

# PUCRS

## MAGAZINE

ANNUAL ISSUE IN  
ENGLISH/2017



*Promising  
hopes to fight  
cancer under  
investigation*

*The first Center  
for European and  
German Studies  
in Latin America*

*Brazil plays a  
leading role  
in the genome  
sequencing of  
jaguars*

# **The future**

*that transforms the present*

*PUCRS 360°: Institution paves the way  
for major changes in the near future*



# Summer Courses

**Cursos de Verano**

**Find out more about the summer courses of PUCRS' School of Medicine  
and bring your career to a higher level!**

Conozca los cursos de verano de la Escuela de Medicina da PUCRS y califique su formación.

**From January 8 to 26, 2018 / Del 8 al 26 de enero de 2018**

## **Immersion in General Surgery** Inmersión en Cirugía General

Monday to Friday, from 8:00 AM to 12:00 PM  
De lunes a viernes, desde las 8h hasta las 12h

This 60-hour course, will give students the chance to experience medical practice in outpatient clinics, hospitals and operating rooms as they will be providing assistance to patients and work on case studies with a supervisor.

En 60 horas, los alumnos tendrán la oportunidad de experimentar práctica médica en clínica ambulatoria, hospitales y quirófanos ya que estarán dando asistencia a pacientes y trabajando en estudios de caso con supervisión.

## **Principles of Primary Health Care** Principios de Atención Primaria a la Salud

Monday to Friday, from 8:00 AM to 12:00 PM  
Mondays from 2:00 PM to 5:30 PM

This 60-hour course will introduce students to the Family and Community Medicine program and Health Centers.

Con una carga horaria de 60 horas, el curso va a presentar a los alumnos el programa de Medicina de la Familia y de la Comunidad y Centros de Salud.

## **The program includes**

**El programa incluye**

- A 3-week immersion course (60 hours) / Curso de inmersión de 3 semanas
- Public Health practice / Práctica en Salud Pública
- Access to library facilities / Acceso a los servicios de biblioteca
- Certificate / Certificado

**Registration / Inscripción – [www.pucrs.br/educon](http://www.pucrs.br/educon)**



# WELCOME TO THE FUTURE!

Throughout the year of 2017, the University's excellence in multiple dimensions was recognized as it won several national and international awards. Some of these achievements include the institution being recognized for having the best graduate programs among public and private institutions in Brazil. Also, the institution is now considered the best private university according to Folha de S. Paulo and the most innovative educational institution (Revista Amanhã). Ultimately, PUCRS won the Orsalc-Unesco Award of Social Responsibility, as well. However, we are well aware that there is much more to be done. Hence, a new shift of paradigms concerning PUCRS' undergraduate programs and learning environments is underway, under the project known as PUCRS 360°. 2018 will also see 22 academic departments merge and give rise to 8 schools focusing on specific academic areas, which will result in a number of benefits.

This current issue, featured both in English and Spanish, will bring the world closer to our reality and will introduce you to this movement of transformation. In our vision of future, we want to become an international reference in Higher Education through innovation and social, environmental, scientific,

cultural and economic development. Mission and vision must inspire our decisions and actions. The University is in a context where the quest for excellence and sustainability calls for stronger integration with the external environments.

We must be flexible to changes and have a sense of opportunity. A context of complexity and uncertainty calls for new forms of interaction with society. It is not just about the promotion of training for competent professionals to the job market, but being a provider of authentic human, personal, social and professional excellence. The society's expectations about the institutions and what it actually can accomplish are the factors that will determine the

relevance of a university.

These institutions are being "called" to integrate with society. They have to expand. They must be in close connection with businesses, governments and the society. An innovative and modern university must play a leading role in the process of development of its own country.

As PUCRS puts the individual and their education first in its quest for humanist values, as a central vector of development and innovation, it must be in the center of all fundamental issues concerning people and the community, as we bear in mind that the word community now encompasses both a local and a global place.

PHOTO: BRUNO TODESCHINI



*Br. Evilázio Teixeira*  
President of PUCRS



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PHOTO: BRUNO TODESCHINI

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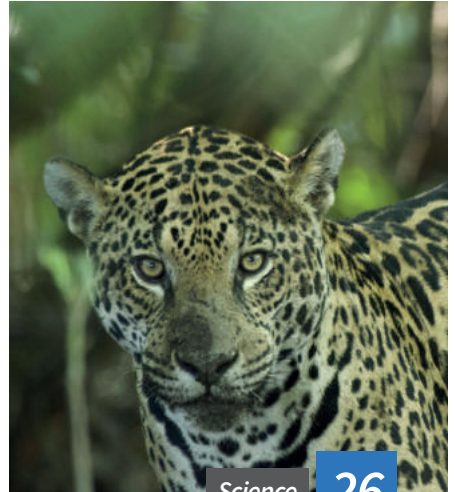


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# UNIVERSITY IN



## *A shift of paradigms from the undergraduate studies to physical facilities*

In a scenario of exponential, accelerated and disruptive changes affecting new generations, new thinking models, new attitudes to life and people, PUCRS faces the challenge to revisit itself in order to respond to both present and future demands. The university, relying on the power of its tradition, aligned with a continued process of training, is aware that these are the features that make it one of the top universities in Brazil and in Latin America. Hence, it takes its chances on one of the most important movements in recent history, which involves changes in several realms, including the teaching models and the Campus facilities.

Starting in 2018, a new model

of organization, which had been developed over the last four years, will take effect at the University. Programs will be embraced by eight different schools, which will replace the existing departments. More interdisciplinarity, more opportunities for development, more autonomy for students to choose their paths and management efficiency are some of the benefits this model brings about.

However, the shift in the academic model of organization alone will not be enough for us to adapt to these ever-changing times. The impending changes in the labor market, the new interests of teenagers and of today's and tomorrow's professionals pose as challenges to educational

institutions and call for changes in university life.

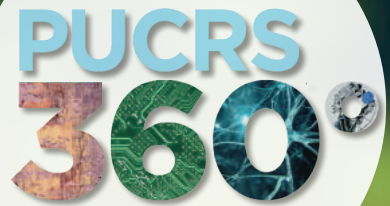
### **MODEL OF EDUCATION**

As a response to this scenario, PUCRS has set out to think about many aspects of its existence: its role in the community; the strong relationship between teaching, research and extension; its commitment to education for human excellence and its role in the cultural, environmental, economic and social development. In view of the above, the university is keen to implement major changes for 2018: a global movement that involves undergraduate programs and the university's facilities, which is intended to look at people as a



# Pillars of transformation

Check out the most important changes to be implemented at the University:



## LEARNING AUTONOMY

Students will have the autonomy to choose the courses they want to take in view of their abilities and interests. The programs will rely on core curriculum courses which, when combined, will provide students with dynamic, innovative and continued training towards the completion of their minors and majors.

## COMPREHENSIVE TRAINING

Encouragement to entrepreneurial training during the undergraduate life is another new feature PUCRS has planned for 2018. This initiative is in line with the expansion of the humanistic training, which prepares students for a world of swift transformations and changes in the concepts of labor, employment and career.

## CAMPUS REMODELING

The entire campus will become a learning environment. New services, classrooms, laboratories and communal areas will be progressively remodeled, in view of the principles of flexibility for use. Additionally, buildings will be remodeled and an atmosphere of social life and engagement will be provided as the entire community will be more connected.

## DIFFERENT TEACHING METHODS

Teaching will be oriented by research, as students will be the agents of their own learning and be encouraged to think up solutions for real challenges that generate social impact.

whole, as it offers a model of education that allows for them to develop their full abilities, with autonomy and sovereignty.

A movement that responds to the University's position as being a vector of innovation and development in every sense possible, and which reinforces its communitarian and Marist character. "This is in line with our strategic position and our identity. Besides, it reflects our constant quest for a new form of education for a new society", claims PUCRS' president, Br. Evilázio Teixeira.

In this first moment, the changes will address four main pillars: three of which will come as important innovations at

the undergraduate level. The projects, which have been under development since 2014 under the strategic planning of the University, bring the teaching aspect of PUCRS to another level and will be implemented gradually. Such projects imply both a new academic model and learning methods. Drawing heavily on international models, this comes as an innovative initiative of higher education, which responds to the contemporary challenges and discussions in education and in the job market.



## Learning autonomy

A journalist can have a minor in Psychology and Economics. A biologist could draw insights from Communications and Engineering. The training of a business administrator could be enhanced with insights from Philosophy and Design. The multiple paths students can take over the course of the undergraduate life earn them more autonomy and a unique background.

All programs will have a core curriculum, which combines the major - necessary for a biologist, for instance - with a non-core curriculum - with focus on the humanistic training and on necessary abilities and competences for any professional

- and, at the end of the program, students will be able to complement and bring their training to a higher level as they will have the chance to undertake complementary studies in areas of their interest.

“This model will be right for students who choose a program and want to enhance their training with advanced-level or interdisciplinary courses”, explains Éder Henriqson, the University’s Director of Undergraduate Studies. For instance: a student may earn their degree in Journalism, with a minor in Economics. These changes will be applicable not only to freshman students but also to senior ones. This

model expands and facilitates the access of alumni seeking professional development, complementary studies or even a second degree at the University.

This is beneficial for students who still do not know which path to take, as they can try undertaking distinct disciplines for self-realization. This will also shape the job market, as the doors for new professions that are yet to be created will be open. “Not long ago, people would earn a degree in a certain area and would stay in the same job for the rest of their lives. Today, however, the job market is in need of people who have a combination of abilities,





*In view of their competences, students will be able to pursue different areas of interest*

such as Engineering with Biology and Journalism, for instance. It is our duty as educators to be aware and flexible to the needs of the youth, so that they can accomplish their life projects”, complements Emilio Jeckel, executive member of Academic Renovation Project (*Reorgg*).

In addition to the implementation of minors, the creation and combination of basic core courses at the Schools opens the doors for new Bachelor’s and Technology degrees. “All the combinations will be in accordance with MEC’s and professional boards’ expectations”, explains Henriqson.

## You choose the path you want to take

1

Students enroll in the program they were admitted to and will be able to choose one or more minors.

From the 1st semester, students will begin cross-sectional, general and humanistic training.

2

3

From the 3rd semester, students will be able to choose their minors and improve or enhance their course of study.

4

Lastly, they will receive their diplomas and a certificate indicating they have completed their minors in the specific areas chosen.

For instance, they may become a Bachelor of Business Administration, with major in Marketing and Minor in Fashion Promotion studies, and will be eligible to providing technical consultancy work for the fashion industry. Students may be able to take courses at any of PUCRS schools and build their own curriculum as they see fit.



## Comprehensive, humanistic and entrepreneurial training

The interdisciplinary academic career is complemented by teaching methodologies that change the way one learns. The goal is to have students develop competences to question reality, generate solutions and deal with contemporary dilemmas of our society, which is marked by complex challenges, many of which are still unknown. College training relying on entrepreneurial and humanistic values is the product of the University's commitment to human excellence, aligned with cultural, environmental, economic and social development, which is in line with the new reality of the



*An ecosystem of innovation and entrepreneurship at the service of teaching*

labor market. Future professionals are being prepared to face the diversity and uncertainty of a context in which the notion of employment, work and career has been completely remodeled.

In an environment relying on a complete ecosystem of innovation, which includes the Science and Technology Park (*Tecnopuc*) and *Raiar* – PUCRS' Startup Development Program, and the



*Students working together trying to find solutions for real challenges*



academic structures, entrepreneurial training is highly encouraged. The development of non technical and complex cognitive skills will be a highlight under this model. Gabriela Ferreira, Director of Innovation and Development, claims this concept will do much more to society than just produce businesses. “To have an entrepreneurial spirit encompasses seeking, proposing and creating solutions for the challenges of society. There is a scarcity of jobs but a plenitude of work. That is why the university needs to adapt. It cannot produce employees but people who will respond to social demands.”

“The very reason for us to enhance the humanistic training is simple: our role in the construction of society. Human relations have always been and will always be decisive for happiness, protection of life and the acquisition of work skills. In the short run, this country will not have a university relying on a humanistic project as intense as that of PUCRS”, anticipates the Director of Undergraduate Studies, Éder Henriqson. Critical abilities and creative thinking are essential curriculum components, as well as the teaching of values, such as fellowship, collaborative spirit, autonomous thinking and respect to the world and to life. The goal is to produce a global, humane, creative and entrepreneurial citizen.

## *Research as a learning tool*

**R**esearch will be one of the pillars of PUCRS’ teaching. It will be gradually incorporated into the undergraduate life, and students will be provided insights into it since the very beginning of their program, as they will work in integrative projects all along, facing real challenges that generate social impact. “No other university can employ research as a teaching tool, in view of all the accomplishments of PUCRS over the last 15 years in this area and in innovation. This does not mean we will only produce researchers, but students who learn from a different perspective”, stresses Henriqson.

Pedagogical innovations carry with it a different conception of knowledge and different views concerning teaching methods and didactics. Under this model, which preaches research as a teaching tool, learning will be a team-based social construct. In this regard, learning will be a process of continuous realization, and will occur in a meaningful and collective way, as students are the agents of their own learning. Students will be assessed not only through exams but by how they address real life problems and propose solutions for society.

PHOTO: CAMILA CUNHA



*Teamwork-based social learning focused on research*

## Campus remodeling

Not only do the changes at the University encompass the academic realm, but also physical and environmental aspects, since the changes to be implemented will be with an eye to students' well-being, as new physical and virtual facilities, services and convenience areas will be offered. The Campus revitalization project, in support of the 360° movement, will be divided into five phases over the next two years and some changes will be presented by the end of March 2018.

Intent on providing better services for students and expanding its relationship with society, the area between the Commencement Hall and building 15 will be renamed to Rua da Cultura, as it will nurture student life. The first part of the project will be completed in March and its changes will affect the area behind building 5 all the way to building 15. Students will be able to

integrate to university life and share outdoor environments with other peers in a properly equipped area which includes video projectors and lecture halls. Right next to the library, there will be a café and an entertainment area.

### LIFE AND INTEGRATION

In the first phase of the project, building 15 will become an integration center. The ground floor will be completely remodeled and will include a large food court for students, professors and staff members. Part of that area will be directly connected to the garden, as the walls will be put down.

In addition to that, building 15 will be home to the PUCRS Store, which will be fully renovated as part of its expansion plan. And there is more: in July 2018, the 2<sup>nd</sup> and 3<sup>rd</sup> floors of building 15 will be fully revamped and new furniture will be arranged in order

to facilitate students' experiences. These areas will be used by all Schools.

There will be four other phases that will effect changes in other areas, such as the Commencement Hall, which will be open to external events and cultural activities, the Events Center, which will be more dynamic and even the footbridge over *Ipiranga* Avenue, which will be remodeled.

Additionally, the buildings will be surrounded by squares. "In the following phases, the innovative and entrepreneurial pedagogical methods, which will initially be developed in building 15, will be implemented in the other Schools. We are working on improvements in the other buildings' classrooms, as we are changing the furniture and the concepts", says Milton Stella, Administrative Director for Quality of Services and Operations of the Office of the Vice President for Administration and Finance (Proaf).

## Learning spaces

Every new area on Campus will be a learning environment, from classrooms to laboratories, and snack bars to hallways. Three principles have been taken into consideration in order to make these changes happen: flexibility, connectivity and engagement. The modernization will put human

beings first as they will be able to integrate, share and enjoy the high quality services, thus maximizing the learning processes.

"These areas can, at the discretion of professors, be used to integrate students from similar and different programs. Learning occurs under different perspectives

and the environments have an influence on people's behavior and state of mind", says Alam Casartelli, Vice President of Administration and Finance. A new Campus will be brought to life in March 2018, and consequently, there will be more integration between the programs of a given School.





# The Schools

Interdisciplinarity gains momentum with the organization of the university in eight different Schools, which will embrace different academic areas

## LAW SCHOOL

- Law

## SCHOOL OF MEDICINE

- Medicine

## SCHOOL OF HEALTH SCIENCES \*\*

- Biomedicine
- Physical Education – Bachelor's / Teaching Degree
- Nursing
- Pharmacy
- Physiotherapy
- Gastronomy
- Nutrition
- Dentistry
- Psychology

## SCHOOL OF SCIENCES\*

- Food Science and Innovation
- Biological Sciences – Bachelor's / Teaching Degree
- Physics - Teaching Degree
- Medical Physics
- Geophysics
- Mathematics - Teaching Degree
- Business Mathematics
- Chemistry - Teaching Degree
- Industrial Chemistry

## SCHOOL OF TECHNOLOGY\*\*

- Architecture and Urbanism
- Computer Science
- Aeronautical Sciences
- Civil Engineering
- Computer Engineering
- Control and Automation Engineering
- Automation
- Production Engineering
- Software Engineering
- Electrical Engineering
- Mechanical Engineering
- Chemical Engineering
- Information Systems

## SCHOOL OF HUMANITIES

- Biological Sciences – Bachelor's / Teaching Degree\*
- Creative Writing
- Philosophy – Bachelor's / Teaching Degree\*
- Geography – Bachelor's / Teaching Degree\*
- History – Bachelor's / Teaching Degree\*
- Letters - English
- Letters - Portuguese
- Pedagogy
- Social Work
- Theology

## SCHOOL OF COMMUNICATIONS, ARTS AND DESIGN\*\*

- Communication Design
- Product Design
- Journalism
- Audiovisual Production
- Advertising
- Public Relations

## BUSINESS SCHOOL

- Business Administration: Business Management
- Business Administration: Innovation and Entrepreneurship
- Business Administration: Leadership and People Management
- Business Administration: International Businesses
- Business Administration: Operations and Services
- Business Administration: Marketing
- Accounting: Controllship and Taxes
- Economics
- Economics: Finances

\*BACHELOR'S AND TEACHING DEGREES  
\*\* CREATED IN DECEMBER 2017



# A REVOLUTION AGAINST CANCER

*Ground-breaking research, innovative treatments and their benefits to patients*

PUCRS ARCHIVE



In less than a decade, cancer should be the main cause of death in Porto Alegre, one of the cities in Latin America that shows the highest incidence of the disease. New medications, especially those relying on immunotherapy (which uses the immune system to fight the enemy), are bringing the treatment to another level. Patients of the Center for Clinical Research of São Lucas Hospital (HSL) are receiving some of the most effective treatments to fight the disease, which is yet to be commercially available. They have access to the same protocols used by the major world centers. As not all of the patients have a satisfactory response to therapy and the evolution of tumors is still a challenge for science, PUCRS is investing in basic, translational and clinical research, making the institution a national and international reference in the area.

In order to maximize the results and bring about new projects, several professionals – oncologists, surgeons, pathologists, chemists, physicists, pharmacists and biologists – are working together

in the Cancer Research Center (*NP-Cancer*), coordinated by the School of Medicine, by the Hospital's Oncology Service and by the Institute of Biomedical Research (IPB). The interdisciplinary solutions put forward in the center are intended to provide significant contributions for the development of science in the near future. "These projects will give our students and professors considerable reputation with the most renowned academic settings", says André Fay, School of Medicine professor and head of the Oncology Service.

Basic research creates countless opportunities. Although it may not be immediately applicable, it can be used

PHOTO: BRUNO TODESCHINI





to elucidate the biological processes of malignant tumors. Molecules studied in laboratories may be materialized in the form of medications to be used in clinical practice. It takes from 8 to 15 years and an investment of up to BRL 2,5 billion to accomplish that goal. Since only a small fraction of thousands of compounds under investigation is actually effective, the whole process becomes quite expensive.

As an experienced oncologist, and Professor Carlos Barrios claims that these investments are not addressing the needs. "There is a plethora of strategies, which employ technological advances and the identification of specific targets, to keep the tumor from growing. We are looking for alternatives to move forward efficiently and at a low cost."

For Barrios, the Group for Cancer Research is an institutional response to an issue that has become epidemical in the country. "We have perfect conditions to work on a broad strategic plan of research." In 10 or 20 years, cancer should be the main cause of death on the planet. In the USA, the incidence in people aged 45+ is even higher than for other diseases.



### Samples on ice

*Once they are collected, samples are stored in a solution known as RNAlater, which preserves them for up to four hours before freezing. At IPB, they will stay at a temperature of -80°C. If the temperature goes up, either due to power outages or sealing problems, an alarm will go off.*

PHOTO: CAMILA CUNHA



The Center for Clinical Oncology opened in 2016

## Universal health care and private plans

The Center for Clinical Oncology, opened in 2016, features a new Chemotherapy Unit, which serves more than 2,000 patients every month, both universal and private ones. The facility offers chemotherapy sessions using biological and oral administration drugs. "The Oncology Service at PUCRS is getting better and better each day and should become a reference both in the local and national scenario, as a result of the research efforts carried out", claims Fay.

The Radiotherapy Service relies on two cutting-edge machines: linear accelerators Clinac iX and Trilogy. They are used in radiosurgery, intensity-modulated radiotherapy, which is employed to protect organs or structures around the tumor; and image-guided radiation therapy. Diagnostic methods using magnetic resonance and PET-CT, offered by the Brain Institute, a reference in this area, are available to patients.

### INTERNATIONAL

Oncologist Gustavo Werutsky, from São Lucas Hospital serves as the new chair of the Latin American Cooperative Oncology Group (Lacog). Several other medical doctors from PUCRS and School of Medicine professors are members of this organization, which congregates 147 oncologists from 70 institutions in 15 countries. "The plan is to take part in international studies and work on projects on the most common tumors in our region. For instance, cervical cancer is one of three most common types of cancer in Latin American women but is rare in Europe and in the USA", asserts Werutsky.

## *New possibilities with Biobanco*

In order to increase the number of investigations, PUCRS has put together the Biobanco, a bank consisting of human biological material, the first in the State of Rio Grande do Sul accredited by the National Commission of Ethics in Research. The opening collection is to be studied by oncology teams and is located at the Institute of Biomedical Research. Up until 2011, human samples could only be stored for immediate application in research. “Not always does the researcher have a project including samples, hypotheses, a schedule and a budget set at the time of collection, and it’s a shame to discard such a rare and scarce material. Now we can store it for future use. Technologies have changed too and now we can investigate other areas”, says Professor Clarice Alho, from the School of Sciences, who designed the Biobanco project, in representation of the Office of the Vice President for Research, Innovation and Development. In addition to oncology material, the project will include the teeth collections of the Dentistry department, and rheumatology samples, but it will be open to other areas of the institution.

### **HIGHER LEVEL**

Professor André Fay goes on to say that this brings the University to a higher level, as it shows advances in science and health care provision. “In a collaborative work, we have put together the Biobanco, which will

make it possible to work on research protocols throughout the generations to come.” His partner Márcio Debiassi adds that the Biobanco is one of the actions underlying the University’s quest for accreditation in terms of research on a global scale.

Once patients grant their consent, the samples are labeled and frozen. The owner’s identities are concealed, though. Clinical information of each case will be stored too. In the long run, it will feature more specific data, and new research will be facilitated. For instance, it might show a group with certain gene alterations.

Researchers interested in conducting research are expected to report to the NP-Cancer’s scientific commission, which will assess the relevance, viability and ethical aspects of the project. “Because the biological material comes in limited quantities, we must conduct a very strict analysis”, warns Fay. The projects need to be further approved by the Committee of Ethics in Research of PUCRS.

Professors Henrique Fillmann and Lúcio Fillmann have worked on the collection of colon cancer tissues. And December 2016 saw the beginning of collection of samples from patients subject to breast biopsy at HSL. The pilot project assesses the conditions for collection and storage of materials. Additional fragments are removed from suspicious nodes. If they test positive, they are sent to Biobanco. Mammogram and breast

ultrasound services will play an important role, too.

### **DIFFERENT STRATEGIES**

Professor Felipe Zerwes, an expert in the area of Mastology, claims that not many investigations carried out in Brazil rely on their own Biobanco. “International data are largely used. But I wonder if these international patients are similar to our local ones. We need to know them in detail, and this may have an influence on public health policies.” He illustrates that the National Institute of Cancer recommends mammograms for women aged 50 - 69 whereas science societies for women at the age of 40. 30% of cases in RS have been reported for patients below the age of 50 and above 70. The State Department of Health endorses the beginning of treatment at the age of 40. “We can only do that if we study the specific population. And the Biobanco will take us one step further. We’ll see biological characteristics of the tumor. Once we know that patients have positive hormone receptors, we’ll be able to adopt a different strategy for prevention and treatment.”

The whole point is to include the diagnostic images into the database, which will be under the responsibility of the Brain Institute. “The relationship between the findings from these exams and the current diagnosis of cancer and biochemical markers may reduce the need for a biopsy, for instance”, says radiologist Bruno Hochhegger.





Research has looked at its benefits

## *Yerba mate could reduce tumor proliferation*

Is yerba mate associated with the high incidence of esophagus cancer in the South of Brazil? Research carried out by the School of Health Sciences, in partnership with the School of Technology, has sought to address this question by looking at the specific effects of the plant. Surprisingly enough, some compounds of *chimarrão*, a tea made out of the herb, which is typical of the South of the country, have reduced the number of tumor cells. “The good results come from an analysis of the plant as a whole rather than the caffeine contained in it alone”, says Professor Fernanda Morrone, from the Laboratory of Applied Pharmacology, who coordinates the study.

The Laboratory of Unit Operations, of the Chemical Engineering program, is responsible for extracting the compounds. Researchers are working on infusions of yerba mate with and without caffeine. However, these must be rich in other substances, such as flavonoids. Then, they are tested for the treatment of esophagus cancer cells.

The next stage is to test the substances in normal esophagus cells to check whether they can be used for the prevention of cancer. However, in order to prove its effectiveness, Dr Morrone claims that more tests are needed in animal models. Epidemiological studies on the consumption of the drink and

the incidence of esophagus cancer are underway. Additionally, patients will be monitored for risk factors, treatments and drug interaction. The group also intends to test the compound in urinary bladder cancer cells.

According to the National Cancer Institute (2016), in the South of Brazil, esophagus cancer is the fifth most common type of cancer in male individuals, in a list that does not include non-melanoma skin cancer. The high incidence may be attributed to the consumption of hot drinks. The yerba mate infusion should be enjoyed at a moderate temperature. Temperatures lower than 70° C are ideal for they present lower risks (once you hear the water sizzle).

## In class

In the course on Fundamentals of Research, School of Medicine students are expected to work on different projects in several laboratories within the University. Devised by professor André Fay in 2015, it gives students an opportunity to work on scientific research since the very beginning of the program. “The course is intended to get students involved in research activities as they learn the basic concepts under the supervision of their professors in their groups, and consequently leading to the

publication of the projects developed in class.” It has been very fruitful, as results have shown to be relevant.

The course was helpful for student Angélica Cardoso, 23, as she got in contact with oncology researchers, an area of interest to her. “I’ll be able to do what most people want: put the projects in practice.” Although the semester is coming to an end, the group is going to look at specific mutations in stomach tumors, by using samples from HSL patients. These alterations can be seen in cervical cancer and may provide



*Student Angélica Cardoso wants to put projects in practice*

patients with a better response to the immunotherapy treatment. “The larger the number of antigens in blood, the higher the chance for them to be recognized by the immune system and targeted by medication”, explains Fay, who advises students’ projects.

## Boosting hopes at the Center for Clinical Research

In 20 years, the Center for Clinical Research (CPC) of São Lucas Hospital has served more than 2,500 patients in the area of oncology, out of which 1,500 have been subjects of investigation. They gained free access to medications available at the most important world centers and which are yet to be commercially available. “Patients receive the same treatment they would receive if they were at the Memorial Sloan Kettering Center in New York or at MD Anderson, in Houston”, claims Professor Carlos Barrios. The basic treatment is usually more effective than the one offered by the local universal system. “We asked ourselves what the best type of therapy is today. This is the best one. If other types of therapies are needed, then we’ll work on them.”

CPC is one of the Centers in Brazil that is a research reference in this area. “And we can play a very important role in it. We can take part in a new line of research to better understand how immunotherapy works”, says Professor André Fay.

One example of the effectiveness of this are breast cancer patients, as 20% of them have shown HER-2 protein overexpression (with as many as 2 million of these molecules, whereas the others have shown 2,000). This makes breast cells grow into more aggressive tumors, but the use of antibodies (new drugs) targeted against this molecule is facilitated. “Results are impressive. It’s been suggested that some people have found a cure”, claims Barrios. Besides the contributions

of antibodies trastuzumab and pertuzumab, which maximize the effects of chemotherapy, other efficient drugs have been offered, such as trastuzumab conjugates combined with chemotherapy. In this case, the antibody points to the right target, the tumor cell, with no side effects. Most research on this medication, involving 2,200 patients from 40 countries, was coordinated by Barrios.

There have been progresses in terms of lung and kidney cancers. For the latter, things have changed dramatically since 2000. “We play a very important role in every investigation on new drugs. We are conducting epidemiological studies in order to learn the reality of the South of Brazil.”



## Proteins to fight cancer

PHOTO: BRUNO TODESCHINI

PB's Laboratory of Cell and Molecular Immunology, headed by Professor Cristina Bonorino, is studying the potential of a fragment of the protein HSPBP1 to be used as medication. Funded by Finep, studies on breast, uterus and lung tumor cells have shown great results. "Up until now, we did not know what this protein was useful for; we only knew it was related to HSP70, which is important for it keeps the tumor from growing. The study has shown that when the HSPBP1 is increased, patients have a longer survival rate; the spread of the disease is halted", claims Dr Bonorino. The investigation, which has been patented, seeks to address whether the immune response is being activated or the tumor growth is being inhibited directly.

Experiments using images of animal models at the Brain Institute have shown that the protein has a direct impact on the target. Nine years ago, Vince Guerriero, then professor at the University of Arizona, discovered



*Initial stage of production of protein HSPBP1*

the protein, read an article written by Cristina's group and decided to test it in patients. The article drew insights from the doctoral dissertation written by Ana Paula Souza, who is now a Professor at the School of Health Science.

Cristina, from the School of Sciences, who has been working in the area of immunology for 30 years, could not be happier about the advances in the area. She adds that this therapy is helpful for, for instance, 25% of patients with metastatic melanoma, for which there was no cure. In combination with immunology treatment, this number may be

increased to 40%. "It's just a matter of time until it is available with the universal system", claims she. As the tumor changes, different medications are needed. "Individual therapy is what the future holds."

One major question that remains unaddressed is why it is not helpful to some people, even with the molecular targets. "Sometimes the medication can trigger a certain response but another molecule may offer resistance. These mechanisms are still not clear." Cristina coordinates several projects seeking to get the answer for those questions.

## Seeking better treatment

Studies conducted by School of Medicine professors André Fay and Márcio Debiassi, relying on the support of students, seek to find out the second line of treatment for metastatic kidney cancer if the first fails and the tumor grows again. Extensive study sessions involving professors and students are needed for confirmation of each

step of the process before data are compiled and analyzed. Harvard and other universities are serving as collaborators. Results are expected to bring benefits to patients in the medium run.

This is called meta-analysis, the last stage of an investigation which serves to guide clinical practice. "Once a drug is developed, from

molecule discovery up to tests in humans, it is common that investigations on a similar topic present diverging results. Meta-analysis comes out as a validated methodology to give a clinical perspective to science and help the scientific community to work out the best treatment to patients", says oncologist Debiassi.

# GERMAN INVESTMENTS IN BRAZIL

*PUCRS and UFRGS open first Center for German and European Studies in Latin America*

In 2017, Brazil joined the global network of Centers for German and European Studies (CDEA), a collaborative network that is now represented in 11 countries through 20 centers. After a painstaking selection process conducted by the German Academic Exchange Service (DAAD) all over the country, PUCRS and UFRGS have been chosen to be home to the first CDEA in Latin America and the Southern Hemisphere. An investment of € 250,000 will be made every year by

the Ministry of Foreign Relations of Germany. The center is located at the School of Humanities and was opened on April 10<sup>th</sup>. By its fifth year, it is expected to undergo a careful evaluation process, which may give it an extension for another five years.

In this first year, CDEA will be directed by the coordinator of the Graduate Program in Law of UFRGS, Cláudia Lima Marques. The Dean of PUCRS' School of Humanities, Dr Draiton Gonzaga de Souza, will serve as its vice director. "It is one of the biggest projects implemented by PUCRS in 2017 and the biggest one in the area of Humanities at the University", comments Souza. Dr Souza says that all the funds obtained will be used in the center and in all the departments affiliated to it, such as the Office of International and Institutional Affairs, Institute for the Environment, Lexis Language Center, Business School, Law School and School of Humanities. Students, professors and researchers are some of the groups that will benefit from it.

The President of PUCRS, Br Evilázio Teixeira, claims that being selected to host the center is such an important achievement for the university. "We are hoping that several departments of

the University and, more specifically, professors, researchers and students, can join their efforts in projects that will come out of this partnership. This poses as a very good opportunity not only for PUCRS and UFRGS, but also for Rio Grande do Sul and Brazil", adds he. In Dr. Marques' view, the CDEA is the fruit of a long-standing partnership between German and European institutions involving the universities' graduate programs. "We are happy and honored that DAAD took its chances on us. We hope to bring considerable benefits to our students, professors and national and international partners with this long-term project. Our institutions and their 22 graduate programs in the area of Humanities have received international recognition for their competence, excellence and experience", states Marques.

One of the goals of the center is to promote the German language, as courses are expected to be offered by PUCRS' Lexis Language Center. A specialization program in the area of German and European Studies is expected to take off, too. And there is more to come. The program includes grants for professors and graduate students and events related to Brazil, Germany and Europe. "We want to

PHOTO: BRUNO TODESCHINI



### 3. Eine interkulturelle Interpretation

Was sich in Bolivien im Augenblick abspielt, ist ein typisches Beispiel für die Folgen der Globalisierung und deren Widersprüche. Die Krise der 1980er Jahre hat die Phase der offenen Krise beendet und befindet sich in der rechten Sackgasse. Die USA konnten den Plan ausarbeiten.



be a reference for people who want to study in Germany”, says Souza.

The actions involving the Brazil-Germany Chamber of Commerce address the economy and commerce, issues that will be at the center of discussions. “Germany is the #1 economy in Europe and sees us as business partners. Thus, these topics may be brought into discussion”, reflects Souza. For the Dean of Technology and Innovation, Dr Jorge Audy, the center will play a key role in how we address contemporary social and political issues, and will reinforce our connections with Europe at the national and international level. “These considerations are the foundations for the solutions for the economic meltdown the country is going through”, says he.

Director Cláudia Marques goes on to say that this will be a unique opportunity for social sciences and humanities’ students and professors all over the country, as it provides an encouragement to research missions, mobility, grants and awards. “We’ll be working together, as new interdisciplinary Master’s and specialization programs will be created in European and German studies. CDEA began its operation with the commitment of 58 researchers and 20 graduate programs, as well as three pilot projects in the areas of Law, Public Policies and Sociology, at UFRGS, which are being implemented at the School of Humanities of PUCRS. When it comes to research and teaching, we hope to enhance our methods and enjoy the partnerships with 20 other similar centers all over the world”, claims she.

## A history of cooperation

PUCRS and UFRGS have close ties with Germany, as both institutions receive several international guests every year and send professors and students for exchanges. “We have had a 20-year history of tradition in the areas of humanities and social sciences in the country. We rely on the support of the Consul General of Germany, Stefan Traumann”, says Souza. PUCRS was notified that it had been chosen in Nov 2016 and, in the following month, Souza and Cláudia joined a meeting involving the directors of the other 20 centers all over the world, in Washington D.C..

The possibility for Brazil to be home for the center had been discussed for four years. In the Consul General’s view, Porto Alegre relies on economic and scientific traditions and the “best educational institutions for such” and, therefore, he recommended the city. “Universities deserve the merit. The center will have a positive influence on the partnership between our countries. It will play a key role not only in the training of students and research, but in seminars, conferences and partnerships involving the different political, economic and scientific actors. It will be a driving force for the relationship between Germany and Brazil and Europe and Brazil”, states Traumann.

## *Interinstitutional, interdisciplinary and international*

The opening of the Center for German and European Studies carries with it the recognition of the academic excellence of PUCRS and UFRGS and strengthens the bonds with Germany, through exchanges, events and joint research projects. “From now on, collaboration and integration will be encouraged in the areas of humanities and social sciences, law and economics, among others”, says Souza.

Globalization, sustainable development and cultural diversity will be among the areas to be addressed, and this can only be done in an interdisciplinary way. “We’re going to work together with researchers from several areas. Globalization is a typical example. We need people from the areas of philosophy, sociology, law and economics. These are issues that need a multidisciplinary approach”, ponders he. CDEA will be a window as PUCRS will be able to interact with the other centers and the universities in the countries where they are located, such as the USA, Canada, France, Netherlands, Russia and Japan.

It consolidates the strong relationship PUCRS and UFRGS have had with Germany, which includes both their sponsorship agencies, such as DAAD, KAAD and Alexander von Humboldt Foundation and their universities.

# CHEMICAL COMPOUND TO INHIBIT SUPERBACTERIA

*Resveratrol analog molecules proven effective against Acinetobacter baumannii*

**R**esveratrol analog molecules could bring some hope in the fight against an antibiotic resistant superbacteria. A variety of international studies have shown that the substance that is found in black grapes and red wine have bactericidal and antioxidant properties (thus lessening the negative effects caused by free

radicals, which are toxic substances produced by the body). An investigation carried out at PUCRS has also proven it to be effective against *Acinetobacter* microorganisms, especially *Acinetobacter baumannii*, which is one of the main agents of infections in hospitals and health stations, as it mostly targets ICU patients.



*Laboratory-produced substance has been tested in Acinetobacter isolates*



Biology professor Sílvia Dias de Oliveira has studied this bacteria extensively, whereas Chemistry professor André Arigony Souto has synthesized different resveratrol analog molecules. Both researchers have decided to join forces and have been working on synthetic compounds of resveratrol analogs (synthesized in laboratories) in *Acinetobacter* isolates since 2014.

### COMBINATIONS WITH EXISTING DRUGS

Experiments have shown that, within a given concentration, resveratrol analogs are able to stop the growth of *Acinetobacter baumannii*. Then, other drugs used to

treat infections were combined. “By using the compound, we have been able to reduce the concentration of the medications. In some cases, we were able to reverse the resistance to that specific drug”, explains Sílvia. This means that even isolated compounds that adapt to the effect of antimicrobial drugs, are susceptible to them when associated with this resveratrol analog.

Outstanding results have been achieved with polymyxin B, an obsolete and highly toxic antibiotic (which mainly affects the kidneys). It has recently risen back to prominence as a response to the lack of modern drugs to fight *Acinetobacter*. And to make matters worse: resistance to polymyxin B has been reported in a number of academic investigations, which urges the need for research into other alternatives.

The group has also studied antimicrobial tobramycin because it can be inhaled. “As *Acinetobacter* causes respiratory infections, we have chosen this target for tests, as we envisioned a useful future for it”, explains Sílvia.

In order to determine the potential effect of antimicrobials, tests were repeated indefinitely. Some isolated bacteria compounds were subject to 50 analysis sessions. A multitude of factors could be held accountable for alterations in the results. Reactions change according to the micro-organism’s isolate under investigation. Differences were so subtle that investigators had to ponder whether it is best to

combine the compound and the drug simultaneously or at intervals. The first hypothesis was accepted.

Future investigations will try to unveil the compound’s mechanism of action. The antimicrobials are internalized into many bacterial cells which will then be expelled, thus reducing its concentration in order to remain active. “We anticipated that the substance has a potential inhibitory action, and causes the drug to concentrate, which makes it reach the target more easily”, elucidates the professor.

### FUTURE POSSIBILITIES

The next stage, which includes testing in animals, is dependent upon funding for analyses of toxicity and activity. In cells, the product has proven to be beneficial. “It’s cheap to synthesize and we would be able to produce it in large scale”, ascertains Arigony. At the laboratory, the group was able to produce 20 grams of the drug. Both the process and the level of purity remained unaltered. “If it works in an in vivo model and arouses the interest of any industries, we will show that it’ll be easy to produce”, complements he.

Biozeus, a drug development company that works together with pharmaceutical industry company and research institutes, assisted PUCRS in drafting the proposal. In September, the company and other researchers delivered a workshop at PUCRS in order to assess the financial potential of projects.

PHOTOS: BRUNO TODESCHINI





Chemistry student Natália César: excitement to develop a new drug

## Undergraduate research students

Sponsored by Praias, a multidisciplinary research program, accountable to the Office of the Vice President for Research, Innovation and Development, the project features two undergraduate research students, and relies on funding to acquire supplies. As students work on their experiments, they learn about one another's areas of expertise. Three pairs of students have joined the program in its previous editions.

"Students can gain a lot from observing different methods! They can see that science is integrative, they can think outside the box. They might be able to explore other possibilities when working in a different scenario", says Arigony. Natália César, 21, 5<sup>th</sup> semester Chemistry student, heartily agrees. "A research project provides me with a wonderful scientific experience because I can put in practice everything I have learned

as an undergraduate student, and learn something new, not necessarily in Chemistry, but also in Biology, for we work mostly in an interdisciplinary way." For her, one of the highlights of the project is to participate in a drug development project. "It may be useful to many people. And it is based on the research and tests we have conducted at the laboratories." The project also features Marina Monteiro, Pharmacy student.

## Atop WHO list

For the first time, in 2017, the World Health Organization (WHO) published a list of antibiotic resistant bacteria, which calls for future research and production of new medications. Twelve families of pathogenic agents appear in the document. In the first of the three urgency categories defined by WHO lie bacteria of the following genus:

Source: UN

*Acinetobacter*, *Pseudomonas* and *Enterobacteriaceae*, such as *Klebsiella*, *Escherichia coli*, *Serratia* and *Proteus*. They can cause serious and often fatal health conditions such as blood infections and pneumonia. In addition to designing new medications, other measures are essential, such as infection prevention actions and awareness to the correct use of existing antibiotics.



## The project researchers

### SEEKING SOCIAL IMPACT

André Arigony Souto has seven patents filed, some of which having been granted overseas. One of them was even licensed by Eurofarma but, after conducting tests with animals, the company decided to discontinue it. “To develop a drug is not an easy task because huge investments are needed and the chances for success are rather low”, says he, as he mentions the strict criteria used by the Health Surveillance Agency. But he will not quit researching products that can exert an impact on society. By synthesizing resveratrol analog molecules, he is able to design compounds to fight diseases. He is such an avid enthusiast of the idea that he takes the substance himself. It all started because he wanted to know why the French, despite relying on such a healthy fat diet, have a low incidence of cardiovascular problems. Wine consumption could be partially accountable for it.

Dr Arigony, who holds a PhD in Chemistry from the Universidad Complutense de Madrid (Spain), and a Master’s and a Bachelor’s degree from PUCRS, claims that his engagement to this type of study is attributable to the University’s policy of technology transfer. He has been a Professor at PUCRS since 1998.



PHOTOS: BRUNO TODESCHINI



### A STEP FORWARD

Sílvia Dias de Oliveira, who has a Bachelor’s, a Master’s and a PhD in Veterinary Medicine from UFRGS, has a vast experience in microbiology. She studies organisms that affect animal and human health. She wrote a Master’s thesis and a doctoral dissertation on *Salmonella*. She has been teaching at PUCRS since 2002, as she began working in health care. She began to characterize the resistance of bacteria isolates at São Lucas Hospital until she arrived at *Acinetobacter*, whose incidence is high not only in Porto Alegre, but all over the world. “We’re living in a chaos, under the constant warning of the World Health Organization as to the resistance to antimicrobials, and we have decided to seek alternative solutions.”

She has filed an application for a method of detection and quantification of milk bacillus, under analysis by the INPI. The project was designed in collaboration with Professor Carlos Alexandre Ferreira, who also works at the Laboratory of Immunology and Microbiology, of the School of Sciences, and with former Cell and Molecular Biology student, Fernanda Cattani.

### Patent applications

*The project needs to be published and examined by the National Institute of Industrial Property (INPI) as a condition for the granting of the patent, which will earn it a 20-year protection. INPI’s letters patent certifies that the invention has reached three levels: world novelty (analyzed up to the application date), inventive activity (obviousness) and industrial scale reproduction. Patent protection has also been claimed to The Patent Cooperation Treaty.*

*Source: PUCRS Technology Transfer Office*



*Lions' genes may have been responsible for the efficiency of the optic nerve*

## CROSSBREED OF JAGUARS AND LIONS HAVE ORIGINATED NEW SPECIES

*PUCRS plays a leading role in the genome sequencing of the largest feline in the Americas*

Coordinated by PUCRS, the genome sequencing of the jaguar, the largest feline in the Americas, which is now endangered, has been completed. An article about the genus *Panthera*, comparing genetic information of jaguars, tigers, lions, leopards and snow leopards, has been published in the journal *Science Advances*, of the American Association for the Advancement of Science. One of the findings of this investigation was that these different species produced hybrid crosses when they shared the same habitat. This hybridization (exchange of

genetic components and production of fertile species) can be explained by the fact that the jaguar inherited traits from the lion, such as two genes involved in optic nerve development, which was likely to have been a factor of great importance to the animal in its quest for food. They could be found in Europe, Asia or North America, where ancestors of both species were found.

4,6 millions of years ago, the five major felines had a common ancestor, very similar to the current leopard. According to Professor Eduardo Eizirik, who coordinates the study,

the reduction in the risk of extinction in the past, since species tend to lose their genetic variability over time, was hypothesized as a possible advantage for hybridization between species. "These animals appear in different numbers." As top predators, they are susceptible to environmental changes, such as the reduction in the number of preys, which can quickly lead to the reduction in the number of individuals." Today, all of them are endangered.

Why is it that the jaguar has a harder bite than other large felines, as it can prey on alligators and even turtles,



with their hard shells? Researchers believe that this would be a reaction to a mass disappearance of the usual preys - large mammals, two million years ago. The study has also shown evidence of other genes that were subject to natural selection and which have facilitated the adaptation of species to new environmental conditions. "It pounces on the back part of the prey's neck, which is more resistant. The other major felines usually pounce on the front part of the neck", explains biologist Henrique Figueiró, the article's lead author.

"The changes observed in hundreds of genes of each species were more dramatic than if such changes were to occur by chance", comments Eizirik. Another evidence is the fact that the snow leopard has a different oxygen capacity. They live in the Himalayas, the highest mountain chain on the planet, which includes the Everest, and also in Tibet, Asia.

Five years were necessary to assemble the findings of this investigation. Once sponsorship for the project was obtained (CNPq, Fapergs and Tetrapak), researchers started working on the generation of data and recruiting collaborators to analyze parts of the genome. Eizirik selected some of the most prominent researchers from the USA, Ireland, Spain, Portugal, Russia and Argentina, as well as Brazilian partners to analyze this large quantity of information. Three of the aforementioned felines had their genomes fully analyzed. William Murphy's group, from the University of Texas, conducted the sequencing of the jaguar as part of this study.

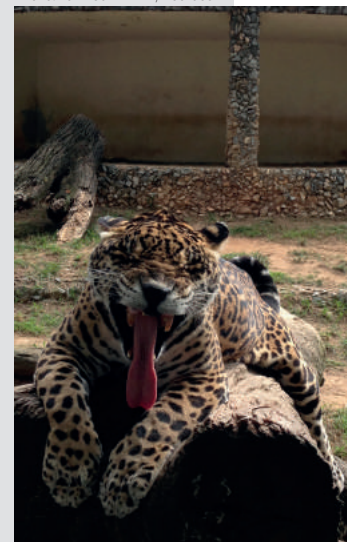
## A definition for genome

The information contained in a genome could be used to complete as many as 3,000 books of 1,000 pages each, each of which containing 1,000 letters. Each human cell is composed of two of such structures: one originating from the mother, and the other, from the father. Sequencing provides information about the evolution of the species.

### Vagalume

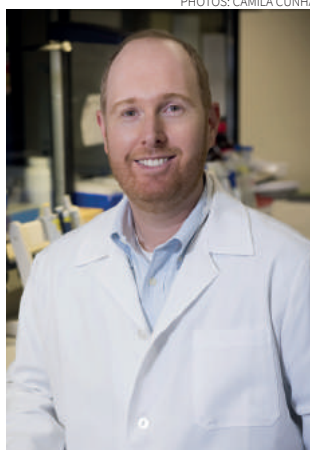
The jaguar's first genome was obtained from a jaguar named Vagalume (image), at the Sorocaba Zoo (SP). A native of the Pantanal area, and weighing 94 kilos, it was left there two years ago as a baby jaguar after the death of its mother, in the 2000s.

PHOTO: RODRIGO TEIXEIRA/DISCLOSURE



## Ground-breaking research on mammals

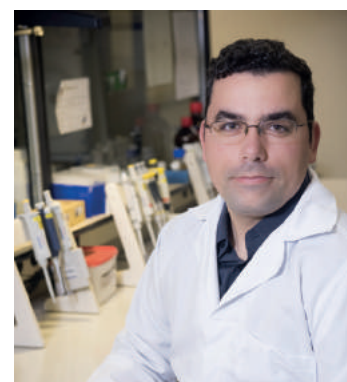
PHOTOS: CAMILA CUNHA



Covers of international journals illustrating research on felines and images of trees illustrating the evolutionary history of mammals are used to decorate Dr Eizirik's living room and testify his contribution to science. Enjoying considerable reputation as a researcher in Brazil, he has been teaching at the School of Sciences for 13 years. He holds a Master's degree from UFRGS and a PhD from the University of Maryland (USA). He conducted a post-doctoral internship at the National Institute of Health / USA and at PUCRS.

## Looking for innovation

After Mr Figueiró completed his Master's, he accepted the challenge to work on the genome of the jaguar, as he was trying to give his career a solid direction. As he was working on his PhD in Zoology, under the supervision of Dr. Eduardo Eizirik, he spent a year at the University of California (USA), working with major scientists, such as mathematician Rasmus Nielsen, one of the most important global exponents in gene analysis methods.



# AN UNPRECEDENTED MAP OF LEOPARDS

*Black panthers account for 10% of the species*

A pioneer study has shown the habitat of these large predator felines, natives of Asia and Africa, which climb trees as a strategy used to run away from lions and tigers. Geoprocessing techniques have been used to map leopards and have shown that the black panthers account for 10% of the species. Their black fur is best explained by gene mutation.

This investigation was part of the doctoral dissertation of Lucas Gonçalves, a student in the Graduate

Program in Zoology, advised by Dr Eduardo Eizirik. American Journal PLoS One, of the Public Library of Science, has published an article on the topic. The investigation joined efforts from 120 researchers from 20 countries, who shared their contributions (many of them from camera traps, as they capture images of the animals in nature). “It was real hard work. Many of the studies available today are on tigers, lions and cheetahs, but images of leopards appear ‘by chance’. And so hundreds

of pieces of information were available to us”, tells Lucas Gonçalves, who has also traveled to Australia, the USA and the UK as he was studying scientific collections. In addition to them, Ricardo Machado, from Universidade de Brasília, and nine scientists from the USA, Botswana, Thailand, Iran, Sri Lanka and Malaysia are featured in the article.

This information was useful for scientists to conduct the mapping of the species, as it has been shown that it can be found in the two continents,

PHOTO: RAHUL MENON/DISCLOSURE



*A leopard and a black panther with its dark fur*



depending on the environmental conditions. The technique (known as niche modeling) makes it possible to use geographical information from global sources, including information on temperature, moisture, vegetation and altitude. “This method had never been used before for assessing certain variations, such as color, within the same species”, claims Eizirik.

### **MOIST FORESTS**

One of the conclusions is that the black panthers live largely in forests. These findings corroborate Gloger’s rule, a German zoologist who, back in 1833, assumed that dark birds and mammals would be most commonly observed in those areas. They could change their colors and approach their preys or hide from predators easily.

In order to have concrete answers, multiple analyses were conducted. Results were grouped in three different areas: total number of areas where the animals have been reported; the areas where they have been reported in Asia as a whole, and Southeast Asia. The group has found that the incidence of moisture correlates with the large number of black panthers. However, it was necessary to prove whether this would be a direct or an indirect effect

(since the stronger the moisture, the greener the area). Then, the researchers have found that the peninsula south of the Kra Isthmus (a narrow area connecting Malaysia to the rest of Asia) is inhabited solely by black leopards, whereas in the Northern area, the two species coexist in relatively similar numbers. “The setting shared by the two species were basically similar: a forest. Therefore, we concluded that the Southern part is more moist”, claims Eizirik.

### **How to tell a leopard from a jaguar apart?**

*Leopards inhabit Asia and Africa, whereas jaguars inhabit the Americas. The former is not as heavy as the latter but its fur is marked with small rosettes, whereas the latter has such a robust body marked with larger rosettes. Black animals are characteristic of either species.*

## *A history of success at PUCRS*

Lucas Gonçalves da Silva has a very long history as a student at PUCRS. At the undergraduate level, in the Biological Sciences program, he was a research initiation grantee at the Laboratory for Image Treatment and Geoprocessing, in the area of Geography. After completed his Master’s in Zoology, he turned to Dr Eduardo Eizirik. “He is a world reference in this area of research and although I have never been in his classroom, we have been very close somehow. The nicest part of it is that my doctoral research involved biogeography, genetics, evolution and mammals.” He currently develops research at the Universidade Federal Rural de Pernambuco.

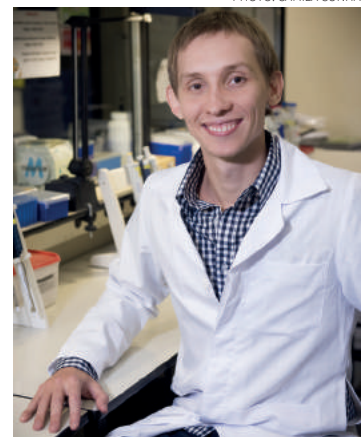


PHOTO: CAMILA CUNHA

# CREATIVE INDUSTRY BUILDS UP MOMENTUM

*Tecna opens its doors with state  
of the art TV and cinema studio*

The creative industry, especially the audiovisual production sector, gained momentum in 2017 with the opening of the Audiovisual Technological Center of RS (Tecna), a partnership involving PUCRS, the government of the State of Rio Grande do Sul and Fundacine. The infrastructure of this environment for innovation and development has been designed to address teaching and research needs and to provide the integration with the market with an eye to the development of sub-specialties in the area. Located at Tecnopuc Viamão, this new environment has sustainability as its vector, as its local productive arrangements are to be shared and improved.

Tecna has been designed to be a driving force in the audiovisual market of the state of RS in order to strengthen the sector. A total investment of BRL 27 million will have been made. “Tecna

will embrace different types of productions as it seeks to draw projects from all over the country and overseas. The project is unique because it is not just a studio, but an organization within a technological center”, claims João Guilherme Barone, Professor of the Undergraduate Program in Audiovisual Production and Graduate Program in Communication, who has been involved since the very beginning of the project.

The first part of the project was completed in April 2017 and features a cutting-edge TV and cinema studio, in line with international qualification norms. According to Barone, there is nothing like it. “It is the most modern and contemporary one in Brazil today. No other university has a similar project, which is connected to a science and technology park”, adds he.







The center is open for content and advertisement production companies and its studios will be available for TV channels as well. Additionally, it will be available to Famecos whenever necessary for any of its studio practices. “It is such a unique platform, available to all programs of the university, whose students and professors are invited to think up projects within the center”, highlights Tecna’s coordinator, Aletéia Selonk.

### **NEW OPPORTUNITIES**

The arrival of Tecna has brought new development programs, since it provides new courses in the area of 3D, animation and sound and photography and art, for instance.

## *Partnerships*

PUCRS joined the project of the Audiovisual Technological Center of RS in 2004, an existing partnership between Fundacine and the government of the State, and considered the areas of Tecnopuc, in Viamão, as perfect locations for the project. In 2011, the University played a leading role in the process in redesigning the project, as it employed the experience gained from Tecnopuc and Famecos. In late 2013, the main financial resources to implement it were collected from the federal and State governments, in addition to the investments made by the university.

The studio that is being designed

“Besides, students and market professionals will be able to join the University’s research groups, as new grants and internships will be available to projects developed in partnership with companies”, adds Aletéia.

Additionally, professors will be able to develop projects in the courses they teach or other research and market activities, since many of them are already playing an important role in them. “Tecna, as a living laboratory, offers a vast field of observation for graduate-level research. So, the number of projects carried out in partnership with businesses and the public sector might see an increase”, adds she.

received funds from the Ministry of Science, Technology, Innovations and Communications; from the government of the state of RS, through Fapergs and the program for Technological Parks of Rio Grande do Sul. In addition to PUCRS, Feevale plays a very important role in the execution of the project.

Besides companies, Tecna is intended to work together with laboratories and existing centers in Brazil and in Mercosur and European countries. “We’re looking into student mobility, and as this new space is being opened, we’ll be able to set up partnerships with schools and centers overseas”, remarks Aletéia.

## Market training

Tecna's impeccably soundproof TV and cinema studio is characterized by the production of high-quality sound. Its upper part is equipped with a grid used to facilitate and provide high-quality lighting for its productions. It is also possible to make use of its multiple stages that will give films a livelier ambiance. These practices will be incorporated to the audiovisual practices enforced by the audiovisual market of Rio Grande do Sul, since most of its productions today are made in booked studios. "Its users have the chance to enjoy a learning experience or revisit their concepts. Studio shooting is very different from location shooting", argues Barone.

Tecna's second phase of production will be completed by the end of the year and will consist of equipped laboratories for animation, games, visual effects, 3D, render farm and motion capture, as well as a sound



*Ministry of Culture delegates paid Tecna a visit*

studio equipped with a unique audio mixing room. Students' active involvement in the processes of audiovisual production, including audio mixing, will be facilitated in these environments. The project is equipped with two recording booths for sound effects, voice-overs and music.

### MAJOR PRODUCTIONS

Many movies set in Porto Alegre were shot in improvised settings such as a warehouse in the Pier. In addition to designing the stages, the teams had to set up all the supporting structures and, at the end, everything had to

be put down. At Tecna, producing companies will have the necessary infrastructure at a lower cost and at a high level of efficiency. The Center has been conceived with the idea of providing production companies with stages and structures that could be shared and reused in the future.

Companies will have the chance to shoot their movies at Tecna, including the stages of preparation, filming and, in the future, post-production. Creative industry companies will also have the chance to set their offices at Tecna and make use of its infrastructure, as well as develop research projects with PUCRS.

## A memorable site

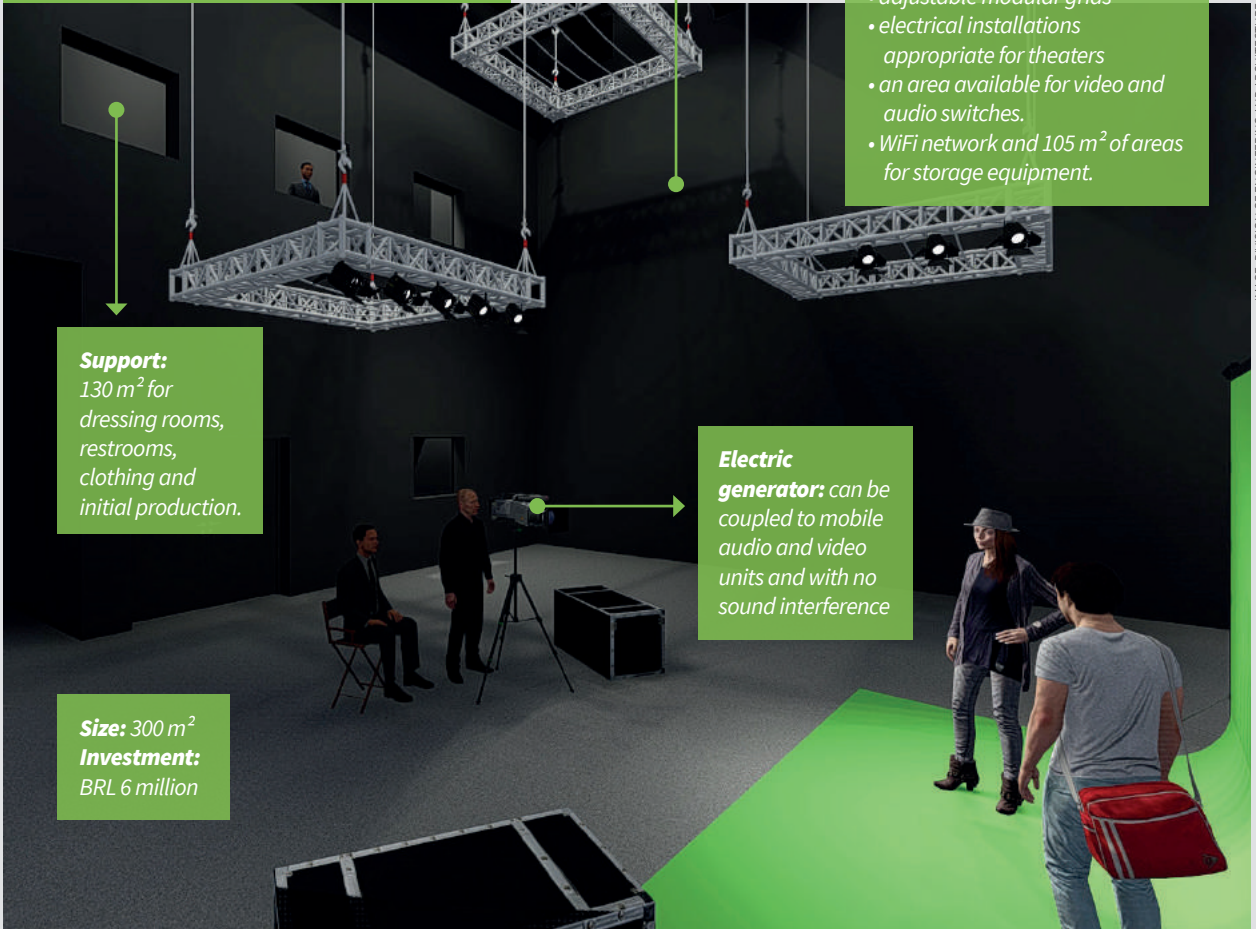
The area where now sits Tecnopuc Viamão used to be home to the city's Seminário Maior, which also served as the headquarters for the Nossa Senhora Imaculada Conceição School of Philosophy. In 2004, PUCRS bought the area in an effort to expand its Campus and build of the Science and Technology Park. Tecnopuc Viamão officially opened in 2013, in a total area of 15 ha and 33,000 m<sup>2</sup> of built area.



*Tecna is located at Tecnopuc Viamão, Rio Grande do Sul, Brazil*



## MOVIES AND TV STUDIOS



### Special features:

- soundproof walls
- acoustic floating floor on laser level concrete equipped with an anti-vibration system
- air conditioning
- adjustable modular grids
- electrical installations appropriate for theaters
- an area available for video and audio switches.
- WiFi network and 105 m<sup>2</sup> of areas for storage equipment.

### Support:

130 m<sup>2</sup> for dressing rooms, restrooms, clothing and initial production.

### Electric generator:

can be coupled to mobile audio and video units and with no sound interference

**Size:** 300 m<sup>2</sup>  
**Investment:**  
BRL 6 million

IMAGE: DIVISION OF ENGINEERING AND ARCHITECTURE

## Inspiration

Similar facilities all over the world served as the inspiration for the construction of Tecna. In France, Valence, one of the country's largest animation

centers, Angoulême, home to comic strip capital, and Paris, home to two very important cinema schools, have been visited. In Spain, visits were paid

to Bilbao, a very important city in terms of technology parks. In Italy, the legendary Cinecittà and the new Porto Cine served as references.



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# KNOWLEDGE FOR EVERYONE

*PUCRS offers Portuguese lessons for immigrants and refugees*

“Welcome to the program! I’m glad you came!” The music played by Rev. João Carlos took on a new meaning when performed chorally by Haitian and Senegalese immigrants from Lomba do Pinheiro, in Porto Alegre. Volunteer professors Cristina Perna and Regina Kohlrausch, from the School of Humanities, and PhD student Graziela Andrighetti filled the 24 students with encouragement. The Director of the Pastoral and Solidarity Center of PUCRS, Br. Marcelo Bonhemberger, and the leading pastoral agent, Rafael Rossetto, played the guitar.

In this relaxed atmosphere, the immigrants and refugees completed PUCRS’ 3-month Portuguese program, on Saturday mornings, at Santa Clara Parish Church, at no charge. The program featured topics on everyday and corporate life. The professors have also worked on curriculum design. For Dr. Kohlrausch, this action has been designed to provide assistance to new arrivals who need the language in order to integrate into the local community. “We’re trying to make their adaptation less painful as they are far from home”, says she.



*Lessons were given at Santa Clara Parish Church, in Porto Alegre*

The idea came out in 2015, at the meetings of the Human Mobility Work Group (created by the Pastoral Center, following an initiative of the Office of Communications and Marketing). Today, several departments of the University are involved. Relying on the support of the Caritas Archdiocese of Porto Alegre, which provides support to immigrants, the Pastoral proposed collaborative actions with Santa Clara Parish Church. And so, the project came to life.

## **LOOKING FOR WORK**

Nandie Saint Paul, 22, has been in Brazil for two years, with her husband

and son. “I can’t find a job. It’s very hard. I used to work as a cook in Haiti”, says she. Communication is a major issue for her. “When I came here, I couldn’t understand a word people said. I have learned a lot from these Portuguese lessons. I think they will be useful for me to find a job”, claims she. Nandie would like to be a secretary, but in her opinion, she would be happy doing anything.

Joseph Bazalais, 31, is faced with a similar problem. He arrived in Porto Velho, in the north of Brazil, three years ago. Then, he headed to



Santa Catarina, and started working at a butchery. “I lost my job after two years. I don’t know why. I’ve been living in Porto Alegre for a year now and still haven’t found a job. I apply for several jobs and never get a call back. I haven’t paid rental for four months and I don’t have anyone to help”, reports he. That is the reason why he is attending the Portuguese lessons: he wants to be qualified for the job market. “I can do anything. I have a family in Haiti and things have been tough out there. I wish I could help, but I can’t”. Back in his home country, he used to work in civil construction and gardening.

## FELLOWSHIP

Rafael Rossetto claims that initiatives such as this are ingrained in the mission of PUCRS. The Marist Network provides support to 82 countries. “The institution is naturally devoted to promoting human rights, be them in Brazil, Africa or in the Middle East”, explains he.

In addition to the Portuguese lessons, the University has plans to provide counseling sessions to students. “They go through a struggle in order to be able provide for their families”, claims Rossetto. The idea is that Psychology students could play an active role in the treatment. “Developing fellowship during the educational process, either of students or staff, is a challenge the Pastoral is keen to address. An example of such is the Voluntariado Marista. We can’t forget about it”, argues he.



*Haitian Nandie Saint Paul takes her son to class*

## IN BRAZIL

In 2012, a new type of visa was adopted by the Brazilian government: the humanitarian one. Today, there are less than 10,000 known refugees in Brazil. As many as 40,000 are awaiting a decision of the National Committee for Refugees, an agency responsible for reviewing refugee applications. According to Dr Gustavo Pereira, Law School Professor, when expats are considered illegal in Brazil, they must leave the country in 8 days. If they fail to do so, they will become illegal aliens. “As the country does not count on a rigid immigration policy, expats will only be deported if they report to court”, explains he.

The current existing immigration policy reflects 1980’s Statute of the Foreigner. Because it was created under the laws of the dictatorship, it is not very friendly to migrants. “The word ‘foreigner’ per se gives the idea of outsider”, criticizes Pereira. The new regulations are expected to effect changes - the Migrations Act, which is yet to be enacted. “It’s far from excellent, but it’s better than today’s. It looks at it as a human rights rather than national security issue, as stated in the current legislation. There’s nothing new in terms of bureaucracy. The difference lies in the language used”, ponders he.

## Learn the difference

**Refugees:** people fleeing their countries of origin for fear of persecution by virtue of their nationality, political views, social group, race or religion.

**Migrants:** people fleeing their countries of origin due to economic reasons or natural disasters. Examples of such are the Haitians and Senegalese who live in Lomba do Pinheiro.

# INTERNATIONAL EXPERIENCE CLOSE BY

*PUCRS is partners with more than 60 universities from Argentina, Chile, Colombia, Spain, Mexico, Peru and Uruguay*

The reasons that drive students to embark on an international experience are manifold. A large number of factors come at play when deciding on the destination, such as the geographical distance, cultural proximity, language identification, the existence of similar habits as well as money. Spanish-speaking countries seem to be a reasonable choice for those who want to have

an international experience without traveling long distances.

PUCRS has a large number of partnerships, cooperation agreements, memorandums of understanding and addenda for specific projects with more than 60 universities, as well as institutions such as NGOs and colleges from Argentina, Chile, Colombia, Spain, Mexico, Peru and Uruguay. There are

nine other agreements with these countries currently underway.

These partnerships serve to promote the exchange of professors and researchers, students, academic mobility programs, officialization, implementation and development of joint research projects, promotion of cultural and scientific events, knowledge exchange and academic publications.

## *Geographic and historical proximity*

Laura Ortega, 23, a junior Psychology major at PUCRS, chose Argentina as a destination for an international academic experience. She was selected for a Santander Universidades grant. She arrived in Buenos Aires at the end of July and is expected to stay there until the first week in December.

Cultural adaptation is a continuous and ongoing process and, perhaps, her biggest challenge. “I’ve learned a lot about sharing, independence and freedom. I share an apartment with two French girls and a Peruvian one. It’s important to respect each other’s space and, most importantly, to be respected. Back in Brazil, I lived with my parents and was completely oblivious of trivial issues since I had someone there to help me. I feel that the responsibilities I have here make me feel free”, says she.

In the academic realm, Laura highlights the importance of learning something she loves under another perspective. “I can see new visions of world all the time and I am making improvements not only in Spanish but also in English”, claims she. What I have to say to those who are considering going on an exchange program is: “Open your heart to a new culture and show respect to the new country without judging it. Study the local language, before and during the exchange.”



*Laura Ortega went on an exchange to Universidad Católica Argentina*

## IN AND OUT

Since 2009, PUCRS has opened its doors to 306 students from these countries, not including Peru, its most recent mobility partner. As many as 300 of our students packed their bags to go on an exchange to Latin America and Spain. The Dean of International and Institutional Affairs (AAIL), Dr Heloísa Delgado, adds that the institution is keen on expanding the number of agreements with Latin America and increasing the number of students on incoming and outgoing academic mobility in these countries. “We have promoted the partner countries in every class and we highlighted the positive aspects of Latin America. We talked about the region, its attractions and the advantages of studying in a neighboring country. To strengthen ties between us is one of the priorities in our strategic plan for the coming years.”

AAIL’s administrative coordinator, Sandra Becker, is in charge of setting up partnerships with Latin American universities. “Because I come from Argentina, I am very proud to collaborate with this strategic project for strengthening the ties and prospecting bilateral agreements. We need to find out more about the potential of neighboring countries and vice-versa. We need to find out more about one another, after all we are sister nations. We are stronger together.”



*Eva Crispín came from Spain to study Advertising at PUCRS*

## Hands-on work in Brazil

**E**va Crispín, 20, a student from Universidad de Vigo (Spain), has been in Porto Alegre since July 2017 for a one-year exchange at PUCRS. The courses that were offered and the possibility to do courses in other academic areas were some of the reasons that brought her to PUCRS. “In Galicia, I study Advertising and Public Relations, as a one-degree program. But I want to focus on Advertising only. PUCRS gives me the chance to work on Advertising alone. I also want to study people’s behavior and next semester I want to do Psychology courses”, tells she.

As a senior year student, Eva adds that one of the most striking differences in higher education between the two countries is the engagement with practicum work. In her view, in Spain you will always see students carrying a lot of books around as classes are mostly theoretical and students are subject to many more written exams. Eva approves of the practicum work done at PUCRS, in addition to theory and individual tests, and is excited about doing an internship. “It is hard to find a balance between work and study in Spain. Here, students can do an internship during the course of their study. As I am not allowed to paid work, according to my visa regulations, I intend to do a mandatory non paid internship instead”, plans she.

Eva will not hesitate to encourage people to have a study abroad experience. “Traveling across the ocean alone, speaking a different language, meeting people and understanding how things work makes me grow as a person and as an advertiser. I will have lots of stories to tell and be better prepared for the market when I return”, says she.



## National and international recognition

PUCRS ranks as the best private higher education institution of Brazil, as per Folha de São Paulo University Ranking (RUF), published by Folha de S. Paulo. Among public and private institutions, it has moved up four positions from 22<sup>nd</sup> in 2016 to 18<sup>th</sup> in 2017. It has become the first private institution to rank higher than PUC-Rio (20<sup>th</sup>) since 2012. In terms of Research, the university climbed four positions too: from 24<sup>th</sup> to 20<sup>th</sup>. As for Internationalization, it ranks atop public and private universities in Rio Grande do Sul. 2017's significant achievements were featured in the Times Higher Education list, as PUCRS appears as the best private institution of RS, among 1000 universities around the globe. In the *Campeões da Inovação* list, from *Revista Amanhã*, it has been considered the most innovative educational institution in the south of Brazil.

## Traits of Evolution

PUCRS' Science and Technology Museum (MCT-PUCRS), in partnership with the Great North Museum: Hancock, from Newcastle University (UK), launched the exhibit Traits of Evolution. Based on a phylogenetic tree, a big "tree of life", it shows its contemporary take on the evolution of organisms, focusing on the changes that have occurred throughout the evolutionary process which, from natural selection, facilitated the formation of such organisms. The exhibit stemmed from the project "*The use of museums' scientific collections for teaching evolution and understanding of environmental changes from the ecomuseological perspective*", which was selected by the British Council Brasil, being sponsored by Newton Fund, one of the most important British funds for funding and development of research and innovation in the UK.



FOTO: BRUNO TODESCHINI



## Doctor Honoris Causa

PUCRS awarded German philosopher and researcher Ludger Honnefelder with an honorary degree. The recognition came from the School of Humanities. Honnefelder is Professor Emeritus of Philosophy at the University of Bonn (Germany) and has written many articles on medieval philosophy, metaphysics and ethics. He was also invited to deliver lectures in two events at the University: the 8<sup>th</sup> Brazil-Germany Symposium of Sustainable Development and the International Symposium 500 Years since the Reformation: Legacies and Challenges.

## Social responsibility

PUCRS has won the *Ojo de Plata* 2017, a prize given by the Social Responsibility Regional Center for Latin America and the Caribbean (Orsalc), accountable to the Unesco International Institute for Higher Education in Latin America and the Caribbean, which recognizes the good practices and experiences of the University in social responsibility. The annual prize, was given to the hands of the President of PUCRS, Br Evilázio Teixeira, at the 5<sup>th</sup> Regional Latin America and the Caribbean Forum – Territorial Social Responsibility, at the *Universidad Nacional Mayor de San Marcos*, in Lima (Peru).

## Graduate Programs

PUCRS ranks atop a list of public and private higher education institutions (HES) that offer ten or more graduate programs, according to the Federal Agency of Evaluation and Support of Graduate Education (Capes). This has been the country's biggest improvement from 2013 to 2016. Out of the 24 graduate programs offered at the University, 7 have had their quality improved and, overall, 11 have been classified as programs of international excellence. PUCRS has a score of 5.36 among the HEIs offering ten or more graduate programs according to CAPES' preliminary evaluation. Capes evaluates programs on a scale that goes up to 7, but programs awarded grade 6 are considered of international excellence.



## Weather station

The Geography program, on behalf of its Image Treatment and Geoprocessing Laboratory, has been given a weather station from Cambridge University's Raspberry Pi Foundation. The equipment, which is yet to be available in the market, will be used to check weather data on Campus. The difference between the temperature at PUCRS and that of other areas of Porto Alegre may vary up to 3°C. The equipment has been installed between buildings 15 and 6. The Porto Alegre weather forecast can be checked on [www.wunderground.com](http://www.wunderground.com) and at the main hall of building 5. The equipment records wind speed, rainfall, pressure, air quality, wind direction and ground temperature.

## Nobel Prize

Paulo Henrique Hoeckel, a graduate student in the Business School's Development Economics program, joined a group of 400 students selected for the 6<sup>th</sup> Meeting on Economic Sciences, in Germany, last August. Once a year, around 20 winners of Nobel Prizes in Economic Sciences get together in Lindau, Germany, to meet with the next generation of scientists. "I served as a speaker in one of the sessions. I gave a presentation and the Nobel Prize committee gave it a careful analysis", says he.

PHOTO: PERSONAL ARCHIVE



# 200 YEARS OF HISTORY

*The Marist network promotes actions to celebrate its 200<sup>th</sup> anniversary*



PHOTO: DISCLOSURE

*L'Hermitage, in France, is a marist symbol and the determination of Champagnat*

Stimulated by seeing kids deprived of education in France, after the revolution, a young French priest decided to take action. Saint Marcellin Champagnat dedicated his life to the cause, and at the age of 27, he founded an institution committed to educating children and adolescents. The idea of creating a Society, under the protection of Mary, intended to preach the word of God through education, came up during his training in a Seminar in Lyon. Then, Jan 2<sup>nd</sup>, 1817 saw the official beginning of the Marist actions.

Shortly before that, in Oct 1816, Champagnat's primary motivation emerged as he paid a visit to the 16 year old Jean-Baptiste Montagne, on his deathbed. As he talked to the

## Actions to remember

On Jan 2<sup>nd</sup>, 2017, the Marist Network celebrated its 200<sup>th</sup> anniversary. However, celebrations are observed all year round. Parties and festivities are adapted to each place around the world. 200 actions are being planned to celebrate the Marist Network's 200<sup>th</sup> anniversary through the project *Maristas em Rede*. Brothers, professionals, students, family and society are joining their forces to accomplish the social actions in education, civic

consciousness, human rights, art and culture, sport, spirituality, sustainability and innovation. All the things that have been planned can be checked on the link [maristas.org.br/emrede](http://maristas.org.br/emrede).

Additionally, two other missions, named *Champagnat Ways*, left Porto Alegre for France, as they revisited the most striking sites in the Marist history. Among such places are Rome, Paris, Lyon and L'Hermitage. The trips occurred in 2017.



young man about God, he realized Jean-Baptiste was completely unaware of what he was talking about. Montagne's lack of knowledge was a driving force for the priest to put his idea into practice.

Champagnat died in 1840. He had trained 280 brothers and founded 48 schools, providing assistance to as many as 7,000 students. So, the mission quickly spread around the world, from France to Europe, Africa and the Americas. Today, it is making its presence felt in 80 countries. The Brazilian gateway for the Marists was the state of Minas Gerais, as they arrived there in 1897. Three years later, they left France for Bom Princípio, in Rio Grande do Sul, at the request of German immigrants who wanted their kids to have a quality education. In 1903, another group of Brothers went to Belém, in the Amazon, as they disseminated the actions all over the North. Every Brazilian state has been marked by at least one Marist action – from schools and universities to social assistance units and missionary work –, which accounts for more than 40% of the network's global actions.

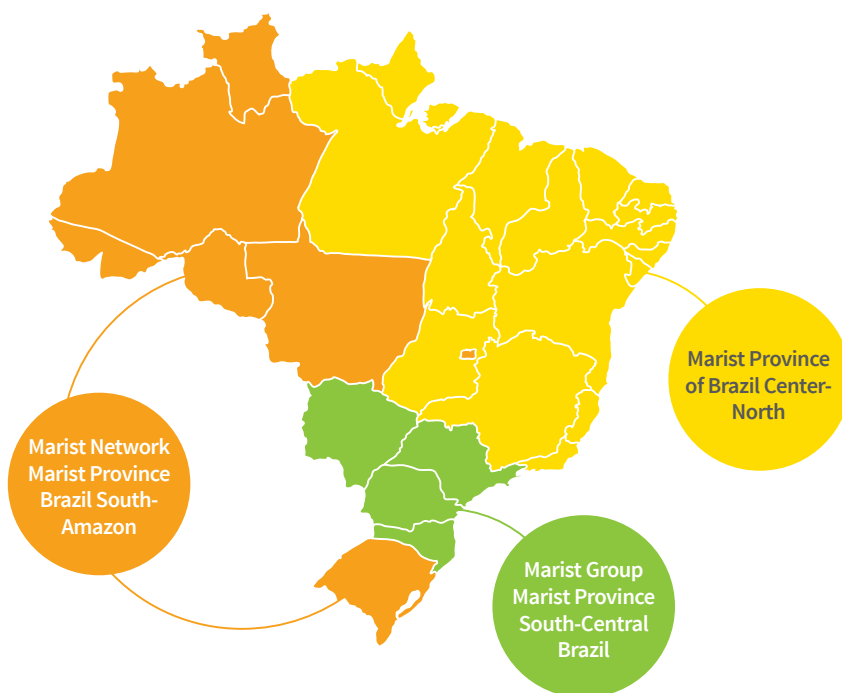
For Br. Arlindo Corrent, advisor of the Office of the Vice President for Administration and Finance of PUCRS, the fidelity to Champagnat's ideals is what keeps the Marist Institute still strong all over the world. "Its charisma, that is, the ideals, have always been at the core of the Institute's mission. Although education is one of our missions, our main goal is to preach the Marist word and make Jesus known and loved."

## A new chapter

September 2017 marked the official beginning of another General Chapter. "It's the world's largest Marist assembly. The path we're going to take over the coming years were decided there", explains Br. Arlindo. The assembly was also marked by the election of the new superior, Br. Ernesto Sánchez, and general boards, which will run the Marist in world over the next eight years. For the first time, the event took place outside of Rome – in the city of Medellín, Colombia. A representative of each province is invited to the assembly. Today, including the advisors, there are more than 100.

Despite being officially scheduled to begin in September, the meeting had been prepared for two years by brothers and lay preachers from all over the world. They contributed with ideas, suggestions and reflections that guided the discussions throughout the assembly's 42 days. This Latin America assembly is the 22<sup>nd</sup> of all Chapters that are concluded every eight years.

### MARISTS IN BRAZIL



- 3** Provinces
- 97** basic education schools, 34 of which provide free education
- 35** social assistance units
- 7** hospitals

- More than 80** thousand students in Basic Education schools in 23 states and in the Federal District
- 58** thousand students in higher education (graduate and undergraduate)
- 27** thousand brothers, lay preachers and collaborators

INFORMATION AVAILABLE IN THE BRASIL MARISTA SOCIAL REPORT 2015, PUBLISHED IN OCT 2016

# PUCRS



## University in Transformation

*To effect changes in people's lives and in society has always been our mission. We are transforming ourselves, revisiting the way we educate despite remaining firm to our traditions, our identity, our vocation for innovation. We are a University in Transformation and we want to be as Great as the Future.*

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