

<p>Technological trajectory 1</p>	<p><i>New pharmaceutical, diagnostic and biomedical technologies– Innovative cellular and molecular therapies, molecular diagnostics and imaging</i></p> <p>Acronym: CMDI</p> <p>The field of life sciences - particularly those related to human health - is characterised by a high degree of variability both in terms of disorders and technologies, skills, areas involved and possible scientific approaches. And thus it ensues that the main application potential lies in the ability to integrate these multiple elements in an original and innovative manner. An example of this integration, which generated the biggest impact, is that achieved between diagnosis and treatment, which then led to the development of personalized medicine. According to this new approach, the principle that a good therapy is based on good diagnostic appears as a critical factor, the very core of the system that leads to the management of the patient enabling early diagnosis and control during the life cycle of the possible illness. Techniques of diagnostic imaging and molecular diagnostics, integrated with molecular and cellular therapeutic protocols, may allow in fields such as oncology, cardiovascular diseases, CNS and inflammatory diseases, to converge more and more towards system solutions that, in a future perspective, make it possible to intervene on the patient before symptoms of the disease appear and, consequently, minimize Healthcare System costs.</p> <p>The main objectives of this technological trajectory consist in the development of new knowledge in the specific field of applied research, particularly the development of new methods, diagnostic instruments and skills related to cellular therapies and identification of biological markers of stem cells. Moreover, attention will be given to both the abovementioned personalised medicine approaches and the impact on health care costs.</p> <p>Besides the identification of new business opportunities, it also aims to support the growth of innovative enterprises and the expansion of product and project range for existing ones, enabling them to become more competitive while ensuring greater international visibility of the local system.</p>
<p>Development line 1</p>	<p><i>Applications for disorders with High Medical Need</i></p> <p><i>HMNA 1</i></p> <p>The main application fields in which the related products and services fit, are oncology, regenerative medicine, inflammatory diseases, human infections and neurodegenerative diseases. These fields are highly competitive, heavily regulated and of a global importance. Furthermore, the development of increasingly important approaches for the cure in the perspective of the individual patient (personalised medicine) induces companies to position themselves increasingly in niche markets. The technologies used range from the development of small molecules to advanced therapies (particularly cellular therapies, new approaches to regenerative medicine, etc.) and molecular diagnostic or diagnostic imaging approaches, and aim to manage the entire continuum, from diagnostics to treatment and patient monitoring.</p>

<p>Development line 2</p>	<p><i>Non-direct human health care applications</i></p> <p><i>NdHCA 1</i></p> <p>The increasingly imminent and significant approach of personalised medicine involves the development of solutions that aim to assist “traditional” diagnostic and therapeutic methods. From an operational point of view, this has resulted in the growth of companies that claim to have the solutions to the so-called <i>wellness</i>, extended to the entire surrounding environment. Therefore, these solutions and products are designed to ensure a healthier environment through the work of prevention and assistance. On the one hand this trend touches niche markets and on the other hand is showing - especially in developed countries - impressive growth rates, particularly for what concerns the problems of the so-called innovative agro-industrial products.</p>
<p>Technological trajectory no.2</p>	<p><i>Innovative technologies and services for biomedical, biotechnology and health care applications</i></p> <p>Acronym: TecInn</p> <p>Innovative technologies for the biomedical sector and the impact of these technologies in fields that are not strictly healthcare-related represent a real opportunity for development. The development of the biomedical sector is based on three main macro-trends:</p> <ol style="list-style-type: none"> 1 - research on micro-invasive surgery, 2 - research on innovative biocompatible materials and new fabrics, 3 - IT and electronics applied to medical and biological sciences. <p>The reduction of invasiveness, biological response of the individual (rejection, inflammation) and the timing of intervention leads to the need of creating complex solutions that derive from the interaction between various technologies for new materials, ICT, micromechanics, electronics, nanotechnology, etc., as well as <i>wet</i> technologies. These technologies can be used for different application fields such as cardiovascular, orthopaedic and dental prosthesis, tissue engineering and, more generally, regenerative medicine, "combined" applications such as DES (drug-eluting stents), drug delivery and formulation, surgical techniques, information based medicine ...</p> <p>This technological trajectory is aimed at developing medical devices and instrumentation as well as methods for biomedical application by converging different technologies and skills from different sectors (converging technologies). In a synergistic manner and consistent with the CMDI trajectory, the overall objective is to improve the competitiveness of the regional business structure through the virtuous interaction of public and private entities, while positively impacting the costs of health care.</p>
<p>Development line 1</p>	<p><i>Applications for Disorders with High Medical Need</i></p> <p><i>HMNA 2</i></p> <p>In the biomedical sector, integration of different technologies has a very positive impact on the quality of life of patients treated with innovative therapeutic solutions. In fact, less invasive surgical techniques, better tolerability of the <i>medical device</i> and reduced side effects — concurrently with the development of innovative tools and instruments for monitoring and diagnostics — can be achieved by integrating solutions from technological contexts apparently different but actually complementary . The development</p>

	<p>of biomedical technologies related to new materials, nanotechnology, ICT, electronics and high precision mechanics - technology fields highly popular within the Piedmont territorial context – enables the identification of niches of economic interest as well as development and production paths in application fields with a high medical need that not only allow for the development of innovative solutions but optimise health care costs.</p>
<p>Development line 2</p>	<p><i>Non-direct human health care applications</i></p> <p><i>HMNA 2</i></p> <p>The need to avail, in some cases, of skills that are not available in micro and small businesses, calls for academic institutions and external consultants as a fundamental source of knowledge in order to be able to reach short-term goals. In particular, small businesses in the early stages of value chain development of a product intended for human health market, often need advice on regulatory aspects and they also must identify within the market companies that provide services related to the experiments. Equally important in the production of a therapeutic or biomedical product is the compliance with production standards recognised worldwide. In conclusion, specifically within the biomedical field, SMEs need to identify external support skills both for the realisation of the product itself and the regulatory development of the product for a future launch on the market. The creation of a biomedical product also includes special attention to issues related to <i>product lifecycle management (PLM)</i>, as well as <i>material requirements planning (MRP)</i>, which is the system for the planning of requirements related to materials used in which IT plays a leading role by providing advanced tools. Accordingly, the development line aims at covering issues related both to the development of services and products within the above mentioned fields as well as facilitating the identification of new solutions to problems related to process, product and process innovations, management and control of data obtained from development activities, production processes and the monitoring of patients/users.</p>