



Invest *in* Tuscany

Tuscany attractiveness to Life Sciences investors

In collaboration with:

ATKEARNEY



Regione Toscana

Diritti Valori Innovazione Sostenibilità

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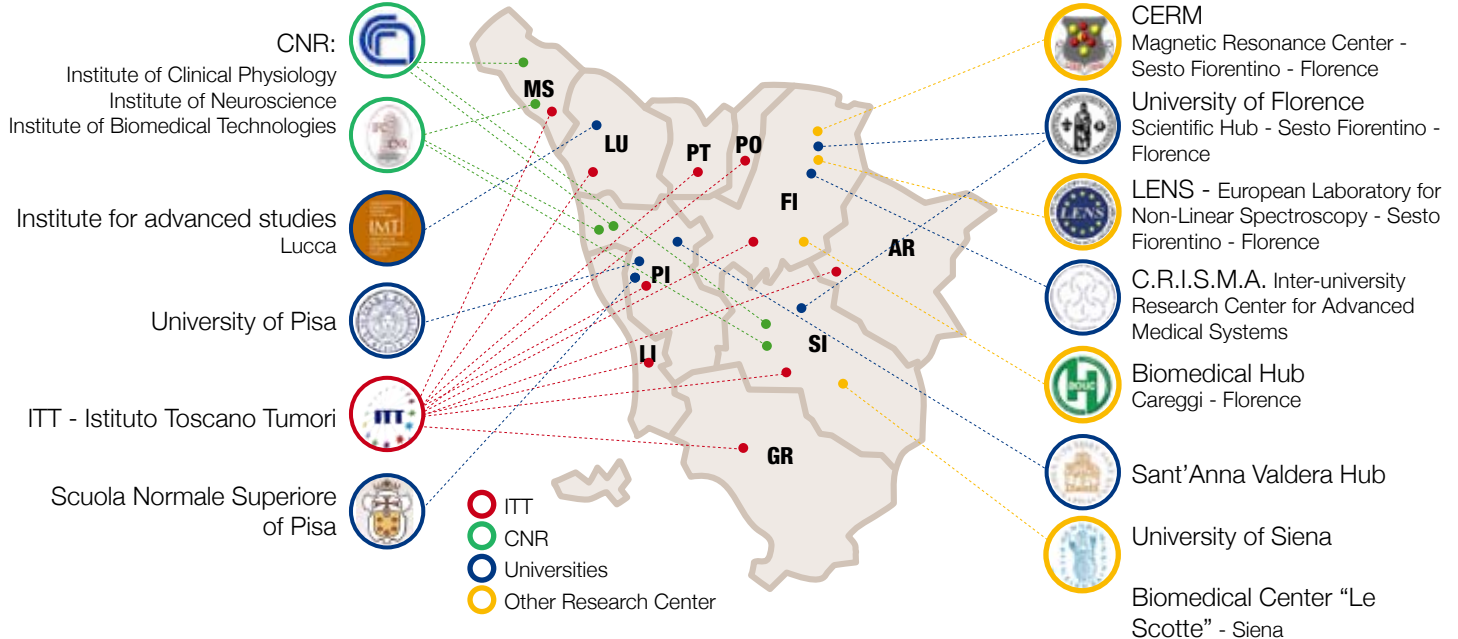


UNIVERSITIES AND RESEARCH CENTERS



TUSCANY PRESENTS A NOTABLE CONCENTRATION OF UNIVERSITIES AND RESEARCH CENTERS

MAIN UNIVERSITIES AND RESEARCH CENTERS IN TUSCANY, 2007





LONG ESTABLISHED, MAJOR UNIVERSITIES - FLORENCE, PISA AND SIENA HAVE LIFE SCIENCE AS ONE OF THEIR CORE AREAS CENTERS

UNIVERSITY OF FLORENCE

- Founded in 1321, the University of Florence has 12 Faculties and about 9.400 graduates per year
- Life Science Master's degrees offered are:
 - Industrial and Environmental Biotechnologies
 - Pharmaceutical Biotechnologies
 - Medical Biotechnologies
 - Biomedical Engineering
- In 2007 with 42 research projects of "national interest" managed by Tuscan professors, the University was 2nd in Italy for amount of funds received from the Italian Government for research



THE PISAN UNIVERSITY SYSTEM

- The Pisan University system is formed by the "Scuola Normale Superiore", the "Scuola Superiore Sant'Anna" and the "University of Pisa"
- Established in 1335, the University of Pisa has 11 Faculties including Pharmacy, Engineering, Medicine and Surgery, Veterinary Medicine, Mathematics and Physic
- Life Science Master's degrees offered are:
 - Vegetable Biotechnologies
 - Biomedical Engineering
 - Food Biotechnologies



UNIVERSITY OF SIENA

- Created in 1240, it has 9 Faculties: Economics, Pharmacy, Law, Engineering, Letters and Philosophy (in Siena and Arezzo), Medicine and Surgery, Mathematical, Physical, Natural Sciences and Political Sciences
- The University of Siena owns the Scientific Area of San Miniato where a huge research activity in the Medicinal, Toxicological, Chemistry, Pharmaceutical and Organic Chemistry fields is performed
- Life Science Master's degrees offered are:
 - Human Health Biotechnologies
 - Biotechnologies



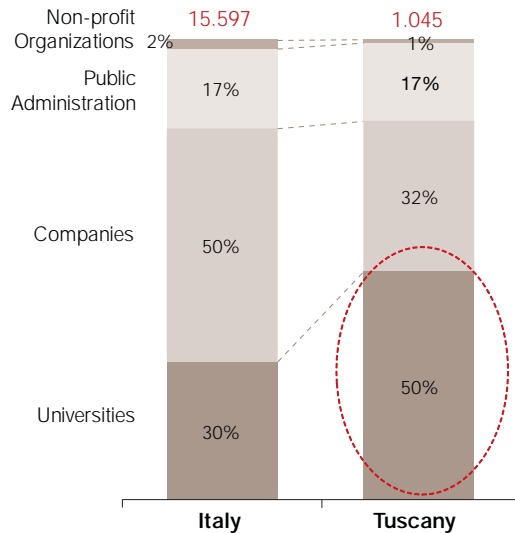
IN 2007 ALMOST 9.000 STUDENTS GRADUATED IN SCIENTIFIC AND TECHNICAL FIELDS FROM TUSCAN UNIVERSITIES ⁽¹⁾

Notes: (1). Graduates in Medicine and Surgery, Engineering, Mathematic, Psychology, Physical, Veterinary and Agriculture
Source: MIUR, A.T. Kearney Analysis

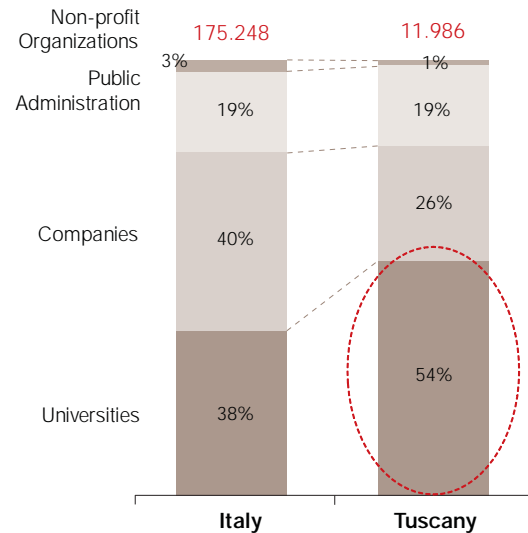


UNIVERSITIES REPRESENT THE PRIMARY R&D PLAYER IN TUSCANY, FOR BOTH R&D SPEND AND PERSONNEL

BREAKDOWN OF R&D SPEND BY ORGANIZATION, 2005
(% ON TOTAL, € MLN.)



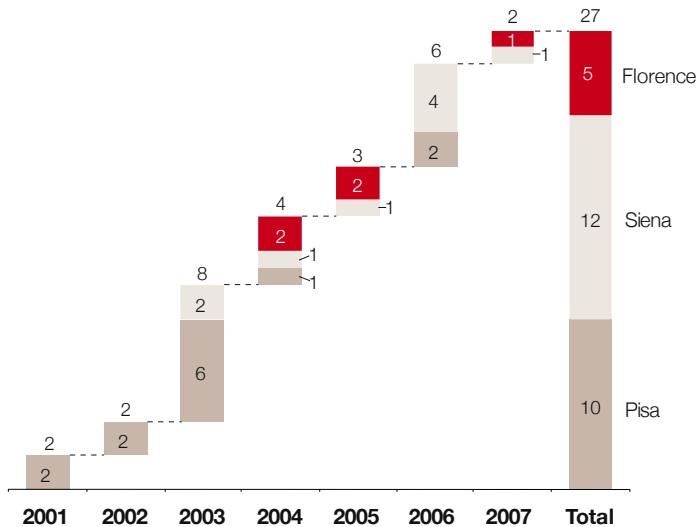
BREAKDOWN OF R&D EMPLOYEES BY ORGANIZATION, 2005
(% ON TOTAL, .000)





THE UNIVERSITY NETWORK SERVES AND SUPPORTS THE INDUSTRY IN MULTIPLE WAYS

ENTREPRENEURIAL SPIN OFFS GENERATED FROM THE UNIVERSITIES OF FLORENCE, PISA AND SIENA, 2001-2007 (#)



BUSINESS INCUBATION IN TUSCANY

- From 2001 to 2007 the main Tuscan Universities have generated a total of 27 spin offs and 10 of them are related to companies working in the Life Science segment, specifically:
 - Siena: Bio-graphic, Bio-suma and Serge genomics operate in the bio-tech and bio-medical field, with Bio-suma producing innovative bio-medical materials
 - Florence: DeGene S.r.l, Protera and Espikem work in the field of applied research with focus in molecular biology and creation, development and distribution of novel target bio-molecules and new methods for the drug discovery
 - Pisa: Proteogen Bio, Lobim S.r.l, Ideability and SORTA S.r.l produce advanced medical devices



NATIONAL RESEARCH COUNCIL (CNR) IS ANOTHER MAJOR PLAYER IN THE LIFE SCIENCE RESEARCH FIELD IN TUSCANY

THE ROLE OF CNR IN ITALY

- The National Research Council (CNR) is a public organization in charge of carrying out research activities in the main sectors of knowledge as **biotechnology, medicine, materials, environment and land, information and communications, advanced systems of production, judicial and socio-economic sciences, classical studies and arts.**
- CNR is distributed all over Italy through a network of institutes aiming at promoting a wide diffusion of its competences throughout the national territory and at facilitating contacts and cooperation with local firms and organizations
- Resources for its researches come mainly from the government and international funding (70%) and for 30% as a result of the internal activities



CNR IN TUSCANY

- CNR has in Tuscany a total of 16 Institutes plus 13 territorial sections; among them there are some important Life Science research centers as:
 - The Institute of Clinical Physiology in Pisa, with 190 people employed, is focused on the research of Physiopathology and clinics of cardiovascular and pulmonary diseases, molecular medicine and clinical biology. For its clinical activities it is federated with Fondazione Monasterio (500 people) which provides over 5.000 cardiovascular hospital admissions per year
 - The Institute of Neuroscience in Pisa, which employs around 40 people, is focused in the fields of molecular, cellular, physiological, and pharmacological study of the nervous and neuromuscular systems
 - Institute of Biomedical Technologies which carries out research on the human genome, degenerative diseases, bioinformatics, comparative genomics, epidemiology and medical informatics





CNR WORKS ON BOTH BASE AND APPLIED RESEARCH

EXAMPLE

A CURRENT PROJECT CARRIED OUT IN PISA

- Stem Cells Regulation
 - Role of homeobox genes in stem and progenitor cells of various tissues (blood, bone, heart)
 - Transcriptional regulation of the kit receptor in different types of stem cells
- Stem Cells Developmental Potential
 - Haematopoietic Stem Cells
 - Mesenchymal Stem Cells
 - Cardiac Stem Cells



THE OBJECTIVES

- Identification of common gene networks regulating self-renewal, commitment and differentiation of somatic stem cells
- Identification of new molecular markers for specific diseases
- Identification of easily accessible stem cell sources capable of tissue regeneration



THE INDUSTRIAL APPLICABILITY

- Development of tissue culture systems for stem cells expansion or differentiation
- Development of new kits for stem cells purification
- Development of new diagnostic tools for specific diseases
- Cell factories for cell therapy in damaged or pathological tissues

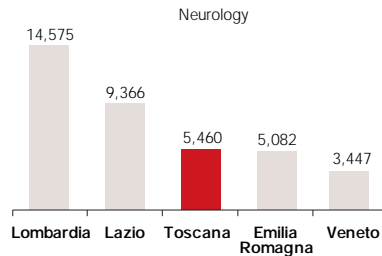
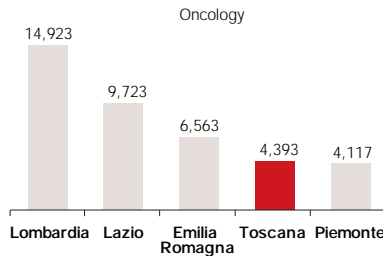
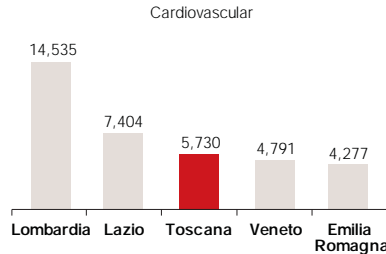
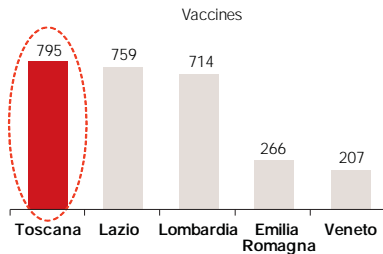
CNR COMBINES EXPLORATIVE AND APPLIED RESEARCH IN AN HOMOGENOUS AND SYNERGIC WAY

TUSCAN R&D REACHES TOP EXCELLENCE IN VACCINES, AND WELL EMERGES IN CARDIOVASCULAR, ONCOLOGY AND NEUROLOGY

VALUE OF SCIENTIFIC PUBLICATION BY THERAPEUTIC AREA IN THE TOP 5 ITALIAN REGIONS, 1990-2005 (#)



IMPACT FACTOR ⁽¹⁾



- Tuscan expertise in the vaccines field comes from the presence of Chiron (today Novartis) which historically boosted the research in the area; as a result 70% of publications between 1990 and 2005 were made by Chiron researchers
- On the other side scientific publication in oncology, cardiovascular and neurology disease are mainly performed by the University of Florence, Pisa and Siena and the National Research Council

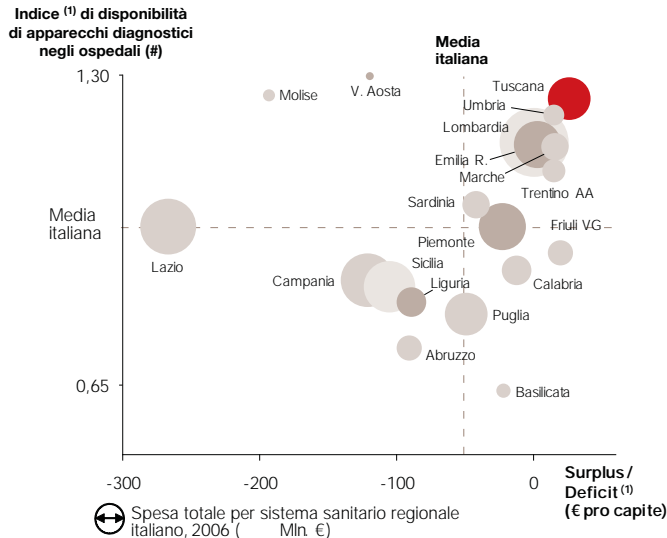
Notes: (1). Impact factor measures the number of publications and the scientific recognition of the Journal in which the Publications appear in print
Source: Regione Toscana, A.T. Kearney Analysis



REGIONAL HEALTH SYSTEM

THE TUSCAN HEALTH SYSTEM IS ONE OF THE BEST MANAGED IN ITALY, THUS FAVORING A COLLABORATIVE MOOD BETWEEN AUTHORITIES AND INDUSTRY

INDEX ⁽¹⁾ OF DIAGNOSTIC EQUIPMENTS AVAILABILITY IN HOSPITALS (#)



KEY POINTS

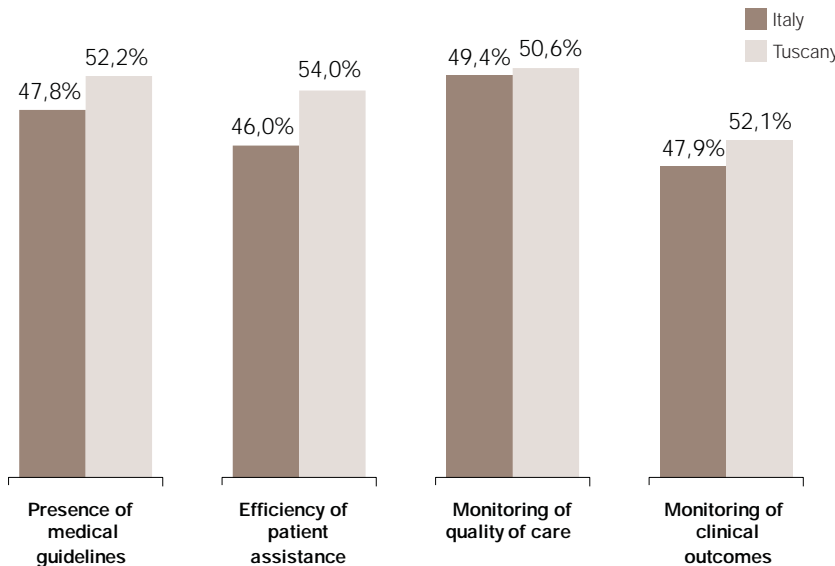
- Tuscany has the best surplus per capita, offering a high overall expenditure and a good quality of care
- Regional Health Care system is efficiently managed through:
 - A careful monitoring of the total health expenditure which allows a limited per capita deficit
 - An appropriate allocation to the health system of the total resources available in Tuscany
 - An efficient drug reimbursement system

QUALITY OF CARE MEASURED THROUGH KPIS SCORES HIGHER THAN THE ITALIAN AVERAGE

KPIS REGISTERED IN THE CLINICAL GOVERNMENT OF TUSCAN AND ITALY (% ON HEALTH CARE STRUCTURES⁽¹⁾)



KEY POINTS

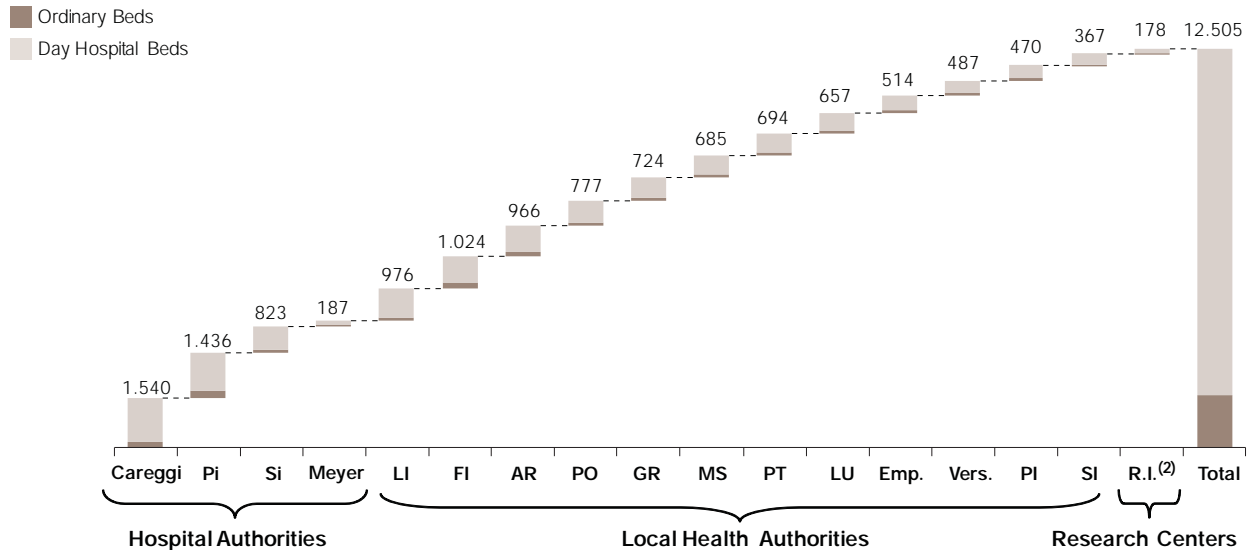


- Tuscan health structures are well organized in order to provide an high quality of care to patients
- Guidelines which help physicians and nurses to follow the correct patient's treatments are present in more than 50% of the cases
- Quality of care and monitoring of clinical outcomes is tracked with a frequency higher than the Italian average

Notes: (1). In Tuscany have been mapped 60% of total health care structures, in Italy an average of 67%
 Source: Italian Department of Health, A.T. Kearney Analysis

MORE THAN 12.500 PUBLIC BEDS ARE AVAILABLE PROVIDED BY HOSPITAL AND LOCAL HEALTH AUTHORITIES AND RESEARCH CENTERS

PUBLIC HOSPITAL BEDS PER HOSPITAL⁽¹⁾, 2006 (#)

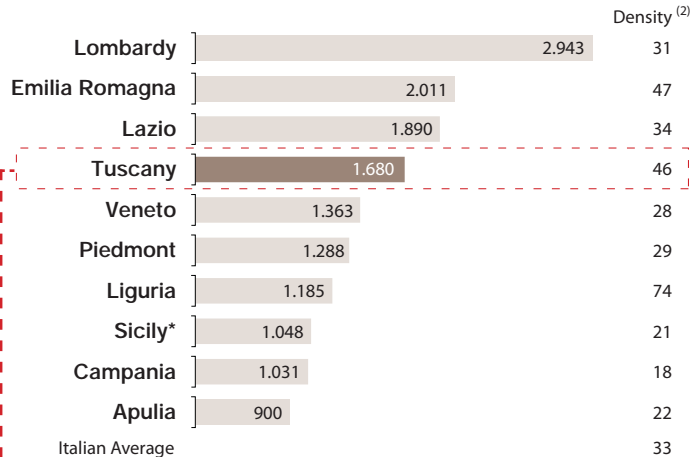


Notes: (1). Public beds available in private structures are not included (2). Research Institutes
 Source: "Toscana in cifre 2007" published by Tuscany Region and IRPET, A.T. Kearney Analysis

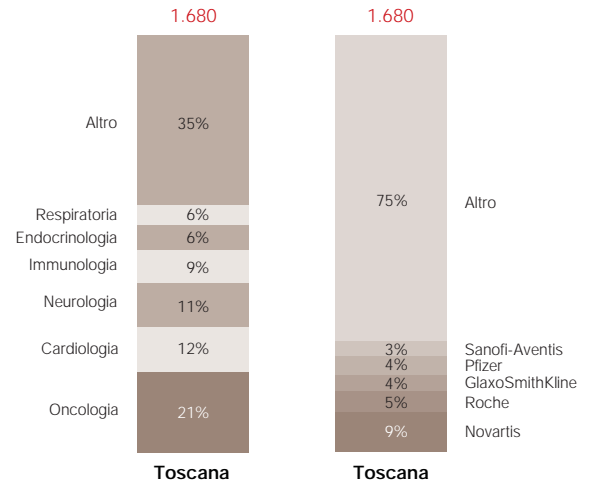


HOSPITALS IN THE REGION FAVOURS R&D ACTIVITIES AND A HIGH NUMBER OF CLINICAL TRIALS IS PERFORMED WITH THE PARTICIPATION OF GLOBAL PLAYERS

CLINICAL TRIALS PERFORMED IN THE TOP 10 ITALIAN REGIONS ⁽¹⁾, 2000-2007 (#)



BREAKDOWN OF CLINICAL TRIALS BY THERAPEUTIC AREA AND PROMOTER, 2000-2007 (% ON TOTAL, #)



SIMPLIFIED PROCEDURES ARE AVAILABLE IN THE REGION FOR THE PERFORMANCE OF CLINICAL TRIALS

Notes: (1). Phase I excluded; (2) Clinical Trials every 10.000 inhabitants
Source: AIFA, A.T. Kearney Analysis

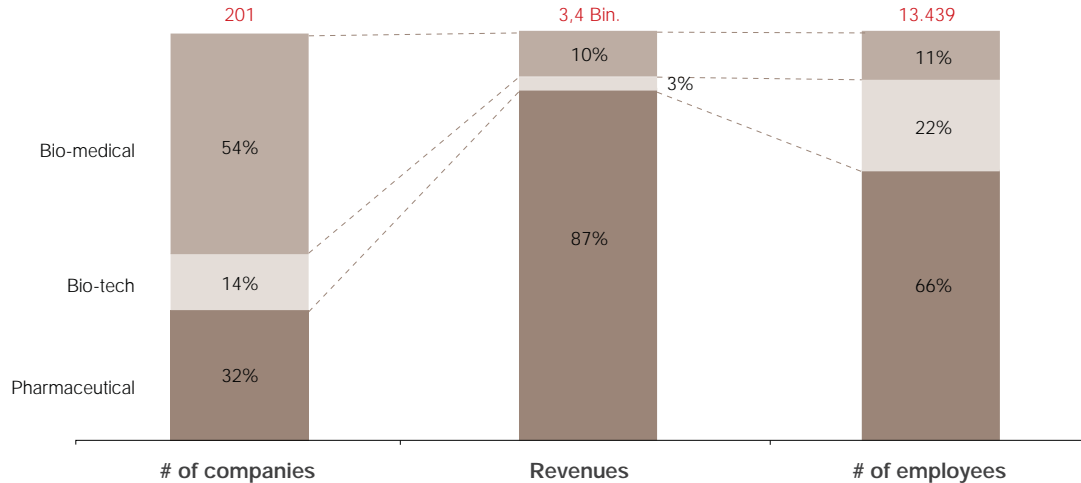


LIFE SCIENCE INDUSTRIAL FOOTPRINT



TUSCANY HAS 201 COMPANIES IN THE LIFE SCIENCE SECTOR GENERATING 3,4 € BLN. SALES AND EMPLOYING OVER 13.000 PEOPLE

THE LIFE SCIENCE INDUSTRY IN TUSCANY⁽¹⁾, 2007 (%)



Notes: (1).Data partially available
Source: A.T. Kearney Analysis

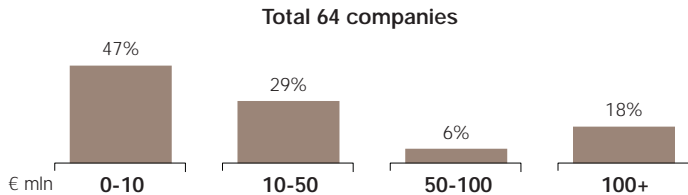


LIFE SCIENCE INDUSTRIAL FOOTPRINT - PHARMACEUTICAL



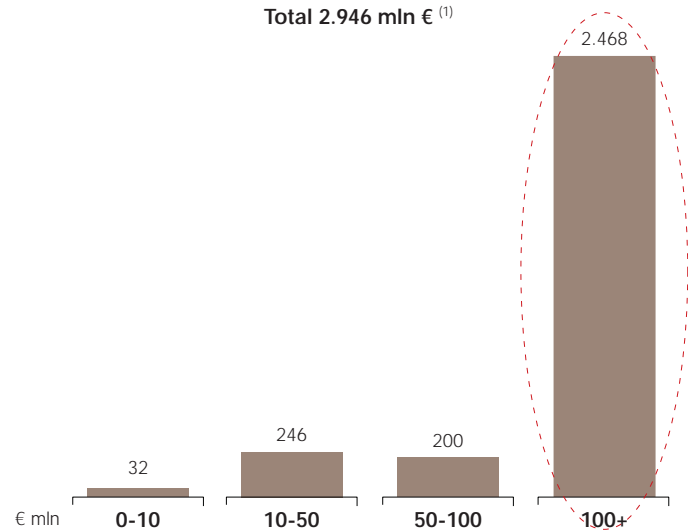
THE PHARMACEUTICAL INDUSTRY IN TUSCANY ACCOUNTS FOR 64 COMPANIES AND 9.083 EMPLOYEES, WITH THE LARGEST SIX ONES ACCOUNTING FOR ABOUT 65%

PHARMA COMPANIES BY CLUSTER REVENUES ⁽¹⁾ (%)

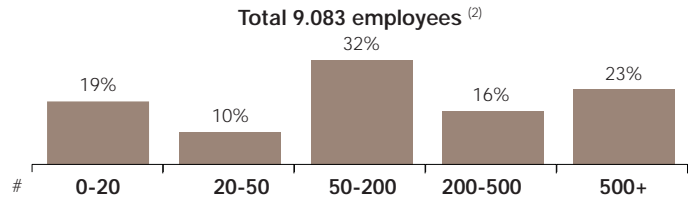


2006

PHARMA REVENUES ⁽¹⁾ BREAKDOWN BY COMPANY SALES CLUSTER (€ MLN)



PHARMA COMPANIES BY EMPLOYEES ⁽²⁾ (%)

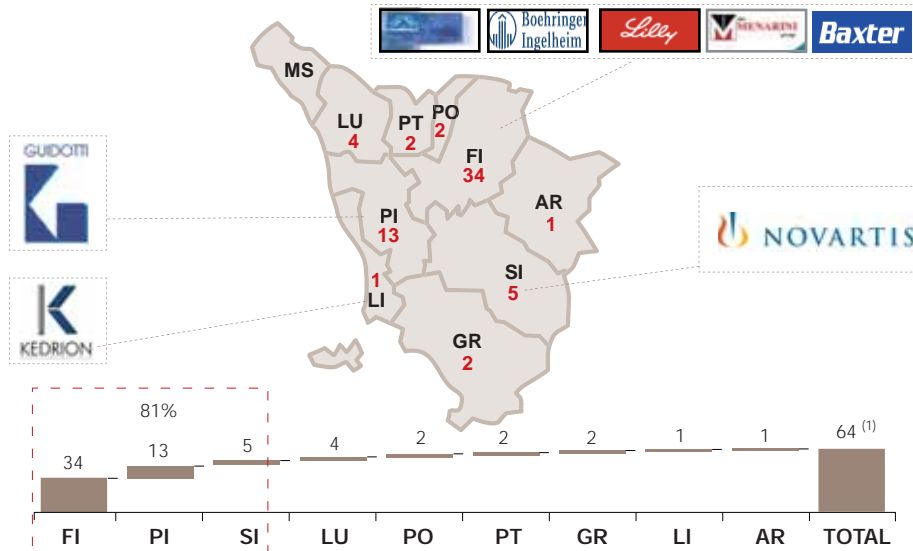


6 COMPANIES ACCOUNT FOR ABOUT 65% OF TOTAL EMPLOYEES

Notes: (1). Phase I excluded; (2) Clinical Trials every 10.000 inhabitants
Source: AIFA, A. T. Kearney Analysis

PHARMACEUTICAL COMPANIES ARE CONCENTRATED IN THREE TUSCAN PROVINCES, WITH MAJOR FOCUS ON VACCINES, HAEMATOLOGY, ANAESTHESIOLOGY, PNEUMOLOGY AND TOXICOLOGY

PHARMACEUTICAL FIRMS BY PROVINCE, 2007



HIGHLIGHTS

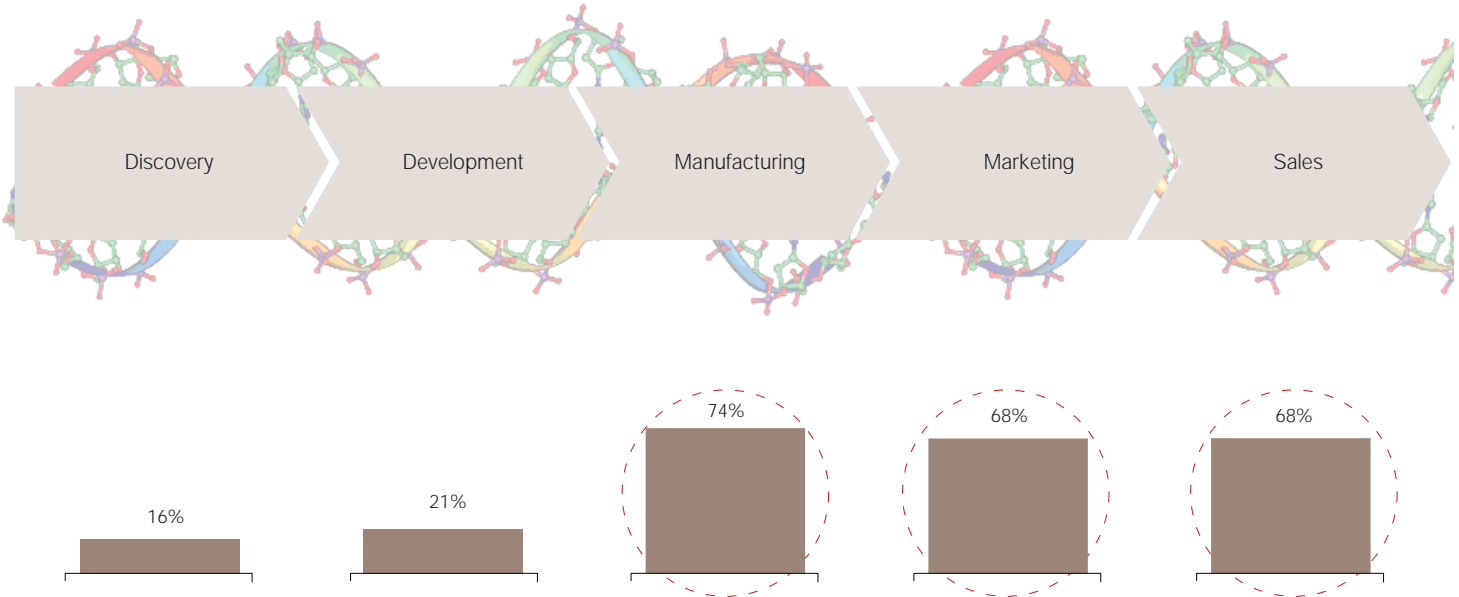
- 80% of companies are concentrated in the provinces of Florence, Siena and Pisa
- Big players work in the field of vaccines, haematology, anaesthesiology, pneumology, toxicology
- Small medium enterprises cover also other segments as gynaecology, neurology, osteopathy, endocrinology, urology, nephrology and cardiology

Notes: (1). Total of Pharmaceutical, Biotech and Bio-medical firms higher than 201 because some companies work in more than one segment only
 Source: Regione Toscana Reports, Press Search, A.T. Kearney Analysis



THREE OUT OF FOUR PHARMACEUTICAL COMPANIES ACTIVE IN TUSCANY MANUFACTURE DRUGS HERE

% OF PHARMACEUTICAL FIRMS⁽¹⁾ ENGAGED IN EACH STEP OF THE VALUE CHAIN IN TUSCANY



Notes: (1). Data available for 55 pharmaceutical firms
Source: Ernst and Young, Business Insights, A.T. Kearney Analysis



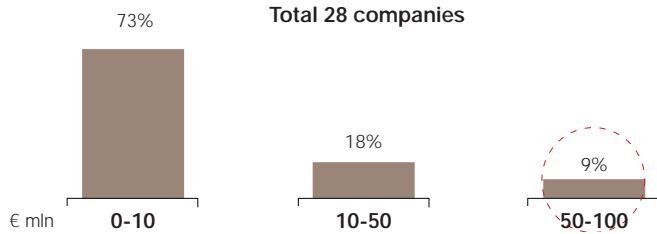
LIFE SCIENCE INDUSTRIAL FOOTPRINT - BIO-TECH



THE TUSCAN BIOTECH INDUSTRY CONSISTS OF ONE LARGER PLAYER – ABIOTEN – AND MANY SMALL VENTURES

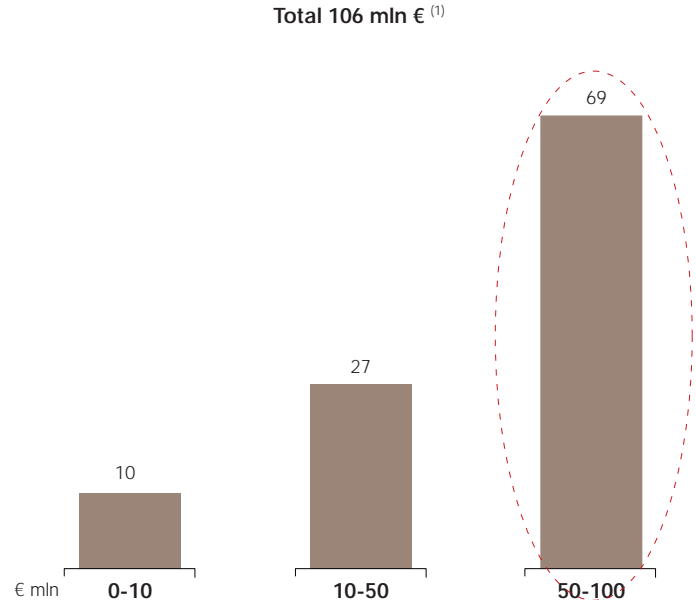
2006

BIOTECH FIRMS BY CLUSTER REVENUES ⁽¹⁾ (%)

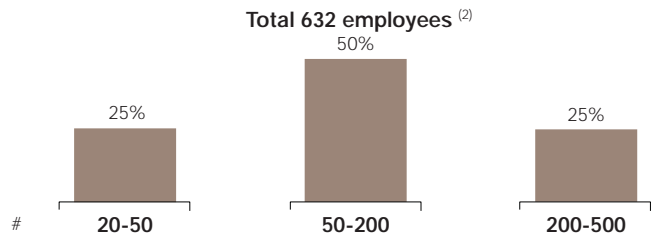


ABIOTEN IS THE LARGEST BIOTECH PLAYER

BIOTECH REVENUES ⁽¹⁾ BREAKDOWN BY COMPANY SALES CLUSTER (€ MLN)



BIOTECH COMPANIES BY CLUSTER - EMPLOYEES ⁽²⁾ (%)

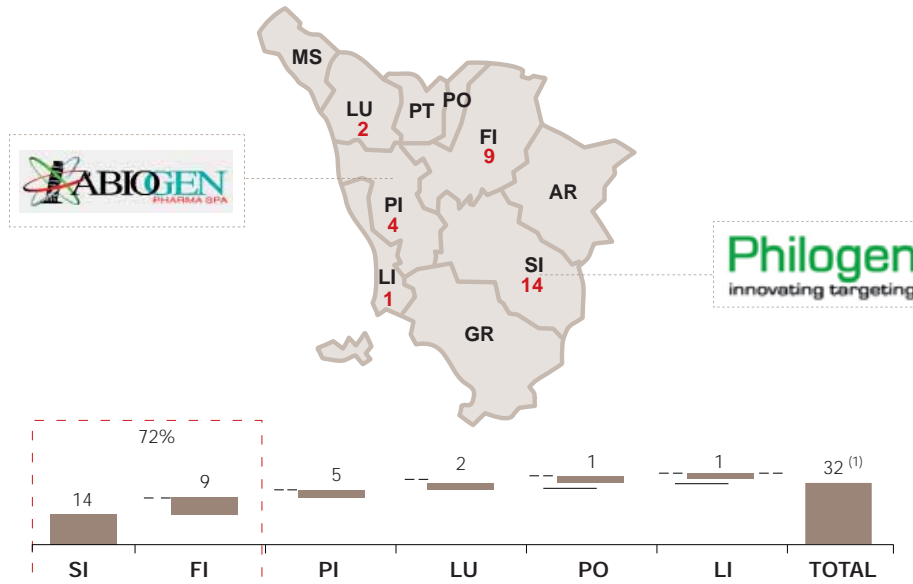


Notes: (1) Sample of 11 companies; (2). Sample of 4 companies
Source: Press Search, A.T. Kearney Analysis



BIO-TECH FIRMS ARE MOSTLY CONCENTRATED IN THE PROVINCES OF SIENA AND FLORENCE

BIO-TECH FIRMS BY PROVINCE, 2007



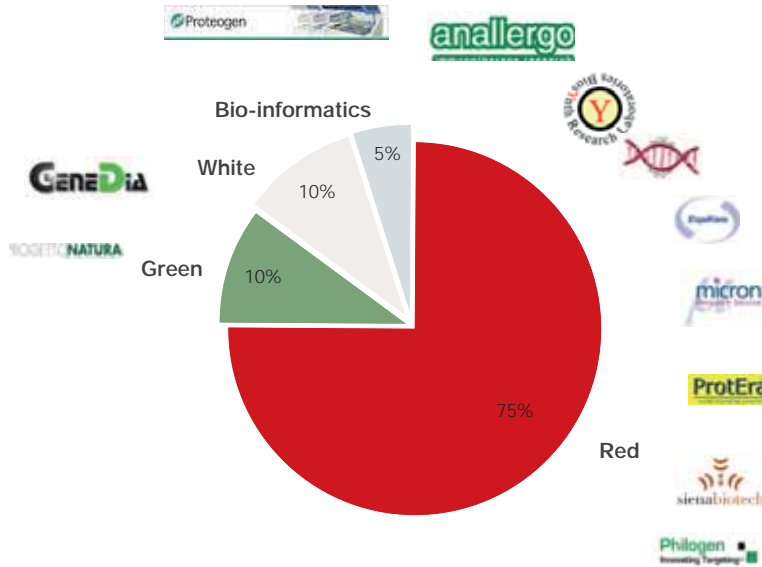
HIGHLIGHTS

- As in the pharmaceutical segment, bio-tech companies are mostly located in the provinces where the concentration of research centers is higher
- Siena is the leading province, accounting for half of the companies
- Abiogen and Philogen are the two main players active in the field of muscle-skeletal, respiratory, diabetology, dermatology and angiogenesis-related disorders

Notes: (1). Total of Pharmaceutical, Biotech and Bio-medical firms higher than 201 because some companies work in more than one segment only
 Source: Regione Toscana, Reports Press Search, A.T. Kearney Analysis

THE TUSCAN BIOTECH INDUSTRY IS MAINLY ACTIVE IN THE RED BIO-TECH

TUSCAN BIO-TECH COMPANIES ⁽¹⁾ BY SEGMENT, 2007



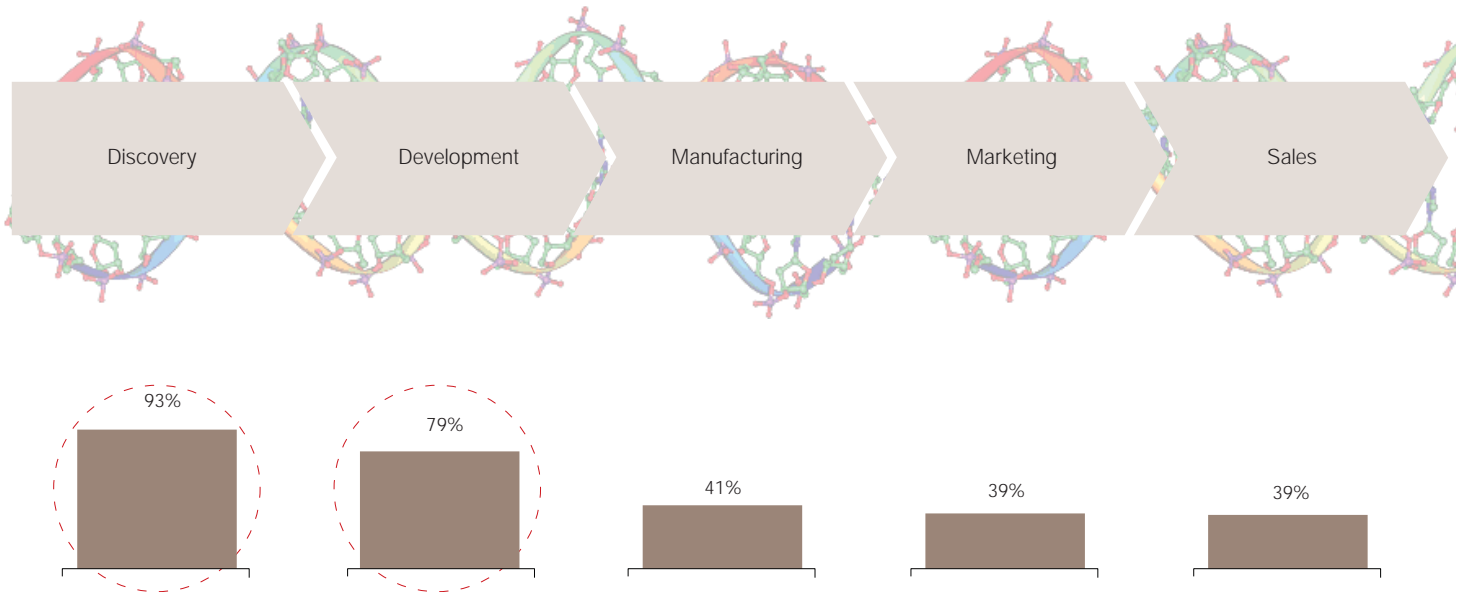
HIGHLIGHTS

- Red bio-tech companies concentrate their efforts in the medical field, as Philogen which develops innovative products and technologies for the diagnosis and therapy of severe human diseases with a special focus on angiogenesis-related disorders (i.e. tumors and ophthalmic disease)
- Green bio-tech companies are active in the agro-food field, as "Progetto Natura" which provides services aimed at guarantee the control of the food safety
- White bio-tech companies operate in the industrial field, as Genedia, which offers products as biomolecular kits to identify bacteria in water
- Bio-informatics firms provide IT product and services to be applied to the bio-tech segment, as Protegeon, a spin off of the Pisan University, which provides consultancy services on the development of software for molecular biology

Notes: (1). Data available for 19 bio-tech companies
Source: Regione Toscana, A.T. Kearney Analysis

ALMOST ALL BIOTECH COMPANIES HAVE R&D LABS HERE

% OF BIO-TECH FIRMS⁽¹⁾ ENGAGED IN EACH STEP OF THE VALUE CHAIN IN TUSCANY



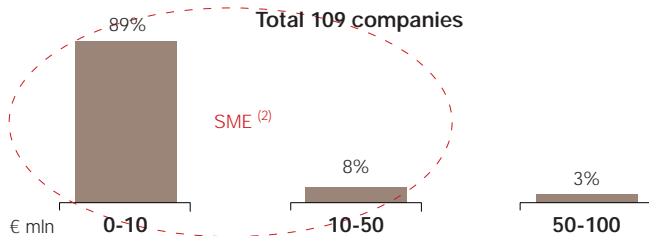


LIFE SCIENCE INDUSTRIAL FOOTPRINT - BIO-MEDICAL

EXIST A STRONG PRESENCE OF BIO-MEDICAL COMPANY, WITH SMALL & MEDIUM ENTERPRISES GENERATING HALF OF TOTAL REVENUES

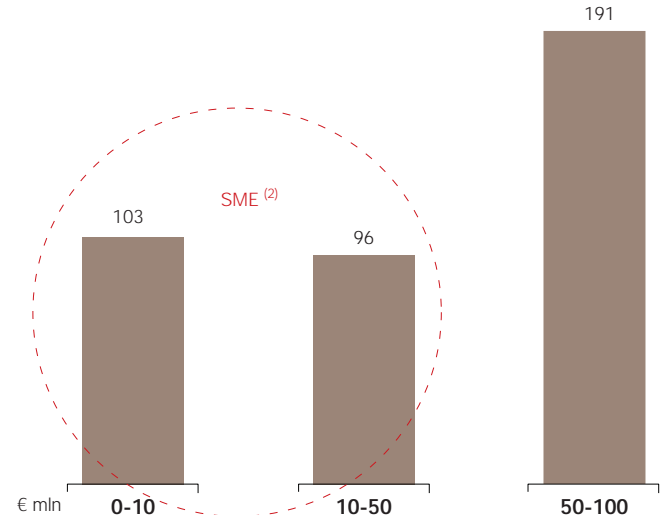
2006

BIO-MEDICAL FIRMS BY CLUSTER REVENUES ⁽¹⁾ (%)

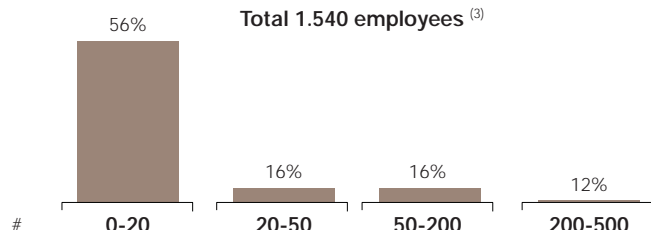


BIO-MEDICAL REVENUES ⁽¹⁾ BREAKDOWN BY COMPANY SALES CLUSTER (€ MLN.)

Total 390 mln € ⁽¹⁾



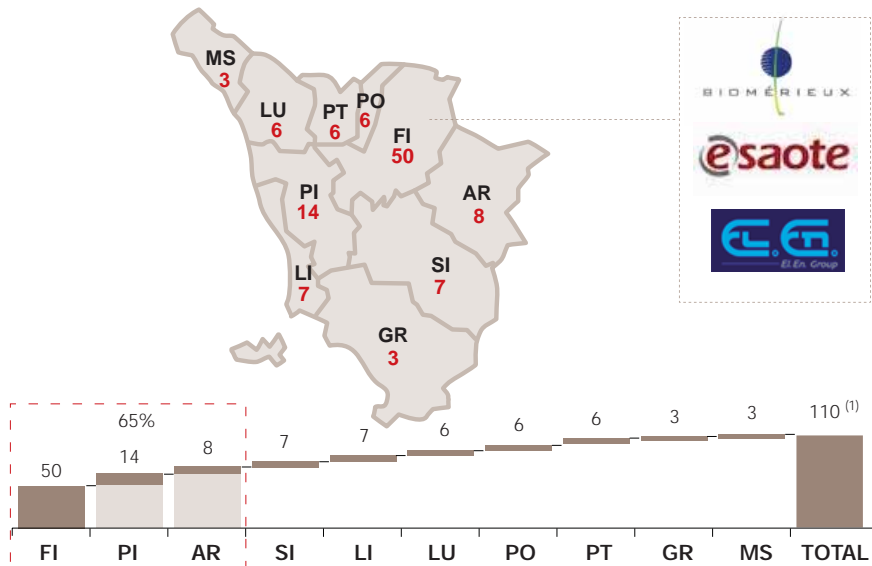
BIOMEDICAL COMPANIES BY CLUSTER - EMPLOYEES ⁽³⁾ (%)



Notes: (1) Sample of 71 companies; (2). Small Medium Enterprises; (3). Sample of 25 companies
Source: Press Search, A.T. Kearney Analysis

FLORENCE PROVINCE HOSTS HALF OF BIO-MEDICAL FIRMS LOCATED IN TUSCANY - LABORATORY AND DIAGNOSTIC EQUIPMENTS BEING THEIR FOCUS

BIO-MEDICAL FIRMS BY PROVINCE, 2007



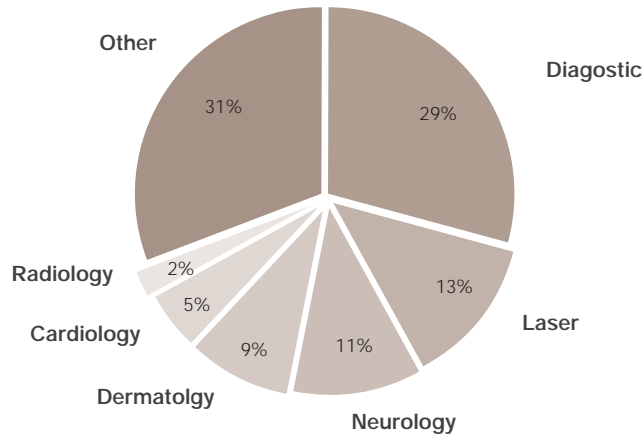
HIGHLIGHTS

- Almost 50% of firms are located in the Florence Province where work also the top players Esaote, El.En, Bio-merieux,
- Companies in the segment are focused on the production of diagnostic equipments (Esaote, Bio-merieux⁽²⁾) and laboratory equipments as lasers (El.En)
- Expertise in the production of medical equipments often derives from the production of precision mechanic instruments
- One of the major sector is related to Ultrasound diagnostic devices (lead by Esaote)

Notes: (1). Total of Pharmaceutical, Biotech and Bio-medical firms higher than 200 because some companies work in more than one segment only
 (2) The multinational Bio-merieux is specialized in the production of in vitro diagnostic equipments; Source: Press Search, A. T. Kearney Analysis

BESIDE DIAGNOSTIC AND LASER, BIO-MEDICAL COMPANIES ARE SPECIALIZED IN THE PRODUCTION OF NEUROLOGY AND DERMATOLOGY DEVICES

TUSCAN BIO-MEDICAL COMPANIES ⁽¹⁾ BY SEGMENT, 2007



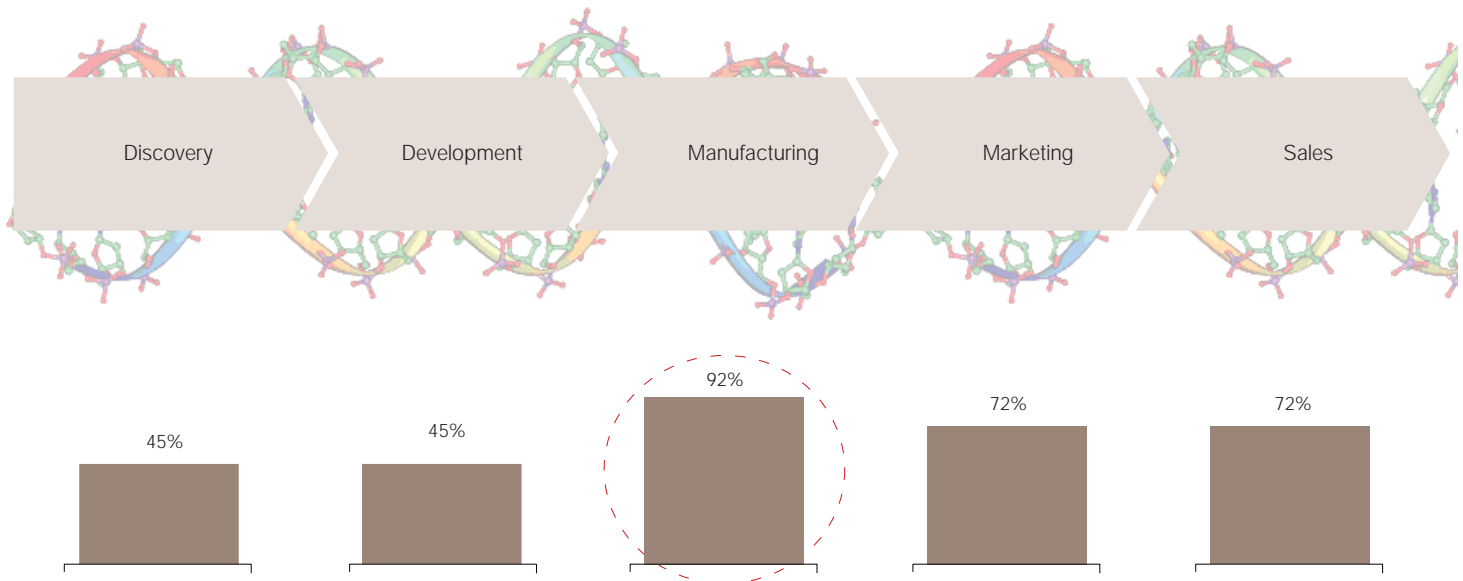
HIGHLIGHTS

- In addition to Esaote and Biomerieux, majority of firms produce diagnostic devices for laboratories
- Companies active in the dermatology segment often produce instruments with the use of the laser technology as devices for micro dermal abrasion, pulse light and modern equipments focused on the growing aesthetic market
- In the Neurology segment companies are focused on the production on instruments for electroencephalography, electromyography, polysomnography and sleep analysis

Notes: (1). Data available for 19 bio-medical companies
Source: Leonardo Business Consulting, A.T. Kearney Analysis

R&D IS PERFORMED HERE BY ONE OUT OF TWO BIO-MEDICAL COMPANIES BASED IN TUSCANY

% OF BIO-MEDICAL FIRMS⁽¹⁾ ENGAGED IN EACH STEP OF THE VALUE CHAIN



Notes: (1). Data available for 29 bio-tech firms
Source: Ernst and Young, Business Insights, A.T. Kearney Analysis



SUPPORTING ENVIRONMENT



COMPANIES INVESTING IN TUSCANY CAN BENEFIT FROM A FAVOURABLE AND SUPPORTING ENVIRONMENT



LAST BUT NOT LEAST, TUSCANY'S HIGH QUALITY OF LIFE HELPS ATTRACTING THE BEST TALENTS GLOBALLY



THREE RECENTLY ESTABLISHED TECHNOLOGIES PARKS PROVIDE THE IDEAL LOCATION FOR SETTING UP NEW BUSINESS IN TUSCANY

TLS SCIENCE PARK

- TLS Science Park represents the most important project of the Toscana Life Sciences Foundation (TLS), a non-profit organization founded in December 2004 by a group of public and private institutions in Tuscany
- The park, which is the historical site of the Sclavo Institute in Siena, hosts Novartis Vaccines Institute and a number of small to medium companies focused on the high tech biomedical research and related services
- Total researchers employed within the area are about 350



POLO TECNOLOGICO OF NAVACCHIO

- Polo Tecnologico of Navacchio, Pisa, was set up in 2003 with the aim to help the set up and growth of companies mainly in innovative sector as biomedical and robotics
- The Polo offers to the companies a broad range of facilities, both in terms of general services (hall congresses, etc.) and consulting services such as marketing, fiscal, legal and financial advices
- The Technology park hosts 3 companies in the biomedical field; Smartex and Scansystem and LOBIM specialized in the production of health monitoring systems



POLO SANT'ANNA VALDERA (PSV)

- Located near Pisa, Polo Sant'Anna Valdera was set up 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
- The technology park is today managed by Pont-Tech, a consortium for industrial research and technology transfer which offers consulting services and the access to modern facilities to companies located in the park
- The park hosts 15 Spin offs employing 130 people





Invest *in* Tuscany

CONTACT US

TOSCANA PROMOZIONE - INVEST IN TUSCANY

HEAD QUARTER

Via Vittorio Emanuele II 62/64 - 50134 Firenze - Italy

Ph. +39 055 462801 - Fax +39 055 4628082

www.toscanapromozione.it

info@investintuscany.com - www.investintuscany.com