearly highlights how the positioning of parks can vary depending on the location in the surrounding environment, the position in the flow of knowledge-technology, the type of target companies hosted, the level of specialization, the level of internationalization sought, the complexity of the network to be governed, and the type of ownership model and governance adopted.

The concept of STP is therefore constantly evolving, in line with the technological and socio-economic trends affecting all the actors that populate the parks. It remains, however, possible to intercept some common dynamics that characterize the parks' recent evolution. At the moment, there is a progressive tendency to urbanization, not necessarily for a need to place the park within a city context, but to weave hybrid relations with actors that have an urban dimension. Even parks located outside cities are progressively adding services that push them in that direction. This element is also in line with the needs of professionals who typically reside in STP, especially in the case of Life Sciences. Highly qualified and educated professionals seek urban contexts because they offer advanced services, thus affecting the positioning of parks. In addition, there is a progressive trend towards specialization, not necessarily in a single sector but on a focused core of activities that also allows a more strategic approach to relationships and networking, making structuring partnerships and alliances more focused and rational. Finally, a further trend of evolution is related to governance, with an increasing number of private parks or those where proprietary partnerships are developed between public and private stakeholders.

In Italy the STP panorama presents a series of cases with specific and differential connotations due to structural and environmental elements. This heterogeneity can be attributed to three distinct groups (Prodi, 2020):

- i) Large parks that act as spatial aggregation points and co-location of heterogeneous subjects
- ii) Parks with a lighter organizational structure focused on the transfer of technology activities and the provision of high added value services
- iii) Parks with network structure, which acquire a regional dimension with a multitude of poles integrated with each other.

Among the Italian STP, the sectors they mainly deal with are ICT, advanced tertiary and life sciences. Some parks are therefore specialized in health and life sciences. Three of these STP are object of in-depth study in the document: the Bioindustry Park Silvano, created in 1998 and located in the province of Turin; Openzone, a science campus financed with private capital just outside Milan; and Toscana Life Sciences Foundation, a non-profit organization based in Siena, an idea of the main institutional subjects.

STP are particularly suitable for the Life Sciences sector for various reasons:

- i) The centrality of the University and the need to develop customary and privileged relations with academic actors
- ii) The need to support ideas and projects in the transition from basic research to industrial application
- iii) The increasing proliferation of start-ups operating in this field
- iv) The centrality of health and life sciences in the industrial policies of the most developed economies
- v) The potential that comes from sharing knowledge and the adoption of an Open Innovation paradigm.

In addition, a questionnaire was administered to a selected sample of companies, operating in various economic sectors, with the aim of analyzing the demand and identifying the critical factors both for the success of the parks, and to guide the choices of the actors who occupy the spaces of the park. In this sense, the 30 subjects who took part in the survey identified in the balanced mix between start-ups and larger companies and in the presence of universities and applied research centers the

most relevant factors for the success of STP, while less importance was attached to mixed governance with public and private entities and the presence of public funding on favorable terms. Of the respondents, 66.7% are currently involved in STP in Italy or abroad, mainly as partners for the development of specific skills.

Finally, the study presents some insights on issues of great interest for the evolution and future of STP.

Among these, the issue of STP evaluation is certainly relevant. The scientific literature highlights methodological difficulties related to the evaluation of the work of STP. First, even given the previously represented heterogeneity, it is difficult to provide a unique definition of the meaning of performance for STP. Furthermore, while it is accepted that we can identify the variables to be monitored, further complexity is generated by the difficulty in finding quantitative data, from possible selection bias related to the hypothetical and the complexity encountered in isolating the specific contribution of STP, generally integrated in an ecosystem of relations and policies it is difficult to avoid. Despite these critical issues, several authors have been able to agree on some metrics that can be used for the evaluation of parks and their management team: typically, the quantities monitored include the park's contribution to the local economy in terms of GDP, employment dynamics and the percentage of available space that are actually occupied.

A second in-depth theme concerns the very future of STP, questioned by the progressive virtualization of some interactive processes. Parks are necessarily based on a proximity that is primarily geographical. Physicality therefore remains a distinctive element, but what is asked is whether this is sufficient to preserve the model of parks, in the face of the pressures that lead to an ever-greater interconnection by leveraging digital potential. This issue, accelerated by the implications generated by the pandemic, remains one of the main questions related to the Parks' evolution in the coming years.

This study was carried out with the coordination of CERGAS Bocconi.

*Working group: **Elio Borgonovi** (Chairman, CERGAS Bocconi, Milan); **Stefano Bertuzzi** (CEO, American Society for Microbiology, Washington DC); **Francesco Gatto** (Co-founder and Chief Scientific Officer, Elypta, Stockholm); **Gabriele Grecchi** (CEO and Co-founder, Silk Biomaterials, Milan); **Giorgio Margaritondo** (Honorary Professor of Physics, École Polytechnique Fédérale de Lausanne); **Sergio Pecorelli** (Emeritus Professor, University of Brescia - President, Giovanni Lorenzini Medical Foundation, Baylor College Houston TX); **Francesco Petracca** (Junior Lecturer, SDA Bocconi School of Management, Milan); **Livio Valenti** (Co-founder, Vaxess Technologies, Boston MA).*

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