Fundación BBVA

2009 BBVA Foundation Frontiers of Knowledge Awards

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PRESS RELEASE

The BBVA Foundation presents its Frontiers of Knowledge Awards at a formal ceremony celebrating scientific and artistic creation

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Madrid, June 23, 2010.- Models to predict the future of ecosystems, the proof that human activity is driving climate change, a discovery that has revolutionized the field of pharmacology, a new understanding of how nature conducts itself on the molecular scale, advances in chip miniaturization and signal transmission that permeate technologies in everyday use, and musical creation as a means to harmonize knowledge and intuition. The 2009 BBVA Foundation Frontiers of Knowledge Awards ceremony, which took place this evening, stands as a celebration of scientific and artistic creation.

The ceremony, under the presidency of Spain's Minister of Science and Innovation, Cristina Garmendia, BBVA Foundation President Francisco González, and the President of the Spanish National Research Council (CSIC), Rafael Rodrigo, welcomed eminent representatives of the international scientific community and high-level government institutions as well as leading figures from the worlds of business and the arts.

In her speech, the **Minister of Science and Innovation** talked about the injection of confidence for the Spanish scientific system in knowing that supporting R&D "is no longer seen as an eccentricity, thanks to the leadership of companies like BBVA".

Cristina Garmendia also saw it as a good omen that the Spanish financial institution sponsoring the national football league – the "Liga BBVA", considered a world beater for its ability to draw in talent – "is behind our country's most prestigious privately funded research prizes".

The Minister used the occasion to announce that the Government will take the first steps next year towards a new science financing model "to reinforce research centers that are able to demonstrate critical mass and international excellence", so the quantitative leap of the last few years is joined by "a qualitative leap". In doing so, she referred to an article in *Science* a few days back acknowledging the strides made by Spanish science and "featuring comments by several Spanish and international researchers who have chosen to work in Spain".

Francisco González, President of the BBVA Foundation, emphasized the scale of the Foundation's ambition in "addressing the whole spectrum from theoretical advances and artistic creation through to technoscientific developments of an applied nature", and expressed his conviction "that **the virtuous cycle of basic knowledge-applied knowledge-innovation is among the most effective ways we have to meet the demands and challenges of the present. Not forgetting the enrichment of our cultural life that comes from the arts and, very specially, music".**

The BBVA Foundation President was also adamant that "the Frontiers of Knowledge Awards, devised in Spain and directed at scientists and cultural practitioners regardless of nationality, are the best example of our country's forward-looking spirit".

In expressing his admiration for the award winners, Francisco González extended the compliment to the entire scientific and artistic community, with the desire that "these awards serve as a stimulus for younger generations to participate in the adventure of research and artistic creation, while helping to strengthen society's regard for knowledge, culture and innovation."

AWARDS OF INTERNATIONAL REPUTE

In just two editions (2008 and 2009), the BBVA Foundation Frontiers of Knowledge Awards have taken their place among the world's most widely followed award schemes. Nominations for the 2010 call will close shortly, on the last day of the current month.

The values that define these awards are innovation building on the cumulative stock of knowledge, and curiosity as a spur to exploration, creativity and the achievement of excellence. Their uniqueness lies in their close alignment with the scientific, technological, social and economic challenges of the present century. In this respect, they are the first to reserve dedicated categories for Climate Change, Development Cooperation, Information and Communication Technologies, and Ecology and Conservation Biology, alongside the awards going to outstanding contributions in Economics, Finance and Management, Basic Sciences, Biomedicine and Contemporary Music.

Each award category carries a cash prize of 400,000 euros. The breadth of disciplines addressed and their monetary amount – a total of 3.2 million euros – place the Frontiers of Knowledge among the world's foremost award schemes.

The laureates in this second edition of the Frontiers of Knowledge Awards are Richard N. Zare and Michael J. Fisher, in Basic Sciences, for rendering molecules visible and elucidating their collective behavior; Robert J. Lefkowitz, in Biomedicine, for identifying the receptors targeted by half of today's drugs; Peter B. Reich, in Ecology and Conservation Biology, for helping to predict how our forests will cope in a warmer planet with less biodiversity; Thomas Kailath, in Information and Communication Technologies, for breaking through the barrier of chip miniaturization; Andreu Mas-Colell and Hugo Sonnenschein, in Economics, Finance and Management, for their work on interpreting consumer behavior; Cristóbal Halffter, in Contemporary Music, for his essential contribution to the idea of a European contemporary music; Klaus Hasselmann, in Climate Change, for identifying the human imprint in climate change; and the Development Research Institute at New York University, in Development Cooperation, for challenging the received wisdom in development assistance.

A THRILLING ADVENTURE

In their short acceptance speeches during the ceremony, the 2009 laureates talked about the challenges the future holds, the fascination they feel for research and the social value of knowledge.

Robert J. Lefkowitz, father of the discovery that opened the door to much of modern therapeutics, revealed that he had never been a vocational scientist. "I never dreamed, almost 50 years ago when I entered medical school, that I would become a scientist, much less one who would one day win an award such as this. My only goal was to practice medicine. But when I spent a two-year period in research at the NIH [National Institutes of Health] after my medical residency everything began to change. I experienced for the first time the exhilaration that accompanies making even the smallest of discoveries. Over the next five years, as I pursued both clinical medicine and laboratory research, I felt myself drawn ever more strongly to the research, and began to understand that it was in that direction that my destiny lay".

Peter B. Reich explained how the sheer scale of the scientific project can overwhelm the researcher. "My research seeks to better understand and predict how the consequences of human activities – such as rising carbon dioxide levels and climate change – influence the health, productivity, and stability of forests and grasslands, from the tropics to the poles. We seek to understand how, in turn, changes in these ecosystems then alter the global carbon cycle, and thereby affect climate change. In trying to understand earth as a complex, living system, I frequently bump into the limits of our knowledge and feel humbled by the enormity of the challenge. It was

therefore extremely gratifying that our efforts to unlock nature's complex mysteries, and monitor its pulse in the face of multiple environmental threats, were deemed noteworthy by this esteemed Foundation."

He also expressed his belief that the tests we face are difficult but not insurmountable: "It feels oddly bittersweet to win a prize for studying how much environmental damage Mother Earth can take before collapsing and leaving us in very deep trouble. But we must remain joyful and hopeful, despite the extraordinary challenges of the 21st century. Our joy is in the beauty of the science and the earth itself. Our hope is that our work helps inform each of us about the imperative of maintaining the health of earth's ecosystems, on which *all* life depends."

This faith in the transforming power of knowledge is shared by **Hugo Sonnenschein**, speaking on his own behalf and that of co-laureate Andreu Mas-Colell: "We are optimistic for the future. Surely the best hope for dealing with today's very real challenges, and leaving the world a better place, is an improved understanding of what science can make possible and a deeper appreciation of the best of our humanity. It is this conviction, and perhaps similar optimism, that is behind these awards".

Knowledge is also the best tool to prevent foreign aid becoming a vain – and costly – exercise. **Yaw Nyarko**, in giving thanks for the award on behalf of himself and William Easterly, co-director of the Development Research Institute, stressed that "aid must be used efficiently and transparently, and to indeed benefit the poor. Too often, the statement 'Because they are poor' is used to justify huge spending on projects with little documented benefit; it has also been used to hide the fact that aid agencies are themselves institutions with interests and goals which are not always in total alignment with those of the poor. Because Africa is poor does not justify Africa having poor research."

Richard N. Zare, speaking also for his co-laureate Michael E. Fisher, underlined the value of basic knowledge. "We live in turbulent financial times in which it would be an easy decision to dismiss the basic sciences whose fruits often seem far removed from the most pressing day-to-day problems of the world. Therefore, Michael Fisher and I are all the more grateful to the BBVA Foundation for maintaining this awards program. Their efforts and continued support indicate a depth of insight and concern and awareness that humanity must work for both the present and the future".

Zare and Fisher had words to say about the closeness of science and art. "Creation, whether artistic or scientific, is both a solitary and a communal undertaking. In isolation, an artist may experience the simple joy of creativity – letting oneself be wafted by the winds of inspiration to produce a work that is loved for itself, independent of any praise that it may engender; but, nonetheless, the joys of that creation are enriched by the pleasure it evokes in

others. And just as the work of an artist may find fresh interpretations in the eyes of a perceptive observer – views not contemplated by the original creator – so the scientific illumination of a fundamental tenet of nature often finds an unanticipated extension in the conceptions of other scientists, thereby opening windows on fresh vistas and gates to new pastures."

Cristóbal Halffter too reflected on this intimate connection. After thanking the BBVA Foundation for the "major step" it has taken in "placing the music of our time side by side with other knowledge disciplines", he added that "musical creation is the discipline in which the mind draws most clearly and in equal measure on science and aesthetics, knowledge and intuition, reason and sentiment, logos and pathos."

And from knowledge to action was the rallying cry of **Klaus Hasselmann**: "The question we must ask today is no longer 'Can we detect the human impact on climate?', but 'How can we prevent the far more serious climate change predicted in the future if we fail to act today?' To find answers to this central question we have recently created the European Climate Forum, in collaboration with economists, social-scientists and representatives from business, NGOs and policymakers."

Thomas Kailath, finally, used the occasion to announce that "I have asked for my BBVA Foundation prize to be donated to Massachusetts Institute of Technology, as part of my pledge to fund a fellowship for graduate students in electrical engineering and computer science who wish to apply their knowledge and talents to the field of cancer research."

All awardees were presented with an artwork by sculptor Blanca Muñoz (Madrid, 1963), based on a series of spirals that represent the progress and interrelation of scientific disciplines. The spiral, in the words of the author, "is the optimal solution for growth in a limited space as well as the best way to represent continuity".

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