Frédérique Vidal – Minister of Higher Education, Research and Innovation, France



I know first hand the importance of bringing together education, research and innovation

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Frédérique Vidal, the French Minister of Higher Education, Research and Innovation, discusses her plans to create innovation campuses to facilitate the collaboration between industry, institutes and academia. She also highlights the importance of European collaboration in the fields of research and artificial intelligence.

What are your immediate priorities and longer-term ambitions as Minister?

Considering my background as a professor of biochemistry, I am convinced that we need to have evidence-based policies. This is the reason my key priority is to promote research and science within our society. Recently, we have reformed the application process for universities, as it is important to give access to higher education to as many people as possible and provide information on career opportunities in this area. Moreover, the consolidation of the budget for basic research as well as national research agencies has been a key goal, together with an increased focus on specific priority research programs, for instance on Pesticides or Artificial Intelligence (AI).

Due to my experience, working for both basic research laboratories and academia, I know, first hand, the importance of bringing together education, research and innovation. Hence, our ambition is to establish strong links between fundamental research and R&D through collaboration with companies.

What is your biggest challenge currently?

The creation of innovation campuses is one of the main challenges, as we need to foster better interaction between the public and private sector. This will be a lengthy process, as it involves changing behavior and mindsets, hence we have started with applying changes to the educational level first. The innovation campus program also includes a better recognition of the PhD degree, because until last year it was not recognized in the French system of competencies. This created a paradox as companies preferred to hire master students over higher-qualified PhD students. Along with this measure, we are reinforcing support to joint PhD degrees offered by public and private laboratories. With these policies we hope to facilitate and speed-up the process between having an idea and creating an end product.

How will your proposed innovation campuses bridge the gap between fundamental research and commercialization?

We do have excellent basic research as well as world-leading Big Pharma companies in France. The role of the government is to support all the steps that lie in between an idea and a product. We are convinced that innovation is formed through the collaboration of academic institutions, research institutes and companies. For this reason, we have established the concept of innovation campuses to bring together these different sectors. There is no doubt that we have to simplify rules and regulations if we are to improve the conversion rate of bringing discoveries to market. The “PACTE” bill, as presented by French Minister of Economy Bruno Le Maire, is aiming to facilitate creation of start-ups and spin-offs by researchers themselves.

How does the PACTE bill incentivize scientific innovation and serve to unleash the sort of entrepreneurialism required to place France right at the forefront of a new era of medicine?

There has been a law in 1999 already, which allowed scientists at basic research institutions to spend 20 percent of their time to create their own Start-ups. We have further developed this model, now allowing researchers to spend up to 50 percent of their time working for start-ups, even when working for public laboratories.

Our new approach is to change the cultural mindset in France and encourage entrepreneurship as early as possible, starting at the educational level. Both the Bachelor's curriculum and Master's curriculum are now pushing students in the direction of being entrepreneurial. We are challenging the traditional logic, which was most of the time to start an academic career after finishing with a PhD. With this new program, students are also prepared to become entrepreneurs and to join start-ups.

The laying down of appropriate incentive structures is another key aspect of the PACTE that makes it easier now to benefit from one's own innovation, as it becomes easy for researchers to keep shares of the start-ups they create. In, addition, until today, careers have mainly been judged by the quality of academic research and publications. We have decided to recognize all the competencies during a career, for instance industry achievements and training rather than solely the number and quality of publications.

Looking at the financing side in France, funding for institutions and infrastructure seems to be the preferred model, while in the USA most of the funding is project based. Would this be something that will have to be changed?

The main difference is that financing in France for basic research includes salaries, for instance within the budget of the INSERM, which is not the case in the USA. We do fund special projects in France as well, and it is somehow of a misconception that we do not do so. It is important to note however that the role of the state is also to support basic research. We tend to overlook fundamental research in favour of translational research, but it is the former that delivers real disruption which can usually not come from private industry alone. This is the reason why basic research is emphasized in our budget.

Nevertheless, we do face new challenges in many different disciplines. Climate change, for instance, is a challenge related to many different fields such as physics, chemistry, oceanography, human sciences, economics and many more. Collaboration between these disciplines is needed to find solutions, hence we are accommodating scientists from different backgrounds under one roof, as part of our priority research programs. The old silo-ed approach is not fit for purpose in the modern era.

In summary, France is offering a budget for basic research as well as funding specific research projects. The aforementioned challenges are not only French challenges, but issues that we have to tackle together with our European partners. While we want to be leaders in research within Europe,

international collaboration is necessary.

How do you plan on anchoring French research at the heart of international research?

The coordination of health data and how to deal with rare diseases are two of the key strengths of the French health ecosystem. Our system has great capabilities in microbiology as well since we have a long tradition in this field and excellent institutions like Institut Pasteur. France has a very centralized health system with a huge amount of high-quality data, which can help us to become a leader in artificial intelligence (AI) on a European level. The use of FAIR (Findable, Accessible, Interoperable, and Reusable) data has been suggested and supported by France, as one of the first countries alongside the Netherlands and Germany. In relation to AI, our mission on a European level is to explain why research is important to the daily life of citizens. We need to be more concrete in defining how these fields bring value, e.g. by explaining how AI can help to cure cancer in the next 25 years. This is not only a problem in health, but an issue in the European Union in general, as many people do not see how it is useful. While progress has been made in the field of education – the ERASMUS program is well-known and highly valued by now – in research, there is still a lot of work to do.

How will Brexit affect this international collaboration, and what opportunity will it provide for a country such as France?

There will be a strong change in scientific research, as Brexit will undoubtedly come with a break between European and British researchers. It can be an opportunity for France’s system of higher education, as many EU and international students may come to France. Therefore, very soon, we will present a plan to attract more students to France. As for Brexit, we will have to wait for the results of the negotiations before laying out plans on research collaboration. As we have done it in the past with Switzerland or Norway, we will have to create a new framework for UK-EU research and education collaboration.

Domestic spending on R&D in France amounted to EUR 49.8 billion – representing 2.27 percent of GDP in 2017 – which means France is ranked behind South Korea, Japan, Germany and the United States. What is the reason for this?

There is no doubt that we will have to reach the 3 percent mark in terms of R&D spending. The budget of my Ministry has increased of 1.3 billion in two years, and French research is already among the best in the world! But what is at stake is bigger: we need to strengthen attractiveness –like we did with the Make our Planet great Again initiative for instance – and develop the links between academic research and private R&D. We have set out a stepwise, sequential approach.

We know that Big Pharma companies do have an interest in investing in France, as we do provide excellent infrastructure and a well-trained workforce. Establishing partnerships between universities and companies has been also simplified within the last months, to make investments more attractive.

Which specific benefits will the recent announcement of the suppression of the Numerus Clausus (for medical students) deliver?

The Numerus Clausus has been an archaic regulation which affected the number of Doctor of Medicine students. It has been outdated in the sense that all students having the same background and competencies are being educated in the exact same way, while nowadays we need more diversity. When looking at today's challenges, such as big data, personalized medicine and AI, more students with a background in mathematics are needed. Another challenge is the demographic change, which forces us to invest more in prevention, through medical data and training. This requires professionals from various backgrounds such as sociology and medicine, hence why we are creating more pathways through suppressing the Numerus Clausus within faculties of medicine.

A few words to conclude?

Choose France! I am very enthusiastic about the future, as currently we have a strong, positive ecosystem in France, which welcomes international students and researchers to a world-class scientific environment. Our country is well poised to regain leadership in life sciences as all the assets and ingredients are right here in France.

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