THE ROSARIO TODAY: THE RESULT OF 20 YEARS OF CHANGE

Becoming one of the top-ranked universities on a national and international level, playing a leading role in the Misión de Sabios, 2019 (2019 Mission of the Learned), mounting doctoral programs before the planned date and presenting novel projects to the country: These are some of the achievements which this institution can show, the result of its decision to wager on research and innovation. An interview of Stéphanie Lavaux, its lady Vice President and Provost.

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Photos: Alberto Sierra, Adriana Sánchez

A little more than two decades ago, the Universidad del Rosario implemented a measure which led to a major change: It decided to be a teaching university which undertakes research. Today, the results show that it was a wise decision. It is ranked among the best Colombian universities (for example, *QS Latin American Ranking* put it among the top five in 2019), its academics have published their studies in leading scientific publications and it participates in research consortiums, among other achievements.

In addition, its directors are proud of the fact that the university has been chosen to act as the technical secretary of the section of social sciences and equitable human development of the *Misión de Sabios, 2019,* the name of the group of academics, intellectuals and artists of the highest level who, since February, have been charged with the mission of guiding the course which Colombia should take in the fields of science, technology and innovation. And if that were not enough, one of those learned men and women is the director of the Center for Auto-Immune Diseases Research (CREA, in its Spanish acronym) of the School of Medicine and Health Sciences of the Universidad del Rosario, Juan Manuel Anaya,

who coordinates the Mission´s focus on life sciences and health.

"These deeds are an acknowledgement of what we are doing, that the university knows how to rethink itself and generate changes on very solid foundations," says Stéphanie Lavaux, Vice President and Provost of this academic institution, who has held that post for nearly five years and has led a large part of the changes, several of which were accomplished before the planned date. For example, 20 years ago, the university set the goal of advancing to the point where it would offer its first doctoral programs in 2019: However, it achieved that several years ago and is currently working to accredit the high quality of its first doctorate.

"We are moving forward with our planning and we can even announce that, in 2020, we will have programs in two fields of knowledge which are new to the university: Engineering and Creation. Under an umbrella program which is called URTec (Universidad del Rosario Tech), we decided to open a School of Creation – a mixture of art, musical theater, design and architecture – and a highly innovative Engineering School so that, in alliance with the School of Management and Business and through science and creation, companies may work with the university in the search for solutions related to sustainability, innovation and all of the challenges of the fourth industrial revolution," the Vice President and Provost explains.

These new programs are framed within the three wagers on research which the alma mater has made for the next few years: Technology and innovation, scientific talent and open science, which the Vice President and Provost speaks of in the following interview:

Advances in Science **(AS): For nearly 20 years now, the Universidad del Rosario has been responsible for major transformations in the field of research.**
Which of them would you single out?
Stéphanie Lavaux (SL): If we were to put it in order of importance, we´ve succeeded in advancing from a teaching university, based on undergraduate education, to a true teaching university which undertakes research.

It was not an easy decision. Those of us who were here then remember that we had to convince the administrative and professorial staff that we had to make big changes in order to promote and support research, that the basic thing was to create projects and to do that, we had to have professors with certain talents and profiles: Teachers with an experience of research who would link the work of research with the job of teaching.

The change took place when the decision was made and we have been consistent about it since then. That means that all of our strategic planning has had an emphasis on research.

The tools of promotion were changed, hiring policies were adjusted, new fields of knowledge were created. For example, the Faculty of Natural Sciences and Mathematics arrived, which is an outstanding accomplishment because it improved the model of teaching which undertakes research.

On another front, several international accreditation and evaluating agencies have opened up very important paths of reflection for us. I would underline the university´s contact with the European University Association, which showed us how making the decision to put research at the heart of our mission would not only be seen in our undergraduate programs and human talent, but also in our postgraduate programs, Masters programs in research and doctorate facul-

ties, which is another of the qualitative leaps we made.

And, more recently, they encouraged us to undertake institutional wagers on open science, which includes open access to data, the training and enlistment of new generations of scientific talent, innovation and the transference of the results of research to society.

AS: Do the research incubators deserve a special mention, since they have shown a significant growth and have had a positive impact on the productivity of the research groups.

SL: They are consistent with the model chosen by the university, but they are also based on a diagnosis, which I find alarming, and that is that Colombia does not know how to spot scientific talent and encourage it in primary and secondary education. That does not happen in the countries of the Organisation for Economic Co-operation and Development (OECD), where it is usually found that 10% of the students with a high school diploma show an interest in science.

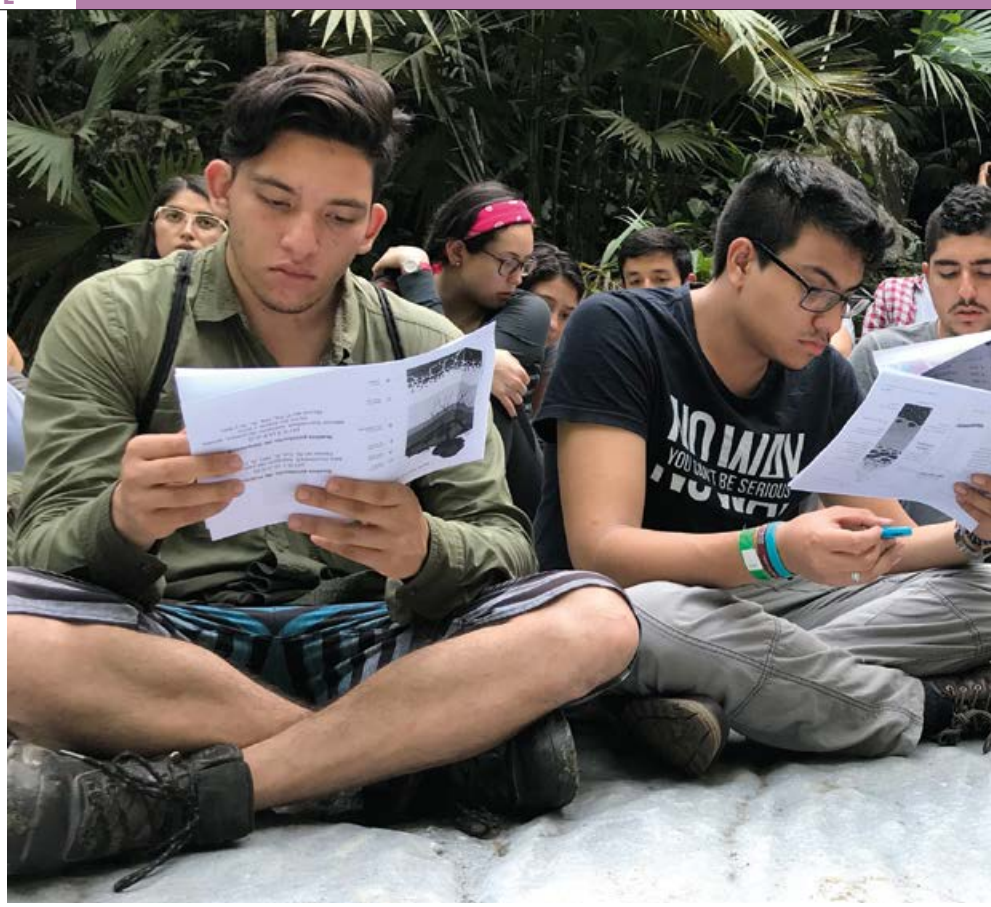
It is up to us, the universities, to find that talent, encourage it, train it, and later, provide it with the means to apply it. That has to change. I know that there are high schools who are following that path and there is the "*Ondas*" (Waves) program of Colciencias (the Colombian science, technology and innovation agency), but we need to do more.

In that context, this university, like others in the country, opened a space for training-linked research and training in research, in which the research incubators have an important role.

In addition, in recent years the Rosario destined resources, through open competitions, so that the research incubators may finance investigative projects and activities. It also consolidated a protocol for the creation of research incubators so that they can have what is needed in terms of training, projects and scientific integrity. That means that they are tied to a professor, a group and a line of research.

At the current time, we have 80 research incubators with a special characteristic: They do not follow the limits of a semester. The professor who commits himself or herself to lead it does it on a long-term basis, because there has to be a "learning to learn by doing" strategy and you cannot do that in four months. There is also a strategy of working with peers, a role in which undergraduate students are combined with those studying for a Masters or Ph.D., with the aim of passing knowledge from one generation to the next.

AS: How do you link all of that with the option of a coterminal degree, that is, with the possibility of connecting the undergraduate level with that of the Masters and that, with the Doctorate?



SL: In accordance with the lessons we have learned, and with the idea of holding onto scientific talent, we opened up a route for studying science to students who want to develop that aspect of their education for professional and vocational needs, who want to be the new generation of scientists in this country. The route starts at the undergraduate level and finishes at the doctoral one, with the possibility of studying abroad.

The undergraduate students who wish to take that course are offered opportunities to test themselves as scientists – courses on the methodology of research and research incubators, for example – and when they are already finishing their undergraduate studies, we give them the chance to connect with the first semester of a Masters in research. As students for the Masters, they take their undergraduate examinations and in the Masters program, study subjects which are more demanding than those of the undergraduate course, which, when they pass them, are accredited to the Masters degree. And the same occurs at the doctoral faculties: They connect their Masters in research with a Doctorate at the University, with a single line of training.

It is like a Lego game: If the student has met all of the requisites and passes the first semester of the Masters in research, he or she can get his undergraduate degree. He enters his Masters program, moves on to a doctoral faculty and within a few semesters, will have his candidacy for the Ph.D. approved. It means that the student only needs to complete the part of formal research to get his program approved. With such experience in science, we can speed up the student´s graduation, with a strong professional and vocational impact.

AS: Considering all of these changes, what do you think are the most important achievements?
SL: The biggest is the consolidation of all dimensions of research, which has enabled us to show the results we now have. We are obtaining results from initiatives which go back to the strategic decisions of nearly 20 years ago.

But the biggest, in terms of recent consolidation, is the increase of high-impact scientific productivity. It is a promising sign that more than half of our published studies are done with foreign co-authors and this figure puts us in the middle range of such collaborative studies on a world level, without having engineering programs, which are usually the driving force of research. The same applies to the fact that we are in the top five of Colombian universities and the top three in private universities in scientific terms.

What stands out is having ensured that the results of our researchs radiate out to society, from their basic social impact to a number of transfers of technology, with patents or innovative technological products, which also pertains to the social sciences and is not exclusive to STEM subjects (science, technology, engineering and mathematics), as usually happens.

Likewise, it is very important that we have established the first institute of research in the field of health sciences, after having consolidated our doctoral programs in almost all fields of knowledge, and are working on some doctorates, which will really break new ground in the academic and scientific panorama of the country, like the Ph.D. in Clinical Research.

I would like to finish with an achievement which shows how mature the university has become and it is in a field few universities are working in, and that is our wager on the idea of open science. Within this idea of providing access to knowledge and ensuring its transference there is also the objective of making the inputs which allow us to produce new knowledge available to communities of scientific experts: To allow other teams to use our results and inputs so that they may continue to produce more results and because not having to start from scratch is an achievement in itself: World science has to be accumulative.

It began with open access and towards that end, in 2017, we signed the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities, the first Colombian university to have done that and for which we gained a number of acknowledgments. We now have a policy of open data in research, which also includes the social sciences. To democratize and liberate knowledge is a big wager of the university.

AS: With so many achievements, what are the challenges?
SL: The challenge number one is to consolidate all of these wagers. To do that, we must permanently update our instruments of promotion.

The second challenge is to do with innovation and experimentation. We must experiment, not chisel anything onto stone; we have to be more dynamic and see how to lend more support to the projects of the scientific life both of the human beings who are doing research and the institution as a whole. To find new paths, new formats and not be afraid of anything.

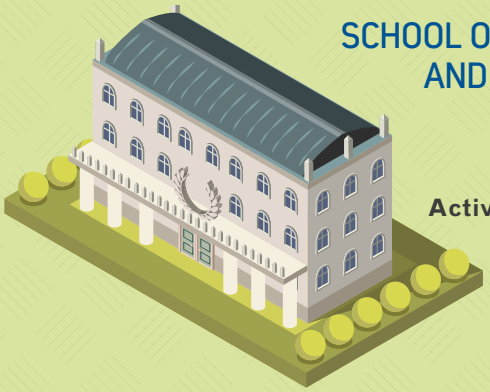
The third challenge, and it is a very immediate one, is to achieve a greater internationalization of research. This does not mean that Colombia is still not the heart of the work we do and the purpose of that work. It is not a question of our becoming more expert in a field in another country or choosing to solve problems in another part of the world. It is a matter of looking for expertise wherever it may found in order to advance the basic sciences and build solutions for the problems of Colombia, where science has much to say.

This challenge entails creating mixed units of research, in which there are other researchers who have common wagers and resources. The ideal is that science at the Universidad del Rosario is not only done on its campus but we can have units of research in different parts of the world.

And the fourth challenge is to obtain more crossed international funding and have the leadership in initiatives for large research consortiums, like the one which "Colombia Científica" opened to us, that government program which supports projects of research and innovation which promote the development of the regions and respond to the needs of the productive sector. This will enable us to undertake inter-disciplinary research and work with different sectors on a national and international level.

ACTIVE RESEARCH INCUBATORS

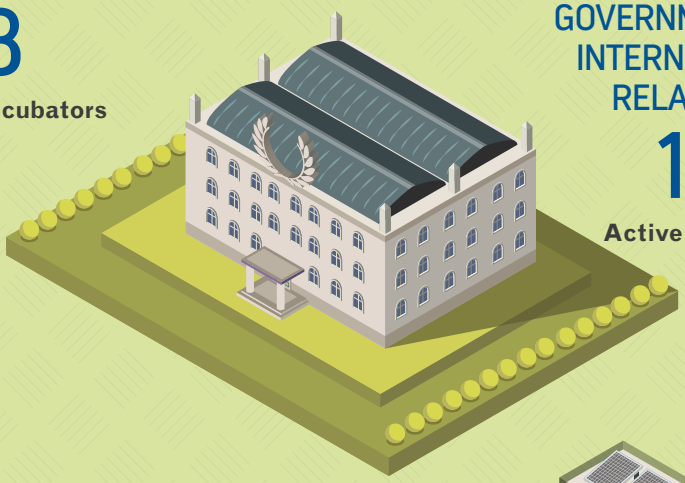
There are a total of 80 active incubators, arranged as follows:



SCHOOL OF MANAGEMENT AND BUSINESS

3

Active incubators



FACULTY OF POLITICAL SCIENCE, GOVERNMENT AND INTERNATIONAL RELATIONS

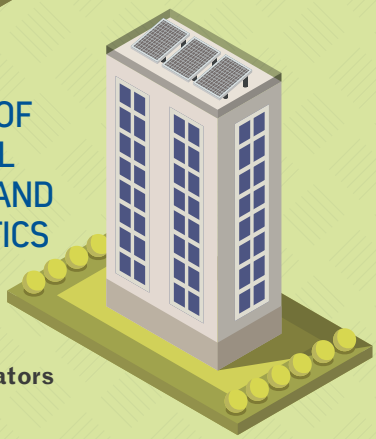
12

Active incubators

SCHOOL OF HUMAN SCIENCES

19

Active incubators



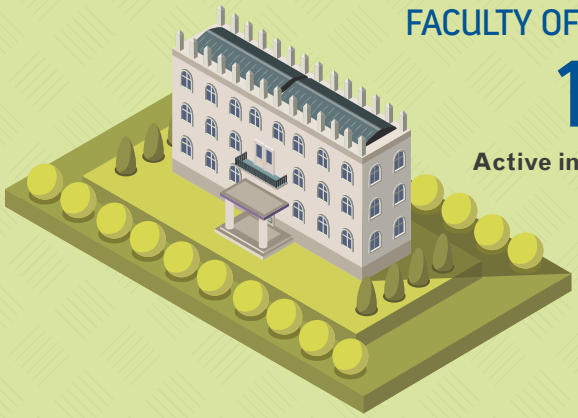
FACULTY OF NATURAL SCIENCES AND MATHEMATICS

9

Active incubators

MORE THAN 100 PROFESSORS WHO ARE DIRECTLY INVOLVED

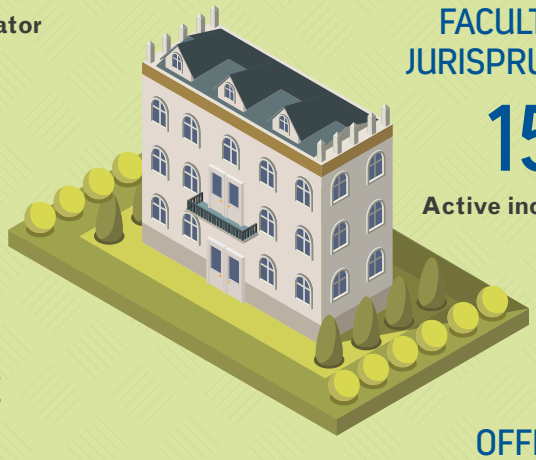
70% OF THE INCUBATORS WHICH WERE ACTIVE IN 2010 CONTINUE TO OPERATE



FACULTY OF ECONOMICS

1

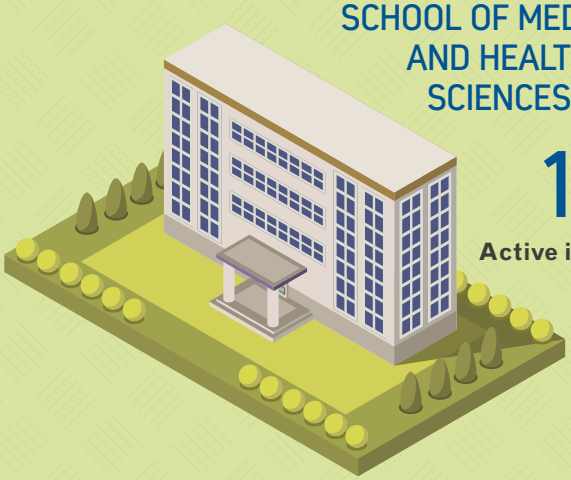
Active incubator



FACULTY OF JURISPRUDENCE

15

Active incubators



SCHOOL OF MEDICINE AND HEALTH SCIENCES

18

Active incubators

OFFICE OF THE VICE PRESIDENT AND PROVOST

3

Active incubators

51 INCUBATORS WITH FEWER THAN 10 STUDENTS

21 INCUBATORS WITH 10 TO 20 STUDENTS

8 INCUBATORS WITH MORE THAN 20 STUDENTS

Source: DIel –March 2019.