



A PUBLIC DIALOGUE ON THE RESEARCH STRATEGY AT CRG: PERCEPTIONS FROM THE CITIZENS AND STAKEHOLDERS

Executive Summary

January 2021



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 741527.



Acknowledgments

We'd like to express our deep and sincere gratitude to all the people that participated in this public dialogue.

Thanks to all the citizens that took part in this long journey with all their passion, implication and willingness to immerse themselves into the science of the CRG.

Thanks to all the stakeholders that selflessly took part in all the intense and fruitful discussions, offering their knowledge, wisdom and vision to the CRG research.

And finally, and foremost, thanks to all the CRG scientists that dedicated their time to share their research, knowledge and opinions, and to actively listen to all the different voices that merged up in all the dialogues.

The new CRG strategy will have your genes. A big thanks to you all.

Stakeholders

In alphabetical order

Alberto Duque, MD, Country Patient Safety Head at Novartis Spain

Carla Conejo González, Head of Science Programs at Catalunya La Pedrera Foundation

Carmen Ayuso, Head of the Genetics Department at the Fundació Jiméneez Díaz University Hospital. Scientific Director at the Fundació Jiméneez Díaz Health Research Institute (IIS-FJD, UAM)

Cristina Sáez Torres, Journalist specialised in science and health

Daniel Arbós, Head of Communications at IDIBAPS (Institut d'Investigacions Biomèdiques August Pi i Sunyer)

Elena Gayán, Teaching technician at Cesire. *Departament d'Educació. Generalitat de Catalunya*

Fèlix Campelo, Ramón y Cajal research fellow at ICFO-Institut de Ciències Fotòniques

Isabel Orbe, General Director of the AECC Scientific Foundation

Dr. **Jaume Mora**, Scientific Director at the Pediatric Cancer Center Barcelona

Joan Comella, Director at Vall d'Hebron Research Campus - VHIR

Jordi Camí, Professor of Pharmacology at Pompeu Fabra University, General Director of the Barcelona Biomedical Research Park (PRBB) and Vice-President of the Pasqual Maragall Foundation for Alzheimer's research

Juan Manuel Báez, Biotechnological Projects Coordination Department at PharmaMar

Laura Clèries, PhD, Director of Elisava Research. Project Lead @materialdesigners.org. Director of Master in Design through New Materials. Co-editor @visions-by.com. ELISAVA Barcelona School of Design & Engineering

Lluís Armengol, Co-funder, CEO and CSO of qGenomics

Lluís Rovira, Director at CERCA Institute

Marcel Cano, Dr. in philosophy, professor of ethics at the UB, of bioethics at the UVic and of intercultural competencies at Pere Terres Foundation - URL

Mateo Valero, Director at Barcelona Supercomputing Center (BSC)

Núria Jar Benabarre, Freelance journalist specialised in science and health

Pere Puigdomènech, Research Professor at CSIC Ad Honorem. Centre for Research in agricultural Genomics. CSIC-IRTA-UAB-UB

Raquel Álvarez, Insights and Strategy Dept., Head of Intelligence and Statistics, Asebio

And all the other stakeholders that are not mentioned in this list.

CRG scientists

In alphabetical order

Ariadna Montero, PhD Student at the CRG

Bernhard Payer, Group Leader at the CRG

Gerard Cantero, Principal Investigator at Vall d'Hebron Research Institute, former postdoc at the CRG (during the public dialogue)

Isabel Espejo, PhD Student at the CRG

Luciano Di Croce, Co-coordinator of the CRG Gene Regulation, Stem Cells and Cancer Programme

Luis Serrano, Director of the CRG re

Manuel Muñoz, PhD Student at the CRG

Maria Lluch, Scientific chief officer at *Pulmobiotics*, former staff scientist at the CRG

Michela Bertero, Head of the International and Scientific Affairs at the CRG

Mònica Morales, Head of Core Facilities at the CRG

Roderic Guigó, Coordinator of the CRG Bioinformatics and Genomics Programme

Sergi Aranda, Staff scientist at the CRG

Sílvia Llonch, Postdoc at the CRG

Sílvia Pérez, Staff scientist at the CRG

Vivek Malhotra, Coordinator of the CRG Cell and Developmental Biology

Contents

1. Introduction, Objectives and Methodology	4
2. The context of Science in Spain.....	5
3. The perception of the CRG	6
4. Basic research.....	7
5. The funding of basic research.....	8
6. Ethical and social debates.	10
7. Communication.....	11
8. Conclusions and next steps	13

1. Introduction, Objectives and Methodology

This public dialogue (PD hereinafter) is positioned within the framework of the EU-funded ORION project (Open Responsible research and Innovation to further Outstanding kNowledge). Its fundamental goals are:

- Firstly, **to take the opinions of civil society and strategic stakeholders into account** for the development of a CRG research and public engagement strategy better aligned with society's views, values and expectations.
- Internally, the aim of this exercise has also been **to promote a cultural change in the perception of open science throughout the CRG community**.

The following specific aspects have been covered:

- Observation of the public and stakeholders' reactions to the CRG research.
- Understanding how public and stakeholders rate basic research and pinpoint reasons for increasing investment in it: basic vs translational research.
- Identifying their interests in the CRG's research and concerns about its ethical and social implications.
- Exploration of insights for communication and activity design, while also finding an optimal CRG positioning.

With a view to achieving the aforementioned goals, a public dialogue (PD) was conducted. As defined in the Sciencewise Guiding Principles, a **public dialogue is a process during which members of the public interact with scientists, stakeholders and policy makers** to deliberate on issues relevant to future policy decisions. It enables constructive conversations amongst diverse groups of citizens on topics which are often complex or controversial.

The initial approach used in this PD was:

1. **Stimulus development, scoping and framing.** 6 research projects were selected to present to the public and stakeholders. These also served as the basis for debate around the aspects at the heart of this PD.
2. **The Dialogue.** The initial plan was to conduct **two substantive full-day workshops**, one with stakeholders and one with the public (30 participants at each), followed by a **half-day reconvened workshop** involving 30 representatives, 15 from each of the previous workshops. **All three workshops were to take place in Barcelona, Spain.**

However, the eruption of the coronavirus pandemic at the end of phase 2 made it necessary to modify the Dialogue methodology. Thus, the 3 face-to-face workshops of the PD were substituted by a design in three stages, combining the following methodologies.

Stage 1: 11-day online community with the general public that took place from September 28th to October 13th, with 30 participants. Using the Ipsos-owned platform Ipsos Live, participants were able to analyse the materials designed and answer the questions put to them.

Additionally, **three online sessions** were held on October 1st, 5th and 7th in which the public, divided into groups of 5-6 people, interacted with the 6 researchers responsible for the case studies shown.

Stage 2: 1 online workshop lasting 3h with stakeholders selected by the CRG held on October 20th, 2020. With 21 stakeholders and 10 CRG researchers, debate groups on 4 main topics were established: basic research, funding, ethical and moral debates, and science communication.

Stage 3: 1 online workshop lasting 2.5h with 13 participants from the general public (stage1), 9 participants from the stakeholders' workshop (stage 2) and 5 CRG researchers.

This workshop took place on November 4th, 2020 and its goals were to obtain feedback from the analysis of the information collected in the two previous stages and gather all ideas to incorporate into the CRG's strategy.

3. **Analysis** and final summary report.

2. The context of Science in Spain

There is a general perception among the participants in this PD that **Spain lacks any "scientific culture"**. Science is of no interest to society and therefore is a topic that is not spoken about in either the public arena or the media.

"Research does not appear to be one of the priorities, plus it's a subject that doesn't appear in the media much and doesn't seem to awaken much interest." Man, 48, Madrid.

In this context, the Covid-19 health crisis has turned the spotlight on science and investment in it. The whole world is following the research into the development of treatments and vaccines for Covid-19 in real time. This situation represents **an opportunity to communicate science, particularly health-related research**, such as the projects being undertaken at the CRG.

"Funding is always an issue for research. Funds are always limited and that's why it's necessary to make people interested in what's being done. COVID has offered a leap that has to be taken advantage of." Man, 51, Bilbao.

It is interesting to see how **in a context in which science is of little relevance, the scientist/ researcher is a respected figure in society.** They are considered highly intelligent, hard-working and committed people who do a complex job, of social interest that is not very well-paid.

"I think we have a lot of young people studying in our country with money we all pay and then they need to go abroad to find work and feel useful because they're not given any opportunity here in spite of being very valuable educated people." Woman, 50, Seville.

Nonetheless, delving deeper into the perceptions, **the public finds it difficult to see beyond the scientist and their "professional persona"**: they are considered distant people who live lives removed from reality in their "laboratory", who speak a different and difficult language.

"What grabbed my attention was how simply the researchers explained things in the videos. Their explanations were really easy to follow. The advantage is that they can reach ordinary people and these can understand. I'd highlight how easy it is to understand the projects for the moment." Woman, 56, Bilbao

For their part, **the scientist occasionally feels misunderstood or even judged by the public that may question the "usefulness" of their scientific research.**

“I bet people wonder, should this person be paid to spend years and years researching something when we don’t even know what it’s for?” Researcher.

3. The perception of the CRG

The general public consulted was not aware of the CRG’s existence before the dialogue and their first reaction on seeing the presentation video was extremely positive. For them, **it was a pleasant surprise to discover that Spain has a centre of international excellence such as the CRG**. In a way, it puts Spain on the science map.

Regarding its activity, **genomic research is particularly appealing to the public because of its association with multiple advances in the healthcare area**.

“The work done in the CRG came as a surprise to me and I think it’s really interesting and hopeful for many diseases.” Woman, 33, Madrid

They rate the CRG’s interest in communicating its activity to the general public and its investment in Open Science highly. They also value the CRG’s holistic and multidisciplinary approach, along with its policy on diversity, animal protection and environmental concern. Its **talent-attracting objectives surprise them positively**. This contrasts with the general idea that there’s a major problem in Spain with promising talents in health and science going abroad.

“I had never heard of the CRG and the idea of crossing frontiers on an everyday level so that science reaches everyone unfamiliar with its work as information. On the contrary, I thought that science had always been obliged to beg for aid to be able to keep researching, many researchers have even had to leave the country to continue their projects due to insufficient resources...” Man, 65, Bilbao.

Lastly, **they highlight the simplicity of the language used and its educational/didactic character**, considered essential if they wish to reach everyone.

“I found the presentation really interesting. It’s a very straightforward and understandable way of presenting a very complex scientific work.” Man, 51, Bilbao.

From the outset, **the concerns that emerge spontaneously are linked to the sources of funding, the possible conflicts of interest and the ethical limits** of the research conducted in the CRG.

“I’m fundamentally concerned about the sources of funding to develop this project. Unfortunately, these are uncertain times that have brought numerous crises, both of a financial and a social and public health nature.” Man, 56, Barcelona.

The CRG’s research projects are very positively rated. The general public believe they cover different, complementary areas, all of which are very relevant for health. Among these, **they highlight Gene Regulation, Stem Cells and Cancer because of the high prevalence of this latter disease and the importance of regenerating organs from cells**.

“Though I found all of them really interesting, the ones that grabbed my attention most are the areas of genetic regulation, stem cells and cancer as it’s a very well-known issue, but one that a lot remains to be learned and researched about. Cancer is a disease that kills a huge number of people and there’s no cure for it yet, in spite of the amount of research that’s been done over the years.” Woman, 19, Bilbao

The stakeholders who participated in the public dialogue are professionals who either have or have had some type of relationship with the CRG since its foundation. The

relationship between these professionals and the CRG is close and cordial. However, this does not mean they are not demanding and critical of some of the subjects discussed during the dialogue, such as the scientists' position on basic research and its funding.

"I've had the privilege of getting to know, assisting and accompanying the CRG since it was first conceived, its gestation, pregnancy, childhood, adolescence and adult life, which is what we're going to discuss today". Stakeholder

"I think that those of us involved in spreading science have an enviable relationship with the CRG because we believe they do a really good job and they do a lot of very powerful things and they're an example for those of us involved in dissemination."
Stakeholder

4. Basic research

"Basic science is like wardrobe basics. Always available for any situation." Woman, 58, Madrid

Any discourse on "basic research" goes hand in hand with a search for the general interest of the research projects, their usefulness and their application in time. Nonetheless, after the basic research concept has been presented, **the general public understands and considers knowledge for knowledge's sake extremely relevant; meaning any future finding will be more robust and solid.** They are all in favour of funding basic research projects.

"I still think that without basic science, profound and complex research cannot be sustained. It's like the pillars that hold a building up to grow. And often there must be a lot of unexpected doors. Nothing that can lead to something positive in science should be discarded. The disadvantage is that it's not economically profitable in the short term."
Man, 65, Bilbao.

In addition, **the Covid-19 crisis has driven up the importance of both basic research and a good knowledge base to build on with medium and long-term discoveries.**

"According to the video, thanks to previous research in basic science, it was possible to purify the Covid-19 proteins to create serological tests in a very short period of time. Here the benefits are clearly visible." Man, 62, Madrid.

"From the outside" the scientific framework, **the differentiation between basic and applied research is blurred and counter-intuitive.** The term "basic" emerges as a label that may make sense in the scientific community, but loses significance when its definition reaches the general public. Some researchers confess they also find it increasingly difficult to make the distinction between the two research types; that end up forming part of a continuum.

"The more I penetrate the world of basic research the more difficult it is for me to find the difference versus applied research." Researcher.

"When there's no pressure, the translational research happens naturally" Researcher.

Thus, the public sees **basic research as previous research; the condition necessary for major discoveries to be made later on and to obtain outcomes that are more immediately applicable in the framework of other research studies** (applied research). It is, therefore, equally valuable research that may lay the foundations of the knowledge needed for future research and discoveries.

“It’s necessary to support basic projects because I think they represent what most people demand and worry about, and in the end they become the master lines of the subsequent research that is materialised in specific actions.” Man, 56, Barcelona.

Bearing this in mind, when communicating to the public it will be important to convey the possibilities implicit in acquiring certain specific knowledge; **to build a story about why a theme is chosen and what its possible future applications might be.**

“It’s necessary to work on the narrative and the story behind the basic science for it to reach the public.” Stakeholder

However, according to the researchers and stakeholders, it is not that easy. There aren’t always clear future applications and it is not easy to identify how valuable said knowledge might go on to become. Furthermore, they believe the researchers immersed in the projects are not always capable of pinpointing the possible application of their findings.

“The scientist doesn’t necessarily know when their finding is going to be applicable, it would be ideal to have people who did, who had that double vision” Researcher.

Transference offices emerge as an opportunity for the CRG to contribute to “oriented” basic research. This would consist of using professionals who understand the research but are also capable of seeing the transferability and application of the results. A “bridge” between the research and the opportunities of its results. Partnerships with institutions not specialised in basic research and hospital centres are also good options to foster future translation.

“If Martínez Mojica had had a good transference office, what happened to him with the CRISPR technique and the Nobel Prize wouldn’t have happened” Researcher.

In general, both the citizens and the stakeholders agree that **researchers must have the freedom to decide what to research.** They believe the CRG must focus on those research projects that its scientists suggest within certain “margins of action”, considering the common good and the social benefit as the ultimate goals. In addition, it must continue to promote excellence in the research the centre conducts, organising its scientists into teams to as many subjects of interest as possible are covered.

“The CRG has to be omnipresent, whether it is more or less attractive, with more or less acceptance, with more or less studies... It has to be present in everything possible, you never know when a glimmer of light is going to appear, an idea, a concept...” Woman, 45, Bilbao.

In short, this public dialogue has made it clear that the general public appreciates and values basic science and knowledge for knowledge’s sake and trusts the researchers completely.

5. The funding of basic research

The citizens are surprised that the CRG researchers need to find their own funding from different sources. They are surprised that they have to dedicate time and effort to “selling” their projects instead of just focusing on research.

“On the one hand, we have the baseline funding and, on the other we have to fund ourselves by “fishing” here and there. This really side-tracks us and detracts from our competitiveness.” Researcher.

In this situation, **when the project viability depends on finding methods of funding, everyone agrees that both the public and the private initiative are valid options.**

Regarding other funding options explored in this PD, both the public and the stakeholders approve the following options for the CRG:

- **Collaboration with private companies** is an option with an important advantage as it favours the application of the results and leads to society benefitting sooner. This type of funding **help bring their projects down to earth**, taking the CRG (and its basic research initiatives) closer to the people and their real needs. **The only limit has to be the centre's ethical code.**

“Of course it should collaborate with these centres as they are the ones with the opportunities closest to the people and with experience in practise.” Man, 32, Seville.

- **The creation of start-ups under the CRG umbrella is applauded by everyone** as the creation of new private companies is considered very positive by everyone. These are synonymous with entrepreneurship, modernity, advancement and progress, while, at the same time, generating jobs for young researchers who, otherwise, would have to continue their career abroad.

“It sounds really positive, as in this century it's important to have initiative and move away from the traditional work structures. It offers employment to young people with ambitions who are willing to give their all, and that's what's needed right now, people who give their full dedication to the project and whose goal is to improve everybody's standards of living.” Woman, 19, Bilbao

The majority do not consider the **fact that these companies are created with public money a problem**, as long as they share their results and all of society can benefit from them. It's one way of compensating for the serious lack of public funding. To avoid any grey areas, **it is essential to be absolutely transparent.**

“I feel that anything that is done to improve, whether public or private, is perfect. I do agree with public money being used to invest in private companies, as long as these private enterprises don't speculate with the achievements obtained, but rather they should be re-invested in the common good.” Woman, 63, Seville

Once these companies have been created, the **CRG's work will have to be linked to them at all times, supervising and supporting but also controlling.** The stakeholders also add the 'ethical supervisor of the research' role to these functions.

“Regarding the role played by the CRG in the companies formed under its auspices, it should act as an ethical guide and ensure that the CRG's values and objectives are abided by.” Stakeholder.

Similarly, they all believe **the profits from patents should be invested in research and continued advancement.** This implies investment of these profits in both other the CRG research and in the creation of new companies under its umbrella.

- Finally, the participants in this public dialogue approve the idea of the **CRG turning to patronage and philanthropy to fund its research.** In their opinion, the CRG and the scientific community, should fight to incentivise these donations to science by making them tax-deductible or including them as a deductible option in the taxpayers' returns.

“There should be a box that you could tick in your tax returns to donate money, in the same way that there is one for the NGOs and the church.” Stakeholder.

Hence, the answer to the question “Should the CRG invest resources in getting private funding?” is a rotund **yes** for all participants in the dialogue. Though the general belief is that “selling” science projects or going out to “fish” for funding is not ideal, the current conditions make it obligatory to do so. They all envisage **commercial profiles with a science background and objectivity acting as a “bridge”** between scientists and the entities or people funding them.

6. Ethical and social debates

“I think research and scientific projects have enabled us and continue to allow us to have better quality of life. Who could be against the evolution of humanity?” Woman, 50, Seville.

In principle, genetic engineering and synthetic biology are attractive fields that awaken expectation and open up a world of opportunities, making the apparently impossible possible; **they sound almost like science fiction**. Apart from being attractive, **genetic engineering is a very relevant and highly valued field of study because it may serve to cure and prevent diseases or even create synthetic vaccines**.

“The modification of a bacteria’s genes sounds like science fiction to me. I’d love to know more, how they do it, how they act against these changes, and what causes one micro gene or another to be changed.” Man, 27, Barcelona.

Despite its appeal, it is a controversial topic that causes reticence and may trigger discomfort and fears. The use made, or potentially made, of the results is of particular concern. A debate on different ethical issues inevitably arises: **Are humans breaching the natural balance of things? Who are we to go against nature? Are we ready, as a society, to manage these findings? Is the scientist playing god?**

This is why **transparency and correct communication in the spread of the scientific results and its future findings is fundamental**.

“I don’t believe there can be limits in the research, but there can be in the application of the research.” woman, 63, Bilbao.

“I’d like to imagine a future in which human knowledge meets the standards of that balance, but the interventions in the ecosystem to date prove to me that we are far from achieving it. I’m afraid that by trying to improve something, we’ll end up ruining a lot”. Woman, 43, Seville.

Everyone agrees that **limits governed by more or less “objective” ethical principles must be imposed**. A task perceived to be particularly complicated. They propose different “control” methods to ensure good practise, like for instance: **the establishment of a national and supranational regulation or the creation of a code of ethics within the framework of the research**.

“The limits are those that ethically they want to impose. The problem is that the idea of ethics differs greatly from one culture to another. Imagine the contrast between the North American, the Muslim and the orthodox Jewish cultures. The limits are the ones that ethically they wish to impose. We will have to reach an agreement, bearing in mind that these limits are alive and will change with our own evolution.” Man, 51, Bilbao.

Similarly, **dialogue and the obtainment of different points of view on the ethical issues are considered fundamental**. It is important to understand society’s perspective to adapt these limits to the ethical values of each given moment. What is considered ethical today, will not necessarily be considered ethical tomorrow. **Ethics**

are like a living organism that changes, advances, and evolves in time together with the human being and society.

“We are living in a time in which human life has been prolonged a lot. We all have close acquaintances who are nearly a hundred or more. We are moving towards a very different life to that of our grandparents. Nowadays, the lifestyles of the past are of no use to us. The future is both uncertain and surprising. Ethics evolve with the human being.” Man, 65, Bilbao.

Just because the public trusts the scientific community and researchers does not mean it is not demanding. They sustain that **since researchers are equipped with knowledge and the advances are in their hands, they must play a more operative role and actively partake in any ethical issues that might arise from their research**. Both the stakeholders and the public consider it important for them to engage and take a side, not just as scientists meeting the ethical requirements of the project they’re conducting, but as human beings who form part of society willing to engage and go beyond mere technical matters.

“Scientists have very little humanist culture.” Stakeholder.

“Scientists need to take a Hippocratic oath like doctors do, promising to be ethical and responsible in their work”. Stakeholder

In this context, the **CRG should be able to offer the researchers guidance on the one hand, and foster spaces for debate and dialogue on the other**, engaging different profiles (including the public) to obtain a diversity of opinions.

7. Communication

Over the course of this PD, it’s been made abundantly clear that **the public is open to science**. There is a key need to bring the two worlds closer to each other and overcome prejudices on both sides. **It’s time to be transparent and communicate on a “one to one” basis with an increasingly empowered public**. Some stakeholders go even further and claim it is an ethical duty to spread science.

In this context, a series of questions need to be asked with a view to designing the CRG’s communication strategy:

- **To WHOM do we need to communicate? Science needs to belong to everyone**
Efforts need to address everyone; both those interested in and closer to science, and those who are more removed from it; children and the younger target but also the older. They are very different audiences that need to be segmented to design the best strategy for each one.
- **WHY communicate? WHAT do we want to achieve? Awareness as the first goal.**

It’s essential for the centre to become better known among the general public; as many people as possible need to be reached, using different channels to do so. The participants in this dialogue fundamentally speak of: **education centres, traditional mass channels like television and press, digital channel**

“The communication of basic research to the scientific community is usually through conferences, publications or in universities, I don’t know whether in its entirety or whether there are subjects that never leave the laboratories. Society should be

communicated the advances in research to raise awareness of its importance and obtain the necessary support, recognition and funding.” Woman, 33, Madrid

- **WHAT do we need to communicate? It’s key to show faces.**

The stakeholders believe **it’s essential to break away from certain prejudices and associations and present a more “real” view of science** to the public. Three examples are:

- **Science and research do not always go hand in hand with technology or R+D.** There are also scientific research projects in other areas, such as health.
- **Science is not “exact”** and does not always lead to positive outcomes. It’s essential for the public to know how science and the scientific method work, and that negative outcomes must also be communicated. There’s a need for honesty and transparency.
- Similarly, **scientists are not strange and superior beings who hide away in their laboratories without any contact with society, removed from what’s happening outside.** Faces must be put to names here, to tell stories and convey that these are people just like everyone else.

With regards to the CRG, the general public is most interested in finding out the type of research conducted and the health-related outcomes and disease cures obtained. But **it’s also relevant to communicate the CRG’s values**, introduce the people who work there, how they work and what the centre is like inside, what are the motivations and concerns of those who form part of it; **it’s key to show faces and humanise the centre.**

Among the values to be communicated, the public and stakeholders highlight some of those projected by the CRG, such as excellence, reliability, talent, progress, advance, youth, diversity, creativity, daring and enthusiasm.

- **HOW will we communicate?**

Humanising and “democratising” science gives rise to the need to be proactive and approach the public by speaking their language, avoiding technical terms and simplifying, but without becoming banal or **losing sight of the real complexity.**

In this sense, it’s also important **not to “overpromise”**; don’t make the public think the results and implications of the research studies are always positive. It’s necessary for the communication of science to be realistic.

“It cannot be possible that every certain amount of time the TV news reports that a cure for cancer or for Alzheimer’s has been found.” Stakeholders and researchers.

Additionally, a story should be built to foster public engagement; **tell stories that citizens can identify with.** These stories must have characters and “heroes” that resonate with the public and its emotions. Some suggest how the scientist could communicate their passion for science through these stories.

“With a view to broad diffusion of science, trained professionals are necessary, but they also need to be capable of communicating their passion for knowledge. Authentic storytellers.” Stakeholder.

For one-to-one communication in which the opinion, support and concerns of the public are collected, the most “interactive” means of communication are necessary. **Social media is, undoubtedly, the best channel** for this type of communication.

Finally, Open Science has also been put to debate in this open dialogue. **Everyone agrees that opening science up to the world, as a broad concept, is an opportunity** because:

1. It serves to **highlight the importance** of science, the scientific community and the scientific culture in society.
2. It **increases** transparency and **the public's trust** as they know what their taxes are being invested in.

“It’s important for us citizens to gain a certain knowledge of the research happening in our country, our money is being useful, and also because knowledge is a human right. The risk implies speculating with the publications and how publication would be implemented. The benefits would be important for both those researching because of the prestige it would gain them and the public because of their right to knowledge.”
 Woman, 63, Seville

3. Data collection and research studies constitute another way of **validating and checking** techniques, methodologies and analyses.
4. It fosters **cooperation** between scientific teams rather than competition. This would also result in more rapid advances.

These benefits of Open Access make up for any possible risks, which include: plagiarism, manipulation and the unethical use of results by third parties. Participants of the dialogue call for control of these types of actions by the national or international entities responsible for safeguarding the security and ethics of the scientific community. **The role of the CRG and its researchers is to protect their research and, as mentioned above, play a more active role in ethics and ensuring compliance of this regulation.**

8. Conclusions and next steps

The citizens and researchers found the public dialogue experience highly satisfactory. It not only awakened their interest in science, but also overcame any obstacles or prejudices they had.

“I feel far closer to the research, I’ve even read articles on the subjects dealt with. This change is thanks to getting to know you, to hearing the researchers live, understanding their work, seeing real people in important subjects achieving small advances that make life better”. Woman, 56, Bilbao

“As a personal experience, I think it is an opportunity to contact with people (...) and specially at the end, when we had the general discussion (...) it is kind of very enriching, they have very different ideas than we think, or they think of super different things, I mean as a scientist I wouldn’t have thought of (...) I think it is very enriching, and it has changed my perception of how others see us and how I feel about others”.
 Researcher.

The analysis of these PD findings reveals strong support among both the public and the stakeholders for the CRG, its values, its research projects, its way of working and its commitment to Open Science.

Now that they have discovered the centre, they value the work and efforts of Spanish scientists, particularly given their limited funding conditions. Admiration for the figure of the scientist has increased even further.

Thus, we see how a centre like the CRG must actively approach society, speak in simple and transparent terms and reveal its more human side. The only way to do this is to go to where the public is: use the information and communication channels it uses; use its language to explain findings, but also elicit its opinion and, why not go even further and ask for its support with funding.

All PD participants are aware of the effort required for this *rapprochement*, but they consider it necessary to seize on the interest the COVID crisis has triggered in science. The time is ripe to raise awareness of science and attain the acknowledgment it deserves.

As proof of their support of the CRG, public and stakeholders alike worked alongside the researchers in this PD to come up with specific actions. Some of them are:

Actions to promote “major changes” / collaborations

- Lobby to have a box to tick in the tax returns form allocating part of the taxpayers’ returns to science.
- Patronage/ philanthropy/ major fortunes: work to raise awareness and achieve tax deductions to foster personal donations. The goal is to reach the same level as other countries.

Ethics-related actions

- Committee of advisers to set the projects’ “ethical limits”. A multidisciplinary committee with scientific and social players (scientists, academics, philosophers...). The scientist must “open up” to society. Right now, scientists find it hard to leave their circle.
- Conduct surveys or consultations (for instance, in the newspapers)
- Public talks on social debates (on television). Scientists need to speak in an “educational” way to generate social conversation.

Actions on communication and funding

- Talks in universities and companies.
- Conduct genetic tests among the public (or at a tourist stand)
- Consult certain groups and ask them what they can contribute to the functioning of the centre (e.g. Vegans and research using animals).
- Organisation of fund-raising events that, at the same time, increase the centre’s fame: macro-concerts, sports events, special lottery, galas, ceremonies, etc.
- Collaborate with events such as the Marató de TV3 and focus it on funding for science (not on specific diseases).
- Participation in music festivals. E.g. Primavera Sound, Sonar..., that have the added advantage of combining technology + design.
- Marquees at sports events to communicate and raise funds. E.g. Tennis or golf tournaments, football matches, etc. (depending on the competition, this could be an action of more or less effort and impact)
- Crowdfunding: through platforms established for this purpose, with advertising on the website and Social Media. (Depending on the donations and investment in communication, it could be a big impact action)
- Campaigns for contributions/donations similar to the food bank campaign (e.g. round off shopping receipts in supermarkets, shopping centres...)
- A good interview of a passionate researcher and good communicator in a “prime time” TV format, like for instance the programme, El Hormiguero.

- Recurrent public dialogues
- Create an internal marketing department:
 - Collaborate with brands that share values. E.g. Ecoalf (technical and sustainable clothing); Doctors without Borders, NGOs...
 - Campaigns with like-minded brands. Benetton could be one example
 - Alliance with foundations. E.g. Rafael Nadal
 - Engage IBEX companies in campaigns with science
 - Scientific debates programme
 - Sponsorship/ creation/ collaboration with TV televised science competitions
 - Netflix documentary or a series on scientists
 - “Media sponsor” or ambassador. Someone who shares values and who is listened to for what they have to say. E.g. Neil Harbisson (the first cyborg) or Stay Homas