Health Research in Romania

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Acknowledgements

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Medical Research in Romania

1. Research networks

If we try to describe medical research in Romania in the past 10 years, we have to take as the starting point of our review the year 1989, with its political changes and the structures as they existed at at that moment. The political and economic reforms, which came after 1989, induced changes that affected medical research too, both research policies and resources.

The economic crisis led to important cuts in financial resources and means, but it also contributed to restructuring the previously highly institutionalized research facilities. The result was decentralisation of many research facilities. Some were closed down; the remainder were revamped as new institutions, governmental or non-governmental organizations, funded by the State or from various other sources.

It became clear that merely ensuring funds for research was not enough to ensure its effectiveness. There was a need for a clear policy in the field that would also bring about a change in mentality within the research community. The scientific community should accept the fact that not everything that can be financed and researched *should* be researched, and that every research result should have a purpose, should be needed for something or should be requested by somebody. There has to be a real need for research. This should lead to the development of new technologies or more advanced techniques, should generate more valuable knowledge for society as a whole, for progress and welfare.

The main body of medical research in Romania is organized in a number of research institutes and several special units. Their staff and supporting activities are derived from clinics and hospitals all around the country, under the authority of the Ministry of Health and/or the Ministry of Education. It should be stressed that there are in fact four tiers of research units in this field:

- A number of research institutes and research units under the direct responsibility of the Ministry of Health;
- A complex medical research network belonging to the medical and pharmaceutical universities, as stated above in Bucharest, Iasi, Cluj, Tirgu-Mures, Craiova, Timisoara etc., involved in systematically teaching a number of specialties to medical students, with a six-year curriculum approved by the Ministry of Education;
- Another group of units also involved in medical research, supported by the National Agency of Science, Technology and Innovation (NASTI), organized by a medical committee, as part of a central research college;
- And last but not least, the Medical Section of the Romanian Academy, doing fundamental research in a number of subsidiary, dependent biological and medical institutes.

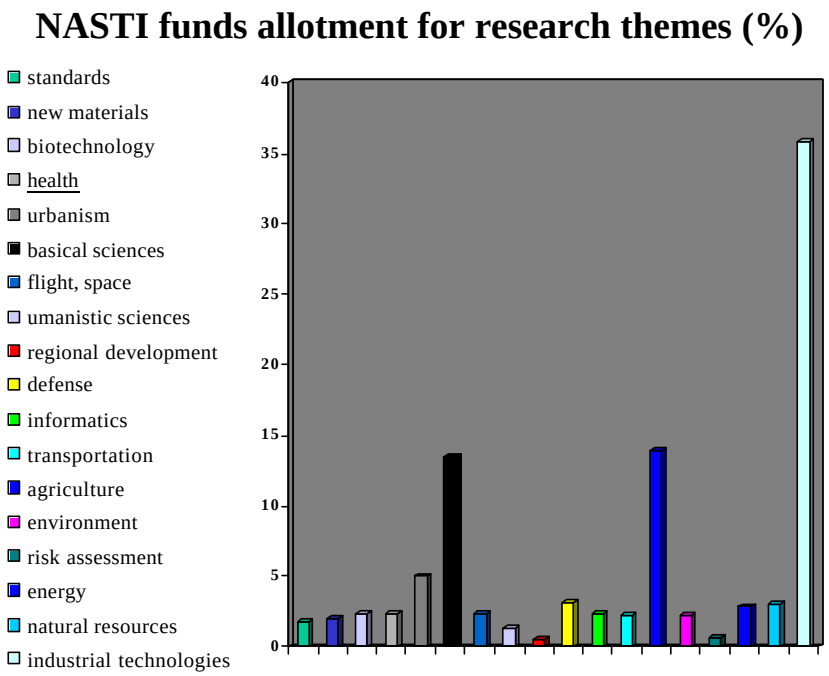
These four research networks, which are practically independent of one another, developed gradually during the 20th century. The staff of the respective medical specialties belongs, either to the academic/university domains, or to the NASTI. NASTI was the last one to appear, namely after the 1989 revolution for freedom and political independence, evolving from the level of a general directorate in the Ministry of Education to a Ministry of Research. Later on the Ministry of Research was restructured to become the above-mentioned National Research Agency which is now the main coordinating and financing body of research in Romania, including medical research.

Government policy on research is implemented through NASTI, in the framework of its National programme called "Horizon 2000". The programme has four main objectives:

i. Achievement of an efficient and safe infrastructure;
ii. Improvement of the industrial competitiveness and technological and industrial integration into the EU norms and standards;
iii. Environmental protection and quality;
iv. Increasing the Romanian participation in international scientific co-operation.

2. Research funding

It can be observed that medical research is not explicitly mentioned within the main objectives, but can easily fit in. The major consequence of this can be seen in the figure describing the allocation of NASTI funds by research theme:



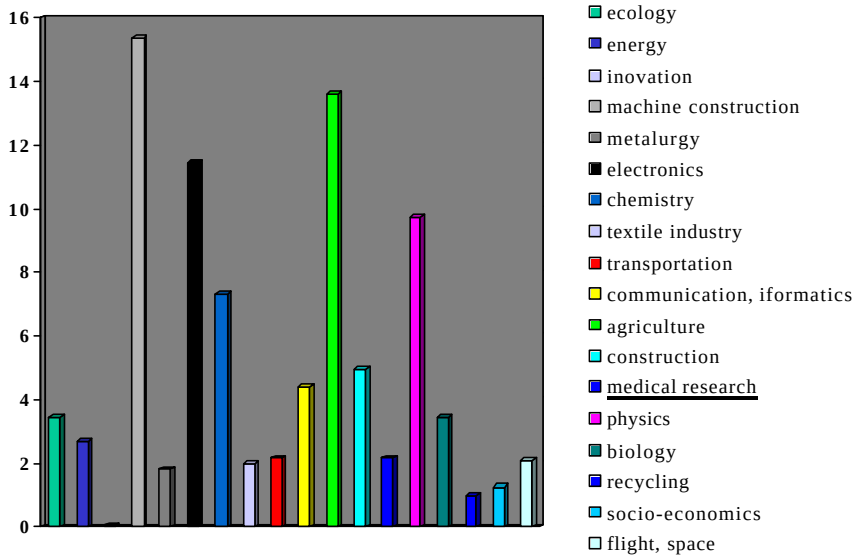
Only 2.17% of the whole NASTI budget was allotted to medical research activities. Annually NASTI receives from the Government about 0.2% of the GDP. The highest amount was allocated to industrial technologies, agriculture, basic sciences and urbanism. Some of the high allocation fields are priorities within research objectives, but some of them are due to structures that existed prior to 1989, such as huge independent research institutes.

NASTI aims to support the cross-sectoral nature of research activities within the “Horizon 2000" programme by creating a flexible, horizontal approach to the use the funds. Despite the flexibility, the pressure on the State budget and the transition period affected the national programme by financing mainly projects already running or those resulting from international governmental cooperation.

The system of fund allocation can be summarised as follows:

NASTI gets advice from an Advisory Committee. The Committee members are nominated for a 6-year mandate by the ministries and the Romanian Academy, for what is an honorary position.

NASTI funds allotment (%) to the specialised commissions

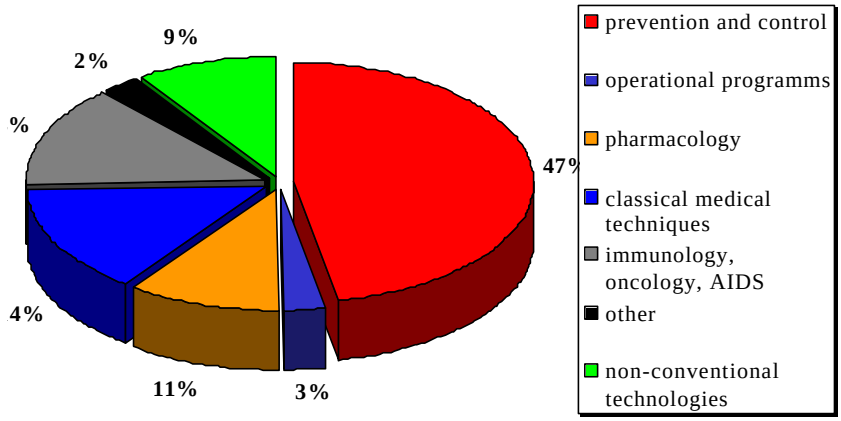


Those nominated are well-known scientist or persons with high academic degrees, and receive no remuneration for their work on the committee.
There are a number of subcommittees (specialised commissions) according to the various specialities. The Subcommittee for Biomedicine and Pharmacy has 27 members selected by the Advisory Committee.
The Subcommittee:

- evaluates the need, the number and the priority of research projects;
- establishes the framework for their objectives;
- calls for project proposals;
- evaluates the proposed projects and forwards them to the Advisory Committee;
- the agreed objectives are distributed to the research institutes for choosing the themes;
- The proposed projects, evaluated by the subcommittees are subject to approval by the Advisory Committee. Once approved, the projects are financed by NASTI.

The funds allotted to the specialised subcommittees are along virtually the same lines as the research topics, where machine construction, electronics, chemistry, agriculture and physics are the main priorities. The Subcommittee for Medical Research received 2.17% of the NASTI budget. This could lead us to the conclusion that medical research is not among the high priorities area of NASTI. The place of medical research within NASTI is also illustrated in the following figure:

Fields of medical research financed by National Agency for Sciences, Technology and Inventions (NASTI)
Total amount allotted for medical research: 2.17 %



According to NASTI, in 1998, the whole research field in Romania involved 36,302 people, of whom 20,450 were highly qualified. They are employed in 503 research facilities. Of these 22 are National Institutes of Research, 14 are facilities belonging to the Romanian Academy and 39 are under the authority of Ministry of Education.

The same source states that the number of staff involved in research decreased by 30% in 1998 compared to 1997. The decrease was higher (34.2%) within the number of highly qualified personnel. The decrease was due to the year on year budget deficit, lack of research requests from social and economic sites, restructuring and reform of research institutes towards production, services or trade activities.

3. Evaluation criteria

The evaluation criteria of the projects for financing followed the NASTI guidelines:

- Long-standing allocation (to ensure continuity);
- Development of various fields in EU;
- Requests from ministries to finance strategic studies ;
- Support for basic research.

There were selected projects to support and foster international programmes, like COST, INCO-COPERNICUS, NATO, TEMPUS, EUREKA, PECO, or bilateral agreements such as with France, Spain, Japan, Greece and Belgium. The complex multidisciplinary character of projects should be stressed, which explains the differences in funding allocations between research topics and specialized subcommittees.

The criteria could also explain, to a certain extent, the fund allocation for medical research, which has several sources:

i. National Agency for Science, Technology and Inventions (NASTI) (previously organised as a Ministry) receives yearly about 0.2% of GDP. The mechanism for financing medical research was described above;

ii. Ministry of Health - through national health programmes - direct financing of some institutes, which have research departments or activities - salaries for researchers The health care reform introduced new ways of financing health care services and restructured the classic hierarchy of the health sector. The Ministry of Health's budget is dedicated mainly to public health issues. The financial resources are directed to the institutes within the framework of the national health programmes. All these programmes have research components. The salaries for the staff involved are covered also from this source;

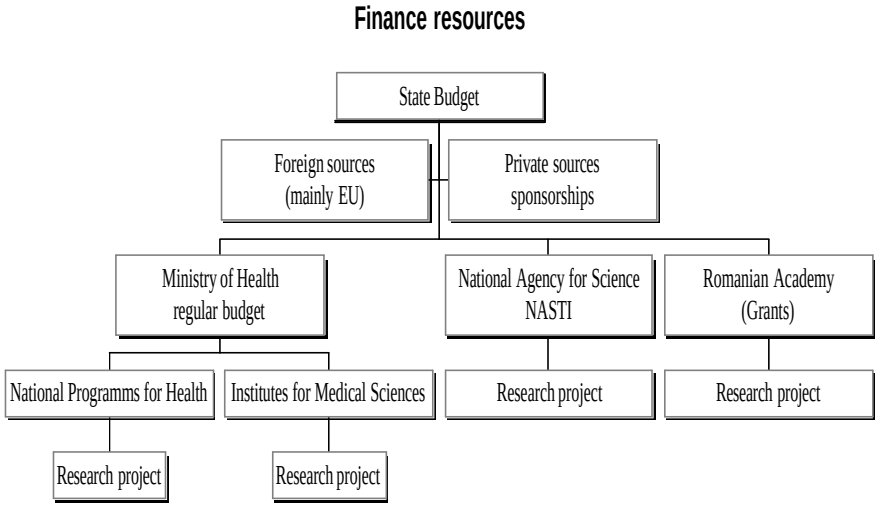
iii. Romanian Academy Grants (State budget) - project targeted. The Romanian Academy as budget holder, distributes research grants to specific projects;

iv. Collaboration between research institutes and foreign partners;

v. Foreign sources (mainly EU);

vi. A few private sources - mainly sponsorships related to participation of specialists in various congresses, not clearly directed towards a research project.

In summary, the financial resources for medical research in Romania can be illustrated in the following chart:



4. Romanian Academy of Medical Sciences

Moreover, there is a central NGO, *The Academy of Medical Science*s, acting as consultant and advisor to the same Ministry of Health, which enjoys a high degree of autonomy in conducting medical research in close relations with the university clinics in the main Romanian cities.

The Romanian Academy of Medical Sciences is an independent institution financed by the Ministry of Health, the Romanian Academy and its members. It has an advisory role with NASTI, the Romanian Academy, Ministry of Health and Ministry of Education. It also fulfils the role of Subcommittee for Bio-ethics for the Ministry of Health.
This high-level body of medical specialists was founded by Professor Daniel Danielopolu, a cardiologist born in 1883, and former Minister of Health in the thirties and at the same time member of the Romanian Academy. The Academy had its origins in 1934 by an Act of Parliament, and was, from the outset, the highest medical organized body, a sort of "noblesse" of the medical non-governmental profession.

Later, after the Second World War that destroyed and reshaped so many institutions among the states of the world, it was "absorbed" by the communist regime, and only after the 1989 revolution was it promoted to its former leading position. From its vantage point, the Academy was successful in encouraging and sustaining an active research life, with a systematic approach to the main fields of medicine, that could be summarized as follows:

- Nurturing a number of traditional epics of Romanian research: for example anatomy, physiology, cardiology, endocrinology, gerontology, neurology, virology and bacteriology, as well as modern informatics, public health research and environmental hygiene, health management etc;
- Keeping a breast with new developments in medical science around the world and helping to incorporate its effective use in research institutes and clinics;
- To provide a satisfactory level for a combination of adequate instruction and support for the creation of a new medical school for an active body of research;
- And thus, to contribute to the creation of an "elite of career researchers", to be grafted onto new, well-adapted structures of "excellence".

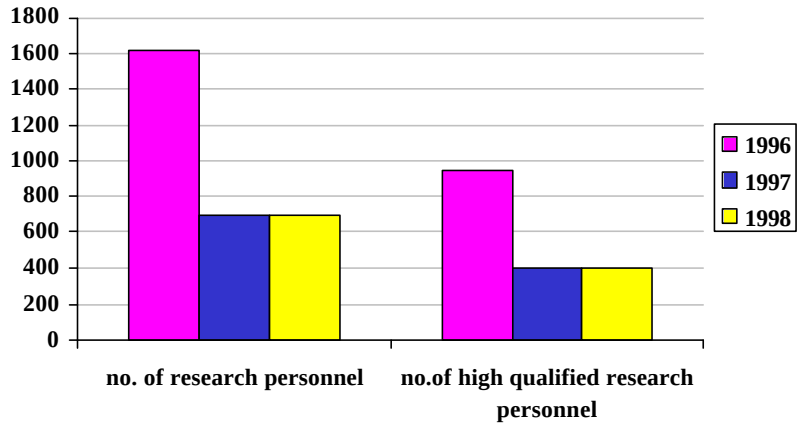
In fact, all these actual objectives were reflected in a deeper understanding of modern physiology, further assuring the quality of medical procedures, in the spirit of European "good clinical and laboratory practice" that aimed at orienting, finalizing and accomplishing medical research.

As far as better promoting and, thus, safeguarding an active scientific life is concenrned, as well as adequately entertaining the "speculated " outcome of medical research, it was a question of overcoming the problems of publishing scientific results or up-to-date reviews in various fast developing fields of interest, as well as extensive and constant use of "Internet".

Some achievements were published by the NASTI in its 1998 report, which reflect mainly the research activities funded through it's "Horizon 2000" programme. There were 55 institutions involved in medical research activities, mobilizing a staff of 700 people, of whom 410 were highly qualified personnel.

Human resources in medical research

projects financed mainly by NASTI



5. Human Resources in medical research

There were a number of 54 projects that could be grouped as follows according to financial allocation criteria:

47,04%,	2,56%,	10,51%,	14,24%,	13,85%,	9,45%.
Preventing and control	Operational programs	pharmacology	classical medical techniques	Immunology, oncology, AIDS	Non-conventional technologies

The priorities of medical research were formulated in accordance with the general health indicators of Romania and with the health priorities of the Ministry of Health. They focussed on prevention and control of chronic diseases, infectious diseases, immunology, AIDS, oncology research, Romanian drugs, medical equipment and software for health care services.

The figures and table presented above, list the human resources and institutions involved in research funded by NASTI. The financing process was project targeted. Apart from that, the

regular budget of the Ministry of Health supports the salaries of researchers in 29 medical research institutions. There are 3 categories of such research facilities:

i. 13 research institutes with beds - premises, structure and management are linked to university clinics;
ii. 11 research institute without beds - their focus is mainly on public health;
iii. 5 research centres - linked also to well recognized clinics.

Human resources of the MoH

Year	1996			1997			1998		
Category of personnel	Total	With research title	Without research title	Total	With research title	Without research title	Total	With research title	Without research title
Total	2357	685	1672	2419	872	1547	2483	816	1667
Biologist	321	204	117	311	195	116	273	156	117
Chemist	221	144	77	231	149	82	214	130	84
Biochemist	54	32	22	59	39	20	57	35	22
Pharmacist	98	39	59	75	36	39	64	33	31
Doctor	1663	266	1397	1743	453	1290	1875	462	1413

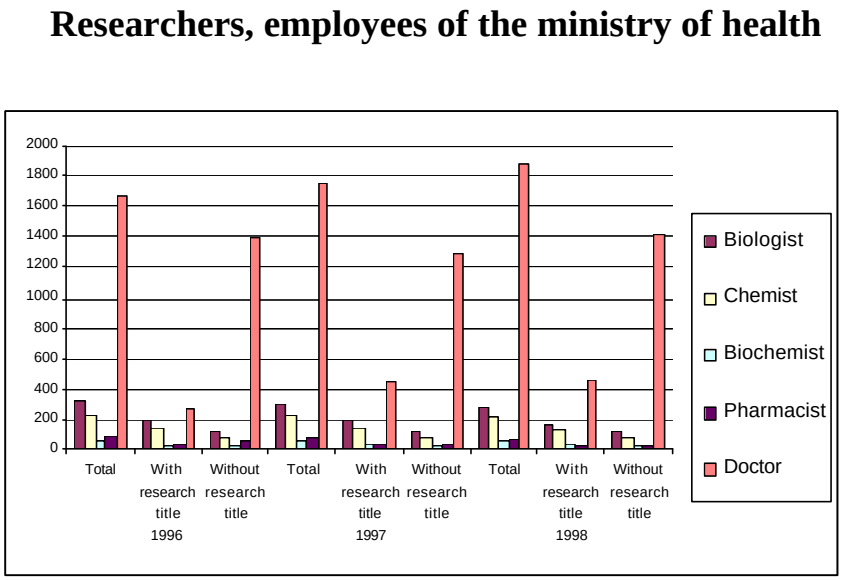
This table shows the dynamics of research personnel, employees of the Ministry of Health from 1996 -1998. As compared to the figures of the NASTI report, the number of research staff of the Ministry of Health increased during past years, instead of decreasing as a result of budget constraints.

There are differences between the categories of personnel in terms of number and trends. Doctors represent more than 70% of the staff. Their number increased by 300 in three years. It is common knowledge that there are no incentives for research activities, and salaries of researchers are the same as for other doctors. Th only real explanation for this important increase in the number of doctors in research is to be found in the role, structure, organisation and management of research institution. As mentioned before, 18 institutes out of 29 are linked to hospitals and/or university clinics, so that the majority of the doctors are likely to provide health care services.

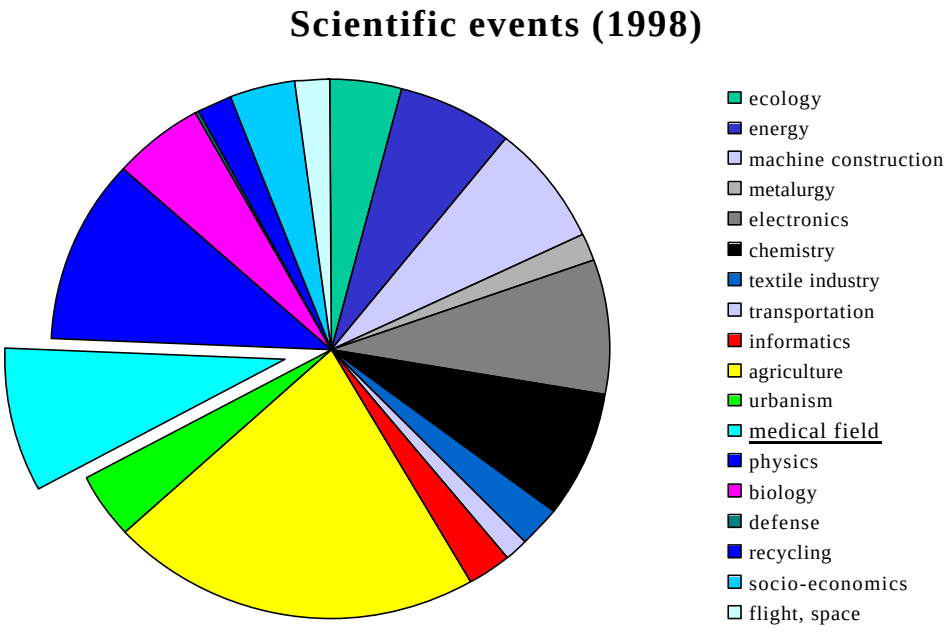
The downward trend in research personnel, as mentioned by the NASTI report, can be observed only among biologists and pharmacists. The growing importance of modern technologies has led to a decrease in the number of biologists, while pharmacists left for the private sector where the free market of pharmaceuticals has created new career development opportunities for pharmacists.

The following chart clearly shows the differences between the categories of personnel employed as researcher in the research network of the Ministry of Health:

6. Scientific events



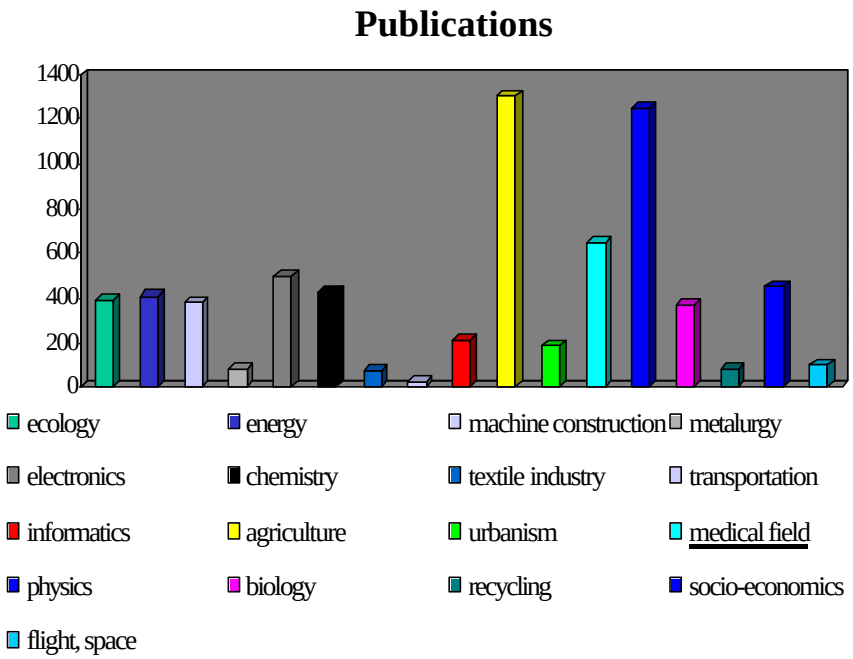
Regardless of the financing sources, all medical research activities are strongly linked to scientific events and publications. The importance of the events and publications, and the way in which the scientific and professional community receives them, can be seen in the following figures:



The figure shows that the medical field is in third place among research fields in Romania as far as scientific events are concerned. As compared with the other figures related to financing medical research, we can observe the high ranking of medicine and pharmacy. The conclusion can be drawn that there is a huge demand in this field, demand for research, demand for information, demand for up-to-date knowledge in this field.

7. Publications

The same conclusion emerges from the next figure on publications. Again, the medical field holds third place after agriculture and physics.
The large number of publications reflects the demand for knowledge and information among health professionals.
Health care reform introduced a lot of changes that needed to be assessed, evaluated and



reshaped to produce new tools for health workers to do their job. There is a need for research on the outcome of these reforms and their impact on the health status of the population. The differences between figures on financial allocations and research results, such as events and publications, should be considered by NASTI in setting criteria for the distribution of funds.

8. Recent achievements

We can describe in brief a number of most noteworthy results obtained during the last 10 years in a series of the most representative medical research institutes in Romania:

- The National "Victor Babes" Institute for pathology and biomedical sciences, interested mostly in anatomy pathological and functional studies on biochemical, hormonal and genetic alteration in various vital organs and tissues, oriented towards the "apostosis phenomenon", based on the dynamics of applied immunoenzimatic immunohistochemistry, and molecular biology investigations; the genetic molecular analysis of HLA alleles, associated in pre-oncogenic proliferative processes, on the basis of HLA1 and HLA2 genotyping. And too the

mechanism of action of all-trans-retinoic acid in the induction of reemission in acute panmyelocite laukemia;

- The "Stefan Nicolau" Institute of Virology of the Romanian Academy persuing fundamental studies on Human Immunodeficiency Virus, as well as on epidemic hepatitis viruses (A, B, C, D, E);
- The "Contacuzino" Institute of Immunology, microbiology and epidemiology on modern and rapid "fingerprinting" molecular methods in epidemic infections produced by particularly aggressive strains of microbes in the Enterobacteriaceae Family; Streptococcus pneumoniae, Brucella, Toxoplasmosis, as well as on other enteroviruses, to obtain remarkable active new specific immunomodulatory products, based on fundamental studies in the cellular and hormonal arms of immunological processes, as major changes in natural factors of body resistance to microbial and viral inversion mechanisms and their particular immunomodulatory aspects autoimmunity and immunodeficiency;
- The "Nicolae Simionescu" Institute for cellular biology and pathology especially on fundamental processes of irreversible glycosilation of proteins and their role in the interaction with endothelial cells in experimental diabetes;
- The "Paulescu" nutritional and metabolic pathology studies on multiparametric electronic system in the early diagnosis of diabetic somato-sensititive neuropathy;
- The National Institute of Chemical and Pharmaceutical research on new biologically active synthetic products belonging to the fluoro-kinolones;
- The "Parhon" Institute of Endocrinology on hypophysal and epiphysal neurohormones in the diagnosis of glandular tumors and a most comprehensive National Program for the prophylaxis and adequate multifunctional treatment of osteoporosis, constructing also a national incidence and prevalence indicator, based on the combined use of Dexa, absorption and radiogeometry of bone structures;
- Most remarkable progress obtained by using a new bio-adapted product "biovitroceramics" Ponetti in orthopedy, traumatology in bio-osteoblast implants and prostheses as well as in dentistry in the efficient control of paradontopathies;
- New surgical techniques in the field of laparoscopic surgery, in hepatic transplantation and original procedures based on virtual electronic models in neurosurgery;
- Special social-medical programs on an active community care of the elderly, geriatric palliatology and total community care for the old terminal patient etc. and detection of special aspects immuno-endocrine integration and chrono-biology of aging;
- Institute of Public Health and Institute for Mother and Child Care were focused their research activities towards infant mortality, nutrition and Iodine deficiency.

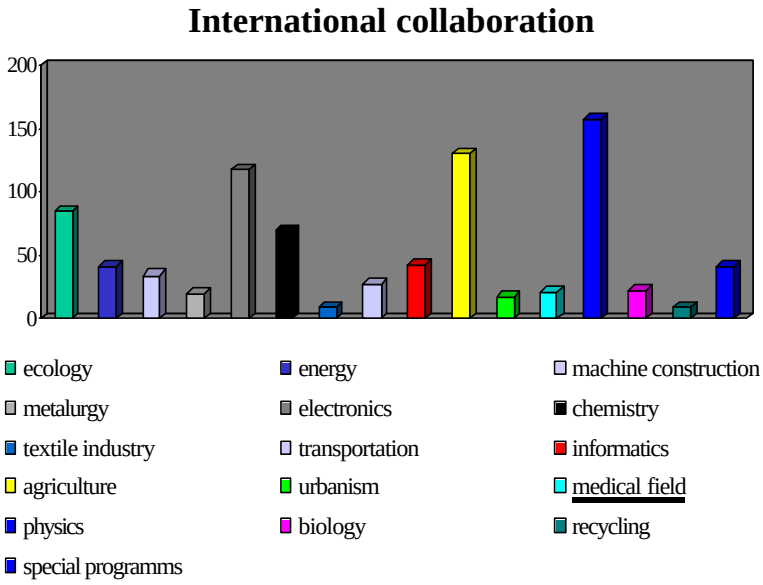
A brand new research complex of the National Research Programme was initiated recently and development is under way on the basis of converging population studies. It contains five main lines of activities:

- Fundamental research oriented towards a better understanding of pathological mechanisms in promoting multisectoral and multidisciplinary research, connecting biotechnology and information;
- Development of scientific knowledge in children and adolescents, as well as geriatric research medical care with a number of other domains, such as biophysics, biochemistry, into pathology, with a view to obtaining an adequate prophylaxis in reducing the multifactoral causes of some high morbidity and mortality indicators;
- Organizing a transplant network across Romania, together with the management of a bank of organs and tissues;
- Creating new efficient strategies of a fundamental character in trying to better control pathological processes and risk factors with chronic and degenerative consequences that induce high morbidity, such as diabetes mellitus, mental disorders, cancer, etc.;
- Obtaining new medical equipment and appropriate technologies in medical care, in search of the best technological transfer possibilities, based also on specific medical

information networks for their rapid and efficient introduction in current use, thus ensuring a better life and health status for the population.

9. International cooperation

One of the key issues to achieve the objectives of the research policy is international cooperation. Despite the fact that a lot of medical research activities were conducted with international support, as compared to other research fields, international cooperation in medical research is rather poor. This could be explained by the main objectives of NASTI and by the poor resources allocated to research. On the other hand, other sources of funding for research, such as the private sector and the pharmaceutical industry, were mainly directed towards sponsoring the participation of Romanian scientists in various scientific events around the world. Due to the regulations in force for the past 10 years, the local drug industry could not support any research activities. Prices of their products were strongly regulated by the State, and they were not allowed to include research and development costs in the production cost. This policy had a negative effect on research related to the locally produced medicines.
Electronics, ecology, physics and agriculture are fields where international collaboration was the most important pillar of research activities.



10. Conclusions

- Romania has an important medical research potential within a network of researchers and auxiliary personnel of its institutes and universities. More than 60% of them are highly qualified scientists with academic and scientific degrees;

- Medical research in Romania is financed form 6 main sources, such as the State budget through the National Agency for Science, Technology and Inventions, Ministry of Health,

Ministry of Education and the Romanian Academy; international cooperation, intersectoral cooperation and private sources;

- The State allocation for research represents 0.2% of GDP, a percentage considered very poor. By way of comparison, the entire health care budget for the last 5 years was around 3% of GDP annually. It is widely recognized that health care in Romania is chronically under-financed, a fact reflected in health indicators;

- The funds allotted to medical research were far below the estimate of NASTI's specialized subcommittees;

- There is a downward trend in staff involved in research. In fact, there is a passive restructuring of all research facilities and institutions due to the shortage of financial means. In the long run this could have a negative effect unless there is a policy or a reform framework for this field;

- There is a lack of use of research findings in the economy and in health care. This could be explained by the lack of a research market and by massive import of products and technologies, as a side effect of the policies of the 80's;

- The gap between the need and demand for research becomes more and more significant;

- There is a need for coordination in order to avoid overlapping, to ensure synergy and to identify new ways of collaborating;

- Romania has no definite, widely accepted policy on medical research. Medical research does not cover the needs of health policy developments and of the health development. Reform of medical research structures directed towards the better use of existing means is needed, as well linkage to demand, improving international cooperation and the flow of information;

- The Government should regard medical research as a priority among other research activities. Medical research as a priority could contribute better to the achievement of the objectives set by NASTI within the overall targets of the Government, such as EU accession and building the welfare state.