

***INVESTING IN RESEARCH  
AND INNOVATION IN ITALY -  
FOCUSING on BIOTECH***

***An overview of Italian early stage red  
biotech companies and spin-offs***

***October 2011***

---

---

## **INDEX**

<i>EXECUTIVE SUMMARY</i> .....	2
1. TECHNOLOGY PARKS & RESEARCH INFRASTRUCTURES.....	4
1.1 Technology Parks and Business Incubators .....	4
1.2 Research Institutes and Universities .....	9
1.3 Technological Meta-districts .....	14
2. EARLY STAGE BIOTECH COMPANIES IN ITALY .....	16
3. GOVERNMENT STRATEGIES, POLICIES, PROGRAMS & INVESTMENTS .....	33
4. VENTURE CAPITAL .....	37
4.1 Italian Private Investments Trend in the Biotech Sector.....	37
4.2 Italian VC/PEs in the Red Biotech Sector.....	40
4.3 Investing in Italian Biotech.....	43
5. ITALIAN BIOTECH EVENTS 2011 .....	48
6. ADDITIONAL INFORMATIONAL LINKS .....	50

---

---

## Executive Summary<sup>1</sup>

In recent years, biotechnologies in Italy have become a solid industrial reality in all fields of application: health, energy, agro-food and industry, in general. Despite the adverse international economic situation, in 2010 the Italian biotechnology industry has been able to make great strides internationally.

According to the latest report on the Italian biotech industry by Ernst & Young and Assobiotech, at the end of 2010 there were **375 biotech companies engaged in research and development** in Italy. Moreover, Italy ranks third in Europe in terms of number of biotech companies (after Germany and the United Kingdom), and it's the European country with the highest growth in number of pure biotech firms<sup>2</sup> (+ 2.8 % compared to the previous year).

Among the different biotechnology sectors currently in Italy, the health sector (**red biotech**) is the most represented and developed. The Italian biotech companies have a significant pipeline of highly innovative drugs and diagnostics and have shown a constant increase in the number of products derived from research and development. At the same time, there is also an evident increase, in number and turnover, of companies that use modern biotechnological methods both in the agro-food (green biotech) and industrial (white biotech) sectors. In fact, of the 375 biotech companies identified, 246 are working in the field of human health, 49 operate in the "green biotech" and 21 are active in the "white biotech." The remaining companies pertain to GTPA (genomics, proteomics, and enabling technologies) and a wider application sector called "multicore." Most of those biotech companies are characterized by their small size; 75% of the companies have less than 10 employees (considered as "micro") or less than 50 employees (small enterprises). Nevertheless, they are growing and increasing their production as the total turnover in the Italian biotech sector is estimated at 7.4 billion Euros, with an increase of 6% compared with the previous year. Pharma companies contribute to 84% of the total turnover, and pure biotech with 16%. Considering the location of the companies operating in the sector, in most cases, (56%), the companies are located autonomously (in their own premises, not within technological parks). However, considering just the "pure biotech" companies, almost half are located in science parks and incubators, with an increase from 44% in 2009 to 49% in 2010.

An interesting feature relating to the Italian biotech scenario is the proliferation of **spin offs** willing to bring the effort of public research into industry. In Italy currently there are around 900 spin offs, belonging to universities or public research centres, of which the 84.3% offer a product/service, whereas just 12.5 % are in a prototypal phase and only 3.1% are still concluding their research. The sectors in which spin offs are concentrated are ICT (32.8%), energy and environment (16.2%) and life sciences (15%, and increasing).

However, although the biotech sector, and specifically the red biotech sector, reveals excellence and growth, the critical priority the majority of biotech companies (and especially the early stage companies) have to face is access to finance. Fortunately, R&D private investments in the sector are increasing: in 2010, the Venture Capital, Private Equity and IPO investments in biotech companies totalled € 72 million, which represents a 27% increase of the volume collected with respect to 2009. Conversely, there is a significant decrease in recourse

<sup>1</sup> - "Italian Biotechnology Report– BioInItaly Report 2011" – Assobiotech, Ernst & Young

- "8<sup>th</sup> NETVAL Report- Potenziamo La Catena Del Valore", Italian Network for the Valorisation of University Research, 2011

<sup>2</sup> Definition used by the Ernst & Young international centre

to national grants, substantially due to a reduction of public funds for research and development activities. And although Italy only invests 1.2 % of its GDP in R&D, it holds, at the international level, top positions in terms of quality (publications per researchers, citations per scientific article) with a trend that shows steady growth.

---

**For this reason, the present report aims to highlight the real opportunities that the Italian biotech sectors (focusing on red technologies) have to offer to prospective investors. The report, by grouping fundamental information and data together, will serve as a guide to understand the intricate and yet interesting world of start-ups and spin-offs created by Italian universities and research centers.**

---

While readers will find a more extensive analysis of the broader Italian research and innovation system in the report *“Research in Italy- Land of Hidden Gems- How and Where to Invest in Italian Scientific and Technological Excellence, Second Edition,”* the present report specifically focuses on the biotech sector and will provide:

- **An overview of the main science parks, research centers, universities and incubators in Italy** which host researchers, ideas, business plans and could therefore be the target of a careful investigation by potential investors. In particular, the report will focus on the extensive network of Science Parks, Business Incubators, universities, which are ecosystems that foster dynamic interaction among companies, research, finance and the local governments, thus contributing to the creation of a growth-oriented business environment.
- A glimpse of Italy’s vibrant biotech entrepreneurial community, including **detailed profiles of selected early stage red biotech companies.**
- Information on current **Strategies, Policies and Investment** programs promoted by the Italian Government to support the biotech sector.
- A sample list of **venture capitalists in Italy**, which can serve as a source of deal flow and potential partners in syndicated investments.
- **Testimonies** from a US-based VC who has invested in an Italian company and from an Italian Seed Capital investor
- A list of **upcoming events** of interest for biotech companies, which represent a great opportunity to meet Italian researchers and entrepreneurs, as well as inventors.
- A list of additional useful informational links. Organizations cited throughout the text are not included in this table.

## 1. Technology Parks & Research Infrastructures

As outlined in the executive summary, the extensive network of **Science Parks, Business Incubators, Private Research Institutes** and **Public Research Organizations** represent an important source for start-ups and new companies in the biotech sector.

### 1.1 Technology Parks and Business Incubators

According to RIDITT<sup>3</sup> and APSTI<sup>4</sup> respectively, 44 Science and Technology parks and 14 incubators operate in Italy (Figure 1a/b), which act as a base for start-ups and new business initiatives. They are comprised of companies, venture capitalists, universities, laboratories, and research centers, offering a wide range of services.

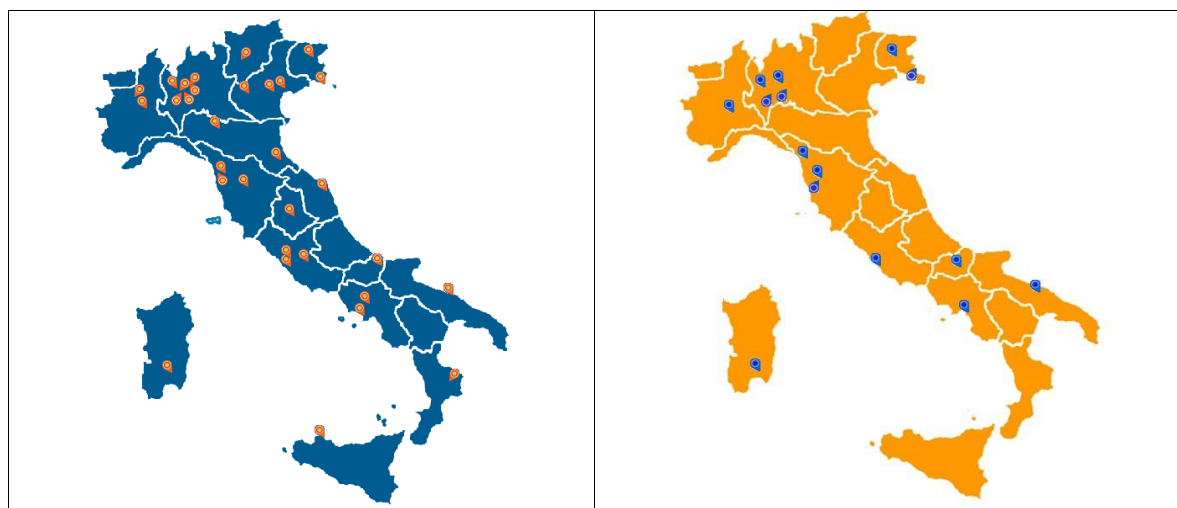
The overall ecosystem of the technology parks and incubators are specifically designed to act as an integrator between the need for innovative growth of the business system and the wealth of the scientific knowledge and technological excellence. The ultimate goal of these structures is to support the innovative development of strategic productive industries and increase the competitiveness of the national economic system.

Science and Technology parks and incubators offer specific facilities and infrastructures that will:

- √ Strengthen high-tech networks and scientific cooperation
- √ Create new business opportunities and add value to mature companies
- √ Foster entrepreneurship by incubating new innovative companies
- √ Generate knowledge-based jobs
- √ Build attractive spaces for the emerging knowledge workers
- √ Enhance the synergy between universities and companies

**Figure 1: a) Science & Technology Parks in Italy map**

**b) Italian Business incubators map**



<sup>3</sup> RIDITT: Italian Network for Innovation and Technology Transfer to SMEs- <http://www.riditt.it>

<sup>4</sup> APSTI: Network of Italian Scientific and Technological Parks- <http://www.apsti.it>

Currently, Italian Science Technology parks and incubators host around 600 high-tech companies, 150 of which are incubated. In addition, about 2,500 companies make use of the services provided by the scientific and technological parks. The main activity sectors are: ICT, red biotechnologies (life science, biomedical, pharmaceutical chemistry) green biotechnologies (agro-food, environment) electronics and robotic technologies.

The table below (Table 1) includes a brief description of the most important Italian Technology Parks involved in developing biotech research, listed in alphabetical order.

PARK NAME AND DESCRIPTION	PROJECTS RESEARCH LINES	CONTACTS
<p><b>Area Science Park</b></p> <p>Is one of the main multisectoral science parks in Europe with institutions and centers of excellence in the fields of Biotechnology, Diagnostics, Chemicals, and Biochemical, Biomedical Technology. The park also hosts the Technology District of Molecular Biomedicine which is an innovative system that aims to strengthen research, protect IP rights, create innovative enterprises and attract leading companies, and focuses its activities on Genomics, Bio-nanotechnologies, Molecular Imaging and Bioinformatics</p>	<p>Biotechnology, Diagnostics, Chemicals, Biochemical, Biomedical Technology.</p>	<p><a href="http://www.area.trieste.it">www.area.trieste.it</a> <a href="mailto:info@area.trieste.it">info@area.trieste.it</a></p> <p>Padriciano, 99 34012 TRIESTE Tel: 040.3755111</p>
<p><b>Bioindustry Park Silvano Fumero S.p.A.</b></p> <p>Promotes and develops biotechnological research hosting enterprises who want to set up research and pilot production in the chemical, pharmaceutical, diagnostic, veterinary, food, cosmetic, bioengineering and information science fields. Spaces are still available for start-up, spin off and existing companies in the above-mentioned fields. The incubator "Discovery", the most important life science base initiative for the creation of new companies in Piedmont, is also in the park.</p>	<p>Molecular Biology, Proteomics and Functional Proteomics, Chemicals, Bioinformatics, Theoretical and Computational biophysics</p>	<p><a href="http://www.bioindustrypark.eu">www.bioindustrypark.eu</a> <a href="mailto:bipca@bioindustrypark.it">bipca@bioindustrypark.it</a></p> <p>Via Ribes, 5 10010 Colletterto Giacosa TORINO Tel: 0125/561311</p>
<p><b>Città della Scienza – Fondazione Idis</b></p> <p>Is Campania Region's instrumental agency that supports innovation and the internationalisation of the regional system. As representative of the region, it organizes all the region's programmes and strategic activities.</p>	<p>Biotechnology</p>	<p><a href="http://www.cittadellascienza.it">www.cittadellascienza.it</a> <a href="mailto:bic@cittadellascienza.it">bic@cittadellascienza.it</a></p> <p>Via Coroglio, 57 80124 NAPOLI Tel: 081.7352409</p>
<p><b>Friuli Innovazione</b></p> <p>Offers customized services to develop strategies, processes, technologies and human resources for the promotion and support of innovation at every stage from the generation of entrepreneurial ideas to the creation of new enterprises, incubating,</p>	<p>Biotechnology</p>	<p><a href="http://www.friulinnovazione.it">www.friulinnovazione.it</a> <a href="mailto:info@friulinnovazione.it">info@friulinnovazione.it</a></p> <p>c/o Parco Scientifico e Tecnologico L. Danieli di Udine Via Jacopo Linussio, 51 33100 UDINE</p>

mentoring, funding, seeking partners, networking and set ups.		Tel: 0432.629911
<p><b>Fondazione Istituto Insubrico Ricerca per la vita</b></p> <p>Backed by The Foundation Istituto Insubrico di Ricerca per la Vita (FIIRV), The Park has a total surface of 52.000 square meters, of which 15.000 are occupied by offices and laboratories, equipped with the most advanced technologies in the bio-medical sector.</p>	Anti-Cancer & Coeliac Disease Project	<a href="http://www.ricercaperlavita.it">www.ricercaperlavita.it</a>
<p><b>Fondazione Parco Biomedico San Raffaele di Roma</b></p> <p>Is a public-private partnership with over 3,000 sqm (32,000 sqf) of laboratories and counts on a broad network of research clinics. The main research areas for the companies and research groups in the park are stem cells, oncology, leukemia, immunology, molecular cardiology, skeletal regeneration, cell therapy, biomedical quality control.</p>	Diabetology and molecular endocrinology, Hematopoiesis and leukemogenesis, Immunology, Molecular cardiology, Molecular medicine, Skeletal diseases, Stem cells, Stem cells and muscular dystrophies, Tumor epigenetics, Viral vectors and gene therapy	<a href="http://www.scienceparkrome.eu">www.scienceparkrome.eu</a>  via di Castel Romano 100 00128 – ROMA
<p><b>Fondazione San Raffaele del Monte Tabor</b></p> <p>Science Park RAF of Milan is one of Europe's largest Science Parks, entirely devoted to biomedical and biotechnology research. It includes: the biggest Italian private hospital; the first ranking Italian biomedical research institute with 500 scientists; Università Vita-Salute, a private University; 8 biotech and pharmaceutical companies; 2 research funding charities.</p>	Cancer Immunotherapy, genetics and Gene therapy, Molecular and Cellular Pathology, Neuroscience and Stem Cells, AIDS and infectious diseases, biomedical technologies.	<a href="http://www.sanraffaele.org">www.sanraffaele.org</a>  Via Olgettina, 60 20132 Milano Tel: 02.26434880
<p><b>Parco Scientifico e Tecnologico della Sicilia</b></p> <p>The Science and Technology Park of Sicily (PSTS) has developed a complex system of relationships between Sicilian Universities, research centres and companies that share the mission of enhancing the competitiveness of the region through research, innovation, technology transfer and dissemination of a culture of quality and specialized training.</p>	Biotechnology	<a href="http://www.pstsicilia.org">www.pstsicilia.org</a> <a href="mailto:info@pstsicilia.org">info(a)pstsicilia.org</a>  c/o Centro Direzionale Area di Sviluppo Industriale Brancaccio - Via Filippo Pecoraino 90124 PALERMO Tel: 091.6215653 - 095.292390
<p><b>Parco Tecnologico Padano</b></p> <p>Represents the most important Ag-biotech cluster in Italy. Within the park, research activities are performed by a specific division</p>	Development of algorithms and software for statistical and bioinformatic analysis of genetic data; livestock	<a href="http://www.tecnoparco.org">www.tecnoparco.org</a> <a href="mailto:comunicazione@tecnoparco.org">comunicazione(a)tecnoparco.org</a>  Via Einstein - Loc. Cascina

<p>(CERSA, Agro-food Research Center) whose mission is to carry out innovative research on the genomics and genetic diversity of traits related to crop and livestock production and traceability of derived products. Ongoing research projects are focused on: Molecular breeding, Pathogen resistance, Food safety, Biodiversity, Traceability.</p>	<p>genotyping DNA polymorphism analyses; provide genetical and molecular tools to improve plant breeding; produce applications in the field of genomics and functional genomics applied to plant.</p>	<p>Codazza 26900 LODI Tel: 0371.4662200</p>
<p><b>Pont-tech – Pontedera e tecnologia</b> Established in 2002 as a unit of Scuola Superiore Sant'Anna to support the growth and development of innovative firms in many sectors, including Biomedical and Biotech, this Park is managed by Pont-Tech, a consortium for Industrial Research and Technology Transfer resulting from a joint initiative of public and private entities, industrial companies, banks and universities. The mission of Pont-Tech is to promote research activities and technology transfer from research towards industrial application.</p>	<p>Biotechnology</p>	<p><a href="http://www.pont-tech.it">www.pont-tech.it</a> <a href="mailto:pont-tech(a)pont-tech.it">pont-tech(a)pont-tech.it</a> Viale Rinaldo Piaggio, 32 - 56025 Pontedera (PISA) Tel: 0587.274811</p>
<p><b>Sardegna Ricerche</b> The Science and Technology Park of Sardinia- provides a range of services promoting innovation, research and technological development. The park promotes applied research in diversified technological branches, namely ICT, Bioinformatics, Biomedicine, and Industrial Biotechnologies. It also assists enterprises and research centers with financing, while also promoting R&amp;D activities at the international level, with the aim of attracting new investments in Sardinia and promoting scientific and technological collaborations. There are currently 35 biotech companies in the park.</p>	<p>Biomedical biotechnology for diagnosis and drug discovery &amp; development; Bioinformatics; ICTs for medicine. Bioinformatics and computational biomedicine lab; Genotyping, molecular diagnostics and pharmacogenetics lab; Biotechnology applied to biomedicine lab; GLP-certified preclinical pharmacology lab; Bioactive molecules.</p>	<p><a href="http://www.sardegnaricerche.it">www.sardegnaricerche.it</a> <a href="mailto:info(a)sardegnaricerche.it">info(a)sardegnaricerche.it</a> Loc. Piscinamanna - 09010 Pula (CAGLIARI) Tel: 070.92432204</p>
<p><b>Technapoli Consortium</b> Is organizing and integrating activities to make industrial and scientific processes more innovative.</p>	<p>Pharmaceuticals, Medical Devices, Biotechnology, biomaterials, bioinformatics</p>	<p><a href="http://www.technapoli.it">www.technapoli.it</a> <a href="mailto:constec(a)technapoli.it">constec(a)technapoli.it</a> Via A. Olivetti, 1 80078 POZZUOLI- NAPOLI Tel: 081.5255182 - 081.525513</p>
<p><b>Toscana Life Sciences</b> Is dedicated to applied research in the Life Science Sector. The park offers equipped buildings, services and financing opportunities, spurring the development of</p>	<p>microbiology, immunology, molecular and cell biology, bioinformatics, computational</p>	<p><a href="http://www.toscanalifesciences.org">www.toscanalifesciences.org</a> <a href="mailto:info(a)toscanalifesciences.org">info(a)toscanalifesciences.org</a> Via Fiorentina, 1</p>

<p>new biotech companies focused on pharmaceutical, biotech, diagnostic and innovative biomedical technologies. The park was open in 2005 and currently hosts 18 companies.</p>	<p>chemistry, small drug design and discovery.</p>	<p>53100 SIENA                  Tel: 0577.1916204</p>
<p><b>Vega Venice</b>                  Gateway for Science and Technologies is the Venice City of Technology and Innovation, linking Universities, Centres of Excellence and the manufacturing sector in order to sharpen the competitive edge of the companies in the national and international markets. Vega counts 200 companies and over 2000 people employed.</p>	<p>Industrial microbiology;                  Nanobiotechnologies;                  Biosensors for the monitoring of human and animal health, food quality and the environment;                  Bioinformatics;                  Bioelectronics;                  Downstream, separation and purification of metabolites;</p>	<p><a href="http://www.vegapark.ve.it">www.vegapark.ve.it</a>  <a href="mailto:master(a)vegapark.ve.it">master(a)vegapark.ve.it</a>                  Via della Libertà, 12                  30175 Marghera,                  VENEZIA                  Tel: 041.509.3000</p>

*Table 1: A list of the main biotech technology parks*

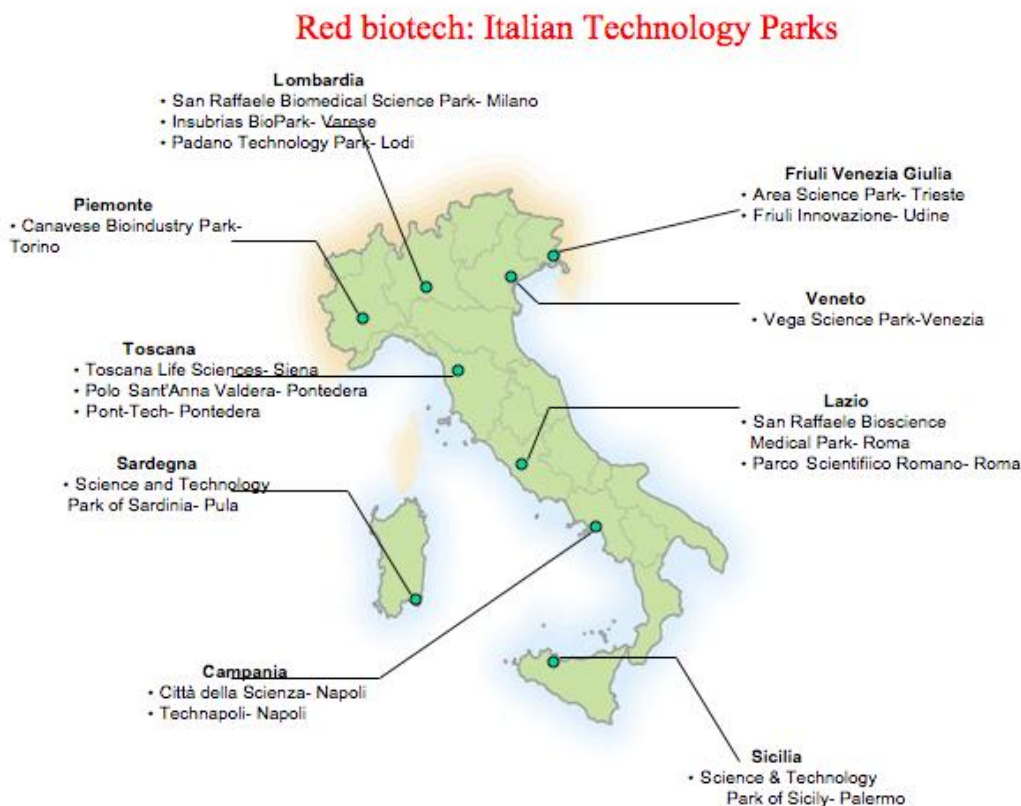
### The red biotech sector

The Technology Parks listed in Table 1 reflect the growth and development of the Italian **red biotech sector**. In fact, as already mentioned, the red sector is the most highly represented within the overall biotech sector: 190 companies specialized in biomedical, neurosciences, molecular and cell biology, molecular immunology and genetics, oncology, gene therapy. At least 95 companies out of 260 are located in these infrastructures.

The main biotech clusters are located in the Northern part of Italy, in the regions of Lombardia, Piemonte, and Toscana, while regions such as Lazio, Sardegna, Campania, Friuli and Emilia Romagna in the last few years have also gained prominence and reached a considerable critical mass.

Figure 2 maps out the most important **red biotech** Science Parks in Italy, which in the last years have also increasingly supported start-ups and promoted technology transfer. Among the most prominent parks are the **San Raffaele Biomedical Science Park**- Milano; **Canavese BioIndustry Park**- Torino; **Area Science Park**- Trieste and **Toscana Life Sciences** – Siena.

Figure 2: Red Biotech Italian Technology Parks



## 1.2\_Research Institutes and Universities

Italian biotech has developed in an extensive network of Research infrastructures, which includes universities with specialized degrees, committed research centers, working hospitals, as well as both public and private institutes that operate throughout the country. These entities/organizations come together to make invaluable contributions to the national research and innovation system.

### Public and Private Research Organizations

Public and Private research organizations in Italy are numerous and internationally recognized for their commitment to the advancement of science, research and technology. In collaboration with the universities, they play a key role in fostering innovation. For the sake of brevity, this report only lists some of the most significant organizations, including a more detailed profile in *Table 2<sup>5</sup>* of the **National Research Council (CNR)**, one of the most relevant for the purpose of the present report.

<sup>5</sup> The present data are derived from a Publication by Ufficio Pubblicazioni e Informazioni Scientifiche – CNR

**The National Research Council (CNR)**, the main national research organization working in all scientific disciplines, which acts both as research performer and financial supporter. <http://www.cnr.it/>

**Istituto Superiore di Sanità (ISS)** - the leading technical and scientific public body of the Italian National Health Service. Its activities include research, control, training and consultation in the interest of public health protection. The Institute is also involved in several major clinical trials, which are frequently conducted in cooperation with the Scientific Institutes for Research and Care (IRCCS) network and Hospitals. <http://www.iss.it>

**Telethon Institute of Genetics and Medicine (TIGEM)** - Since its inception in 1994 TIGEM has been a point of reference in Italy and internationally, for research on genetic diseases and developing new technologies in functional genomics and gene therapy. The Institute currently hosts 13 independent research groups with over 170 members including graduate students, postdoctoral fellows, technicians and administration. <http://www.tigem.it/>

**CEINGE Advanced Biotechnology (CEINGE)** - Biotechnologie Avanzate is a non-profit consortium specialized in advanced biotechnologies and their possible applications. Founded in 1983, its partners are the Campania Region, the University of Naples 'Federico II', the Naples Provincial Authority, the Naples Chamber of Commerce, and the Naples Municipality. <http://www.ceinge.unina.it>

**International Center for Genetic Engineering and Biotechnology (ICGEB)** - The Centre is dedicated to advanced research and training in molecular biology and biotechnology and extends the prospect of advancing knowledge and applying the latest techniques in the fields of: bio-medicine, crop improvement, environmental protection/remediation, bio-pharmaceuticals and bio-pesticide production. ICGEB is part of the United Nations System and it belongs to an international network of centers of excellence for research and high-level training. <http://www.icgeb.trieste.it>

**National Laboratory for the Inter-University Biotechnology Consortium (LNCIB)** - located in the Area Science Park in Trieste, this center of excellence for biotechnology has since 1992 acted as a reference for member universities in promoting research and higher education in biotechnology in Italy. Its scientific achievements in the field of biotechnology and basic research are internationally recognized and this allowed LNCIB to attract funding from American government institutions (National Cancer Institute) as well as private companies (Invitrogen, Merck Genome Research Institute). Area of focus: Genomics, Bioinformatics, Immunology, and Oncology. <http://www.lncib.it/>

**Institute for Molecular Oncology Foundation (IFOM)** – Located in Milano, IFOM is a non –profit top rated research institute for the study of tumor formation and development. With its powerful technological infrastructure, IFOM intends to become an “open channel” for the transfer of biotech information from the academic to the industrial world. <http://www.ifom-firc.it>

**Mario Negri Institute for Pharmacological Research** – Located in Milano, it is a non-profit biomedical research organization founded in 1961. Mario Negri works in close collaboration with Italy’s most important national institutes, foreign universities and international organizations. The research conducted at Mario Negri focuses mainly on the fight against cancer, nervous system and mental diseases, cardiovascular and kidney diseases, rare diseases. <http://www.marionegri.it>

**European Oncology Institute (IEO)** – Based in Milano, IEO is a non-profit comprehensive cancer center, opened in 1994. In keeping with the standards of the most advanced international oncology centers, the Institute fully integrates different activities involved in the fight against cancer: prevention and diagnosis, health education and training, research and treatment. <http://www.ieo.it>

**San Raffaele Institute:** is a private Scientific Institute, belonging to the San Raffaele del Monte Tabor Foundation, recognized by the Italian Ministry of Health as a Scientific Institute carrying out biomedical research and clinical activities of relevant national interest (IRCCS). San Raffaele Institute is relentlessly pursuing its three interrelated lines of clinics, research and education since 1971 when it was established. <http://www.sanraffaele.org>

**The Italian Institute of Technology:** (IIT) is a foundation established jointly by the Italian Ministry of Education, Universities and Research and the Ministry of Economy and Finance to promote excellence in basic and applied research and to contribute to the economic development of Italy. The primary goals of the IIT are the creation and dissemination of scientific knowledge as well as the strengthening of Italy’s technological competitiveness. To achieve these two goals, the IIT will cooperate with both academic institutions and private organizations, fostering through these partnerships scientific development, technological advances and training in high technology. <http://www.iit.it/en/home.html>

**The Institute for Cancer Research (IRCC)-** Located in Torino IRCC is a private non-profit institution founded by the Fondazione Piemontese per la Ricerca sul Cancro-Onlus (FPRC) and operated by the Fondazione del Piemonte per l'Oncologia (FPO: a joint venture between the FPRC and the Regione Piemonte). It is the seat of the Department of Oncological Sciences of the University of Torino. Its mission is to make a significant contribution to fight cancer by understanding the basics, and by providing optimal diagnostic and therapeutic services. Both basic research and clinical research are actively performed, placing the Institute at the interface between molecular biology and medicine. <http://www.ircc.it>

#### THE NATIONAL RESEARCH COUNCIL (CNR)

The Italian National research Council (CNR) is the largest public research institution in Italy. **CNR’s Mission** is to:

- Perform research in its own Institutes;
- Promote innovation, national industrial system’s competitiveness, and national research system internationalization;
- Provide technologies and solutions to emerging public and private needs;

- Advise Government and other public bodies;
- Ensure the best training to the human force the institution employs

**CNR Organization:** CNR integrates its activities through an interdisciplinary structure of 11 National Departments. The 108 Institutes, coordinated by the Departments, are located throughout Italy and they function grouping together technical and scientific areas of expertise. CNR employs more than 8,000 people, of whom more than half are **researchers** and technologists.

From a **financial** point of view, the main resources come from the Government - 552 million € of Institutional Funds in 2007. The remaining part - 309 million €- is derived from the market: as much as 30% of CNR's revenues come from external services - e.g. technological due diligence; private agreements; external contracts with governmental international organizations, etc.

CNR's financial strategy identifies the following 3 main funded activities:

1. curiosity driven research (allocated funds: 15%);
2. development of new research capabilities (allocated funds: 15%);
3. R&D activities performed in cooperation with universities, other research institutions and industrial companies (allocated funds: 70%).

**CNR Technology Transfer:** in order to encourage innovation and stimulate the competitiveness of businesses through market oriented Technology Transfer activities; disseminate know-how and finalize partnership agreements with external parties to foster cooperation, CNR has created an agile Tech Transfer mechanism structured as follows:

- A central *Business Development Unit* that evaluates and the implements new spin-off enterprises;
- *Rete Ventures*, a Technology Transfer enterprise, 90% - owned by CNR, whose task is to provide the scientific network with professional services and entrepreneurial skills to protect, valorize and commercialize new technologies;
- *Quantica SGR*, an Asset Management Company, whose aim is to invest in high-tech spin offs and to promote the development of venture capital.

The activities performed by the "Technology Transfer Unit" include the set up of **spin-offs (42 operating in 2009)** and the protection and enhancement of CNR scientific results (**340 Patents** in the entire CNR intellectual property rights portfolio).

Furthermore:

- As of 31 Dec. 2008, CNR participated in **93 joint ventures**, both Italian and foreign. The joint ventures cover the entire spectrum of legal structures: companies, consortia, associations, foundations, and European Economic Interest Groupings;
- CNR **partners** with large hi-tech companies; government departments and local authorities; associations designed to enhance the competitiveness of the manufacturing system; dissemination and know-how transfer specialized entities.

**Table 2.** National Research Council Description

## Universities

In Italy, the *Ministry for Education University and Research (MiUR)* coordinates national and international scientific activities, allocates funding to universities and research centers, and establishes the guidelines for the support of public and private research and technological

development funding. Furthermore, MiUR coordinates the preparation of the triennial National Research Program (NRP), the main governmental document for R&D planning that sets the strategic lines for the national system.

Research activity in Italy is mainly carried out by universities. There are 95 Italian universities, 67 of which are public<sup>6</sup>.

Table 3 lists the top 10 Universities in each of the main scientific studies: Medical and surgery, Veterinary, Pharmacy, Science and Agronomy. The Universities have been ranked by *Censis* - one of the most prestigious research center for social studies in the country<sup>7</sup>- by taking into consideration the following criteria: scientific productivity, teaching quality and teachers qualifications, research level and collaboration with international universities.

SCHOOL RANKING	MEDICAL AND SURGERY	VETERINARY	PHARMACY	SCIENCE*	AGRONOMY
1	PADOVA	PADOVA	BOLOGNA	PADOVA	BOLOGNA
2	PERUGIA	BOLOGNA	TRIESTE	TRIESTE	TERAMO
3	MILANO 2 - BICOCCA	TORINO	PADOVA	PAVIA	MODENA - REGGIO EMILIA
4	UDINE	PERUGIA	MODENA - REGGIO EMILIA	MILANO 2 - BICOCCA	PERUGIA
5	NAPOLI 1 - FEDERICO II	PARMA	PAVIA	PERUGIA	PARMA
6	ROMA 1 - LA SAPIENZA	NAPOLI 1 - FEDERICO II	PERUGIA	TORINO	POLITECNICA DELLE MARCHE
7	MILANO 1	SASSARI	FERRARA	MODENA - REGGIO EMILIA	PADOVA
8	VERONA	TERAMO	MILANO	CAMERINO	UDINE
9	FIRENZE	CAMERINO	GENOVA	FERRARA	SASSARI
10	TORINO	BARI	PIEMONTE ORIENTALE	MILANO 1	FIRENZE

**Table 3.** Ranking of the best Italian Universities involved in scientific studies (2010) (\*Biological Sciences, computer science, chemical Science and technology, mathematical sciences , natural and environment sciences and technology, Biotechnology, Earth and Geological Sciences)

Another criteria to rank the best Italian universities involved in scientific studies, is based on the **number of biotech spin-offs** born in each university. Considering that the ultimate goal of research is to bring new knowledge to society, for a public research institute achieving this goal is possible by **transferring technologies from academia and research centers to the industry**. Although the primary mission of any university is to disseminate knowledge eventually providing highly educated and qualified personnel to the industries, in order to significantly impact the economic development of a region it is absolutely necessary to promote the creation of spin-offs. Moreover, spin-offs are the reflection of a well-structured, broad and cooperative scientific ecosystem as well as the demonstration of a specialization in a particular sector by bringing together talents and infrastructures, thus accelerating the process of translating good bench research in profitable research.

<sup>6</sup> Web Portal "Italian Research": [http://www.ricercaitaliana.it/universita\\_chifaricerca.htm](http://www.ricercaitaliana.it/universita_chifaricerca.htm)

<sup>7</sup> Report *Classifica facolta' medico - farmaceutiche 2010; Classifica facolta' scientifico - tecniche 2010* (Censis Servizi)

In Table 4 the top ten Italian universities are listed, ranked by the number of affiliated spin offs. The information source belongs to the **Italian Network for the Valorization of the University Research** -NETVAL- Report<sup>8</sup>. More information is available in section 2.

UNIVERSITY	# SPIN OFFS	% OF BIOTECH SPIN-OFFS OF THE TOTAL NATIONAL NUMBER (N=873)
Politecnico di Torino	60	6.9%
Università di Bologna	42	4.8%
Università di Perugia	35	4%
Università di Padova	35	4%
Università di Udine	33	3.8%
Università Cagliari	32	3.7%
Scuola Superiore Sant'Anna di Pisa	28	3.2%
Università di Milano	28	3.2%
Politecnico di Milano	27	3.1%
Università di Pisa	25	2.9%

**Table 4.** Top ten Italian universities (Dic 2009) ranked by spin offs number

### 1.3 Technological Meta-districts

Technological meta-districts are initiatives aimed at reproducing the positive results derived from industrial districts. They focus on highly technological services and products and are promoted at the central and regional levels. The following are the Italian districts involved in biotech recognized by MiUR<sup>9</sup>.

- **Veneto Nanotech** - (Veneto). A district financed by national and regional funds aimed at creating an area of excellence in nanotechnology in Veneto. The district includes private companies and local scientific institutions.
- **Biotech in Lombardia** - (Lombardia). An initiative aimed at facilitating the development of a biotech district in a key area where this industry in Italy is already growing.
- **Center for Molecular Biomedicine** - (Friuli Venezia-Giulia). Located inside the Area Science Park, CBM is a public-private consortium which carries out research and advanced training in the field of molecular biomedicine. CBM acts as a bridge between public research and industry in the sector of "personalized medicine" and it manages a network of science centers, companies, governmental bodies, development agencies and financial partners in order to stimulate and accelerate the technology transfer process.

<sup>8</sup> "VIII Rapporto Netval sulla Valorizzazione della Ricerca nelle Università Italiane" (Netval 2011)

<sup>9</sup> Italian Technology meta-districts recognized by MiUR as for November 2008

- **Bio-Medicine district** - (Sardegna). The Sardinian district is the result of a public-private regional effort. Over € 40 Million have been invested for the creation of the Medicine district. The region's aim is to attract investment, new companies, with the overall goal to create a Biomedicine and Technology Valley.
  
- **Bioscience District** - (Lazio). Established in 2008, the Lazio Bio-district focuses on the development of pharmaceuticals, medical devices, nanotech for health, ICT for biomedicine.
  
- **Biotechnology district** - (Puglia). Established in 2005, the biotechnology district in Puglia is one of the most successful in Italy. With its technopole in Bari and Lecce, it specializes in the health and agro-food sectors.

## 2. Early stage biotech companies in Italy

In the last several years, there's an increasing number of young Italian companies engaged in research and development. The companies are spin offs of university labs and/or new innovative companies in the initial phases of development and in search of financial resources to support their growth. They represent a valuable opportunity for VCs and/or Business Angels willing to support them.

One of the most active Italian organizations monitoring spin-offs is **NETVAL - the Italian Network for the Valorization of the University Research**- the association of Italian public universities whose goal is to enhance the value of its members' research activities by working with tech-transfer offices and developing collaborations with the private sector. NETVAL's platform includes the most important Italian Universities and, thanks to this large network, the association is able to monitor universities' productivity in terms of spin offs and patents produced.

According to NETVAL's latest report<sup>10</sup>, since 2000, Italy continues to display signs of a strong acceleration in the number of newly generated spin-offs. The report highlights that among the **873 spin-offs** currently operating in Italy, more than 85% were born in the last 9 years and over 50% are located in the northern-central Italian regions, 26.9% in the center and the 22.5% in the southern regions and islands. The most represented sectors are: ICT (32.8%), energy and environment (16.2%), life sciences (15%), electronics (9.3%) and biomedical (7.3%).

In order to facilitate the transition from bench to market and with the aim of providing brilliant academic scientists with the necessary instruments to best use their innovative ideas and translate them in commercial technologies, 90.7% of the Italian universities have set up Technology Transfer Offices (TTOs), whose primary objective is to accelerate the creation of entrepreneurial initiatives, offering the necessary assistance and valuable instruments to spin-offs.

NETVAL's website provides an **online directory of Italian spin-offs organized by university**. A customized selection of university spin-offs by sector can also be requested by contacting the Italian Trade Commission in New York ([newyork@ice.it](mailto:newyork@ice.it)) - or [segreteria@netval.it](mailto:segreteria@netval.it).

In order to provide the reader with **a selection of some of the most interesting and established Italian biotech spin-offs** that might be appealing to foreign investors, the authors of the present report used a screening methodology able to guarantee objective and homogeneous selection criteria. With NETVAL's assistance, a selection was made of red biotech companies with patented technologies and/or products already in the market or ready to be taken to market, whose websites were both in Italian and English.

---

<sup>10</sup> Eight NETVAL Report, 2011 " *Annual Report of the valorization of results in the university research*"

**Table 5.** Selection of 27 among the most established Italian Biotech spin-offs

A SELECTION OF ITALIAN BIOTECH SPIN-OFFS		
University affiliation	Company Name Web Site	Company Description
POLITECNICO di MILANO	<b>RESMON</b> <a href="http://www.resmon.it">www.resmon.it</a>	Resmon develops innovative non-invasive technologies and devices for the assessment of the respiratory functionality both in the hospital and at the patient's place.
SCUOLA SUPERIORE SANT'ANNA (PISA)	<b>HUMANWARE</b> <a href="http://www.hmw.it">www.hmw.it</a>	Humanware core activity is focused on the manufacturing of hi-tech advanced devices for the Biomedical sector, taking a careful look at Neuro and Ortho Rehabilitation applications.
	<b>MICROTECH</b> <a href="http://www.microtechitaly.com">www.microtechitaly.com</a>	Microtech designs, manufactures and commercializes medical devices for minimally invasive surgery.
	<b>HENESIS</b> <a href="http://www.henesis.eu">www.henesis.eu</a>	Henesis focuses on the design and development of multi-scale artificial perception systems, currently targeted at: <ul style="list-style-type: none"> <li>- Environmental monitoring;</li> <li>- Quality assessment for Industry;</li> <li>- Man-machine interfaces.</li> </ul>
	<b>W.I.N.</b> <a href="http://www.winmed.it">www.winmed.it</a>	W.I.N develops electronics and software for monitoring of biomedical parameters through portable wireless devices.
	<b>PRENSILIA</b> <a href="http://www.prensilia.com">www.prensilia.com</a>	Prensilia designs, customizes and manufactures advanced anthropomorphic under-actuated robotic hands endowed with embedded actuation, sensory and control systems, that can be exploited in research as advanced hand prostheses, end effectors for humanoid robots, for rehabilitation and/or neuroscientific experiments; in general, in all research fields where it's important to have an artificial hand that behaves as a natural one.
UNIVERSITÀ degli STUDI di CAMERINO	<b>SYNBIOTEC</b> <a href="http://www.synbiotec.com">www.synbiotec.com</a>	Synbiotec develops dietary supplements and natural processes in order to improve the quality of food and human wellbeing
UNIVERSITA' DEGLI STUDI DI "ROMA TRE"	<b>MBS</b> <a href="http://www.emmebiesse.net">www.emmebiesse.net</a>	Located in Rome, Lazio, - A spin off of University of Roma 3, MBS specializes in the production of analytical kits for microbiological composition of water and food.
UNIVERSITÀ di FERRARA	<b>AEQUOTEC</b> <a href="http://www.aequotech.com">www.aequotech.com</a>	Aequotec provides a list of different kind of recombinant proteins, including aequorin, GFP and luciferase, used as biosensors in various heterologous systems

	<p><b>AMBROSIALAB</b>  <a href="http://www.ambrosialab.com">www.ambrosialab.com</a></p>	<p>AMBROSIALAB offers outsourced applied research to companies, institution and clinics in the pharmaceutical, food, dietary supplement, and cosmetics fields.</p>
	<p><b>PHARMESTE</b>  <a href="http://www.pharmeste.com">www.pharmeste.com</a></p>	<p>Pharmaeste is a drug development biopharmaceutical company based on a unique Transient Receptor Potential (TRPs) ion channel technology platform that brings together strong expertise on TRPs area and industrial competences in research &amp; development process applied to small molecule therapeutics. The Company mission is to play a leading role in the discovery and development of fully proprietary high affinity and selective TRP channel therapeutics for the treatment of neuropathic pain, overactive bladder and other TRP-mediated diseases.</p>
	<p><b>UFPEPTIDES</b>  <a href="http://www.ufpeptides.com">www.ufpeptides.com</a></p>	<p>UFPeptides combines expertise in peptide chemistry - medicinal chemistry and pharmacology to provide a unique resource in peptide receptor research. The company provides high quality products/services to the academia and biotechnology and pharmaceutical industry that consists of custom synthesized bioactive peptides and contract research services.</p>
<p>UNIVERSITÀ                  GENOVA</p>	<p>di <b>SIRIUS BIOTECH</b>  <a href="http://www.sirius-biotech.com">www.sirius-biotech.com</a></p>	<p>Sirius-biotech develops products and reagents and offers services in the fields of Medical Biotechnology, Molecular Biology and Tissue Engineering. Sirius-biotech also offers preclinical services to help the clients develop their front-edge ideas and results into products.</p>

	<p><b>GENOVAX</b>  <a href="http://www.genovax.it">www.genovax.it</a></p>	<p>Genovax is a biotech company established after a spin-off from the Centre of Excellence for Biomedical Research of the University of Genova, and with the support of Eporgen Venture. Genovax mission is to develop vaccines for chronic diseases, aiming at re-establishing the original physiological profile of the immune system. New therapeutics approaches against Lupus (LES) an autoimmune diseases. The Company explores the potential of tolerogenic vaccination and the setting of new formulations of vaccines against cancer based on the activation of effector immunity and down-modulation of regulatory/suppressor functions. Genovax has a pipeline of 2 active projects: GX 101 (lupus) - GX 301 (renal and prostate cancers) and is starting GX201, generation of a Fc-IL10R Chimera for the treatment of cancer.</p>
<p>UNIVERSITÀ MILANO</p>	<p>di <b>NEURO-ZONE</b>  <a href="http://www.neuro-zone.com">www.neuro-zone.com</a></p>	<p>Neuro-Zone's mission is to develop products, tools and solutions for advanced research in the field of neuroscience. The company provides purified primary cellular cultures from the Central Nervous System and related products for advanced research. Moreover it develops "on-demand" services (i.e. lead compound validation) on transgenic and KO mice, with specialized protocols tailored on the clients' needs.</p>
	<p><b>GENESPIN</b>  <a href="http://www.genespin.com">www.genespin.com</a></p>	<p>GeneSpin is a technology-based company which aims are the:</p> <ul style="list-style-type: none"> <li>• Development of new methodologies and products for the identification of regulatory networks controlling gene expression in eukaryotic cells;</li> <li>• Development and application of innovative biological systems and methodologies to identify the genotoxicity of a variety of chemico-physical agents;</li> <li>• Production and distribution of molecular biology reagents and kits.</li> </ul>

	<p><b>TETHIS</b>  <a href="http://www.tethis-lab.com">www.tethis-lab.com</a></p>	<p>Tethis is a technology development company operating in the emerging field of nanobiotechnology. Activities are organized in three different business areas:</p> <ul style="list-style-type: none"> <li>• Tethis Systems focuses on the design and commercialization of nanoparticle synthesis and nanocoating units allowing customers to develop their own nanotech-products in-house;</li> <li>• Tethis Technology Services supports customers with nano- and biotech product development by technical consulting and by opening Tethis' platform technologies for services such as tailor-made coatings or nanopowder development;</li> <li>• Tethis Research targets on the incorporation of nanotechnology in devices, for instance by the integration of nanotechnology, biotechnology and microfabrication. Many of the company's research projects are based on collaborations with industries, universities and research centers.</li> </ul>
	<p><b>TOP</b>  <a href="http://www.top-mice.com">www.top-mice.com</a></p>	<p>Through genetic engineering techniques, TOP produces cell and animal reporter systems for in vivo imaging (bioluminescence, PET, NMR). The company's unique reporter mice enable non-invasive visualization of the activity of hormones, pharmacological compounds and environmental or alimentary contaminants in living organisms and are employed in:</p> <ul style="list-style-type: none"> <li>• Drug discovery (target validation, screening and ADMET);</li> <li>• Environmental and food toxicology;</li> <li>• Basic research.</li> </ul> <p>TOP also offers service planning and construction of customized new model systems, with partners such as pharmaceutical companies, biotech organizations and research institutions.</p>
<p>UNIVERSITÀ di          MODENA e REGGIO          EMILIA</p>	<p><b>HOLOSTEM</b>  <a href="http://www.holostem.com">www.holostem.com</a></p>	<p>Holostem Terapie Avanzate S.r.l. is the first Italian biotechnology company devoted to the development, production and distribution of epithelial tissues from stem cell culture for advanced therapy (cell therapy and gene therapy).</p>
	<p><b>TYDOCK PHARMA</b>  <a href="http://www.tydockpharma.com">www.tydockpharma.com</a></p>	<p>TYDOCKPHARMA is a young chemistry-driven research-intensive biostart-up company discovering new drugs targeting major infection diseases.</p>

UNIVERSITÀ PADOVA	di	<p><b>WETWARE CONCEPT</b> <a href="http://www.wetwareconcepts.com">www.wetwareconcepts.com</a></p>	<p>Wetware concept sets up biosensor arrays based on the innovative concepts of detecting compounds in biological samples directly measuring specific biological effects. These effects are evoked in a specific biological model coupled with a semiconductor in a microchip.</p>
		<p><b>ANANAS NANOTECH</b> <a href="http://www.ananasnanotech.com">www.ananasnanotech.com</a></p>	<p>Ananas Nanotech develops innovative solutions for high sensitivity in vitro diagnostics. Nanosystems for site-directed drug-delivery and in vivo diagnostics.</p>
UNIVERSITÀ PERUGIA	di	<p><b>BIO-NET</b> <a href="http://www.bio-net.it">www.bio-net.it</a></p>	<p>Bio-nets designs, builds, and sells small-sized systems for biomass energy conversion based on IPRP technology.</p>
UNIVERSITÀ di PISA		<p><b>SORTA</b> <a href="http://www.sorta-biomedical.com">www.sorta-biomedical.com</a></p>	<p>Sorta Srl. is a biomedical R&amp;D company committed to design, develop, patent and market novel technologies (procedures, reagents, instrumentation) related to oxidative-stress diagnostics in biology and medicine. The uniqueness of Sorta products warrants the filling of selected market niches, with relevance to medical fields of major concern for public health.</p>
		<p><b>TOSCANA BIOMARKERS Srl</b> <a href="http://www.toscanabiomarkers.com">www.toscanabiomarkers.com</a></p>	<p>Toscana Biomarkers Srl is a spin off company promoted by a multidisciplinary group of researchers of the Universities of Florence (Interdepartmental Laboratory of Peptide and Protein Chemistry and Biology) and Pisa (Clinical Immunology Unit). The mission of Toscana Biomarkers is the discovery and validation of new modified peptides as synthetic probes to be used in the identification in sera of specific autoantibodies, as biomarkers of autoimmune diseases. These synthetic probes are used for the development of new diagnostic/prognostic products to follow-up patients affected by autoimmune diseases and to support clinical evaluation of new therapeutic treatments. Financed by Tuscan institutional funds, Toscana Biomarkers is located since March 2007 in the bio-incubator of Toscana Life Sciences Foundation in Siena.</p>
UNIVERSITÀ di SIENA		<p><b>BIOSUMA</b> <a href="http://www.biosuma.it">www.biosuma.it</a></p>	<p>Biosuma focuses on the research, development and manufacturing of innovative materials for biomedical applications.</p>

		<b>SIENABIOGRAFIX</b> <a href="http://www.sienabiografix.it">www.sienabiografix.it</a>	Sienabiografix offers informatics and 3D graphics services applied to science and technology thanks to the company's biological, physico-chemical, computer graphics and multimedia expertises.
UNIVERSITÀ TRIESTE	di	<b>GENEFINITY</b> <a href="http://www.genefinity.com">www.genefinity.com</a>	Genefinity provides new processes, products and services for the biosensor market, like the patented direct-patterning deposition system, a breakthrough in the field of disposable substrates for bioassays.

If one of the fundamental steps leading to the growth of the biotech sector is the technology transfer of the research efforts to industry (such as spin offs), it is also necessary to assess the company's business progress. The "early stage" phase of a company represents the step forward from the start-up / seed stage.

As an example of Italian early stage biotech companies, Table 6 includes detailed profiles of the companies that were selected to participate at the «**BioInItaly Investment Forum & Intesa Sanpaolo Start-Up Initiative**», an event that was held in Milan in April 2011. For the second year, the event merged two relevant initiatives supporting Italian start ups: the "*BioInItaly Investment Forum*," organized annually since 2008 by Assobiotec (the National Association for the Development of Biotechnology) and Innovhub (the innovation centre for the Chamber of Commerce of Milan) and the "*Intesa Sanpaolo Start-Up Initiative*," organized by Intesa Sanpaolo, one of Italy's largest banks. The aim of the event was to connect innovative companies involved in red biotechnologies, with domestic and foreign larger companies and investors.

**Table 6<sup>11</sup>:** *Biotech companies which participated to the «BioInItaly Investment Forum & Intesa Sanpaolo Start-Up Initiative» 2011 – Milan, Italy*

APTENIA Srl	
Sector	Pharmaceutical R&D process from chemical synthesis, molecular and cellular biology, to preclinical animal models
Company profile	Aptenia Srl was founded on December 10, 2010 with the support of Medeor Associates Srl. Aptenia is now performing the first R&D phases in collaboration with the University of Pavia. Aptenia's R&D research is focused on the development of innovative probes for molecular imaging (MI), in particular Positron Emission Tomography (PET) imaging. Aptenia's mission is to bring together aptamers specific against tumor markers with the <sup>18</sup> F-labeling kit will allow Aptenia to revolutionize the diagnosis in oncology
Product Portfolio	The Aptenia-patented technology is a new way to label molecules that recognize cancer tissue with fluorine-18 (18F), the most common PET radioisotope. Labeling will be performed in simple and rapid way providing ready-to-inject solutions with a minimal exposure to radioactivity of clinical

<sup>11</sup> The companies classified as early stage are not categorized based on a specific requirement of number of years active.

	personnel.
Technology Pipeline	Aptenia is now performing the first R&D phases in collaboration with the University of Pavia. The next milestone is to obtain a fully optimized and validated prototype to be ready to start at the end of 2011 a preclinical assay on tumor mouse models.
Potential market value	In Italy have been performed more than 100,000 PET scans with a annual growth trend exceeding 10%. In the United States and North Europe PET scans are even more common (source AIMN 2007). It is estimated that in developed countries there are over 1500 PET scanners and the market, currently about 7 billion dollars, will grow over 10 billion by 2015, driven by the oncology examinations but also new applications such as cardiology and neurological disorders (e.g. Alzheimer's).
Business idea	Aptenia aims to cover a part of the billion dollars therapeutic peptides market, especially antibodies, to "transform" them into innovative diagnostic agents. In fact, there is huge need of innovative molecular probes for molecular imaging, in particular PET imaging. 18F-labeling kit and aptamers specific against tumor marker will allow Aptenia to fill some of those unmet needs.
Looking for opportunities	Aptenia is looking for investments in order to validate a prototype kit to be licensed to a manufacturer of biomedical devices that will manage production and distribution.
Contact	Matteo Scabini, CEO e mail: matteo.scabini@gmail.com

<b>AXXAM SpA</b> www.axxam.com	
Sector	Biopharmaceutics, discovery of novel bioactive compounds
Company profile	Axxam S.p.A. is a privately owned contract research and discovery company, located at the San Raffaele Biomedical Science Park in Milan, Italy. Axxam was founded by former Bayer senior executive Stefan Lohmer and executive and entrepreneur Alessandro Sidoli. Axxam began its operations as an independent company in November of 2001. Prior to that, the unit was an integral part of the worldwide Research and Development organization of Bayer Healthcare, where it was a leader in assay development, with specialized scientists and state of the art laboratory capabilities driving the business.
Product Portfolio	Axxam has invested extensively to ensure IPRs and FTO for selected assays, methodologies and tools developed inhouse. The company's IP portfolio currently includes several patents, granted in major markets, such as: <ul style="list-style-type: none"> <li>• Photina® platform: calcium-binding bioluminescent photoproteins</li> <li>• FlashLight: secreted luciferase reporter system for intact live cell analysis</li> <li>• chAMPion: innovative luminescence-based universal GPCR and Ca<sup>2+</sup> channel reporter cells</li> <li>• GFP: novel monomeric green fluorescent proteins</li> </ul>

	<ul style="list-style-type: none"> <li>• PhotoStem: stem cells for HTS (neuron like cells)</li> <li>• PhotoTopo®: luminescent transgenic mice</li> </ul>
Technology Pipeline	Novel bioactive compounds for pain, autoimmune diseases and metabolic disorders.
Potential market value	<p>The size of the global pharmaceutical market is estimated at approximately USD 600bn with the US accounting for roughly 40-50% of the world market. Even during economic recessions the industry moves forward with an expected increase of 5%, at the global level. Within the growing trend of biotech out-licensing deals, even early research based compounds (Leads) have gained more attraction with pharma licensors, which are consequently available to recognize an higher value to biotech company in terms of option fees, upfront, milestones and royalty payments than in the past. In term of values, these payments are valued on average 3 times more than 5 years ago (Deloitte 2009). Axxam's current pipeline includes discovery programs and drug leads in a number of high medical need therapeutic areas. Targeted global market sizes are estimated as follows: Rheumatoid Arthritis (USD15bn), Asthma/COPD (USD15bn), Diabetes (USD10bn), Transplant Therapeutics (USD3bn), Inflammatory Bowel Disease (USD3bn), Multiple Sclerosis (USD5bn).</p>
Business idea	<p>The company has a proven track record as a third party research and discovery services provider and is now in the process of expanding its business model towards an added focus on establishing its own suite of internal discovery programs against attractive biomedical targets, which then are out-licensed at a Lead stage to a collaborative/licensing partner. Since its inception, Axxam has built a solid discovery platform and ensured intellectual property protection and/or freedom to operate for key methodologies, assays and tools. Going forward, the Company will be investing primarily in internal research efforts to further advance the development of proprietary discovery programs and lead molecules for out-licensing. The Company sees building and expanding its proprietary lead molecule pipeline as central to future revenue creation. Since late 2001, Axxam has built up an integrated discovery platform called "LeadEngine", that consists of "assay development", "highthroughput screening" and "hit follow-up" modules. Since 2002, Axxam's service business has been always profitable and has generated a total revenue stream of EUR 55m, demonstrating its capabilities to approach the needs of the discovery market.</p>
Looking for opportunities	<p>The development costs for the lead molecules discovery programs are estimated to be covered by: public grants; mark-up and success fees from the services business; out-licensing of technologies.</p> <p>Axxam is now looking at further strategic corporate investors to complete the series A fund raising and/or venture capitalists and private equity investors.</p>
Contact	Luigi Gavazzeni
<b>EXTERNAUTICS SpA</b> <a href="http://www.externautics.com">www.externautics.com</a>	
Sector	Oncology biomarker market

Company profile	<p>Externautics was founded in December 2007 by PRIMM Srl (Milan, Italy) as a “spin-off” Company with the objective of exploiting PRIMM’s YOMICS® Platform Technology in the field of biomarker discovery for oncology applications. The Company was established in June 2008 and is currently incubated in the Tuscany Life Sciences Foundation (TLS) building, in the scientific park area of Novartis Vaccines and Diagnostics in Siena (Italy). Externautics core activity addresses the need of novel diagnostic, prognostic, predictive and therapeutic tools through the discovery and pre-clinical development of novel tumor markers. Preference is given to: i) almost uncharacterized/unknown proteins (based on the available scientific literature), ii) markers localized on the surface of the tumor cells, being ideal targets of anticancer drugs, iii) markers secreted by tumor cells or released in the biological fluids, being ideal candidates for the development of non invasive diagnostic assays.</p>
Product Portfolio	<p>Externautics has started to create a solid intellectual property position on the newly discovered markers (89 proteins) by filing 8 international patent applications covering the marker use for therapeutic and diagnostic purposes (PCT/EP2010/000503, PCT/EP2010/000502; PCT/EP2010/066147, PCT/EP2010/066144, PCT/EP2010/066146, PCT/EP2010/066154, PCT/EP2010/066134, EP10161559.9). Moreover, Externautics has acquired exclusive rights on the use of the YOMICS® technology and antibody collection for oncology applications. A panel of murine marker-specific monoclonal antibodies is available for preclinical investigation.</p>
Technology Pipeline	<p>Research and preclinical development on novel protein biomarkers as therapeutic and/or diagnostic applications.</p>
Potential market value	<p>Epidemiology data indicate that cancer incidence is growing. In USA, more than 800.000 new cancer cases (affecting breast, lung, colon, ovary and prostate) are registered every year. This increase is paralleled by a continuous growth of the diagnostic and therapeutic market. The global market marker for serum diagnostics was over \$1 billion worldwide (100 million serum screening tests/year), with an estimated Compound Annual Growth Rate (CAGR) of 6.3%. Concerning cancer therapeutics, an even larger market size is expected, whose large part is occupied by monoclonal antibodies. In 2009, the oncology market of monoclonal antibodies was of \$18 billion worldwide, with a foreseen CAGR of 13% (source Datamonitor). We envision peak sales of approx. 1 billion \$ for each anticancer drug covering unmet clinical need or significantly improving current treatments</p>
Business idea	<p>Externautics’ goals are:</p> <ol style="list-style-type: none"> <li>1) to grow as a reference company in the field of cancer diagnostics and therapeutics through the identification and validation of prognostic, predictive or therapeutic biomarkers of human tumors and,</li> <li>2) to develop a diagnostic product and/or a therapeutic monoclonal antibody ready to enter Phase I/II based on the proprietary biomarkers.</li> </ol>
Looking for opportunities	<p>Externautics is currently proposing a Series B round of financing in order to reach clinical phase with a therapeutic monoclonal antibody against one of the target tumors as well as to complete the development of at least one diagnostic product for the oncology market. A business plan has been structured and is available to potential investors.</p>

Contact	Dr. Paolo Sarmientos paolo.sarmientos@externautics.com
---------	---

<b>HPF-NUTRACEUTICS SRL</b> www.hpfnutraceuticals.com	
Sector	Nutraceuticals: dietary supplements and functional foods
Company profile	HPF is an academic spin-off participated by the University of Milan (UNIMI) and Dominae Trading srl. HPF is specialized in the design, research and development of innovative nutraceuticals for the prevention and treatment of cardiovascular disease (CVD). The investigation of the biological activities of lupin protein are currently the main interest of HPF, which actively collaborates with Dominae Trading SRL, the leading Italian company in the commercialization of lupin-based food products. HPF offers also its expertise, technologies and relationship network to SMEs that may encounter difficulties in interfacing themselves directly with the University, mainly for the complexity of the bureaucratic pathways.
Product Portfolio	HPF Nutraceuticals services are: <ul style="list-style-type: none"> <li>- Identification of active components from vegetable raw materials;</li> <li>- In vitro testing of the biological activity and the mechanism of action;</li> <li>- Coordination of experimental and clinical trials;</li> <li>- Preparation of the dossiers for the approval of the health claims on functional foods and dietary supplements in accordance with the current EU regulationsinternational patent: "Anti-hypertensive activity of lupin protein hydrolysates".</li> </ul>
Technology Pipeline	Development of functional foods based on lupin protein in dietary supplements based on lupin protein hydrolyzates in CVD prevention
Potential market value	The global market of functional foods and dietary supplements was worth over \$52bn in 2006 - the latest comprehensive figures available - with estimates suggesting that the market has since grown an additional 4- 6% yearly. Western Europe made up some 14.4% of global sales, in third place behind Asia Pacific (44.2%) and North America (32.2%). Italy was the largest market in Western Europe, valued at \$1.6bn (23% of total); Germany came the 2nd with a 20% share, UK was the 3rd accounting for 13% share; France was the 4th with 11%. The market analyst Precepta indicates that, buoyed by growing demand for health and slimming products, the turnover of the market of functional foods and dietary supplements in France was around € 1.1 billion in 2008, growing at an average annual rate of 15% between 2000 and 2007, and even after the global economic downturn fell hard on the industry, the market is still growing, on average, by 2.5% in the period 2008 - 2010 [www.nutraingredients.com]. In the United Kingdom the market reached £ 1.72 billion in 2007 corresponding to an increase of 1180% from 1998, and still continued to increase at a 3% rate in 2008 - 2010.
Business idea	HPF until now has covered its expenses with the social capital, the contributes from the owners and part of a grant of the Ministry of Education, University and Research (MIUR) (art. 11 D.M. n. 593, 08/08/2000).
Looking for opportunities	HPF Nutraceuticals is now looking for funds for further R&D activities. Investors may also consider the possibility of investing in Dominae Trading

opportunities	srl, which has developed and is already commercialising lupin foods (meat-free products, the best lupin ice-creams on the market, an eggfree mayonnaise etc) with great success, but requires a stronger capitalization for development.
Contact	Anna anna.arnoldi@hpfnutraceutics.com Arnoldi

<b>JV BIO</b>	
Sector	Biotechnology
Company profile	JV Bio was founded during 2010 by a world class pharmaceutical experienced team of former scientists and managers of Merck & Co. and Roche. It is based on a ground-breaking, proprietary platform technology developed by one of its funders and obtained in license from Merck & Co. Its main therapeutic focus is on antiviral drugs, for which human efficacy can be estimated through a low-cost Proof-of-concept (POC) clinical study monitoring the change in plasma viral concentration upon treatment.
Product Portfolio	JV Bio develops biologics – Peptides and Monoclonal Antibodies – the highest-growth sector of the global pharmaceutical market (\$120 B in 2009). JV Bio has a very solid intellectual property (IP) position: <ol style="list-style-type: none"> <li>1. A Best-in-class HIV Peptide Fusion Inhibitor</li> <li>2. A peptide Fusion Inhibitor of Childhood Respiratory Paramyxoviruses</li> <li>3. A peptide Fusion Inhibitor of Emerging Zoonotic Paramyxoviruses</li> <li>4. A Monoclonal Antibody which Inhibits Entry of Hepatitis C Virus</li> </ol>
Technology Pipeline	JV BIO has a rich pipeline of antivirals, for some of which they have already obtained preclinical efficacy in a gold standard animal disease model, and a fully developed discovery strategy to further expand their portfolio. One of JV Bio programs has completed the preclinical stage and can begin the clinical stage within one year, after toxicology studies conducive to the request for authorization of a human Phase Ib efficacy trial.  In particular, JV Bio lead product, an antiviral peptide for HIV, has completed the preclinical phase and is ready for the POC clinical trial. Other products in preclinical development include antivirals for childhood respiratory diseases, for emerging viruses of the WHO/CDC watch list, and for Hepatitis C.
Potential market value	In 2009, the global market for antiviral drugs attained sales of over \$28B, and is predicted to expand, driven by significant unmet needs, expanding patient populations, better diagnostics and innovative drugs, including combination therapies. Since viruses mutate rapidly and acquire drug-resistance, the antiviral pipeline needs to be continuously replenished with newer, better therapies. The JV Bio platform technology can capture a sizable portion of this market by developing antivirals for both major and niche markets.
Business idea	JV Bio plans to develop and commercialize novel proprietary therapeutics for unmet medical needs in the fields of viral diseases, cancer and autoimmunity.
Looking for	The company seeks an initial seed investment to fund 1.5 years of activity

opportunities	leading to a key value-increasing milestone: clinical efficacy in humans of the lead HIV antiviral candidate, and simultaneous proof of concept of the platform technology to be applied to the next candidates.
Contact	Antonello Pessi e mail: a.pessi@jvbio.com

<b>ONCOXX</b>	
Sector	Biopharmaceuticals
Company profile	ONCOXX founded on January 2010, is a Biotech company based in Abruzzo at the CESI Institute, in Chieti. Oncoxx mission is to develop new anti-tumoral therapies, diagnostic tests and patient monitoring based on anti-Trop-2 antibodies and novel delivery strategies. The aim of the corresponding diagnostics is to determinate if the tumor of each patient expresses the therapy target molecules and to follow the progression of the disease, to monitor therapy efficacy..
Product Portfolio	NA
Technology Pipeline	Trop-2 antibodies for therapy for lung, liver, colon, ovary cancers.
Potential market value	The company focuses on the development of anti Trop-2 antibodies for cancer therapy. The business evolution is based on the positive conclusion of the clinical phase I and II. This will allow to close a strategic deal with a pharmaceutical company in order to step to phase III and face the market.
Business idea	NA
Looking for opportunities	Looking for funds in order to conclude the clinical trials (phase I & II) for the anti-trop 2 antibodies.
Contact	Saverio Alberti e mail: s.alberti@unich.it

<b>SetLance Srl</b> www.setlance.com	
Sector	Biotechnology, Peptide synthesis
Company profile	SetLance was founded in 2009 by researchers at the University of Siena. Its registered office is based at the Toscana Life Sciences scientific park in Siena. SetLance operates in the field of biotechnology and pharmaceuticals for the identification and development of branched peptides as drugs for personalized tumor targeting and antimicrobial therapy. The company mission is the development of branched peptides for the treatment of human diseases.
Product Portfolio	Presently, SetLance portfolio includes several different branched peptides in each of the two main projects of the company: 1) tumor targeting– i.e. Neurotensin-based branched peptide conjugated to different chemotherapy drugs are being developed for personalized therapy of colon, pancreas and urinary bladder carcinoma- and 2) treatment of bacterial infections. The asset of SetLance includes 4 patents: WO 2006/006195 A1

	<p>“Antibacterial peptides and analogues thereof” licensed from University of Siena. PCT/IB2009/054347 5/10/2009 “Peptide sequences, their branched form and use thereof for antimicrobial applications”, licensed from University of Siena. EP10170639 23/07/2010 “Antimicrobial peptide, branched forms and uses thereof for the cure of bacteria infections”, owned by SetLance. PCT/EP2009/064619 4/11/2009 “Branched peptides for tumor diagnosis and therapy”, owned by SetLance.</p>
Technology Pipeline	<p>The non-natural branched peptide M33 is in the development phase for the treatment of lung infections due to Pseudomonas aeruginosa. Preclinical development of M33 followed by a Phase I – Clinical Trial will be carried out by SetLance in the next five years.</p>
Potential market value	<p>In addition to P.Aeruginosa resistant infections, the branched peptide M33’s use could be extended to other gram negative infections resistant to quinolones or carbapenems – global sales in 2010 of \$7billion and \$2billion, respectively (IMS) - which represent a huge medical need. Antibiotics that can overcome bacterial resistance will provide growth opportunities for pharmaceutical companies as they will be able to justify high prices. Global current and 2013 estimated sales of most recent antibiotics active on resistant bacteria can be taken as a reference, such as daptomycin (350-500 \$million) teicoplanin (350-450) and tigecyclin (320-400).</p>
Business idea	NA
Looking for opportunities	<p>The search for partnerships with companies and/or Venture Capitalists, which will be able to provide funds for conducting the terminal phases of the preclinical development and the clinical phases of selected candidates, is a priority of the company since its very beginning.</p>
Contact	Giancarlo Bolognesi

<p><b>SPRIN S.p.A.</b> www.sprintechnologies.com</p>	
Sector	Biocatalysis and Solid Phase Synthesis in pharma, food, fine chemistry and biofuel
Company profile	<p>SPRIN S.p.A. was founded in 2007 as a spin-off of the Università degli Studi di Trieste. Resindion s.r.l. (Mitsubishi Chemical Corporation) - leader in the industrial production of functionalized polymers specific for enzyme immobilization, solid phase synthesis and chromatography - is partner and shareholder of SPRIN. At the end of 2009 - thanks to Venture Capitalist entrance - SPRIN underwent complete company reorganization, leading to the acquisition of new headquarters in Trieste, production facilities and staff implementation. SPRINs mission is to develop and offer existing and emerging technologies in chemical, pharmaceutical and food industrial applications, through sustainable processes and innovative product.</p>
Product Portfolio	<p>SPRINs portfolio includes two lines, SPRINzymes™, Immobilised Enzymes for biotech processes and Synbeads™, Polymers for Solid Phase Synthesis of Peptides (Drugs).</p>
Technology Pipeline	<p>Polyesters and bioplastics synthesis through bioprocesses; technologies for oil production.</p>

Potential market value	<p>WHITE BIOTECH MARKET SIZE: In 2007 worldwide worth € 99B (6% of the global chemical industry sales), € 48B in EU in the same year. In 2012 expected to grow above €135B (CAGR 55%)</p> <p>SPRIN POSITIONING : Pharma (80% of expected revenues), food, fine chemistry and biofuels</p>
Business idea	<p>The main business of SPRIN is selling its Products. SPRIN offers economically affordable biotech solutions to industries willing to switch from traditional chemical to biocatalyzed and more sustainable processes. Thanks to its scientific experience and partnerships, customers are assisted in all needs, from the selection of the right product at the early stage of the project, to industrial scale production. The partnerships with Mitsubishi Chem. Corp. ensures raw material quality and real industrial approach. SPRIN customers are big pharma companies.</p>
Looking for opportunities	<p>What SPRIN needs is the necessary capital to advance its commercial action, recruiting a Senior Sales Manager with 10+ years experience in the pharma a/o fine chemistry, skilled sales agents and corporate lawyer assistance with international experience.</p>
Contact	<p>Alessandra <span style="float: right;">Basso</span> basso@sprinttechnologies.com</p>

<b>TAKIS s.r.l.</b> <a href="http://www.takis-it.it">http://www.takis-it.it</a>	
Sector	Biotechnology
Company profile	<p>Takis is a start up Company created In November 2009 as a spin off from IRBM (Istituto di Ricerche di Biologia Molecolare P. Angeletti), a Research Center in Italy near Rome, formerly part of the global network of Merck Research Laboratories (MRL). The group has an established track record in drug discovery, having contributed to the development of new drugs for the treatment of viral diseases and cancer and to a number of IND/CSA filings in the areas of virology and oncology. The team is also recognized for the conception and implementation of a number of innovative technologies.</p> <p>Takis' core interests is the generation of Cancer Vaccines based on a prime-boost platform constituted by Adenoviral Vectors and Electro Gene Transfer (EGT).</p>
Product Portfolio	<p>Vaccines inducing highest levels of immune response (CD4+ , CD8+, antibodies, innate immunity)</p> <ul style="list-style-type: none"> <li>- Adenoviral vectors</li> <li>- Muscle Electro-gene-transfer</li> <li>- Design Protein/Peptide vaccines</li> </ul>
Technology Pipeline	<p>At present, Takis has in its pipeline:</p> <p>A) 2 projects with completed pre-clinical research and ready for clinical development</p> <p>B) 3 R&amp;D projects under advanced pre-clinical development</p>

Potential market value	Datamonitor (December 2009) reports that the theoretical market potential for therapeutic cancer vaccines in the seven major markets totals over \$4.7 billion.
Business idea	<p>Takis pursues the discovery and development of innovative Therapeutic Cancer Vaccines based on a proprietary Adeno vector-prime DNA-boost platform technology, leveraging on its strong track record in drug discovery.</p> <p>Takis business strategy for the next 5 years is to develop its two frontline therapeutic cancer vaccines from advanced regulatory pre-clinical Phase to the achievement of clinical Phase Ib Proof-of-Concept and then to license out to pharma/large biotech companies, in exchange for upfront, success-based milestones and royalty fees.</p>
Looking for opportunities	<p>Takis is looking for funds in order to:</p> <ul style="list-style-type: none"> <li>▪ Start the production of cGMP grade Ad and plasmid DNA vectors.</li> <li>▪ Safety/Toxicology Studies.</li> <li>▪ Clinical Trials</li> </ul>
Contacts	<p>Gennaro Ciliberto: <a href="mailto:ciliberto@takis-it.it">ciliberto@takis-it.it</a> Luigi Aurisicchio: <a href="mailto:aurisicchio@takis-it.it">aurisicchio@takis-it.it</a></p>

<b>Tu.A srl : Tutela Agroalimentare</b>	
Sector	Agri-food certification and diagnosis- Territorial biodiversity monitoring
Company profile	Tu.A Ltd is a start up company hosted within the CNR Institute of Plant Biology and Biotechnology in Milan. It is made up by six founding members, all belonging to the National Research Council (CNR), assisted by a long-experienced Executive manager.
Product Portfolio	<p>Tu.A has in its portfolio:</p> <ul style="list-style-type: none"> <li>- 20 plant species specific probes, to be used individually or in diagnostic kits;</li> <li>- DNA barcoding service on individual samples or mixtures : already performing;</li> <li>- Qualitative and semi-quantitative analyses on agri-food and feed composition : already performing tough limited to the individual probes available;</li> <li>- Identification of contaminants in food/feed, import controls : already performing;</li> <li>- Monitoring of territorial biodiversity : already performing</li> </ul> <p>Currently Tu.A owns 2 patents : 1 released European patent, 1 current PCT application</p>
Technology Pipeline	<p>Tu.A aims to increase the number of plant species-specific DNA bar coding and detection kit up to 200-300, among those of economical relevance. The research will focus on:</p> <ul style="list-style-type: none"> <li>- Creating a DNA barcoding data base for plant species and varieties</li> <li>- Creating a DNA nucleotide database of plant species-specific probes</li> <li>- Developing and testing modular multiplex reactions for identification of the</li> </ul>

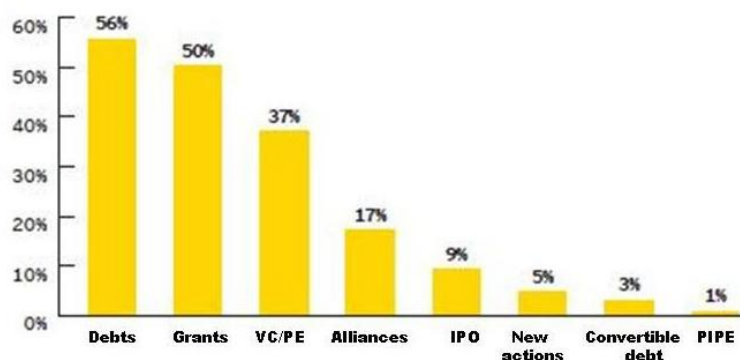
	<p>multiple ingredients in a mix</p> <p>- Developing recognition assays based on fluorescence</p>
Potential market value	<p>The market of analytical and consultancy services for agrifood and feed control, traceability and diagnosis in commercially available products and matrices: 2,000 Mi€/year/IT (source Federalimentare); Feed production and import: 6,500 Mi€/year/IT (source Assalzoo). EU regional foods, labeled with the PDO-TSG-PDI designations: 9,000 Mi€/year/IT (source Ismea); Alternative foods (non-allergic, functional, dietetic, ayurvedic, etc.): 2600 Mi€/year/IT e 50.000 Mi€/year/WO (sources AC Nielsen e Fonte Cordis). Future markets : milk and dairy products ; seeds ; vegetables ; medical herbs ; ornamental plants ; animal-derived feed/flour</p>
Business idea	<p>Tu.A Ltd means to provide innovative analytical services and innovative testing products for: traceability and certification of the food and feed supply chains; ingredients identification in multiple matrices of plant origin; plant-derived contaminants and allergens detection; cataloguing the different plant species present in any territorial area of relevance such as ecological niches, natural parks, gardens, lawns and pastures. All this is done thanks to its innovative and protected methods, The principal aim of Tu.A Ltd is to provide easy readable DNA barcoding for each plant species in a fast, affordable, simple, reliable, reproducible way.</p>
Looking for opportunities	<p>Fundings for the development of the product pipeline.</p>
Contact	<p>Dr. Diego Breviario          terenzio@ibba.cnr.it</p>

### 3. Government Strategies, Policies, Programs & Investments

Despite the fact that limited access to finance remains a critical concern for the majority of Italian biotech companies, Italy is the European country with the highest growth in number of companies<sup>12</sup>- a testament to the ability of these firms to weather the financial crisis of the last few years and operate very efficiently.

In general, Italian biotech companies have access to 3 main funding options: debt (56% of companies have borrowed bank loans), public grants (50% have made use of national, regional, European and/or international funds) and Venture Capital and Private Equity funds (37%). The figure below shows the main financial sources used by Italian biotech companies in 2009, which are not mutually exclusive.

**Figure 3: Financial sources used by Italian biotech companies (source: Ernst & Young)**



The Italian Ministries responsible for the public funding support measures related to the red biotechnology sector are: **The Ministry for University and Research (MIUR), the Ministry of Health (MDS) and the Ministry of Economic Development (MiSE).**

**MiUR** - The MIUR R&D funding allocations for 2009 corresponded to approximately the 70% of total national funding for research, showing a small increase of 0.7 %, compared to the decline of 7.2 % between 2007 and 2008. Always in 2009, the funds for the basic knowledge research (63 %) and human health research (3 %) increased, respectively, of 6% and 40%.

**MDS** - it provides funds to:

- Basic research: in support of research activities aimed to develop basic knowledge in the specific sectors of biomedicine and public health. 85% of the funds are directed to Scientific Health Care Institutes (IRCCS). The funds for the research grew steadily until 2008, and then declined by almost 20% in 2009.
- Applied research: for the implementation of the priority objectives identified by the National Health Plan (PNR), in the biomedical and health sectors. Unlike the basic research funds, the applied research budget has increased of about 100% from 2008 to 2009.

<sup>12</sup> "Italian Biotechnology Report- BioItaly Report 2011" – Assobiotec, Ernst & Young

**MiSE** - In recent years the Ministry of Economic Development funnelled €5 million to biotech companies through the “**special revolving fund for technological innovation**” (**FIT**). These resources are directed to Italian SMEs for transnational industrial innovation projects in all biotechnology fields.

Since 2009, the Italian Government notably reduced the overall resources devoted to R&D funding. However, in March 2011 the National Research Program (**PNR**) 2011-2013 was released, which includes a policy strategy in support of the development of the Italian biotech sector and indicates the research priorities for the Italian National Health Plan on a triennial basis.

The PNR, agreed between the National Commission of Health Research (CNRS) and the Ministry of Labor, Health and Social Policies, includes a ministerial plan, mainly directed to the MIUR, in support of basic research projects focusing on the development of new knowledge and enabling technologies. The medium-short term actions foresee the involvement of other Ministries and are oriented towards technology transfer, development of innovative industrial sectors and the creation of new high-tech companies.

The main objectives of the PNR are the simplification and homogenization of funding tools, from the small investment in research to large innovative investments, and the simplification and unification of the evaluation model for Research and Technological Development at the national and regional level.

Concerning the funding support measures, the PNR defined the amount of funds available during the next three years, categorized on the basis of the different R&D project types in considering the investments needs of the research, development and innovation actions.

FUNDING SOURCE	BUDGET (M€)
Ordinary Fund for research organizations and institutions (FOE – Fondo ordinario per il finanziamento di enti e istituzioni di ricerca )	806
Research benefits fund FAR – Fondo per le agevolazioni alla ricerca –	2,029
Fund for investment in basic research FIRB – Fondo per gli investimenti della ricerca di base	92
Integrative Fund for research FISR – Fondo integrativo Speciale per la ricerca Special	77
Fund for research projects of national interest PRIN – Progetti di ricerca di Interesse nazionale -	268
National Program for Research and competitiveness 2011-2013 PON Ricerca e competitività 2011-2013	2,817
<b>TOTAL</b>	<b>6,089</b>

*Table 7: Italian funding allocation for the period 2011-2013<sup>13</sup>*

Moreover, in order to coordinate and support the Italian Government and Ministries in their actions aimed at fostering the biotech sector, the National Committee for Biosafety, Biotechnology and Life Sciences (CNBBSV) was established in 1992.

The CNBBSV is instrumental for the support of research in the Life Sciences field. Its ongoing actions include the establishment of public-private laboratories, the creation and strengthening

<sup>13</sup> MIUR- Programma Nazionale della Ricerca 2011-2013

of high-tech districts, and the support of major research programs. In recent years, CNBBSV gave specific attention to: genetic testing, gene therapy, tissue engineering, the development of biotechnology in Italy, cloning, Italian and European legislation, clinical trials, GMOs, infrastructure, information, genetic testing, biobanks, and bionanotechnology. Since 2005 the Ministry of University and Research has funded at least 50 research and training projects with high impact on human health, with over €308 million.<sup>14</sup>

The following table lists the Italian national incentive measures focused on the biotech sector.

NATIONAL MEASURE	INCENTIVE	DESCRIPTION
<b>Technology Transfer RIDITT</b>		<p>➤ <b>RIDITT</b></p> <p>The Italian Network for Innovation and Technology Transfer to Enterprises is an initiative sponsored by the Ministry of Economic Development (MSE) aimed at promoting innovation in SMEs.</p> <p>For more information: <a href="http://www.riditt.it">www.riditt.it</a></p>
<b>PON Ricerca e Competitività 2007-2013</b>		<p>➤ <b>FIT ricerca e sviluppo - L. 46/82 Bando procedura negoziale</b></p> <p>The law 46/82 regulates the interventions of MiSE in support of experimental development programs aimed at implementing the results of industrial research activities in order to acquire new useful knowledge for the development of new products, processes or services on the whole national territory. The benefits may be granted for programs of experimental development that may also include some industrial research activities.</p> <p>For more information: <a href="http://www.ponrec.it">www.ponrec.it</a></p>
<b>FAR - DM 593/00</b>		<p><b>Art. 11 – DM 593</b></p> <p>The measure "ART. 11DM 593/00" supports the launch of new highly innovative enterprises, through the financing of industrial Research and experimental development. The aim is to bring academic research results into industry by developing product or services. The funding covers a maximum of 75% of eligible expenditure, with a contribution up to 516,000 Euro.</p> <p>For more information: <a href="http://www.istruzione.it/web/ricerca/far">www.istruzione.it/web/ricerca/far</a></p>
<b>EuroTransBio</b>		<p>➤ <b>7th Transnational Call for Proposals</b></p> <p>The strategic objective of the 7th ETB call is to foster the competitive capacity in Europe's biotechnology industry by supporting SMEs R&amp;D and their strategic partnerships. The 7th ETB call is a generic call including all biotechnologies sectors. The 7th ETB Call has been launched with the participation of the following EU Countries and Regions:</p>

<sup>14</sup> For more information: <http://www.governo.it/biotecnologie/organizzazione.html>

	<p><i>Countries:</i> Austria, Finland, Germany, Italy. <i>Regions:</i> Andalusia, Basque C , Catalonia, Navarra Flanders, Wallonia and Alsace.</p> <p>For more information: <a href="http://www.eurotransbio.eu">www.eurotransbio.eu</a></p>
<p><b>Eurostars</b></p>	<p>➤ <b>EUREKA's Eurostars Programme</b></p> <p>Eurostars Programme is a European Joint Programme dedicated to the R&amp;D performing SMEs*, and co-funded by the European Communities and 33 EUREKA member countries. Is open for funding applications on a continuous basis, with an average of two application submission deadlines each year. Eurostars aims to stimulate these SMEs to lead international collaborative research and innovation projects by easing access to support and funding. It is fine-tuned to focus on the needs of SMEs, and specifically targets the development of new products, processes and services and the access to transnational and international markets in in any technological and market area.</p> <p>For more information: <a href="http://www.eurostars-eureka.eu">www.eurostars-eureka.eu</a></p>

**Table 8:** National Support Measures for the Biotech sector.

## 4. Venture Capital

### 4.1 Italian Private Investments Trend in the Biotech Sector

#### Introduction to the Growth of Italy's Biotech Venture Capital and Private Equity Investments

The data highlighted in reports by Assobiotech and by AIFI, the Italian Association of Private Equity and Venture Capital, demonstrate a positive result for Italy's biotechnology field, showing that the last few years, despite a challenging economic climate, have been very productive for the companies in Italy insofar as most of their products have reached the current phase of development.

This development indicates the Italian biotech industry's capacity for innovation is solid, the research commitment is growing and agreements between Italian companies and international partners are multiplying. As discussed earlier, another key contributing factor to this progress is the academic and research presence in Italy, with more than 40 universities offering dedicated biotech courses, and their commitment towards the continued education of biotech scientists and technicians.

A variety of incentives for foreign investors exist, and there are no restrictions on foreign ownership. Several regional authorities, too, are actively involved in promoting biotech, through the funding of technology transfer agencies, incubators and seed funds. Moreover, Italy's flexible labor laws as well as new employment laws result in labor costs that are about one-half the cost in the U.S., and also very competitive compared to other European countries.

The growth of the emerging life sciences industry in recent years has been accelerated by the Government's commitment to the development of the biotech sector. An important boost to the biotech growth was provided by the Financial Law in 2008, which adopted a specific fiscal reform introducing a tax credit of 10% for in-house R&D expenditure. Moreover, in the same law, the tax credit for R&D expenditure was increased from 15% to 40% (ceiling 50 million Euros per year) for R&D investments in partnership with Universities all around Europe.

Italy has become an attractive and competitive place for entrepreneurs and investors in the biotech field.<sup>15</sup>

#### Italian Biotech VC/PE Positive Trend and Highlights<sup>16</sup>

The access to sufficient financial capital is essential to support R&D activities and is a key element for ensuring growth, innovation and competitiveness in the biotechnology industry.

Concerning the Italian market, in recent years venture capital investments in the biotech companies rose, a testament to the growing interest of Italian investors in one of the most innovative sectors.

According to AIFI, which collects data on Private Equity and Venture Capital deals in Italy every six months, during the period 2005-2009 the amount of capital invested in biotech companies increased from 53 to 206 million Euros, representing 8% of total capital invested in

<sup>15</sup> Source: Assobiotech – Biotech in Italy – Financing Innovation in Italy -

<http://assobiotech.federchimica.it/home-eng/biotech-in-italy/financing-innovation-in-Italy.aspx>

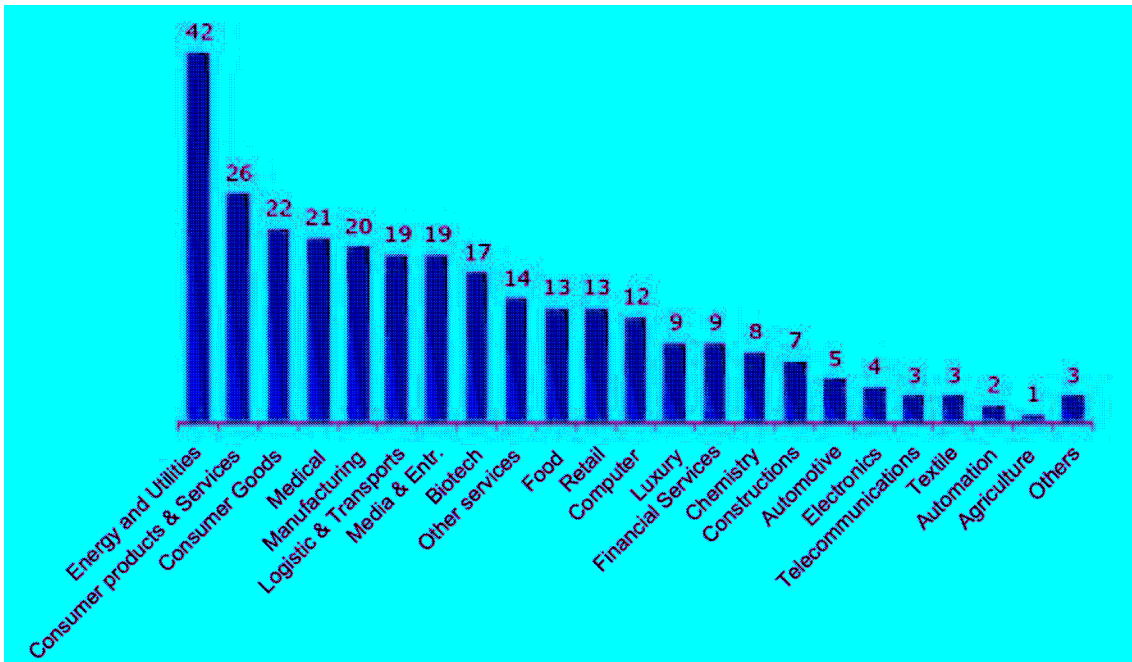
<sup>16</sup> Sources derived from: BioItaly Report 2011 created by Assobiotech and Ernst & Young and AIFI Report: "Il Mercato Italiano del Private Equity e Venture Capital nel 2010" Marzo 2011.

the country. On the other hand, the number of operations remained fairly constant, with approximately 30 investments per year, accounting for 10% of the total number.

Even with the economic crisis of the first half of 2010, with investments falling to their lowest values, the biotech sector has shown positive signs of growth. In fact, in the first half of the year, 17 operations were recorded, representing 13% of the total number of investments made in Italy, compared to 12 operations in the first half of 2009, representing 8% of the total number. (Assobiotec)

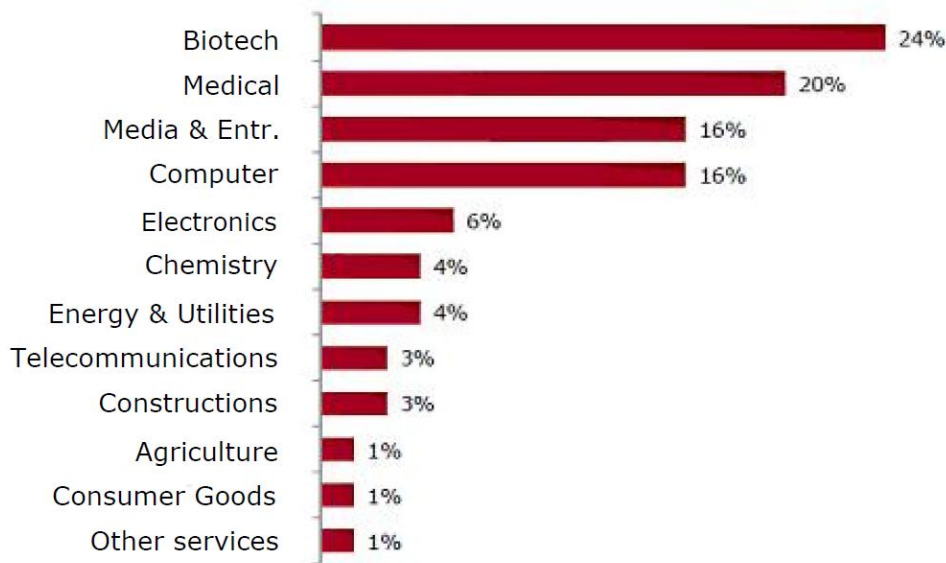
It should also be noted that there was a significant increase in the financial resources invested in the high tech industry (907 million Euro compared to 549 million Euro in the previous year).

**Figure 4:** Number of Investments in 2010 distributed by Industry (Source: AIFI - PricewaterhouseCoopers)



The high tech sectors that have shown the largest percentage of financial transactions in 2010 were biotechnology (24%), medical (20%), computer (15%) and media & entertainment (16%), which all together represented a total of 76% of investments in high-tech companies, as shown in the figure below. In particular, in comparison to 2009, the number of investment operations in the biotechnology sector significantly increased with a 70% growth in 2010.

**Figure 5:** Number of Investments in high tech companies in 2010 distributed by Industry (Source: AIFI – PricewaterhouseCoopers)



Of the Italian companies that received funding in 2010, 37% declared that they received investments from Venture Capital and Private Equity funds.

It's worth noting that when taking into consideration the VC/PE activities across all Italian sectors, in 2009, these activities were primarily concentrated in the Expansion and Buy-out segments, 27% and 39% respectively.

However, it's important to highlight that when considering the biotech field alone, the situation is the complete opposite. In fact, the analysis shows that most of the funds derived from VC/PE are Early Stage, and as such, are supporting companies' early development phases. (Assobiotec)

Moreover, 73% of the total investment operations made towards Italian high-tech companies were towards start-up and seed companies. (AIFI)

In summary, it should be noted, that the prevalence of early stage investment operations, from 2008 to the first half of 2010, accounted for 68% of the overall number of biotechnology investment deals. In fact, during this period, 47 investments were made towards biotechnological start ups, and 11 were at a seed stage.

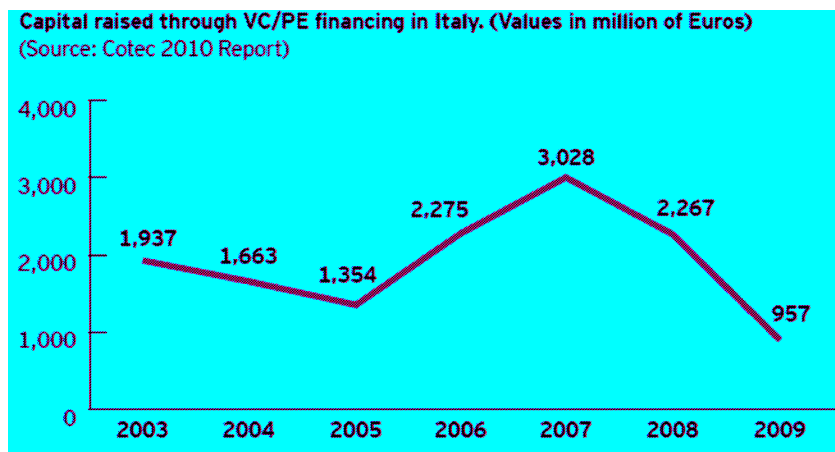
Regarding the distribution of the number of investments in terms of company size, in 2010 there was a further increase in the concentration of operations towards small and medium enterprises (SMEs) (85%, in comparison to 77% in 2009). These small and medium enterprises have attracted resources totalling 879 million Euros (equal to 36% of the total).<sup>17</sup>

Nonetheless, between 2008 and 2009 the total amount of VC/PE funds generally allocated to R&D investments was reduced by more than half (as shown in the figure below), a consequence also of the global financial crisis.

<sup>17</sup> AIFI Report: "Il Mercato Italiano del Private Equity e Venture Capital nel 2010" Marzo 2011.

**Figure 6: Capital raised through VC/PE financing in Italy (Values in million of Euros)**

(Source: Cotec 2010 Report)



In conclusion, there is certainly a promising biotechnology and medical industry in Italy, which has shown positive growth and attracted modest investment in recent years. However, this industry is still relatively young, and there is a clear need and opportunity for the financial community's greater involvement, which would make great strides towards the realization of the biotech industry's full potential.

## 4.2 Italian VC/PEs in the Red Biotech Sector

Listed below, are some of the most active Italian VC funds, both private and public, which invest in the Red Biotech Sector and can serve as a source of deal flow and as potential partners in syndicated investments<sup>18</sup>.

VC/PE Fund	Description	Biotech Investment Portfolio
<b>Atlante Ventures</b>	With the goal of investing in high technology start-ups and university spin-offs, Italian bank Intesa San Paolo launched this fund in May 2009. The initial funding amount to €25 million and have a planned duration of 12 years. In its current portfolio: Igea Spa, a biomedical company based in Modena. <a href="http://www.imiinvestimenti.it/fondi-chiusi-it/fondo-atlante.htm">http://www.imiinvestimenti.it/fondi-chiusi-it/fondo-atlante.htm</a>	<ul style="list-style-type: none"> <li>· Silicon Biosystems</li> <li>· Igea</li> <li>· Tethis</li> </ul>
<b>Emilia Ventures</b>	Emilia Venture, is a private fund managed by MPS Venture SGR, an assets management company pertaining to the Monte dei Paschi di Siena Bank group	<ul style="list-style-type: none"> <li>· Organic spintronics</li> <li>· Pharmaeste</li> </ul>

<sup>18</sup> As an example, Meta Group, the Venture Capital firm who manages the Ingenium Fund, partners with the Dutch VC Zernicke Meta.

	<p>The amount of the Fund is Euro 35 million. The fund has a duration of 8 years (until 2014). The aim of the Emilia Venture Fund is the investment on small and medium-sized companies focusing on advanced and innovative technologies primarily located in the Emilia Romagna Region. The average amount of each investment has to be between 1 and 5 million Euro.</p>	
<b>Eporgen Venture</b>	<p>Eporgen is the first Italian company specialized in seed financing of early stage biotech initiatives and R&amp;D projects. Eporgen is entirely funded by private non-institutional investors.</p> <p><a href="http://www.eporgen.com">http://www.eporgen.com</a></p>	<ul style="list-style-type: none"> <li>· Noto Pharm</li> <li>· Bionucleon</li> <li>· Biopaint</li> <li>· Genovax</li> <li>· Narvalus</li> <li>· Spider Biotech</li> <li>· Target Heart</li> <li>· Apavadis</li> </ul>
<b>Innogest Capital</b>	<p>Innogest Capital, with its €80 million, is currently the largest Italian Venture Capital fund in the Seed and Early Stage segment. Set up in 2005, it is recognized as a reference investor for young, high-potential companies that intend to raise capital in order to sustain their growth plans. The goal of Innogest is to invest in and encourage the success of about twenty highly entrepreneurial and young companies with very strong technology and a distinctive and unique approach to the market.</p> <p><a href="http://www.innogest.it/">http://www.innogest.it/</a></p>	<ul style="list-style-type: none"> <li>· Silicon Biosystems</li> <li>· TwoF</li> <li>· Adriacell</li> <li>· Igea</li> <li>· Erydel</li> </ul>
<b>IP Investimenti e Partecipazioni</b>	<p>IP is a private/independent investment company, founded in 1994, operating in Italy, EU, and internationally, focusing in specializing in leveraged buy-outs, management buy-outs, and industrial spin-offs. IP has a dedicated initiative, IP Medical Capital, focused in the Medical Technologies Sector. Companies of interest ideally should have between €10 and €150 million in annual revenue.</p> <p><a href="http://www.ipspa.it">www.ipspa.it</a></p>	<ul style="list-style-type: none"> <li>· DiaSorin SpA</li> <li>· CID SpA</li> <li>· HemaClear</li> <li>· HDH Medical Ltd.</li> </ul>
<b>Life Sciences Capital</b>	<p>A venture capital firm seeking investment opportunities in Italian Life Science companies what have a close synergy with previous investment made. The ideal breakdown of their investment types is as follows: 10% seed money, 25% early stage, 25% growth stage, 40% mature stage or pre-IPO.</p>	<ul style="list-style-type: none"> <li>· Advanced Accelerator Applications</li> <li>· Im3D</li> <li>· Cerma</li> <li>· Li-Tech</li> </ul>

	<a href="http://www.lscap.it/chi-siamo.html">http://www.lscap.it/chi-siamo.html</a>	<ul style="list-style-type: none"> <li>· Abiel</li> <li>· Echolight</li> </ul>
<b>Piemon-tech</b>	<p>Piemon-tech, the holding company of the Torino Wireless Cluster, is a VC investor providing capital to the most promising Piedmont-based companies in the biotechnologies and biomedical sectors as well as ICT, energy and advanced mechanics. Promoted by the Torino Wireless Foundation and co-founded with I3P, Eurofidi and the Employers' Industrial Association of Turin, Piemon-tech supports the creation of new enterprises by acquiring Equity shares with Angel Investments, typically between €20,000 and €200,000.</p> <p><a href="http://www.piemontech.it">http://www.piemontech.it</a></p>	<ul style="list-style-type: none"> <li>· DemItalia</li> <li>· APAvadis</li> <li>· Rotalactis</li> <li>· Glyconova</li> </ul>
<b>Quantica</b>	<p>Quantica SGR SpA, founded in 2002, based in Milan, Italy, is a venture capital arm of Rete Ventures S.c.r.l. specializing in investments in seed, start-up, spin offs, and early stage companies. It invests in unlisted high-tech companies, specializing in closed-end funds for venture capital activities, investing in high-tech spin-offs and start-ups stemming from scientific research, as well as early-stage financing. The firm makes equity investments of less than €5 million (\$7.16 million) in its portfolio companies. It seeks to take a board seat in its portfolio companies. Quantica's Principia Fund is the first Italian venture fund promoted by experienced managers and prestigious research and university institutions.</p> <p><a href="http://www.quanticasgr.it/">http://www.quanticasgr.it/</a></p>	<ul style="list-style-type: none"> <li>· KeeSquare</li> <li>· PharmEste</li> <li>· Dialectica</li> <li>· NewCorTec</li> </ul>
<b>Siena Venture</b>	<p>Siena Venture, is a private fund managed by MPS Venture SGR, an assets management company pertaining to the Monte dei Paschi di Siena Bank group. The aim of Siena Venture Fund is the investment on small and medium-sized companies with significant growth potential located in Siena and Grosseto provinces. Up to the 30% of the investments have to be devoted to R&amp;D oriented start ups. The average amount of each investment has to be between 1 and 5 million Euro.</p> <p><a href="http://www.mpsventure.it/Prodotti/I+fondi/Siena+Venture.htm">http://www.mpsventure.it/Prodotti/I+fondi/Siena+Venture.htm</a></p>	<ul style="list-style-type: none"> <li>· Externautics</li> </ul>
<b>Strategia Italia</b>	<p>Strategia Italia SGR is a public capital saving management company controlled by Invitalia. The mission of Strategia Italia SGR is to undertake operations on SMES, specifically on early stage</p>	Not available

	<p>companies focusing on innovative technologies.</p> <p><a href="http://www.invitalia.it/site/ita/home/chi-siamo/il-gruppo/svi-finance/strategia-italia.html">http://www.invitalia.it/site/ita/home/chi-siamo/il-gruppo/svi-finance/strategia-italia.html</a></p>	
<b>Sviluppo Imprese Centro Italia</b>	<p>Sviluppo Imprese Centro Italia manages 3 funds totaling €135 mil: Toscana Venture, Toscana Innovazione, and Centroinvest, which invest in start-ups in Tuscany active in sectors, such as ICT, Biotech, and Renewable Energies.</p> <p><a href="http://www.fondisici.it/">http://www.fondisici.it/</a></p>	<ul style="list-style-type: none"> <li>· ProtEra</li> <li>· Toscana Biomakers</li> <li>· Ecopol S.p.A.</li> </ul>
<b>TT Venture</b>	<p>TT Venture is the first Italian closed-end fund dedicated to Technology Transfer. The fund supports the development of high-potential entrepreneurial projects within the sectors of Biomedicine, New Materials, Agro-food and Energy/Environmental Technologies. TT Venture invests in all phases of an entrepreneurial project – seed, start-up, and development – through the selection of investment opportunities offering a high development potential, capable entrepreneurs and a varied disinvestment strategy. The fund will also invest in international venture capital funds in order to strengthen its network and to gain access to the latest R&amp;D developments overseas.</p> <p><a href="http://www.ttventure.it/">http://www.ttventure.it/</a></p>	<p>Not available</p>
<b>Vertis Venture</b>	<p>Vertis SGR, a Neapolitan entity, manages Vertis Venture, a €25 mil fund dedicated to investments in early stage companies.</p> <p><a href="http://www.vertissgr.it.">http://www.vertissgr.it.</a></p>	<ul style="list-style-type: none"> <li>· Biouniversa Srl</li> <li>· Glomeria Therapeutics Srl</li> </ul>
<b>Z Cube</b>	<p>Z-Cube was founded in 2003 to support young life-science start-ups and spin-off companies with novel therapeutics to address significant unmet medical needs. Z-Cube has achieved the launch of 3 start-ups based on projects with the goal of developing highly innovative medicine.</p> <p><a href="http://www.z-cube.it">http://www.z-cube.it</a></p>	<ul style="list-style-type: none"> <li>· PharmEste</li> <li>· SuppreMol GmbH</li> <li>· ProtAffin Biotechnologie AG.</li> </ul>

**Table 9:** Selection of Venture Capital Firms in Italy

### 4.3 Investing in Italian Biotech

It's been shown that VC investment in Italy is quite different than in the US, in size, financial resources, and cultural characteristics. Although venture capital and expertise are they key drivers of high-tech sector growth, approaching top American investors is still a complicated

process, especially for entrepreneurs based overseas, like in Italy. Significant efforts are necessary to promote awareness of the region and establish a dialogue between leading American investing groups and highly motivated high-tech Italian start-ups.

The following section is dedicated to providing real case study examples and testimonials to demonstrate the progress being made in US private equity investment in Italy.

1. Case study to promote US investment in Italy
2. Testimony from US VC who has already invested in an Italian spin-off/start-up
3. Italian Seed capital Investor - testimony on Italian biotech start-up environment

### **I. Promoting US Investment in Italy through support measures**

In order to stimulate the advancement of Italian start-ups, US-Italy initiatives have been developed to attract greater US investment in Italian companies. For example, a recent 2011 initiative to support this exact objective has been created through an alliance of the Californian non-profit association, Bridges to Italy, with the US's largest angel investment network, Tech Coast Angels. A full case study is provided below.

#### **California Tech Coast Angels Partnership with Bridges to Italy to Mentor Southern Italian Entrepreneurs to foster US Investment**

**Tech Coast Angels (TCA)** has partnered with **Bridges to Italy** in order to mentor Italian entrepreneurs and share business models. TCA, an angel investment network, known for its mentoring and development of entrepreneurial companies in Southern California has extended its mentoring and educational capabilities to entrepreneurs also in Southern Italy through a partnership made with the Italian American non profit organization, Bridges to Italy. Bridges to Italy is a Los Angeles-based association, also with an Italian location in Rende, Calabria, by the University of Calabria, the largest US style campus in Italy, aimed at helping Italian startups improve managerial skills; expand their presence; and meet potential investors, clients and partners in the US.

TCA Chairman participated in the University of Calabria's (Rende) conference in June 2011, at their TechNest incubator, focused on the topic, "Fundraising: Is your Company Ready for US Investors?" aimed at raising awareness among international angel investors and venture capitalists of Southern Italy's high-tech potential. TCA's involvement provided the Italian participants the opportunity to better understand the American funding process, the ways that start-ups are judged by investors, and the issues angel investors look at in the U.S., so to help attendees improve their funding potential.

The TCA chairman will evaluate investment opportunities from Southern Italy's leading entrepreneurial businesses in areas including but not limited to renewable energy, nano-materials, biotech, and information technology. The Italian participants benefited from a unique opportunity: after completing an e-learning program, Brains in Motion, a training program to cultivate American-style business skills, offered by Bridges to Italy in conjunction with the University of California, Irvine, they will put their newly acquired skills to work at once by making presentation directly to TCA and other angel investor members.

Cooperation between TCA and Bridges to Italy will continue in Southern California, where the winner of the Brains in Motion competition will be selected by a panel of experts including the president of Enel North America and members of Tech Coast Angels. The winner will be awarded the opportunity present at networking events at each of the five TCA locations in Southern CA, significantly increasing the company's visibility and investing opportunities, where they will meet hundreds of potential US investors and business partners.

Initiatives like this one show the strong commitment to not only strengthen innovation network ties

between Italy and USA, but also directly highlight the technological assets of the Italy's southern regions, and present real concrete methods to improve their international competitiveness and even, hopefully, attract investment from the US.

Source: [www.techcoastangels.com/press/](http://www.techcoastangels.com/press/)

## **II. Testimony from a US VC who has invested in an Italian spin-off**

The following interview summary with **Mr. Takahiro Mukohira, President, of MP Healthcare Venture Management, Inc. (MPH)** aims to demonstrate an example of a US venture capital investment in an Italian spin-off company.

**MP Healthcare Venture Management** is a venture capital firm that invests in innovative research-driven companies in the areas of biotechnology, therapeutics, diagnostics and vaccines. Founded in 2006, MPH is a jointly owned subsidiary of Mitsubishi Tanabe Pharma Corporation (MTPC) and its parent company, Mitsubishi Chemical Holdings Corporation (MCHC). Their investment portfolio consists of red biotech companies based in the US and Europe.

In October of 2008, MPH, along with 3 other Italian-based VCs, financed a **Series B investment** of 6 million Euro, in an **Italian biopharmaceutical company, PharmEste**. PharmEste is a spin-off of the University of Ferrara, focused on drug discovery and development of small molecule Transient Receptor Potential channel therapeutics for the treatment of neuropathic pain, overactive bladder and other related diseases.

In the interview with Mr. Mukohira of MPH, the objective was to gain insights relating to his transaction in Italy. The following is a summary of the discussion's main points.

### ***How MPH and PharmEste's relationship began...***

Both Mr. Mukohira of MPH and CEO of PharmEste attended the event, BIO-Europe Spring 2008, in April of that year in Madrid, the world's largest stand-alone biotechnology partnering conference of the life sciences industry. By attending this conference, MPH was able to meet and create partnerships with potentially interesting biopharma investments from all over the world. Having an interest in Italy's biotech R&D excellence and advancements, when PharmEste approached MPH, PharmEste was able to present their research on their novel lead compound. MPH has a strong experience in the biopharmaceutical industry, and recognized the potential of PharmEste's research, as making advancing strides in drug discovery. When Mr. Mukohira started his career in the early 1980s, his company, Yoshitomi Pharmaceutical Industries, licensed a cardiovascular drug from Zambon. Afterward, Zambon licensed a respiratory drug from Yoshitomi. Management including CEO of PharmEste used to work for Zambon. Mr. Mukohira had a sense of affinity for and trust in PharmEste.

### ***How did MPH make the decision to invest in PharmEste...***

From the time of having met at the conference in spring 2008, MPH decided to invest in PharmEste in 6 months time, (considered to be quite a short process). Due diligence of PharmEste as a company and its research, was thoroughly performed, by also entering into a confidentiality agreement, in order to properly evaluate the investment opportunity. By June of 2008, MPH confirmed the research data presented, and by September of 2008, decided to go forth with participating in PharmEste's second round of financing.

### ***MPH's strategy in investing in the Italian company and how they were involved PharmEste's development...***

After holding a meeting with the senior managers of PharmEste and the other investment partners, MPH decided to also join PharmEste's Board of Directors. This decision was based on the advantage that Mr. Mukohira had a strong experience in biopharmaceuticals industry, and was able to provide a value-added contribution to the management team. MPH's investment resulted in 15% ownership, higher than their other investments, which typically was no more than 3 to 6%.

The progress of their investment (and further future monetary investments) was measured through specific milestones. A first tranche was made in the start of the financing round, in October 2008, but the second tranche depended on PharmEste having achieved their important objective of receiving approval for initiation of the first clinical study by the Swiss Medic; which resulted favorably in July of 2009.

As a joint goal, MPH expects to see a return on their investment, when PharmEste will successfully finish their product work and through the eventual sale of PharmEste; a milestone that is set out to be achieved in approximately the next 4 years.

***Advantages of investing in Italy...***

In discussing MPH's partnership with other Italian venture capital firms, in this investment experience, Mr. Mukohira commented that it was beneficial to have worked with local Italian VCs, to be able to better share information on the Italian environment. The only weakness mentioned by Mr. Mukohira was the apparent inability by Italian VCs to afford very high investments.

In Mr. Mukohira's opinion, Italy is one of the most interesting and promising countries with respect to the pharmaceutical industry and specifically in the field of drug discovery. He thinks that one of the strengths of the Italian research environment resides in the strong orientation and passion towards science, as opposed to a straight market oriented approach to research. In his words: "Italy is very unique in the research of novel compounds, even thanks to the innate creativity that leads to the generation of new approaches and mode of actions in their research."

**III. Italian Seed capital Investor - testimony on Italian biotech start-up environment**

Interview conducted with Mr. Antonio Zangrilli, CEO of INVENT

**INVENT is a seed –capital company** based in Rome operating since in 2001 in the field of innovation consulting, business administration, development and financing high-tech start-ups. At present, INVENT has invested in 14 start-ups mainly located in Italy, specifically also in the biotechnology sector.

- 1. What are the main factors that are most important in supporting a start-up company in Italy, and how may they differ from other country environments?*

Referring to the biotech sector, according to us the most important factors relate to the products innovation, the quality of R&D staff and links with academic institutions. Product innovation is a key point for the future success. "Product" often refers to R&D results protected by an (International patent) that could be licensed to bigger market oriented companies will to exploit the achieved results. In our experience biotech start up companies strategy is to produce R&D results to be afterwards exploited therefore the company R&D staff and the related skills are a strong factor. In addition, given the typical Italian start up structure, very small and undercapitalized, the links with research organizations, often universities where the innovative ideas were originated, represent a relevant competitive

factor to continue developing new innovation projects by sharing knowledge between the company researchers and the university.

2. *What are the strengths/advantages to remember of the Italian VC/seed capital/early stage investment environment? Are their country incentives? Can US venture capital firms benefit from these?*

The VC/seed capital market is very small in Italy. It is populated by very few companies whose investment operations focus in later stages than the early one when the business risk is still very high. However some national and local incentives exist in Italy supporting the VC/seed capital investment strategies. The most famous and used measure is called art. 11 DM 593 providing a grant to innovative academic spin off willing to transform a R&D results into product/services. However only spin offs set up following the government approval can use the grant. The measure can be also used by USA VC interested to set up and support an innovative company in Italy.

Other similar measures works at local level managed by the regional authorities. Other incentives are in the form of small grants or services devoted to future entrepreneurs to develop their business plan and look for potential investors.

3. *What are the weaknesses to remember of the Italian VC/seed capital/early stage investment environment?*

Unfortunately bureaucracy is the main limiting factor; setting up a new company is a very long process and time will be longer in case of acquisition and payment of public grant. In addition no favorable taxation regime exist in Italy as incentive to invest in small and innovative spin offs.

4. *What are some the key evaluation criteria when assessing your Italian company investment?*

At present, INVENT has invested in innovative start-ups generated by R&D projects. Investments have been made, taking into account the potential growth of the company, the expertise and competence of personnel involved in the start-up, business sustainability and targeted markets characterized by high growth dynamics.

## 5. Italian Biotech Events 2011

### **NANOFORUM – VII edition**

**September 14<sup>th</sup> - 15<sup>th</sup> 2011 - Rome**

*Nanoforum, that reaches its seventh edition this year, has establish itself as a first-rate meeting point to promote the new business possibilities offered by nanotechnologies. The event's aim is to foster the process of technological transfer from academic and research world to industry. Nanoforum 2011 is an opportunity to gain a "state-of-the-art" knowledge about micro and nanotechnologies, to get in touch with Italian and foreign experts, to network with potential business partners.*

[www.nanoforum.it](http://www.nanoforum.it)

### **BIOTRANS 2011 Sicilia**

**October 2<sup>th</sup> – 6<sup>th</sup> 2011 – Messina**

*BIOTRANS takes place every two years in Europe with attendance of 500-600 participants from academia and industry, focusing on applied and fundamental aspects of biocatalysis. The BIOTRANS will focus on: Discovery and design of new biocatalysts; Enzymes structure & mechanism, bioinformatics & modelling; Biotransformations in organic synthesis; Oxidative biocatalysis; Biocatalysis for polymer and material chemistry; Cascade chemo-enzymatic processes; Biocatalysis and biorefineries; Industrial process research & development*

[www.biotrans2011.org](http://www.biotrans2011.org)

### **Biotech 2011, the International Event and Conference on Biotechnologies**

**October 5<sup>th</sup> -7<sup>th</sup> 2011 – Milan, Italy**

*BIOTECH, the international event and conference on biotechnologies, closed its second edition with highly positive results, during LIFE-MED, the innovative fair concept dedicated to Life Sciences, with 3,560 visitors, from 39 countries, more than 200 exhibitors from 21 countries, 31 conference sessions, and more than 170 qualified speakers. The appointment with the third edition of BIOTECH is from 5 to 7 October 2011, in Pavilion 1 fieramilanocity (right in the heart of the city), alongside NUCE INTERNATIONAL 2011, the second edition of the international fair for the Nutraceutic, Cosmeceutic, "Functional Foods & Drinks" and "Health Ingredients" industry, and ALGA EUROPE 2011, the second edition of the fair-conference on the production technologies and industrial applications of Algae.*

[http://www.biotechexpo.eu/en\\_lfm/index\\_btc.asp](http://www.biotechexpo.eu/en_lfm/index_btc.asp)

### **Nanochallenge & Polymerchallenge 2011**

**November 10<sup>th</sup>-11<sup>th</sup> 2011 - Padua**

*The Nanochallenge & Polymerchallenge competition offers the highest price reward worldwide, based on the best ideas and revolutionary projects in nanotechnology and in the*

*polymer based material field. There is again a new opportunity available for anyone with a good idea, to win the 2 prizes of 300.000 euro each to start up a new-co. Veneto Nanotech and Imast, the two Italian high tech clusters, confirmed their engagement in supporting the creation of new start-ups through Nanochallenge&Polymerchallenge while Intesa San Paolo Bank assured again its support for the contacts with investors and VCs interested in new business opportunities. Road shows presenting the event have already started around Italy and Europe (Budapest, Verona and Cambridge in May, Turin, Venice, Bari, Perugia and Genova in June, while Rome, Milan, Neaples and Cosenza are due in July).*

*The Final Contest will take place at the University of Padua, November 10th-11th. Deadline for the online registration is September, 2nd.*

[www.nanochallenge.com](http://www.nanochallenge.com)

### **Nanotech in Italy**

**November 23<sup>th</sup> -25<sup>th</sup> 2011 – Venice**

*Nanotech convention will offer a comprehensive picture of nanotechnology activities and perspectives and needs in the Italian sector. During the event, will be discussed the latest developments and trends at world level of nanotech across key industrial sectors, innovation and business practices to bring nanotechnologies to the market place and governance and policy actions to promote nanotech development. There will be a section entirely dedicated to matchmaking and networking opportunities. The three day event will address themes that are challenging modern society to promote a responsible innovation as: New materials, Processes and Manufacturing; Health and life sciences – Nanomedicine; Smart transportation; Safe living; ICT & Nanoelectronics; Responsible development – nanotoxicology*

[www.nanotechitaly.com](http://www.nanotechitaly.com)

## 6. Additional Informational links

<b>www.biodirectory.it</b>	A directory of Italian biotech entities - companies, universities, foundations, science parks- searchable by type of organization, location, product type and clinical trial phase. A comprehensive list of patent attorneys as well as investors is also available.
<b>www.italianbiotech.com</b>	A comprehensive directory, managed by Venture Valuation AG, providing free general contact information on over 700 among the most prominent Italian Biotech operators -companies, institutes, investors, consulting firms - searchable by business name, key words and location. More advanced searches (by therapeutic areas, products, business model etc) and more detailed information for each entity (such as info relating to products, technologies, financing rounds), are available by paying a premium subscription.
<b>www.ditt.de/atlas/it/</b>	A directory of Italian Science and Technology Parks and Technology Districts, searchable by sector and services. The report is managed by the Italian Trade Commission of Berlin.
<b>www.ricercaitaliana.it</b>	A resourceful and comprehensive web portal, offering detailed information on research programs, institutes and government policies in Italy. Searchable by keywords, research area, region. It can be TRANSLATED in English by using the Google Toolbar.
<b>www.invitalia.it</b>	Invitalia is the government agency for inward investment promotion and enterprise development dedicated to assisting companies in all stages of the investment process, to supporting new business ventures and to enhancing local development. Its Inward Investment embodies a single and reliable national reference point for foreign investors eager to expand or to set up a new business in Italy by providing a full spectrum of services in all stages of the investment process. Its website contains useful guides on investing in Italy, as well as information on investment opportunities in its target sectors, including the Life Sciences.
<b>www.biotechitaly.com</b>	The Italian Trade Commission's website dedicated to the biotech sector, featuring information on events, companies, funding opportunities, and latest news
<b>www.assobiotec.it</b>	Assobiotec is the Italian Association for the Development of Biotechnology, representing more than 120 companies and science & technology parks operating in Italy and involved in various biotech-related fields: pharmaceuticals, diagnostics, agro-food, fine chemicals, environment, processing industry and equipment.

**Table 10.** Additional links

*The **Italian Trade Commission** is the government agency responsible for the promotion of trade, business opportunities, and industrial cooperation between Italian and foreign companies, as well as the attraction of foreign direct investment into Italy. Its promotional activities are financed both by government funds, provided by the Italian Ministry for Economic Development, and by private contributions by companies that benefit from its activities and services. These include the exchange of information, assistance in marketing planning, promotion, multilateral cooperation, and training.*

*The Italian Trade Commission operates through 115 branch offices in 86 countries. In the United States the Italian Trade Commission is present in New York, Los Angeles, Chicago, Atlanta and Miami. The Trade Commission offices in the US are deeply committed toward tighter economic partnership between Italy and the US and one of the goals is to encourage US companies to intensify their activities in Italy. To that end, and within the framework of its mission to promote business cooperation between Italy and the US, the New York and Los Angeles offices have Investment Desks, which specifically carry out various programs aimed at positioning Italy as a desirable destination for American investment and provide first assistance to US companies wanting to locate, invest or expand their operations in Italy.*

*Moreover, the Trade Commission is also active in raising foreign investors' awareness of, and involvement in, the scientific and technological innovations of Italian research centers, universities and of the increasing number of spin offs and innovative enterprises stemming from these infrastructures.*

*U.S. technology companies and investors are encouraged to contact the Italian Trade Commission to learn what Italy has to offer in terms of products, services and investment and collaboration opportunities.*

**For more information please contact:**

## **ITALIAN TRADE COMMISSION**

**Trade Promotion Section of the Consulate General of Italy in New York  
 Investments Desk**

**33 East 67<sup>th</sup> Street  
 New York, NY 10065  
 EMAIL: [newyork@ice.it](mailto:newyork@ice.it)  
[www.italtrade.com](http://www.italtrade.com)**

*This document has been prepared by the Innova Consulting Group and the Italian Trade Commission in New York. The organizations herewith portrayed were selected by the Innova Consulting Group and the Italian Trade Commission in New York and do not intend to be an exhaustive list of entities in Italy. Moreover, whilst every effort has been made to ensure that the information contained in this document is accurate, the Italian Trade Commission declines any and all responsibility for possible errors and omissions or out of date information.*