Role of philanthropy in biomedical research and innovation in Spain. A short review*

Fèlix Bosch, Joan Bigorra and Josep Esteve

Introduction

A country's standard of living and future are directly related with its basic and applied scientific research. However, it is not always easy to convince the general public that this is so. Biomedical research is probably the area where the benefits are most easily appreciated, because its accomplishments have increased life expectancy and quality of life. These advances warrant placing a much higher priority on research, development, and innovation (RDI) than we have to date. To ensure that biomedical research advances knowledge and technology, adequate funding is essential not only to undertake new projects but also to maintain them once they are underway.

Currently, however, government support for research is foundering, thus threatening the country's scientific development. This situation represents a significant step backward from what had been achieved through great efforts in the recent past. The political and economic environment is suffocating scientific and technical research in our country, and this is one of the most complex problems we face today. Moreover, unfortunately, civil society generally believes that the state should be responsible for funding all research. Society is neither sufficiently involved nor sufficiently aware to participate in RDI. This situation is paradoxical, given that Spain in general and Catalonia in particular should be proud to have generated internationally renowned research scientists, some of whom are working here and others who are working abroad. Both our society and our political leaders should be much more aware of our country's potential in science.

The substantial cutbacks in public funding make it essential to foster private initiatives. Private initiatives can take on various forms, for example, patronage, and this is where foundations and other nonprofit organizations can play a fundamental role.

In Spain, the tradition and importance of private funding of public RDI projects cannot compare with those in the rest of Europe and the United States. Therefore, we need to analyze the situation in our environment and try to promote measures that incentivize patronage and that enable new funding strategies. Here below we will comment on venture philanthropy (philanthropic risk-involving investments) and different varieties of micropatronage such as crowdfunding. We also need to continue to emphasize efforts to increase society's awareness of the benefits of science and technology through better communication to the general public, because this is another means of boosting patronage. The future patronage law should favor this kind of initiatives considerably.

Low funding for research

After nearly five years of progressive growth (2006-2011), all regions of Spain saw a significant reduction in funding for science, technological development, and innovation, three elements that are essential in modern economies. Cut-

*Chapter modified from Bosch et al. (2014) and translated by John Giba.

backs hit RDI especially hard, and the decrease in the funds earmarked for RDI in the national budget in 2012 was one of the largest in history.

The State's contribution to research in 2012 was under €6.4 billion, 26% less than in 2011, when it was €8.6 billion. If we consider both the public and private sectors, the amount spent on RDI in 2012 was about €13.4 billion, which is similar to the amount spent in 2007. Moreover, in 2013, government spending on RDI fell to €5.9 billion —8% less than the year before.

On the other hand, the percentage of RDI investment in Spain is much lower than in other developed countries. To make matters worse, there is little tradition of cooperation between the public and private sectors in RDI. This is the wrong approach for a country striving for economic and industrial recovery —Spain should be trying to boost its human research potential.

Unfortunately, the situation in Catalonia is no different from the overall situation in Spain. Catalonia's expenditure on research peaked in 2008 at €3.2 billion, dropping 6% to €3.1 billion in 2011. Nearly half of this amount came from the private sector; in the public sector, 24% came from the universities, 20% from public administrations, and 6.7% from the European Union. Government funding for research in Catalonia is being cut by the central government of Spain on the one hand and by the regional government of Catalonia on the other. In 2013, funding from the central government of Spain had decreased by 40% in comparison with 2009 and by 30% in comparison with 2012. Between the start of cutbacks in 2010 and 2014, funding from the regional government of Catalonia dropped 27% (€166 million), from €608 million to €442 million.

However, apart from funding from the central government of Spain and the regional government of Catalonia, research teams in Catalonia also receive support from the European Union and private sources. The overall data show that the current political and economic decline is having direct repercussions in two pillars of biomedical and healthcare research. On the one hand, the cutbacks are affecting the institutions that participate in research, such as hospitals, universities, foundations, and public and private research centers. On the other hand, they are also directly affecting the investigators, including physicians, nurses, pharmacists, biologists, and others. The financial situation not only prohibits our country from attracting talent from abroad, but also forces our most highly trained and capable investigators to emigrate and carry out their projects abroad. Finally, it is important to remember that, apart from conferring direct benefits on the institutions and individuals who carry it out, RDI also generates benefits for businesses in the sector, with all the economic and social consequences that this implies.

Patronage in research

Before the financial crisis, one could optimistically think that research funding was changing for the better both in Catalonia and in the rest of Spain. The commitment to promoting biomedical research was very strong. Large research centers and renowned investigators, enticed from abroad or trained here at home, had helped establish quality biomedical research in our country. With this background, philanthropy for research was strengthened and inspired by the recognition of the need to create wealth that could transform the country into one of the most active focal points of biomedical research in the world. Now, however, the years of financial crisis have left their mark not only by thwarting efforts to establish this research hub, but also by weakening philanthropy and private support for research.

As long as the funding from public administrations continues to diminish, patronage will be fundamental to reverse the financial crisis in research. To discuss this aspect, we need to review the available data about patronage. These data, although not totally precise, can at least provide useful information that will allow us to analyze trends.

Donations to nonprofit organizations have decreased significantly, hurting their ability to carry out their programs. In 2011, donations in Spain reached €1180 billion, 62% of which came from partners and individual donors. However, within Europe, Spain was at the bottom of the list if we consider the number of donors as a percent-

age of the population. The second major source of philanthropic funding came from bequests, which accounted for 10% of the total. In Catalonia, donations in 2011 reached 349 million euros, in other words, 30% of the total in all of Spain. The distribution by donors varied slightly from that of the rest of Spain, with only 45% coming from partners and individual donors.

The amount donated specifically for RDI in 2011 in Spain is estimated at 160 million euros, representing 14% of all donations to charitable causes and about 1% of the total expenditure in RDI. In Catalonia, it was about €48 million (30% of the €160 million), representing 14% (as in Spain) of all donations and about 1.5% of the total expenditure in RDI. In Catalonia, most of this money came from partners and individual donors (44%), collaborative social programs (29%), and personal- and family-based foundations (12%).

Patronage in other countries

Examples of the philanthropic vocation of American fortunes include Muriel Block, Michael Bloomberg, the Lauder family, and the Bill and Melinda Gates Foundation. The significant tax benefits of philanthropic donations in the United States can only explain a small part of the success story that many try to emulate, especially in situations of crisis and cutbacks in public funding for social services, healthcare, education, and scientific research.

Although tax breaks for charitable donations are an important incentive, cultural, historical, and religious factors are also important. American children learn about philanthropy from a very young age, and Calvinism almost obliges the wealthy to seek ways to return a part of their gains to society. Americans get personal satisfaction and social status from donating large amounts of money. Curiously, the wealthy often prefer to bequeath part of their fortunes to charity rather than to pass on the entire sum to their heirs and family. Another figure that shows the cultural differences among countries is the percentage of the adult population that donates to charity: in Europe, the mean is 50%, whereas in Spain it is only 18%.

In some countries, private foundations have been important sponsors of scientific research since the nineteenth century. Until the National Institutes of Health started to fund external research in the 1940s, more than a quarter of all medical research in the United States was funded by charitable organizations. More recently, support for nonprofit organizations in the United States has turned to other countries. In Europe, philanthropic sources currently provide 6.5% of the funds for competitive research, compared to nearly 10% in the United States.

In countries closer to Spain, some research centers are taking serious initiatives to raise private funds and strengthen their RDI. For years, the Institute Pasteur in France has been financed fundamentally by private firms and foundations without the need for any special efforts to raise funds through donations. Recently, however, this institution started a much more aggressive communication and fundraising campaign with the slogan *"Vaccinate our researchers against a lack of funds"*. For institutions like this prestigious research institute, these actions are justified, because fundraising and bequests made up 25% of the resources in their last budget, with about 54 million euros coming from these sources.

In Spain, most research centers have yet to resolve the issue of fundraising if we compare their efforts with those of centers in countries with stronger traditions in this area.

Science foundations in Spain

As mentioned above, science foundations have played a key role in general patronage of scientific research, whether as benefactors or beneficiaries. Within the so-called third sector, foundations often meet the needs of the general public efficiently and have actively contributed to our country's socioeconomic development.

No data are available about the total number of foundations in Spain or about their contribution to funding biomedical RDI. The Spanish Association of Foundations currently lists 14,011 foundations, although only about 9000 are probably active; 1849 (13%) foundations are dedicated to health research. A total of 3051 foundations

are registered in Catalonia, representing 22% of all foundations in Spain, and 324 (11%) of these work in research or health.

One of the most noteworthy philanthropic foundations working in science in Spain is the Ramón Areces Foundation, created in 1976 by the founder of El Corte Inglés, a chain of department stores. This endeavor has many points in common with those initiated by wealthy Americans. This foundation is dedicated to promoting scientific research, contributing to the development of human capital and to the dissemination of knowledge and of academic and scientific advances. Another effort worthy of special mention is the Juan March Foundation, which played an extraordinary role in the world of biology for many years.

In Catalonia, many noteworthy contributions to research have come from foundations, including international foundations like the Bill and Melinda Gates Foundation, Spanish ones like the Esther Koplowitz Foundation, and Catalan ones like the Cellex Foundation or "la Caixa" Foundation. There are also institutions in Catalonia that receive funds and directly promote research, such as the Hospital Clínic de Barcelona, the Vall d'Hebron Institute of Oncology, the Josep Carreras Leukemia Foundation, the Hospital Germans Trias i Pujol Health Sciences Research Institute, the Hospital Sant Joan de Déu Research Foundation, the Pasqual Maragall Foundation for Research into Alzheimer's Disease, the IrsiCaixa AIDS Research Institute, the Barcelona Global Health Institute (ISGlobal), or the Institute of Photonic Sciences, among many others.

Without doubt, the main sponsor of science in Catalonia has been the Cellex Foundation, founded by the Catalan industrialist Pere Mir. It has contributed in three main ways: 1) providing state-of-the art equipment for clinical practice and scientific research; 2) remodeling and constructing research buildings for the Institute of Photonic Sciences, the Hospital Clínic de Barcelona, and the Vall d'Hebron Institute of Oncology; and 3) funding research programs in regenerative medicine, malaria, epigenetics, and cancer, among others. The Institute of Photonic Sciences is considered one of the world's best centers in both basic and applied research in photonics. This prestigious center emphasizes the cross-cutting nature of photonics and its possible applications in medicine, energy, telecommunications, and nanotechnology. A recent example of its application in medicine from research at the center is a diagnostic instrument based on the noninvasive monitoring of blood flow as an approach to cardiovascular disease.

The "la Caixa" Foundation is the greatest supporter of biomedical research projects, bestowing various kinds of scholarships and grants. Although it is true that the Foundation's investment in research has grown in recent years, this investment still represents only a small proportion of the funds it allocates for other charitable initiatives. The "la Caixa" Foundation has participated in research projects at hospitals and reference centers in Catalonia in such diverse areas as AIDS, vaccines, oncology, aging, cardiology, digestive disease, endocrinology, and multiple sclerosis.

The Fundació La Marató de TV3, with 20 years' experience, has become a reference point not only in Catalonia but also in the rest of Spain and abroad. This foundation raises significant amounts of money, helps disseminate biomedical science, and boosts crowdfunding; moreover, it is characterized by exemplary organization in the awarding and follow-up of all of the grants it allots.

On the other hand, the Autonomous Government of Catalonia fosters private investment through the Catalan Foundation for Research and Innovation. This foundation's goal is to facilitate the connection between public-sector and private-sector research and to increase patronage for science. The Catalan Foundation for Research and Innovation has undertaken diverse initiatives to modify the fiscal framework for philanthropy and to improve the social perception of patronage in our country.

Finally, it is also worth mentioning the considerable contributions to research of much more modest, but no less important, foundations. The Fundació Vila Casas, apart from promoting contemporary Catalan art, also sponsors activities to disseminate medical knowledge through meetings and publications in collaboration with the

Science Communication Observatory of Pompeu Fabra University. Other examples include the Víctor Grífols i Lucas Foundation, which focuses above all on activities and publications related with bioethics, and the Uriach Foundation. The contribution of the Esteve Foundation also deserves to be pointed out. Oriented toward favoring scientific discussion and communication in pharmacotherapy, this foundation organizes a wide variety of national and international meetings, awards research prizes, and is firmly committed to the training of biomedical and healthcare professionals. The Esteve Foundation also publishes a wide range of scientific materials and distributes them free of charge.

Healthcare professionals and philanthropy

Most of the above-mentioned philanthropic institutions primarily favor investments in facilities and cutting-edge research projects. However, as is also mentioned above, some orient their patronage toward the actual people who carry out biomedical and healthcare research, in other words, toward healthcare professionals and researchers. Some philanthropic institutions provide support in attracting talent or training biomedical and healthcare students by awarding grants, clinical or research prizes, and courses. It is just as important to develop talent through training as it is to attract and retain talent. For this reason, the new patronage law should make it easier to attract talented individuals who, for diverse reasons, have to go abroad to develop their professional careers.

Many internationally renowned investigators have settled here or combine their activity here and abroad to promote high-level scientific research. All these prestigious investigators could potentially benefit from philanthropic contributions to research. Society should be made much more aware of the important role of world class investigators and pay more attention to them.

The legal framework

At present, our country suffers because of insufficient legal support and scant fiscal incentives for donations. This represents a serious obstacle to funding nonprofit organizations that generates great difficulties in the execution of the programs they develop for the benefit of all.

The current law for a special tax regimen for nonprofit organizations needs to be improved to adapt it to the current circumstances so that it can foster more and new philanthropic initiatives. The law needs to be changed to boost donations for social action, cooperation, research, education, and culture. It should foster the general public's participation in activities for the public good by increasing the percentage that can be deducted for donations to nonprofit organizations. It would be beneficial to achieve higher deductions for corporations and individuals. For example, in some European countries like Austria, or in the United States, 100% of the amount donated can be deducted. To foster patronage in RDI, the law should make it easier to donate to hospitals and research centers, without the need for them to set up foundations. It should also take into account philanthropic risk-involving investments, in other words, investments with clear social objectives that aim for modest returns. Apart from boosting philanthropy, our society should also seek ways to increase public recognition for the role of philanthropists. Finally, the new law should consider crowdfunding as way to support science with or without the possibility of financial returns for donors.

Some proposals and recommendations

The following list summarizes some proposals and recommendations that could help boost philanthropy for biomedical and healthcare research and innovation in Spain (Bigorra y Bosch, 2014):

- Bring science and technology closer to society through the collaboration of scientists, institutions, and the media.
- Foster a culture of science and patronage among the general public, making people aware of the importance of research in general and of biomedical research in particular.
- Increase our political representatives' awareness of the importance of research and of the

need to encourage patronage, learning from successful social and scientific experiences in other environments.

- Work to increase public recognition for researchers and philanthropists. Increased awareness of the general public and political representatives could lead to better recognition for researchers and philanthropists. Healthcare and teaching are as essential as research itself.
- Involve universities in philanthropy. Universities have the mission to educate and train, so ensuring long-term research, especially basic research, is partly their responsibility. There are already philanthropic initiatives and collaborations with universities in our environment, but these must be strengthened.
- Motivate and involve the members of research centers and hospitals in philanthropic actions. Successful fundraising depends on involving the members of research institutions in actions to promote philanthropy. These people should act as ambassadors for their hospital, foundation, or research group, establishing relationships and contacts to capture funds.
- Strengthen the role of the institutions and ensure the professionalization of their chiefs in obtaining resources through foundations and research centers. This professionalization should be combined with the incorporation of young people into research management.
- Appeal to possible donors. Some of these recommendations can be oriented toward increasing both crowdfunding and patronage from the very wealthy. As a general rule, to persuade potential donors, messages must be motivating, clear, and understandable, through a convincing story about the research being promoted and information about the benefits that can be expected. Technology and social networks are key tools for strengthening communication from institutions that benefit from patronage. Finally, it would also be advisable to seek different ways to reward donors.
- Establish simple and fast channels to process donations. Individuals and corporations need simple and fast ways to send donations to the institutions that benefit from them. It is surprising that the process of donating to a research or care facility is often so complicated.
- Establish lines of cooperation among different entities. In addition to individual efforts, collaborative and shared fundraising initiatives will become more and more common. Cooperation among institutions is the key to social innovation and one of the aspects that make nonprofit and charitable organizations different from other organizations.
- Ensure more transparent philanthropic relations. Transparency is a hot topic even in countries with much stronger philanthropic traditions than ours.
- Strengthen communication from the institutions that benefit from patronage. Appropriate communication is fundamental for transparency. This communication should also involve the scientists themselves.
- Seek out applications of the projects funded that can lead to greater social impact. The priority for allocating the funds raised should be for projects that have the greatest social impact as a return on investment.
- To strengthen basic research projects, it would be a good idea to change more long-term fundraising strategies.
- Explore new models of patronage and sponsorship: move toward a new philanthropy. Most philanthropists are not making the necessary changes required to adapt to the current situation. There is talk of a “new philanthropy” in which philanthropists are more demanding when they choose benefactors to administrate their donations; they ask for more explanations about results and require greater competence and transparency. In this way, they can exercise greater control over their donations.
- Strengthen micropatronage as a new alternative. The new patronage law should foster

crowdfunding and encourage individual donors and bequests. Crowdfunding is growing considerably, although its use for biomedical research is merely anecdotal.

- Stimulate initiatives to increase awareness of the need for a new patronage law. Avoid delays in approving the new law and make sure that it takes into account the needs outlined above, such as better fiscal incentives, increased social recognition, and the development of new patronage solutions. And most importantly, develop a legal and fiscal framework that stimulates and rewards philanthropy in science and medicine.

Conclusions

We need to continue to have confidence in our institutions' capacity to research and innovate, and at the same time we need to work to increase their ability to compete. At the institutional level, we cannot continue to decrease investments in RDI because doing so would leave us without a sufficient scientific and technological base from which to grow once the current economic downturn has been overcome. Improving philanthropy for research and innovation in Spain would involve cultural change, legal and fiscal changes, greater social awareness, more activism in patronage, increased professionalization, and mechanisms to facilitate donations in a new philanthropic environment. In the end, the beneficiaries of biomedical and healthcare research are the members of society themselves, who would enjoy better treatments and much better understanding of the many diseases that we suffer. In this sense, it should be clear that we can all help to improve the current situation.

References

– Aebischer P. The price of charity. Nature. 2012;481:260.
– Alford JR. Focus on philanthropy. Trustee. 2011;64:32-4.
– Blendon RJ. The changing role of private philanthropy in health affairs. N Engl J Med. 1975;292:946-50.
– Bosch F, Bigorra J, Esteve J. Revisión sobre el papel de la filantropía en investigación e innovación biomédica. In: Bigorra J, Bosch F, coord. Filantropía en investigación e innovación biosanitaria en Catalunya. Cuadernos de la Fundación Dr. Antonio Esteve, nº 30. Barcelona: Fundación Dr. Antonio Esteve; 2014. p. 29-38.
– Bigorra J, Bosch F, coord. Filantropía en investigación e innovación biosanitaria en Catalunya. Cuadernos de la Fundación Dr. Antonio Esteve, nº 30. Barcelona: Fundación Dr. Antonio Esteve; 2014.
– Coordinadora Catalana de Fundacions. Estudi de les fundacions a Catalunya. Anàlisi de 808 fundacions. Barcelona; 2001.
– Corbella J. La ciencia necesita más mecenas. La Vanguardia, 10 de diciembre de 2009, p. 28-9.
– Couzin-Frankel J. Research philanthropy. Billionaire restores funding for novel biomedical network. Science. 2012;338:873-4.
– Cyranoski D. Japan finds a key to unlock philanthropy. Nature. 2012;482:143.
– Devries RA. Private philanthropy in support of health service demonstrations and research. Health Serv Res. 1981;16:7-10.
– Dickson D. Science research and philanthropy. Charities taking the strain. Nature. 1993;364:742-4.
– Dolgin E. Advocates to bring rare disease philanthropy under one umbrella. Nat Med. 2010;16:837.
– Dyer O. In search of a sustainable philanthropy. Bull World Health Organ. 2006;84:432-3.
– Editorial. Pharmaceuticals, patents, publicity... and philanthropy? Lancet. 2009;373:693.
– Editorial. Philanthropy needed. Nature. 2008;451:224.
– Giles J. Finding philanthropy: like it? Pay for it. Nature. 2012;481:252-3.
– Greene S. Science research and philanthropy. Government funding dominant. Nature. 1993;364:741-2.
– Guinovart JJ. Mecenazgo e investigación científica. La Vanguardia, 4 de noviembre de 2007, p. 34.
– IOM: Institute of Medicine. Venture philanthropy strategies to support translational research: workshop summary. Washington, DC: The National Academies Press; 2009.
– Lynn M. Por qué los ricos regalan su dinero. La Vanguardia, 16 de julio de 2006, Sección Dinero, p. 12.
– Malakoff D. Moore foundation targets science. Science. 2000;290:1481b.
– Massagué J. La filantropía y biomedicina. La Vanguardia, 7 de abril de 2008, p. 21.
– Molas A. El finançament de les fundacions a Catalunya. Barcelona: Coordinadora Catalana de Fundacions; 2012.
– Morgan B. Australia reworks research philanthropy to fill unmet need. Nat Med. 2010;16:730.
– Murray K. Financial analysts' changing view of health care philanthropy: how does your program rate? AHP J. 2009;20-1:23.
– Rodrigues S, Mota M, Saude L, Vidal S, Trindade M. Philanthropy in Portugal. EMBO Rep. 2007;8:613-5.
– Schneider WH. Philanthropy: the difficult art of giving. Nature. 2013;497:311-2.
– Simón A. La ciencia busca mecenas. Cinco Días, 20 de junio de 2013, p. 4.
– Smith DG, Clement JP. Hospital philanthropy. J Health Care Finance. 2013; 39:53-8.

– Stuckler D, Basu S, McKee M. Global health philanthropy and institutional relationships: how should conflicts of interest be addressed? PLoS Med. 2011;8:e1001020.
– Valls R. La dimensión de la filantropía. La Vanguardia, 17 de noviembre de 2013, Sección Dinero, p. 11.
– Wadman M. Biomedical philanthropy: state of the donation. Nature. 2007;447:248-50.