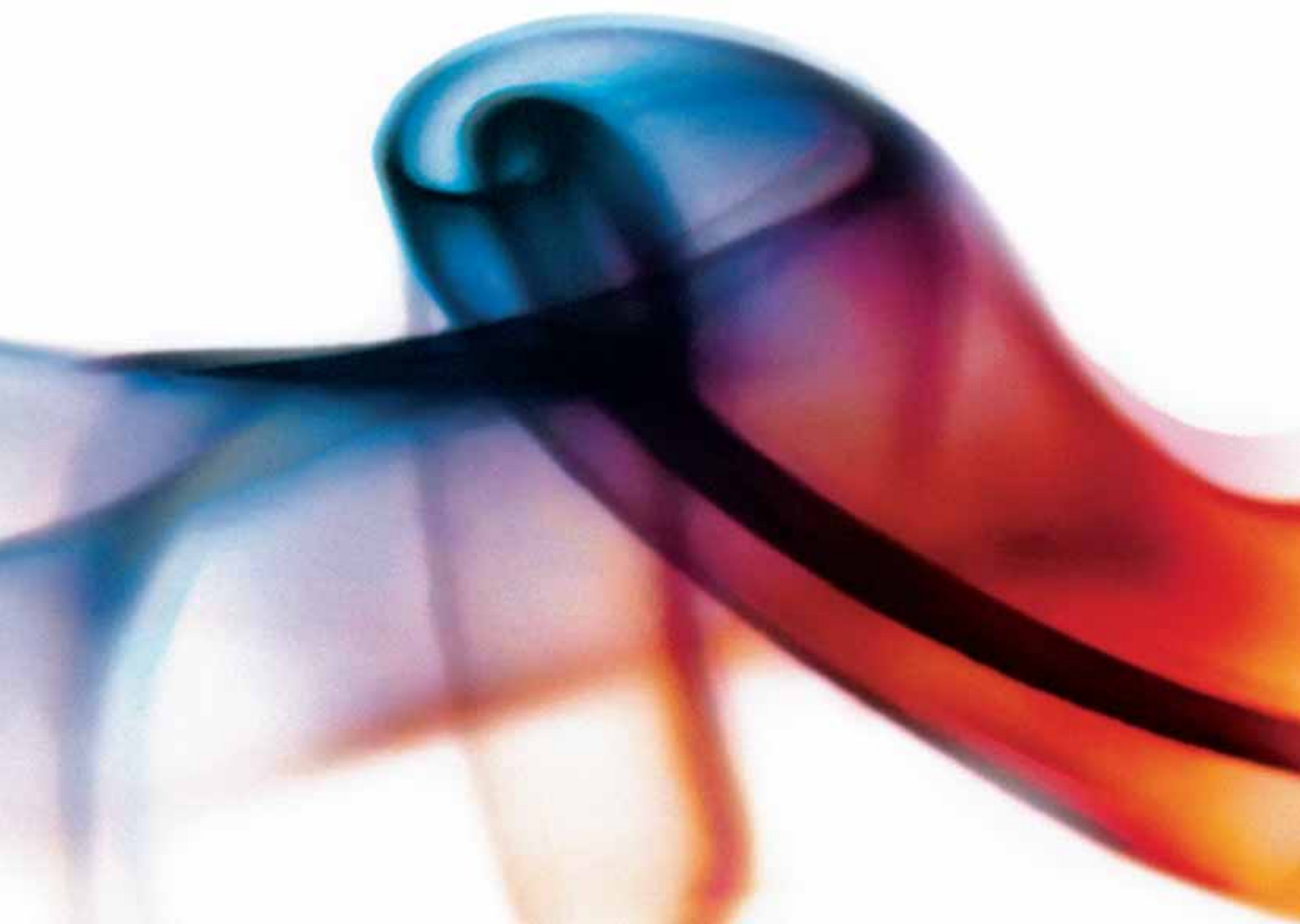
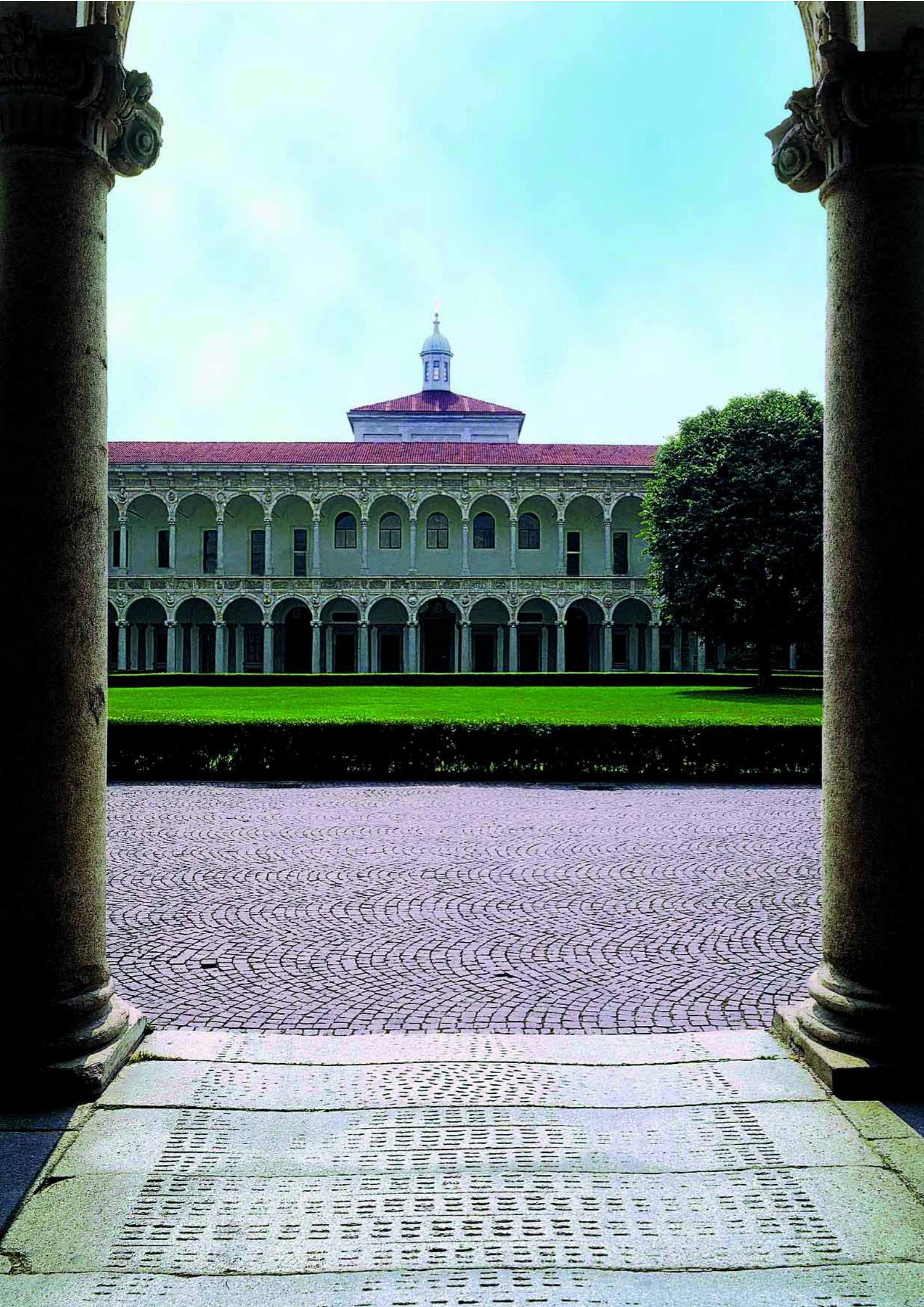


UNIVERSITÀ DEGLI STUDI DI MILANO

Research and Technology Transfer at the University of Milan





THE UNIVERSITY

Established in 1924 with the four faculties of Law, Letters and Philosophy, Medicine and Surgery, and Mathematics, Physics and Natural Sciences, the University of Milan has broadened its area of operation over the years to meet the needs of a rapidly developing society.

Consequently the initial faculties have gradually increased in number to include those of Agriculture, Pharmacy, Veterinary Medicine, Political Sciences and Sports Science.

The size it reached at the end of the 1990s induced the university to undertake a series of decentralisation initiatives which led to the creation of two new universities, one of which in Milan itself (the University of Milan – Bicocca) and the other, in co-operation with the University of Pavia, in two different Lombard towns (the University of Insubria, located in Como and Varese).

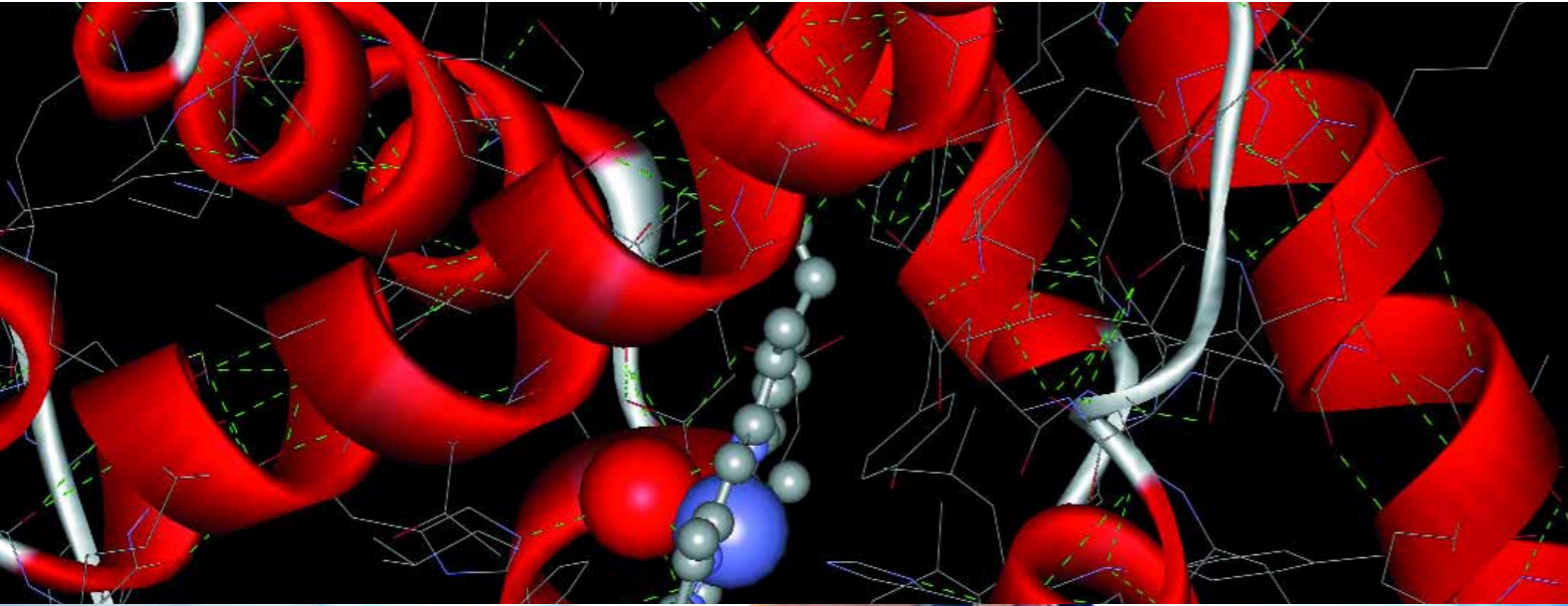
Despite these developments, the University of Milan is still one of the largest universities in Italy in terms of teaching staff and research activity with almost 150 units comprised of departments, institutes and research centres.

The broad range of subjects taught, which currently consists of 70 ordinary degree courses, 60 specialist degree courses, and more than 265 post-graduate masters, research doctorate and specialisation courses, attracts students mostly from the Region of Lombardy, but also significant numbers from other regions in Italy and from countries on all five continents. The student population numbered more than 60,000 in the academic year 2006-2007.

The University's research and teaching activities have developed over the years in a process of continuous exchange to the enhancement of both and it has received important international recognition as a consequence. It is the only Italian university to become a member of the League of European Research Universities (LERU), a prestigious group of twenty research-intensive European Universities.

The University's scientific vocation has also received recent confirmation by the University of Leiden's ranking which places the university in 7th place (and first in Italy) for scientific productivity among European universities.

Located in one of the most industrialised geographical areas in Europe at the crossroads of East-West and North-South economic development, the University of Milan operates in a strongly business-oriented context consisting of enterprises operating on domestic and foreign markets in virtually all goods and services sectors. In such an environment the advance of knowledge goes hand-in-hand with the transfer of results to the world of industry as a priority for a university which, with its broad range of expertise, plays an ever more decisive role in increasing the competitiveness of enterprises through processes of innovation which generate wide-ranging economic and social benefits at international level.



RESEARCH

Over the years the University of Milan has acquired consolidated international prestige in the research areas it operates in as a result of the scientific results it has achieved, which have received ample recognition in the specialist literature, while the large portfolio of patents they have generated form the foundations of the many spin-off enterprises the university has created and supports.

During its life the University of Milan has effectively combined its natural interest in basic, “curiosity-driven”, research with applied, “customer-oriented”, research, conducted in response to precise requests by public and private sector bodies for the development of innovative solutions.

The resources

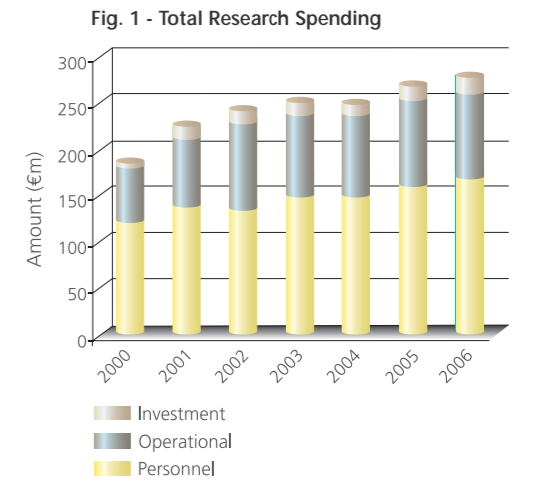
The various premises of the University, both within and outside the city, occupy an indoor surface area of approximately 425,000 sq. m.. More than half of this is used for research conducted in 55 departments, 40 institutes and 50 research centres, three of which have been recognised by the Ministry of Universities and Research as “Excellence Centres”. The University of Milan also hosts various research units belonging to public research bodies: the Consiglio Nazionale delle Ricerche (CNR – National Research Council), *Istituto Nazionale di Fisica Nucleare* (INFN – National Institute for Nuclear Physics), *Istituto Nazionale di Fisica della Materia* (INFM – National Institute for the

Physics of Matter), *Agenzia Spaziale Italiana* (ASI – the Italian Space Agency) and others or depending on various ministries (the Ministry of Health, the Ministry of Production, the Ministry of Agriculture, Foodstuffs and Forestry, the Ministry of the Environment and Protection of Land and Sea, etc.).

The university has approximately 5,000 personnel working on research, to varying extents, consisting of teaching and technical and administrative staff. In addition to these there are some thousands of personnel not on the payroll, consisting of doctorate students, research fellows and assistants, etc..

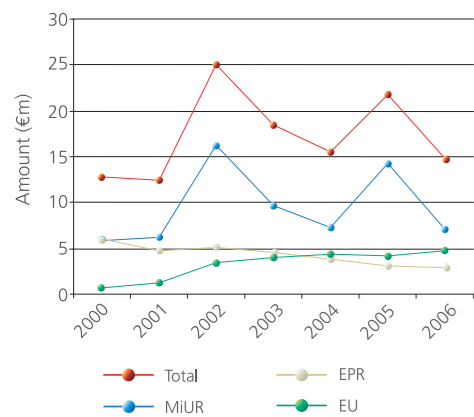
A general outline of the university’s commitment to research in different fields can be obtained in relative terms by considering the distribution of teaching staff among the main disciplinary areas: *Health*, which comprises the disciplines of the Faculties of Medicine and Surgery, Pharmacy and Sports Science (35,4%); *Science*, consisting of the disciplines taught in the Faculties of Mathematics, Physics and Natural Sciences and Agriculture and Veterinary Medicine (35,7%); Social Sciences, which groups the Faculties of Law and Political Sciences (16,5%) and finally, Humanities, for the Faculty of Letters and Philosophy (12,3%).

While the distribution of human resources among the different areas is affected by the specific nature of each one, they are all governed by an overall philosophy of enhancing the potential of the University and its role as a large multidisciplinary research institution.



The financial commitment to research has increased constantly over the years (Fig. 1) despite periodic downturns in the national and international economies. Total spending increased by approximately 52% at current prices between 2000 and 2006 and by 33% with prices constant at 2000 levels to reach approximately €280m at the end of this period, funded to a large extent by the autonomous efforts of the university itself. The figure accounts for more than 50% of the current income of the University which can therefore be justifiably considered a “research-intensive” university. Research spending is calculated as the result of the sum of three items: almost half of total research personnel costs, operating costs and investments in major equipment, IT systems and library material. Although they fluctuate from year to year, it is estimated that on average these three components account for 60%, 34% and 6% of total spending respectively. Research spending is 84% funded by the university and the remaining 16% is provided by external funds for research commissioned by public and private sector, national and international bodies.

Fig. 2 - Resources from Grant/Convention - Funded Research



Activities

The university's research work consists of both internal activity financed with the university's own funds and by activity conducted for third parties either fully, or partly financed with outside funds acquired through grants and convention agreements or contracts.

While the volume of funding for internal activities has remained virtually constant over the last six years at around €8m, external funding increased from around €30m in 2000 to over €45m in 2006 as a result of greater efforts made by the university, with increases recorded even in periods when economies performed poorly internationally.

Grants/convention agreements activity

Research funded by grants consists mainly of work conducted under the Ministry of Universities and Research (MiUR) and European Union (EU) programmes, while work under convention agreements is for public research bodies (EPR) (Fig. 2).

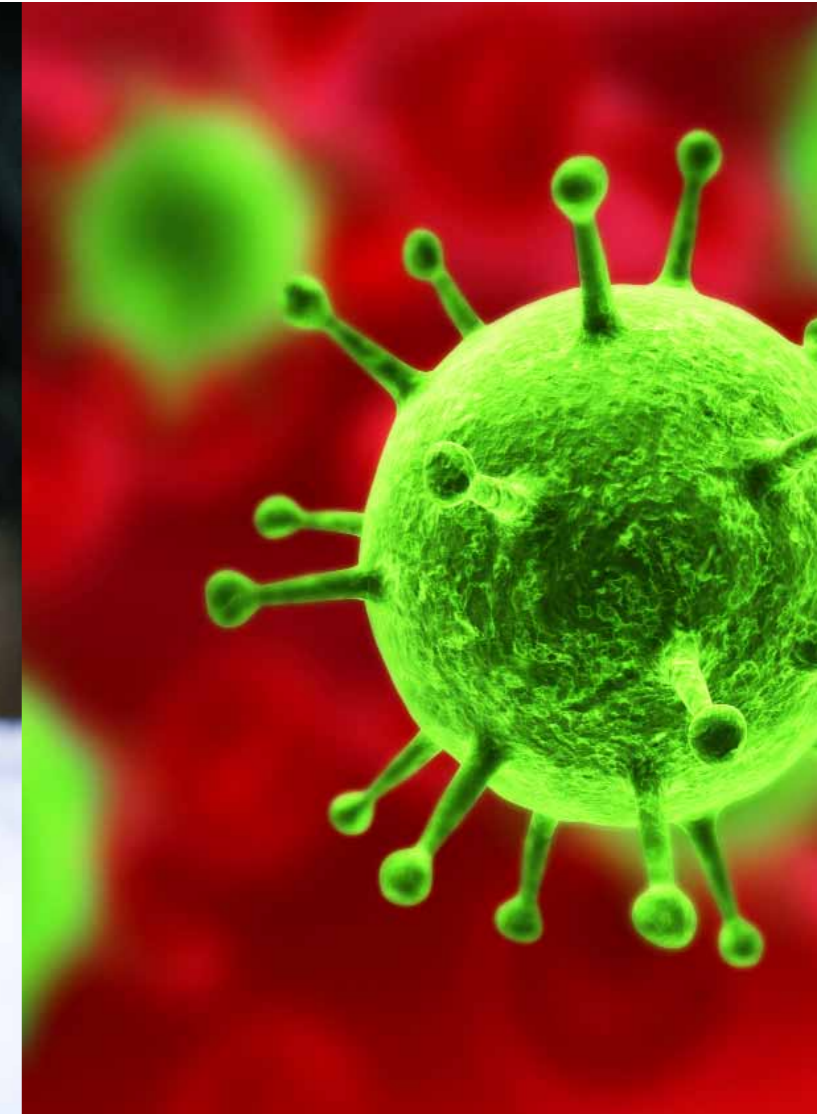
The **Ministry of Universities and Research** employs two main lines of funding, FIRB for basic research and PRIN for projects of national interest. The university acquired an average of 200 projects per year in the period 2000-2006 with total average funding of €8m per annum. Other ministerial funds were employed to set up and operate the three excellence centres already cited and to train young researchers. The University of Milan conducts important research at the European Union level in co-operation with international research groups, often acting as a co-ordinator of activities, with the participation of prestigious academic and business organisations working mainly in the fields of life science, sustainable development and high-tech areas. In this respect the University had signed around 190 contracts with the EU under research framework programmes at the end of 2006 for a total value of almost €34m.

In addition to work with the European Union, the university has signed hundreds of convention agreements internationally for scientific research with universities and research centres.

Public research bodies (CNR, INFN, INFN, ASI and others) have strong synergies with the university in research activities conducted in specific units to which they contribute with their own resources. Approximately 100 research projects were developed on average each year in the period under consideration with funding of more than €4m per year. The fields of research consisted mainly of nuclear physics, life sciences, science of materials and pharmacology.

Activities under contract

With its broad range of expertise the university has developed intense collaboration with a number of important firms and public and private sector bodies on activities to support innovation and provide technical and scientific assistance, which are generally classified on the basis of their prevalent nature as follows: research for third parties; professional and service activities; various activities with donations.



RESEARCH UNITS

DEPARTMENTS

- Agricultural, Food and Environmental Economics and Policy
- Agrifood Molecular Sciences
- Animal Diseases, Hygiene and Public Health
- "Ardito Desio" Earth Sciences
- Biology
- Biology and Genetics for the Medical Sciences
- Biomedical Sciences and Technologies
- Biomolecular Sciences and Biotechnologies
- Chemistry, Biochemistry and Biotechnologies for the Medical Sciences
- Contemporary Languages and Cultures
- Crop Science
- Ecclesiastic, Philosophical, Sociological and Criminal Law
- Economic, Corporate and Statistical Sciences
- Economy, Labour Law and Fiscal Law
- Food Sciences Technology and Microbiology
- Human Morphology
- Information and Communication Technology
- Information Sciences
- Information Technology
- Inorganic, Organometallic and Analytical Chemistry
- Internal Medicine
- International Studies
- "L. Devoto" Occupational Health
- Labour and Welfare Studies
- Linguistic, literary and Philological Studies
- "Lita Vialba" Pre-clinical Sciences
- "Luigi Sacco" Clinical Sciences
- Mathematics
- Medical Sciences
- Medical Surgical Sciences
- Medicine, Surgery and Dentistry
- Modern Philology
- Neurological Sciences
- Organic and Industrial Chemistry
- Otorhinolaryngological and Ophthalmological Sciences - Pharmacological Sciences
- Pharmacology, Chemotherapy and Medical Toxicology
- Philosophy
- Physical Chemistry and Electrochemistry
- Physics
- Politics and Law
- Private Law and History of Law
- Public, Civil Procedure, International and European Law
- Public Health Microbiology - Virology
- Sciences of History and Historical Documentation (Medieval, Modern, Contemporary)
- Sciences of Language and Comparative Foreign Literature

- Social and Political Studies
- Structural Chemistry and Inorganic Stereochemistry
- Surgical Sciences
- History of Society and of Institutions
- History of the Arts, Music and the Performing Arts
- Science of Antiquities
- Veterinary Clinical Sciences
- Veterinary Science and Technology for Food Safety

INSTITUTES

- Agricultural Engineering
- Agricultural Entomology
- Agricultural Hydraulics
- "Alessandro Marchesini" Organic Chemistry
- Anaesthesiology and Intensive Care
- Anatomy of Domestic Animals with Histology and Embryology
- Animal Husbandry
- Applied General Physics
- Cardiology
- Cardiovascular Medicine
- Dental Clinic
- Dermatological Sciences
- Dermatology
- Endocrinology
- Experimental, Transplant and Cardiovascular Surgery
- Farm Animal Science
- General Pathology
- "Giovanni Esposito" General Physiology and Biological Chemistry
- Histology, Embryology and Neurocytology
- Human Geography
- Human Physiology I
- Human Physiology II
- Legal and Insurance Medicine
- Medical and Biometric Statistics
- Obstetrics and Gynaecology Clinic I
- Obstetrics and Gynaecology Clinic II
- Orthopaedic, Trauma, Rheumatic and Rehabilitation Sciences
- Paediatrics
- Paediatrics and Infancy
- Pharmaceutical and Toxicological Chemistry
- Phthiology and Respiratory Diseases
- Physical Exercise, Health and Sports Activities
- Plant Pathology
- Plastic Surgery
- Radiology Sciences
- Urology

Fig. 3 - Resources for Third Parties - Historical Data

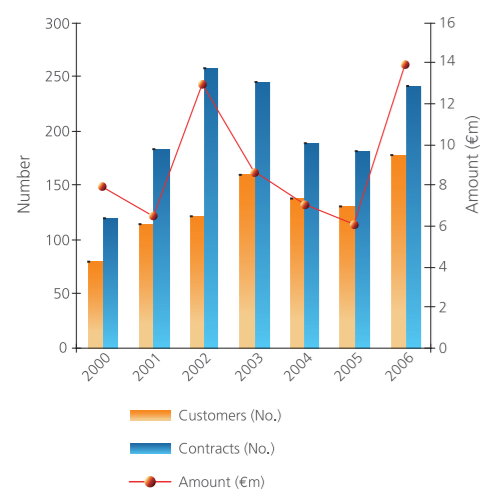


Fig. 4 - Changes in Type of Customer Commissioning Research

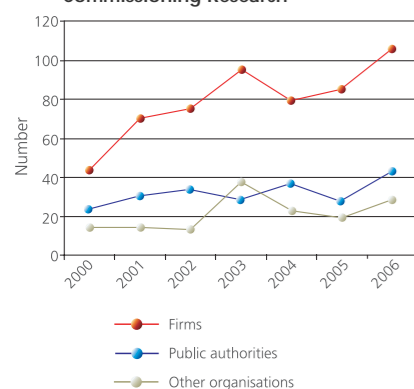
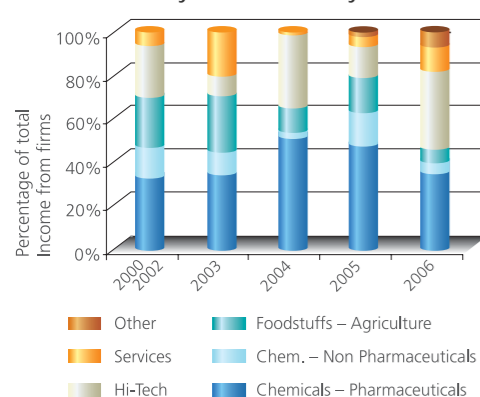


Fig. 5 - Distribution of Research Income from Firms by Sector of Industry



Research for third parties is based on the results of basic research and is designed to produce innovative solutions on themes of interest to the customer, where ownership of the results is determined by contract. The volume of this activity over time is influenced by the general economic trend and by changes in demand for specific research. The university has signed an average of around 200 contracts each year with 120 customers for an average annual amount of almost €10m (Fig. 3).

Customers fall into a number of categories: a) public bodies, b) firms belonging to different sectors of industry and c) various types of organisations such as health institutes, non-profit charities, trade associations etc. The composition of the customers has changed over the years with an increase in the number of firms and income from them, compared to the other two categories (Fig. 4).

An analysis of the types of firms that commission research activity shows that the two largest sectors are the chemical-pharmaceutical and the high-tech sectors which have grown over the years to finally account for around 40% each of the total income. In addition to these, two sectors representing the main areas of the university's research under contract are the agricultural-foodstuffs and the non pharmaceutical chemicals sectors. Almost all the funding acquired is concentrated in these four sectors (Fig. 5).

Professional and service activities include consultancy, training services provided on order and laboratory tests and analyses. The costs of these services are fully covered by the customer. This activity is economically important with several thousand operations performed each year for an average turnover of €4m per annum. The level of this work remains practically constant over time thus confirming that it is a well-established and not occasional activity with a very loyal customer base, which includes important public institutions such as the Judiciary, the police forces and the armed forces which have always seen the university as a reliable and authoritative partner.

Finally **activities with various contributions** are the result of donations and acts of charity performed by private individuals and organisations for research units and the funds are used to improve the resources of the units themselves. There has been a considerable increase in this income since 2000 and it now averages €5m per annum.

The results achieved in all fields of activity are demonstrated by the scientific papers published (more than 7,000 in 2006 alone), by the patent applications filed (more than 120 in the last ten years), most of which have resulted in a transfer of intellectual property rights to firms, and by the formation of 19 spin-off enterprises over the last four years, more than half of which have already been able to attract significant finance from venture capitalists and entrepreneur shareholders.



TECHNOLOGY TRANSFER

The perception that a stronger relationship between universities and their socio-economic context constitutes a sound basis for exploiting the results of research and for strengthening institutional relations and increasing economic benefits has heightened the focus at the University of Milan over the last decade on the issues of innovation and technology transfer. They are functions which are additional and integral to but not a substitution for the more consolidated functions of higher education and explorative and targeted research.

The path taken by the University for innovation is based on a strategy which includes the following:

- a greater commitment to research (including high-risk and long term research);
- a renewed capacity to innovate in teaching based on a closer relationship with enterprises;
- an active role in economic development on different geographical scales based on opportunities, vocations and strategic choices;
- the adoption of innovative solutions in the exploitation of research results, by allowing the diffusion of knowledge to co-exist with economic returns.

In many sectors today technological development is creating competition based on the highest qualitative levels of research and development and in many cases the high costs of this, which are often unsustainable for enterprises, have encouraged dialogue between universities and industry.

While enterprises alone account for two thirds of outstanding contracts for commissioned research, there is still ample leeway to increase co-operation between these two realities which in the past were considered to have conflicting interests.

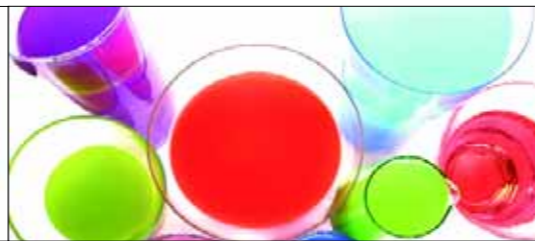
The strategy employed by the University of Milan is to help **fill the gap which still exists between research and the market** by making it easier for enterprises to gain access to patent protected technologies and by anticipating as much as possible the entrance of potential users into the processes of generating innovation in an academic environment. This is a university in which the need to exploit the results of research does not occur at a subsequent stage, but embraces the whole operational process from the decision-making phase to the scientific processes and the creation of institutional relations. In this respect the University of Milan is able to increase its own credibility as an institution which supplies answers to specific demands and which if necessary is able to help redefine them on the basis of a strong focus on the development of internal skills and expertise and a knowledge of external needs and requirements.

Furthermore, the distinctive features of the University of Milan mean that its high-tech research units which produce results that can translate directly into economic and industrial benefits for the community are flanked by expertise in law, sociology, economics and the humanities, which can help produce solutions without equal at a regional level to problems of a multidisciplinary and interdisciplinary nature.

The University of Milan has defined specific procedures (regulations and the relative implementation) and set up special commissions to support, supervise and co-ordinate the activities which govern the transformation of the results of research into economic wealth such as the protection of inventions and the generation of an innovative entrepreneurial spirit.

The **University Patents Commission** addresses matters concerning the protection of intellectual property. It takes part in the formulation of university policy on the management of intellectual property, in the examination of requests to file patent applications and in assessing the economic and development potential of the patents themselves.

The **University Commission for the Assessment of Spin-off Projects** works on enterprise formation processes. It takes part in the formulation of university policy on technology transfer issues, examines applications for authorisation to form university spin-off enterprises and assesses their economic and development potential.



The desire to strengthen and integrate research, innovation and technology transfer led to the creation of a special operational unit named UNIMITT, which operates in direct contact with the outside world and with the scientific, technical and administrative structures of the university. These include the Commission for Scientific Research and Technology Transfer and the Research Services Division, which is responsible for supporting research activities, facilitating participation in public competitions and improving the practical skills of teaching staff in these areas.

UNIMITT – Centre for Innovation and Technology Transfer

UNIMITT is an autonomous university unit designed to consolidate initiatives undertaken by the university and also to extend support and promotional activities (increasing awareness, protection of intellectual property rights, identification of potential support and possibilities for co-operation/consultancy and assistance with formulating individual and group strategies) in a structured fashion for the exploitation of research results, skills and knowledge and also for policies for technology transfer.

Communication and relations with the outside world are of prime importance in this respect, above all with enterprises and public administrations but also with other universities and research and experimentation institutes which are also involved in processes to exploit technology transfer and enhance community relations.

The centre promotes and supports activities concerning the following:

- **patents:** protection and exploitation of the intellectual property generated in the university's research laboratories; the establishment of relations for co-operation with authorities and enterprises for that purpose; university patent policy and management of its patent portfolio;
- **academic and university spin-offs:** support for enterprise start-up based on technology and expertise developed in the university; strengthening competitiveness; assistance in the formulation of development strategies; management of interaction with the technological know-how of the university;
- **innovation and technology transfer projects:** strategic co-operation with external partners and the planning of university projects for the diffusion of knowledge, instruments and the results of innovation; promotion of the university as an ideal dimension for handling institutional relations, participation in shared innovation and technology transfer initiatives.

Finally, UNIMITT is a **scientific policy unit**. While it uses the professional expertise of its own internal staff, it also resorts to external consultants and works in close contact with the scientific, technical and administrative structures of the university. The centre furnishes support to academic bodies in decision-making processes, by assisting university commissions with systematic initiatives, by providing its own assessments of patent and spin-off projects and by helping to keep internal regulations which discipline these matters up-to-date.

UNIMITT acts as a university Industrial Liaison Office by:

- **fostering researcher awareness** and providing support to facilitate relations with authorities and enterprises and with the planning of participation in shared initiatives;
- **co-ordinating processes to manage innovation** and to protect innovative solutions and transfer them to industry (to SME's in particular);
- **promoting and industrially and commercially exploiting inventions and results** developed from research; one way of performing this is by using specific instruments to advertise the products and services of the university;
- **providing consultancy support to create new enterprises** from within the university in accordance with policies laid down by its governing bodies;
- **strengthening university policy concerning the value chain** created by research, by identifying the needs and demands which university research might satisfy and by ensuring full exploitation of projects already at the planning stage.



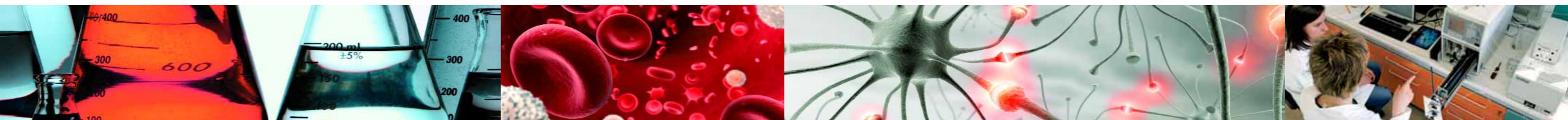
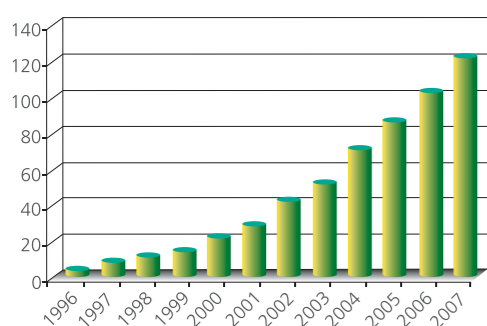


Fig. 6 - Number of Priority Applications



The following are UNIMITT stakeholders:

- **university research units and groups** in the dual role of inventors of innovative technology, who as such are holders of expertise and results, and of potential partners in initiatives promoted or supported by others;
- **national and international institutions and authorities** both because they operate directly in the community and because they are institutional partners, especially as funders of research and investment designed to transfer technology to industrial and service enterprises, and again because they possess complementary expertise useful to universities;
- **enterprises and SME's in particular**, as potential and real agents of innovation for processes and products/services;
- **central and local public administrations** and more specifically their operational departments responsible for exploiting technology and for economic growth resulting from the development and use of modern science.

Patents

Growth in this field has been constant since the first patent application was filed by the University of Milan in 1992: patents held by the University for new inventions numbered 120 in October 2007 (Fig. 6).

The University's policy to exploit inventions has matured over the years. Today the Patents Commission assesses the potential for exploitation and the maturity of inventions in order to decide the best patent strategy.

While on the one hand commencing by filing for a national patent minimises the risk and initial cost and also provides time for more accurate development of the technology, on the other hand it does not introduce those examination procedures which fully validate the patent itself, it strongly limits the potential for finding outlets in the market it is sold on and it weakens bargaining power with companies.

However, proceeding immediately to file for a European patent assumes that the vision and prospects for exploitation are clearer but also requires greater resources. To assist inventors in the decision-making process, to share risks and costs and to offer expertise not normally possessed by research groups when patents are filed and above all at the later stages of maintaining and transferring patents are all tasks which fall within UNIMITT's responsibilities.

The patent portfolio

The University of Milan has (or has had) sole ownership of 63% of the patents in its portfolio, while it has joint ownership with other bodies and institutions of the remaining 37%. These include the CNR (National Research Council), which is the Italian public institution to have filed the highest number of patent applications. The portfolio contains patents owned jointly not only with major Italian universities (La Sapienza of Rome, Florence, Bologna, Federico II of Naples), but also with smaller institutions and recently with foreign universities. The university makes every effort to see that **consideration is given to patent possibilities at the time when research is initially planned and commissioned** and not merely when it is complete.

If the quality and quantity of reports on commissioned research is very high new applications for patents can easily be filed jointly with the firm commissioning the research. This is particularly important considering not just the main context in which the University operates (Milan and Lombardy), but also the heavy involvement and the role played by the University's teaching and research staff in institutions in which it holds an interest in or in connection with external research, a fact that is actually not sufficiently well-known.

Account must be taken when examining the University's patent portfolio that not all the results achieved can be protected by means of patents even if they are transferable. Given the growth and extension of the areas covered over the years it is nevertheless considered that the patent phenomenon is destined to take root and increasingly take its place alongside the "traditional" production of university research literature.

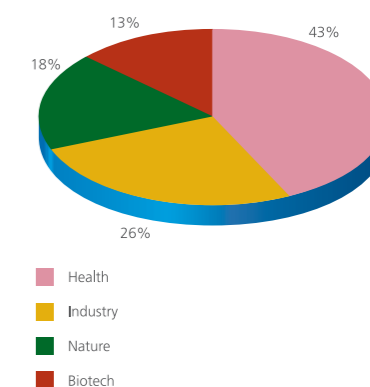
Inventions have been classified in 4 major areas: Health, Nature, Industry and Biotechnologies, on the basis of the main sector in which they are used, which is generally, but not necessarily, reflected in the discipline which generated the invention. More specifically, those inventions which are applied in the research, care, prevention and diagnosis of human diseases are classified under "Health". All those inventions which concern innovation in industrial processes, new catalysers and new industrial materials are classified under "Industry".

Inventions applied principally in the agricultural, foodstuffs and veterinary sectors are classified under the area "Nature". Finally the area termed "Biotechnologies" includes inventions which involve the use of molecular or cellular systems, living organisms or derivatives of them. This category also comprises patents for methods of measurement that may be used in very different sectors and also the only patent currently in the portfolio for bioinformatics.

The highest percentage, 43%, is in the "Health" area, 26% of patents are in "Industry" and 13% in "Biotechnologies" (Fig. 7). The "Nature" area is worthy of mention because it has rapidly risen to account for 18% of the portfolio and it is growing constantly. This is probably partly the result of a more open attitude to the issue of intellectual property and to action taken to increase awareness of patents in the Faculties of Agriculture, Veterinary Medicine and that of Mathematics, Physics and Natural Sciences.

The distribution of patents by faculty reflects the "dimensions" (in terms of teaching and research staff) of the faculties themselves. The highest number of patents are in fact produced by the Faculty of Mathematics, Physics and Natural Sciences (39%), while the Faculty of Pharmacy is the most active in terms of patent productivity (highest number of patents in relation to the number of teaching and research staff).

Fig. 7 - Patents by Area



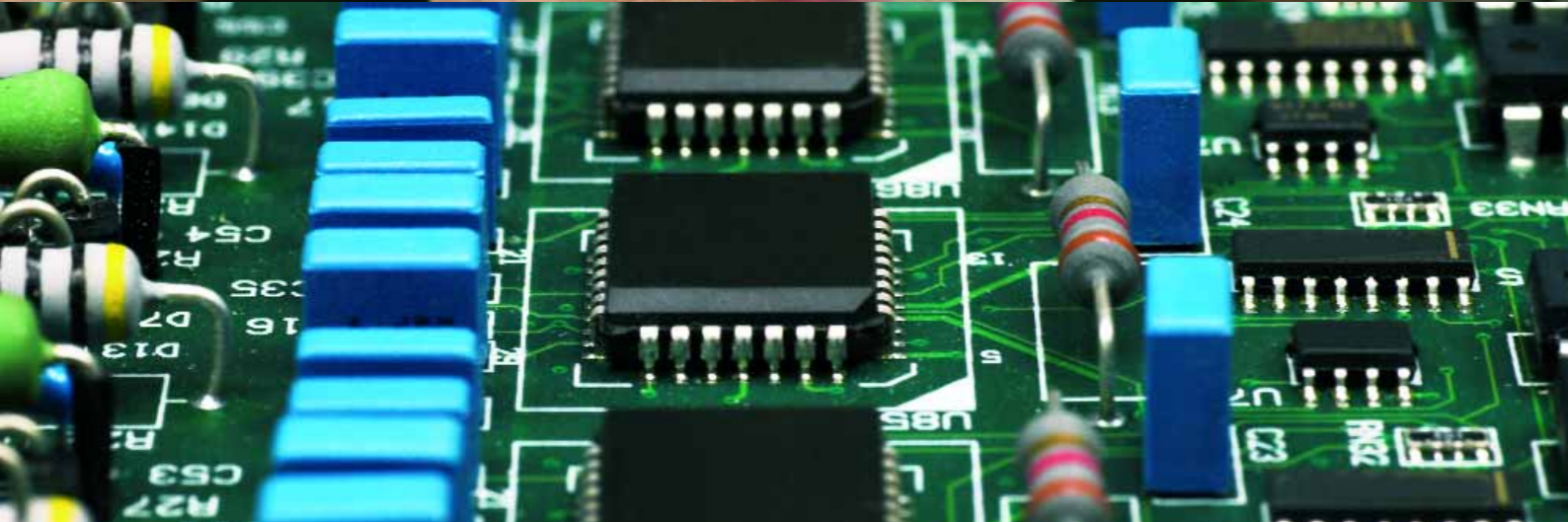


Fig. 8 - Patent Portfolio Composition

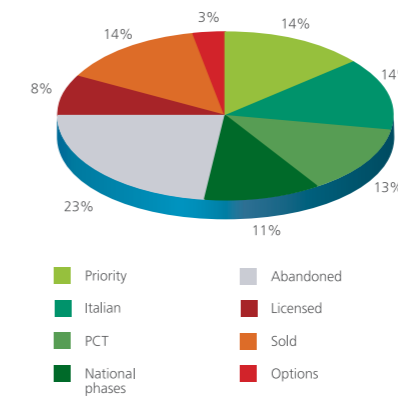
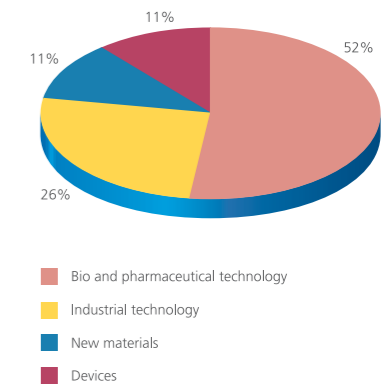


Fig. 9 - Spin-offs by Area



This point also merits consideration. Areas exist in our university, such as for example the law and economics area, which although do not directly produce patentable results, can nevertheless make a very large impact in assisting processes to exploit not just patents but also entrepreneurial ideas generated by university research in general.

The Patents Commission manages and administers the patent portfolio in accordance with the University's policy, which although it considers economic return and profit to be important, does not limit itself to these factors when formulating its exploitation strategy. The reintroduction of annual taxation on patents in Italy led the university to select patent applications more carefully. To-date 24 applications have been abandoned, while 12 have been extended to international status. **Protected inventions have given rise to more than 200 patent applications** and the countries in which they are generally nationalised are Europe, the USA, Japan and Canada.

Clearly it is highly advisable to reach the national phases of PCT (Patent Co-operation Treaty) applications together with a commercial partner, not just because of the high costs, but also to be in a position to choose the countries which only the final producer of the technology will be able to select. The University of Milan has transferred 23% of its patents, for the most part by selling them, or by licensing them. One important fact concerns patents currently (October 2007) subject to secrecy agreements with firms or for which enterprises are exercising, and paying for, option rights, which account for almost two thirds of available patents.

This is perhaps the most significant indicator of how the management of the University's patents is evolving (Fig. 8).

Spin-offs

The University of Milan supports and promotes individual professors and researchers or research groups who conceive of and sometimes partly develop a business idea considered commercially feasible. On the one hand it invests in the initial ownership capital and grants authorisation to use its name and logo and on the other hand it makes space, equipment and personnel available as well as providing specific services to co-ordinate and direct innovation management processes.

In recent years the university has given a considerable boost to this activity with the intention of encouraging the formation of new enterprises with high innovation content designed to exploit scientific research (university or academic spin-offs). Participating in many initiatives designed to support enterprise start-up and to diffuse a technological business culture, through UNIMITT and in co-operation with other organisations is important in this respect. The results are tangible: **19 spin-off companies** have been started up at the University of Milan since 2003, while numerous projects are currently in the pipeline.

The profitability of these business projects was good at the end of 2006 with 50% of the spin-offs recording positive results in profit, a particularly significant achievement for such young companies. The trend is therefore one of growth even if most of the companies are of only recent formation and as such are subject to the typical difficulties of start-ups.

From the viewpoint of finance from outside the University of Milan, more than half of the spin-offs (9 out of 19) have other firms or venture capital investors among their shareholders.

The areas of activity in which the University of Milan's spin-off enterprises operate reflect the most important areas of the university's research (Fig. 9).

Finally most of the spin-off enterprises have less than ten personnel while in two cases the staff exceed 20. We wish to underline that the trend for the employment figures is one of growth which confirms the positive contribution which this type of enterprise also makes to job creation.

The Milan Biosciences Incubator

The University of Milan is currently working in co-operation with financial institutions, foundations and local players in the design of a Milanese biosciences incubator. The incubator project will be sited in the Milan metropolitan area in the vicinity of some of the most important medical and scientific research institutions in the country and is scheduled to open in the middle of 2008. As such, it constitutes an interesting opportunity to experiment an innovative method for creating convergence between research capabilities, entrepreneurial talent and the creation of prospects for industrial success in advanced sectors.

This new facility is intended to meet potential demand for the **creation and location of enterprises in the biomedical and biotechnology areas** (spin-outs, start-ups and spin-offs), which constitute a specific case because of their number and characteristics.

CONCLUSIONS

In this sense the new facility is designed to fill gaps on the Lombard incubator scene which so far consists mainly of infrastructures destined for use in the IT sector only.

The objectives of the initiative are briefly as follows:

- the integration of technology transfer with high-level applied research activities, combined with encouragement for processes and paths which attract external financial and intellectual resources;
- the integration of technological development activities with managerial and financial consultancy activities;
- the creation of skills to be employed in the creation and management of production activities, infrastructures and services with a high scientific and technological content.

The UN.I.V.E.R.S.I.T.A.S. Project
UN.I.V.E.R.S.I.T.A.S. (*Università e Impresa per Valorizzare Esperienze e Risultati Scientifici per Innovare e Trasferire Attività e Saperi* – University and enterprise to value experiences and scientific results to innovate and transfer activities and knowledge) is a project which brings together four universities (the University of Milan, the Polytechnic of Milan, the Luigi Bocconi Commercial University of Milan and the University of Calabria) on the subject of protecting and exploiting academic activities and results to reinforce innovative capabilities in local and national economic development.

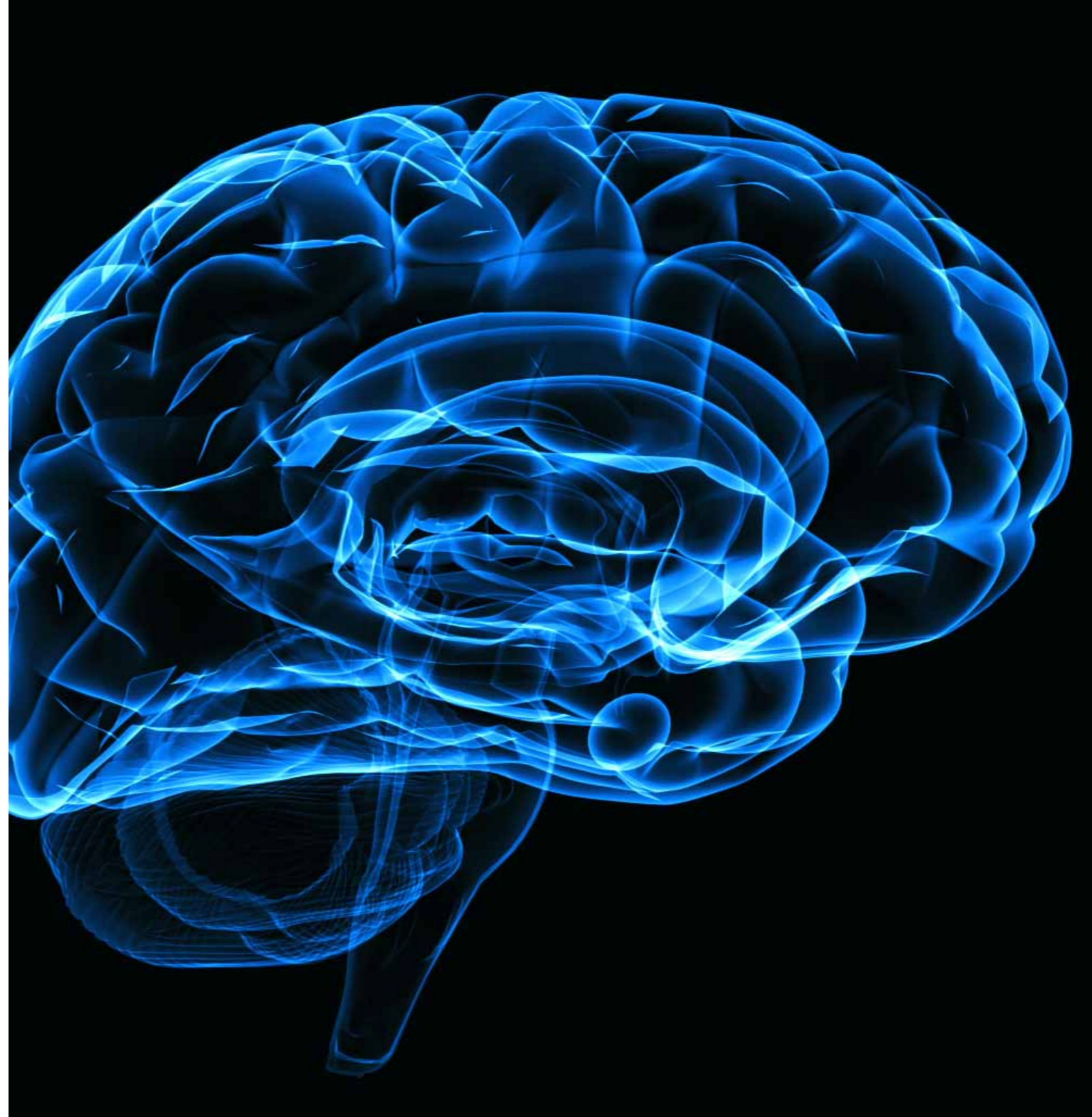
The direct transfer of innovative technologies and solutions to the economy and the community constitutes a challenge in which the quality of the ideas and the individuals must measure up against the market.

Universities are facing up to this challenge increasingly by supporting processes to protect and exploit research results and to form new enterprises based on their expertise, their knowledge and their activities.

The four universities are involved in a project approved and financed by the Ministry of Universities and Research which has the following objectives:

- strengthening individual activities performed through a process of co-operation and integration which involves making shared instruments available, sharing knowledge and training, developing joint initiatives;
- identifying a new integrated model of organisation for the Industrial Liaison Office able to operate on a scale appropriate to the problems and demands it faces without, however, restricting activities of single universities;
- supporting the innovative capacities present in the local communities in which individual universities operate by undertaking action and initiatives designed to enhance the value of relationships and the results of co-operation between the various protagonists of development including both institutions and enterprises;
- providing support for those universities and research organisations which have only recently posed the question of managing innovation and technology transfer in a structured manner, by offering them support, training, services and expertise.

The initiatives and the strategies undertaken by the University of Milan to encourage the spillover of innovative technology into the economy and the community, the attention it pays to the outside world, to the characteristics of the world of business and society as a whole and the changes that are occurring in it and the synergies that it has created with local, national and international institutions are all factors which distinguish this university as a proactive protagonist in the innovative development of society. It does this by integrating the research function with that of the diffusion of knowledge and thereby contributes to the creation of the knowledge-based economy and society.





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