



2020

**SCIENCE
NEWS YEARBOOK**

Campus de Gandia de la Universitat Politècnica de València



UNIVERSITAT
POLITÈCNICA
DE VALÈNCIA

CAMPUS DE GANDIA

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Foreword

The Campus Gandia of the Universitat Politècnica de València relies strongly on bringing science and research closer to society through the spread of the R&D activity developed by the staff of experts and research teams of our campus.

This yearbook of scientific news is born from the desire to encourage people's interest in scientific topics, presenting itself as a brief compilation of the numerous contributions and actions in research and science that are carried out annually by the Campus of Gandia. Therefore, it is a tool to share the most relevant news of technological, scientific, social and environmental interests in 2020.

The articles and news that make up this publication focus not only on the results obtained by research, but also echo personal experiences, reflections and reviews of the state of play. They are giving voice to experts from different scientific fields and covering a wide range of topics in order to reflect the strategic role played by scientific practice in the socioeconomic development of our environment and the improvement of social well-being.

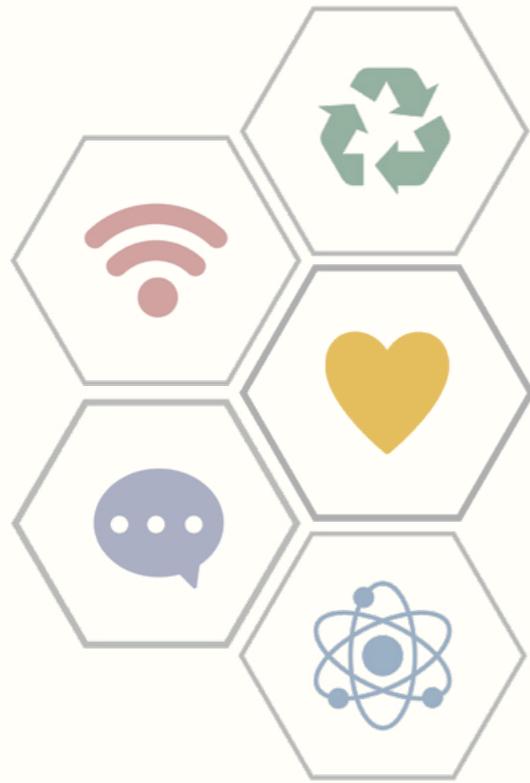
2020 has been a particularly significant year for society as a whole, characterized by the pandemic caused by the SARS-CoV-2 virus and its effects. In this context, the dissemination of scientific knowledge has been essential in the promotion of health care practices and prevention

against infections, as well as the dissemination of studies and scientific evidence associated with the COVID-19 disease, helping to understand the fast transformations experienced by our society. In response to this social need, this yearbook dedicates a section to contributions in research in the field of health.

In reaction to another of the main social concerns of today, important lines of research are being developed in the field of conservation environment in different fields of action. This work is summarized in the following pages, focusing on highlighting this activity and raising public awareness of environmental problems.

Likewise, disseminating scientific culture, promoting scientific vocations and STEM (Science, Technology, Engineering and Mathematics) careers among young people, particularly, among girls and adolescents, continues to be one of the main challenges of the campus since its creation. Therefore, numerous initiatives are being carried out to achieve this goal, with special emphasis on making visible the work and dedication of our female researchers and the role of women in science throughout history.

We invite you to discover the science and technology of the Gandia Campus.



Environmental Sciences

Technology

Science and Society

Health

Social Sciences

Environmental Sciences

1. Study of Environmental Variables Influencing Tellinas and Venus Clams in the Gulf of Valencia
2. Improved Irrigation in Fruit Farms
3. Remote Sensing to Analyze Turbidity Patterns in the Albufera
4. Study Confirms that Adaptive Forest Management Does Not Affect Soil Properties
5. Return of the Loggerhead Turtles

Study of Environmental Variables Influencing Tellinas and Venus Clams in the Gulf of Valencia



Julia Escrivá

Analyzing the functions of physical, chemical and biological gradients on the sandy beach communities of the south of the Gulf of Valencia, was one of the objectives of the research that Julia Escrivá Perales conducted for her Doctoral Thesis, **“Study of the Exploitable Banks of *Donax Trunculus* and *Chamelea Gallina* in the Southern Sector of the Gulf of Valencia and Environmental Factors that Influence Their Abundance”**, supervised by Campus Gandia professor **Silvia Falco** and **Miguel Rodilla**.

River discharge of freshwater into the sea is very important because it transports nutrients, organic matter and fine sediments to coastal ecosystems. The Mediterranean Sea, a nutrient-poor sea, depends largely on the continental freshwater runoffs, as they provide the necessary nutrients for primary production.

The main freshwater discharges along the coast of Gandia come from the Serpis river and from the drainage acequias in the Safor wetland that discharge their waters into the Port of Gandia. In order to analyze the influence of these freshwater discharges on the benthic macrofauna, samples of water and sediment were collected at different stations located at different proximities to freshwater source to the south of the Serpis and Gandia Port, as well as at another reference station located to the north of the main contributions.

These sampling campaigns were conducted over three time periods with different precipitation and flow in the Serpis river, obtaining samples of benthic macrofauna, water and sediment in each campaign. These types of studies can help us understand the causes of the possible variations in the distribution and abundance of the fauna that lives in the marine sediment, where we can find species of great impor-

tance to the bivalve fisheries of the Gandia area of, such as the tellina (*Donax trunculus*) and the venus clam (*Chamelea gallina*).

This study was able to observe increases in the abundance of organisms during the summer, linked to the physiological processes associated with temperature increases. In addition, the study found that the benthic macrofauna communities were strongly influenced by physical factors such as the mean grain size of the sediment, as well as the nutritional variables (organic matter in sediments and microalgae in the water column) and the proximity to the freshwater discharges, with a higher density of organisms in those areas closest to the contributions. The macrobenthic fauna showed a temporary pattern with high abundances in summer that was not so evident in *D. trunculus* and *C. gallina* due to its exploitation.

Identifying these variables is crucial to the development of adequate coastal management strategies, paying special attention to any anthropogenic activities that may modify the environment and subsequently affect the benthic fauna communities and bivalve species of high fishing value, along with their socioeconomic repercussions. Granulometry is an important factor that can condition the benthic macrofauna populations and in particular, the bivalve species of high fishing value, such as the tellina (*D. trunculus*) and the venus clam (*C. gallina*). Since these organisms burrow in the sediment, they are susceptible to variations in the mean grain size of the sediment, so any changes may condition their distribution and abundance.

The results obtained in this research have been published under the title, **“Driving forces that structure sublittoral macrobenthic communities in sandy beaches along environmental gradients”**, in the journal *Estuarine, Coastal and Shelf Science*.

Improved Irrigation in Fruit Farms



Poster of the GOINNOWATER project

GOINNOWATER is a supra-regional project for the improvement of water and energy management in modernized irrigation of fruit farms, responding to the need to improve and increase the efficiency of the use of these natural resources, as well as the productivity and economic viability of these crops, ultimately guaranteeing the health and sustainability of ecosystems through innovative approaches.

In response to its commitment to the environment through the implementation of sustainable agricultural practices, the GOINNOWATER team bases its strategy on the use of technology and research to develop an open source computer program to calculate the efficiency of natural resource use through different management indicators. This program detects inefficiencies at the land-plot scale, applying benchmarking techniques. It also proposes measures for optimizing the management of water and energy resources and improving the competitiveness of fruit farms.

Despite the achievements in irrigation modernization in recent years, Spain does not currently have a data flow between Cooperatives and Irrigation Communities that allows for measurement and improvement of the efficiency of water and energy use, in a context aggravated by climate change and scarce rainfall.

GOINNOWATER established its mission after verifying this shortcoming in the irrigation farming sector. Their approach establishes relationships between farmers, managers of the irrigation communities and cooperatives and research staff, proposing employment of management indices and comparative evaluation as a potential method for identifying effective techniques to improve the productivity of irrigated crops, whether on large farms or on smaller plots whose size limits their access costly technology such as soil moisture sensors.

SUPRA-REGIONAL SCOPE

The GOINNOWATER Operational Group is funded by the National Rural Development Program (2014-2020) to carry out the project. The Operational Groups are key factors in the development of the European Association for Innovation in the field of productive and sustainable agriculture. The aim of this association of actors from different sectors is to form groups with the common objective of solving particular problems by developing

In the case of GOINNOWATER, the Operational Group is supra-regional, with members from three autonomous communities that have large areas of irrigated fruit crops and significant water deficits due to the lack of rainfall in their territories.

The members of each community are:

- Murcia: Moval Agroingeniería
- Valencian Community: Foia del Pou Irrigacion Community, Universidad Miguel Hernández de Elche, Campus Gandia-Universitat Politècnica de València and Agro-food Cooperatives of the Valencian Community
- Andalusia: Universidad de Almería

This project also foresees transferring its results to other geographical areas, crops and irrigation systems in order to achieve an efficient use of water and energy resources, which will improve the competitiveness of agricultural holdings and contribute to the reduction of CO2 emission levels by reducing energy use.

LAUNCH MEETING

Campus Gandia UPV hosted the initial project meeting on January 17, where the representatives of the member organizations of the Operational Group gathered together.

The members of the Campus team, led by **Bernat Roig**, are **Enrique Sigalat** and **Jaime Lloret**, who carried out the preparation and execution tasks for the successive participatory workshops to design the tool to be implemented. The UPV team also participated in the design and analysis of the indicators that will measure the efficiency in the use of water and energy in each plot of land, indicators that will be crucial for the execution of the project.

As part of its program, the Operational Group also planned to hold informative meetings to showcase the use of the program, irrigation management and the improvement of the efficiency of the use of water, energy and nitrogen fertilization.



Project Task Force

Remote Sensing to Analyze Turbidity Patterns in the Albufera

Maite Sebastiá and **Javier Estornell**, experts in Environmental Management and Remote Sensing at Campus Gandia of the Universitat Politècnica de València, collaborated with researchers from the School of Marine Sciences at the Universidad Autónoma de Baja California (Mexico) in a study that analyzes the monthly turbidity pattern of the Albufera lagoon.

The project began during Maite Sebastiá's postdoctoral stay at the Universidad Autónoma de Baja California (UABC), in the POPEYE group that specializes in coastal oceanography and remote sensing. Maite has a PhD in Environmental Sciences and is a specialist in Monitoring Coastal Ecosystems. The objective of the stay was to apply remote sensing monitoring to the Albufera de Valencia, a coastal lagoon that faces an important eutrophication problem.

The eutrophication is due to the supply of nutrients, mainly nitrate and phosphorus, which can produce an imbalance in the system and change the composition of phytoplankton. The eutrophication of the Albufera is an old problem that dates back to the 1960s. From then on, the effects of human activity began to become evident with the progressive degradation of the biodiversity of the system, shifting from a clear state to a turbid stable state that was consolidated in the early 1970s. But in recent years, Paloma Mateache, Director of Conservation at the Albufera Natural Park, and María Sahuquillo, official in charge of the Valencian Government's Quality Monitoring program, have expressed their concerns

about the considerable deposition of sediments that are threatening the lagoon with clogging. In this regard, remote sensors can provide information about turbidity patterns, which in turn would indicate the areas most likely to accumulate sediment. At these meetings held between the research team and the park's technical team, the decision was made to study turbidity patterns in greater depth. Jesús Aguilar from UABC was in charge of developing and applying the methodology.

METHODOLOGY AND RESULTS

In order to monitor the lagoon, the research team used images from the European Space Agency's Sentinel-2 satellite and compared them with in situ data from the monitoring program of the Environment General Subdivision of the regional government. Given the high spatial complexity and the varying water quality, remote sensing is the only way to obtain a synoptic view of the entire lagoon. The results obtained allow the researchers to define the seasonal pattern of turbidity and chlorophyll a (an indicator of the phytoplankton biomass) and to identify the areas of the lagoon with the most anomalous values, providing relevant information for the management of water resources.

The Albufera lagoon is surrounded by an extensive agricultural area primarily used for rice cultivation and connects to the Mediterranean Sea through three floodgates. As Maite explains, "The local water council controls the hydrological cycle to meet to the needs of the rice crop. High turbidity periods are linked to higher water residence time and closed flood-



Jesús Aguilar, Maite Sebastiá and Javier Estornell

gates." However, precipitation and wind also play an important role in the spatial distribution of turbidity. "During storm events, phytoplankton and sediments are discharged to the sea, if the floodgates remain open." The rice harvesting season, when the floodgates are open, coincides with the beginning of the rainy period. Closing the floodgates during the rain events can have several negative effects both for the lagoon and for the receiving coastal waters and ecosystem. Non-discharged solids may accumulate in the lagoon worsening the clogging problems, and the beaches next to the receiving coastal waters will not receive an important load of solids to nourish the ecosystems. This demonstrates the importance of conscious management of the floodgates.

COASTAL LAGOONS IN DANGER

Coastal lagoons are transitional ecosystems between inland and coastal waters characterized by high spatial and temporal variability due to both natural intrinsic factors and anthropic pressures.

The variations resulting from the irrigation system through the control of the hydrological cycle or from urban pressure through the discharge of wastewater cause serious environmental problems that make coastal lagoons one of the most endangered ecosystems.

The Albufera Natural Park is one of the most representative and valuable coastal wetlands in the Valencian Community and the Mediterranean basin, and holds several protection figures at both a national and international level, such as the Spanish Natural Park, Special Protection Areas (SPAs) for birds, Sites of Community Importance (SCI)s and Ramsar Site. In addition, some parts of the area have also been declared as "Flora Micro-reserve" and as "Fauna Reserve".

More information:

Sebastiá-Frasquet, M.-T.; Aguilar-Maldonado, J.A.; Santamaría-Del-Ángel, E.; Estornell, J. Sentinel 2 Analysis of Turbidity Patterns in a Coastal Lagoon. *Remote Sens.* 2019, 11, 2926.

Study Confirms that Adaptive Forest Management Does Not Affect Soil Properties



Cristina Lull

Adaptive forest management does not adversely affect soil properties. It is necessary to articulate forest ecohydrological-based measures that help mitigate the impact of climate change on Mediterranean forests.

These are the main findings of the study carried out by the researchers from the Universitat Politècnica de València, **Cristina Lull** (Campus Gandia), **Inmaculada Bautista**, **Antonio Lidón**, **Antonio del Campo**, **María González** and **Alberto García**, all members of Forestry Science and Technology (Re-ForeST) group of the IIAMA-UPV. Their work has been published in the scientific journal "Forest Ecology and Management".

The study is based on the premise that organic carbon reserves in the soil have an important role in the maintenance of ecosystems as a source of nutrients and energy for soil microorganisms, which have an essential role in the nutrient cycle.

"The biological and biochemical properties of soil are essential for the decomposition of organic matter. However, these properties can be affected by forest treatments that are considered 'sustainable' when the soil properties are maintained or improved," explains the co-author of the study, Cristina Lull from Campus Gandia.

For this reason, the study assessed the effects of adaptive forest management on different soil properties.

RESEARCH UNDERTAKEN AND RESULTS

The study was carried out in a marginal semi-arid forest located in the "La Hunde" public forest, classified as "one of the few well-preserved oak forests in the Valencian Community and the largest in the province of Valencia," says the professor.

The research consisted of analyzing the effect of a silvicultural treatment on the properties of the mineral soil and the mulch in relation to the carbon cycle and on the enzymatic activity of the soil.

Thus, the data obtained was compared to an area that was unmanaged over a period that varied from five months to seven years after silvicultural treatment. Specifically, the untreated area has a high density of holm oaks (1059 ft/ha) and in the treated area it was reduced to 289 ft/ha, in addition to eliminating the bush mass.

"In the early stages, in the treated plot we detected a slightly higher content of sequestered organic carbon in the soil and soluble organic carbon in water in the mineral soil, probably due to the remains of the smaller cuttings that were left behind in the treated plot during the silvicultural treatment.

However, seven years after the treatment, we observed that it did not affect the carbon of the soil, nor the respiration of the soil measured by laboratory incubations, nor the enzymatic activities, specifically neither the phosphatase activity of the phosphorus cycle nor the urease of the nitrogen cycle, supporting the sustainability of this type of forest management," points out the researcher.

All of this highlights the important work that has been carried out by the Forestry Science and Technology (Re-ForeST) group over the last decade, with different studies and research projects that seek to improve the resilience of semi-arid forests against climate change.

"This study is complemented by others carried out in the same area by the Re-foreST group concerning the hydrological characterization of the forest structure for the implementation of adaptive forestry, as well as the study of forest measures based on ecohydrology for adaptation to climate change. All of this with a sole purpose: to promote practices that improve the adaptation and conservation of our forests," concludes Cristina Lull.

More information:

Cristina Lull, Inmaculada Bautista, Antonio Lidón, Antonio D. del Campo, María González-Sanchis, Alberto García-Prats, Temporal effects of thinning on soil organic carbon pools, basal respiration and enzyme activities in a Mediterranean Holm oak forest, *Forest Ecology and Management*, Volume 464, 2020, 118088, ISSN 0378-1127.

Return of the Loggerhead Turtles

In recent decades, the preservation of the loggerhead sea turtle or *Caretta caretta* has raised great concern due to the escalation of environmental threats, many of them caused by the negative impact of human activity on the marine environment. In addition to the effects of marine pollution, specifically the presence of marine debris consisting mainly of plastic debris that turtles mistake for food, other dangers such as fishing or maritime traffic also pose health risks to these species.

The conservation of the loggerhead sea turtle and other marine species in Mediterranean waters depends on understanding and proper management of marine ecosystems. In 2015, in keeping with this objective, Campus Gandia of the Universitat Politècnica de València was added to the existing lines of research on Mediterranean sea turtles carried out by the Marine Zoology Unit of the Cavanilles Institute of the Universitat de València. The Campus is providing innovation with the application of new technologies to increase the understanding of these species and the threats that affect them. These lines of research are part of various scientific projects in which other scientific institutions, conservation associations, NGOs, and the Ministry of Agriculture, Rural Development, Climate Emergency and Ecological Transition of the Generalitat Valenciana also participate.

In the research carried out at Campus Gandia under the leadership of **Eduardo Belda**, the turtles are being tagged and monitored via satellite in order to establish strategies for their protection. By tagging the turtles with satellite transmitters, it is possible to monitor the long journeys and migrations carried out by these specimens, enabling the study of their behavior and habitat use, as well as understanding the survival of captive-bred and rehabilitated specimens.

This was the case with the la tortuga Lola (Lola the turtle), the first rehabilitated juvenile loggerhead turtle that was monitored after being tagged and released.

MOVEMENTS AND REPRODUCTIVE SUCCESS

Currently, within the framework of the European **LIFE INTEMARES project**, the Campus Gandia collaborates in the monitoring of young turtles born on our coasts and in the monitoring of nesting females. This is the case of the turtles Mascletà and Victoria, two specimens tagged with satellite transmitters after spawning this summer on the beaches of Tarragona and Cullera respectively. Thanks to the tagging and monitoring of these turtles, it has been possible to detect new nesting attempts, facilitating the activation of protocols for the protection of the turtles and their eggs.

You can follow the turtles on the webpage <https://eucrante.org/siguiendo-tortugas>, where you will find the updated locations of Mascletà and Victoria, among other turtles.

SPAWNING SITES IN THE MEDITERRANEAN

Female loggerhead turtles have a philopatry tendency, that means that they return to the beach where they were born to spawn. However, since the early 2000s, loggerhead turtle spawning sites have begin to be detected off the western Mediterranean shores. Although the causes are unknown, this phenomenon is associated with the increase in sea surface temperatures in spring and summer, and in terrestrial temperatures, offering better thermal conditions for nesting.



A turtle tagged with satellite transmitters

Most of the nesting events have been recorded on tourist beaches, a fact that poses a risk to hatchlings and eggs, requiring more planning for these events and the relocation of the eggs to safe incubation sites.

Subsequently, it is just as important to understand the oceanic dispersal and survival rates of loggerhead hatchlings in their “lost years”, that is, the period of time that elapses between their birth and entry into the sea, and their return to coastal waters as large juveniles. Few studies have explored the behavior of young turtles in this period. However, advances in satellite technology have enabled research in this field.

ENDANGERED SPECIES

The loggerhead sea turtle is the most common species of sea turtles found on our coasts. It is a vulnerable species cataloged as “in danger of extinction”, included in the Red List of Endangered Species of the IUCN, International Union for Conservation of Nature since 2015, as well as considered a priority species under the Habitats Directive.

Citizen collaboration is very important in the location of nests, trails or sea turtle, specimens. Please notify 112.

More information:

Vilariño León, S. (2020). Monitoring and habitat use of reproductive female loggerhead sea turtles, *Caretta caretta*, on the Spanish Mediterranean coasts.

Abalo-Morla, S., Marco, A., Tomás, J. et al. Survival and dispersal routes of head-started loggerhead sea turtle (*Caretta caretta*) post-hatchlings in the Mediterranean Sea. *Mar Biol* 165, 51 (2018).

Technology

1. CanalTeleco, Telecommunications Explained by Juan Hernández Ruano, Student at Campus Gandia UPV
2. Something's Resonating at Campus Gandia
3. New Product with Sound-Absorption Properties Made of Esparto Grass Fiber
4. IVIO, the UPV and CEU Cardenal Herrera Partner to Study Dentin Demineralization
5. Salva Ardid, a New Commitment to Research Talent
6. Customized Private 5G Networks

CanalTeleco, Telecommunications Explained

by Juan Hernández Ruano, Student at Campus Gandia UPV

How does an antenna work? What does FM and AM stand for? How do magnetic fields apply to telecommunications? **Juan Hernández**, student in the Telecommunications, Sound and Image Systems Engineering Degree at Campus Gandia UPV, answers these and other questions concerning Telecommunications on his YouTube channel, CanalTeleco.

Juan received recognition from the Official College of Graduates in Telecommunications Engineering of the Valencian Community for his science communication work and already has 1,400 followers on his YouTube channel.

According to Juan, the idea for the channel came to him when he couldn't find answers to questions he had when he was looking into the Telecommunications Engineering degree. "A few years ago, as I was looking for information on YouTube and on websites about the Telecommunications Engineering degree, I realized there was something missing: I was really curious about the practice works in each subject. There are quite a few videos on YouTube created by university students, but it's all very scattered and I couldn't find any of the video content that I personally would've liked to see".

"As I was getting on with my course work, I felt really accomplished by everything I was learning each semester. In fact, when I was doing the labs and practice work in certain subjects, it occurred to me that it would be a good idea to share them on social media since they were really interesting and educational. I love the labs and practice work! It's what solidifies all the theory you learn in class. Since I have some electronic material and measuring equipment, I would repeat some of the practices at home to reinforce what I learned and improve what I wasn't doing right in the university lab".

"Before I started university, I worked at a radio station as a sound and maintenance technician and among other hobbies, I do experiments with electronics and radio frequency. With the combination of my prior work experience and to all the new information I was learning in my degree, I set out to create CanalTeleco aimed at students and



Juan Hernández, creator of CanalTeleco

Creating different and easy-to-understand content to help you better understand certain subjects. The aim of the channel isn't to teach, but rather to reinforce what we learn at university. In addition, the channel helps me reinforce everything I learn in class, because I make myself look up a lot of information and go over my notes to make sure that I'm getting it right".

"The channel was launched a year ago, and over time I'll start posting content for students in different course levels. I usually record my videos when my class schedule permits it. Recording and editing usually takes me a few hours, but I love it so much that it's well worth the effort."

Here at the Campus Gandia UPV we want to take the opportunity to congratulate Juan on his initiative and we leave you one of his videos. We hope you like it as much as we do!

You can follow Canal Teleco on:

Facebook:

<https://www.facebook.com/CanalTeleco/>

YouTube:

https://www.youtube.com/channel/UC5_8C-Bv_kM-2fvhCLkYUUG

Twitter:

<https://twitter.com/CanalTeleco>

Something's Resonating at Campus Gandia

The news that has resonated over the years in both the traditional and social media landscape in the La Safor county has been varied: "Five students from the campus receive awards at a national conference", "Pioneer project to reduce noise levels

in rocket launches", "Ambitious research about ultrasound in oral implantology" and many others. They all have two things in common: acoustics and the Campus Gandia of the Universitat Politècnica de València (UPV).



Students in an anechoic chamber



Young Researchers from Campus Gandia Awarded by the Tecniacústica Conference

In this academic and scientific context, we decided that it would be good idea direct our efforts towards research in a discipline that in Spain, unlike other countries, had relatively little relevance and was still very young: Acoustics. The newly formed group consisted of engineers and physicists with diverse opinions and scientific traditions, each of them committed to making scientific contributions to this branch of physics. Teaching and research staff of a public university yet to be built in the Grao de Gandia.

The fruit of the collective work over the years has a very clear result: Campus Gandia is home to one of the most internationally recognized Spanish Acoustics groups. The resounding scientific success is the result of the work carried out by a team of people that have propagated throughout multiple publications, conferences, international collaborations, awards, research projects and agreements with companies and institutions. Currently, the Acoustics research activity on the Campus Gandia finds itself in full swing. The fields of studies and specialties have been diversified, with more than 20 people working in Acoustics, including teaching staff, doctoral students, post-doctoral students, laboratory technical personnel and technical research personnel.

The best professional setting for the dissemination of scientific results in Acoustics is the leading annual national conference: Tecniacústica. The number and quality of scientific studies by the Campus research staff presented in all the editions of the conference are proof of the intense and growing activity carried out in the field of acoustics at Campus Gandia. The Spanish Acoustic Society has recognized more than 15 young researchers from the Campus with prestigious awards for their research work.

FUTURE OF ACOUSTICS

The future of acoustics in Gandia is something we hear about every day on and around the Campus. The topics, projects and branches of Acoustics continue to evolve and grow. Young university students with tremendous talent, ability, enthusiasm and thirst for learning are enrolled in the Master's Degree in Acoustic Engineering, which has seen 10 graduating classes go through. This academic and research environment offers students of varying backgrounds a prestigious and competitive educational program in acoustics, both for their own educational aims and also to continue onto a doctoral dissertation.

INTERNATIONAL EDUCATION AND RESEARCH

The earned prestige of the Acoustics group has opened the door to a wide range of international mobility possibilities during both the Master's degree and the the doctoral degree, allowing for continued research in acoustics in other institutions. This is all possible thanks to the agreements with different European universities, such as the Université du Mans in France, as well as South American universities, such as the Universidad Austral de Chile in Valdivia. As of the the year 2021/2022, outstanding students will be able to study the Master of Acoustic Engineering in the prestigious joint Erasmus Mundus Master's Degree between the UPV, l'École Centrale de Marseille in France and the Universidade de Coimbra in Portugal.

PROFESSIONAL AND RESEARCH OPPORTUNITIES

Intense collaboration between the Campus Gandia research personnel and the surrounding companies and institutions enables the incorporation of students into the job market in the sector by way of internships. Many of them decide to enter the job market, while others with an entrepreneurial spirit venture to create their own companies. There are also students who are deeply invested in their education and decide to further their studies by doing a doctorate. This way they carrying on with the spirit and the passion for research in Acoustics that will continue to resonate on Campus Gandia and its surroundings for many years to come.

Research staff in Acoustics at Campus Gandia: **Jesús Alba, Miguel Ardid, Manuel Bou, Víctor Espinosa, Juan Antonio Martínez, Isabel Pérez, Rubén Picó, Javier Redondo, Romina Del Rey, Víctor José Sánchez.**

More information in the book "Escola Politècnica Superior de Gandia, XXV anys (1994-2019)".

New Product with Sound-Absorption Properties Made of Esparto

The ecological crisis and the greater degree of public awareness regarding environmental problems have transformed the consumption habits of society, requiring the incorporation of ethical and environmental criteria in the production and distribution processes. In this context, research and innovation is crucial for the development of eco-efficient products and services capable of responding to the demand for sustainable and environmentally responsible alternatives.

The building industry is following this trend with a boom in green materials that only keeps growing. This is the field of research that englobes the study, "Sound-Absorption Properties of Materials Made of Esparto Grass Fibers", by Roberto Oltra, **Jesús Alba** and **Romina Del Rey**, experts in acoustics from Campus Gandia UPV, alongside **Jorge Arenas**, professor at the Institute of Acoustics of the Universidad Austral de Chile (UACH).

The research presents esparto fiber as an alternative to standard sound-absorbing materials, since most of these are manufactured with mineral or synthetic fibers, which entail various environmental problems, both in their manufacture and in their disposal. "These materials are difficult to recycle, their combustion causes emissions of toxic fumes and their industrial production requires large amounts of energy, which increases the emission of carbon dioxide, methane and nitrous oxide into the atmosphere, in addition to posing a risk to health", according to the research staff.

Faced with this problem, the study measures the sound absorption performance of three different types of esparto grasses originating in Pakistan, Tunisia and Egypt respectively, to solve sound insulation problems in buildings, further contributing to the existing sustainable alternatives.

To this end, the UPV team analyzed the sound absorption coefficient and the airflow resistivity of each esparto grass, developing the first model known to date for predicting the sound-absorption coefficient for this type of fiber.

Once concluded the study, both teams (UPV-UACH) are working on improving the durability of the product and analyzing the effects of adding flame retardants or insect repellents to the fibers.

LEADER IN ACOUSTICS

Currently, Campus Gandia is at the forefront in Acoustic Engineering, with a long history and specialization in this area, both in the teaching and scientific fields.

The commitment to educating students and to their scientific potential in this discipline is reflected in the quality of their research work. Roberto Oltra, co-author of the study, is an example of the emerging talent of the campus. With a Bachelor's Degree in Telecommunications Systems, Sound and Image Engineering, he also studied the Master's Degree in Acoustic Engineering, where his thesis project was a study titled "Sound-Absorbing Materials Based on Esparto Fibers", supervised by Romina del Rey and Jesús Alba.



Romina del Rey, Jorge Arenas and Jesús Alba



Romina del Rey

The joint project between the campus and the UACH arises from the need to continue the research on natural fibers after the results obtained in the study carried out by Roberto, which stands out for the inclusion of ethical, environmental and social aspects in the field of Acoustic Engineering.

PARTNERSHIP WITH CHILE

The scientific partnership between Campus Gandia and the Universidad Austral de Chile (UACH), which has lasted for over decade, has been fundamental to strengthening the acoustic research potential of both institutions.

This relationship led the creation of an international Dual Degree agreement that allows eight selected students to obtain the Master's Degree in Acoustic Engineering (MIA) from Campus Gandia and the Master's Degree in Acoustics and Vibrations (MAV) from the UACH, a unique opportunity to obtain high-level education in acoustics.

More Information:

Arenas, J.P.; del Rey, R.; Alba, J.; Oltra, R. Sound-Absorption Properties of Materials Made of Esparto Grass Fibers. *Sustainability* 2020, 12, 5533.

IVIO, the UPV and CEU Cardenal Herrera Partner to Study Dentin Demineralization



Salvatore Sauro, Josep Rodríguez, Inés Torres and Francisco Camarena

The prestigious scientific journal, IEEE Ultrasonics Transactions and Ferroelectrics, has published a paper authored by the Valencian Institute of Dental Research (IVIO), the CEU Cardenal Herrera University and the Universitat Politècnica de València, titled "Ultrasonic Monitoring of Dentin Demineralization", demonstrating the value of collaboration between different institutions in research projects on ultrasound.

A RESEARCH PROJECT ON THE RELEVANCE OF DENTAL DEMINERALIZATION

This inter-university project aims to study the process that directly affects dental resistance and, consequently, people's health, since it leads to problems with chewing, hypersensitivity and problems in the dental pulp in teeth. Multiple factors may lead to this pathology, such as tooth decay or surgical procedures.

The extreme complexity of demineralization requires considerable lab testing under optimal conditions. For this specific field of research, ultrasound is an optimal technology, since it is characterized by being fast, non-destructive and it provides localized information on the tissue.

In this regard, the project researchers used the ultrasonic pulse-echo technique to evaluate the complete demineralization process of human dentin under controlled laboratory conditions.

The study led by **Josep Rodríguez**, Inés Torres, **Salvatore Sauro** and **Francisco Camarena**, has consisted in the demineralization of up to 15 human dentin teeth with phosphoric acid, a process monitored by a pulse-echo system similar to that used to obtain ultrasound, which has made it possible to know the way in which the acid produces the lesion in the dentin.

THE NEED FOR INTER-UNIVERSITY PARTNERSHIP

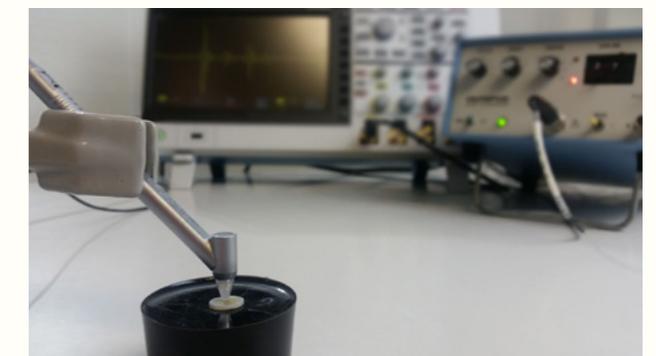
The results of the project carried out between the IVIO, CEU Cardenal Herrera and the UPV reflect the relevance that partnership can have in the research field of dentistry. The search for synergies does not only involve the use of resources, but also enables the exchange of different methodologies, ways of working and research areas, which encourages the expansion of the field of study, achieving more complete results and, therefore, with more applications in the health sector.

In the case of this study, they were successful in finding a method to monitor the types of injuries that can be induced in a healthy tooth, which together with the applied ultrasonic system, reveals the percentage of demineralization that a tooth has undergone throughout the mineral-loss process, enabling the expansion of the range of studies related to tooth decay and dental erosion, a highly complex area of research.

The relevance of the study has led to the presentation of the results at the XI Iberian Acoustics Congress, the 51st Spanish Acoustics Congress TECNIACUSTICA 2020, which took place from October 21st to 23rd, 2020 in the Portuguese city of Faro, this time in an E-congress format due to the Coronavirus pandemic.

The IVIO-UPV Chair of the Campus Gandia has various partnership frameworks with other institutions or companies to carry out their projects. Their purpose is always to develop new projects to meet the needs that patients demand and to provide new technologies and techniques that further improve the well-being of society.

For more information and inquiries on the iVIO-UPV Chair research projects, you can write to Francisco Camarena, research professor at Campus Gandia UPV, at: fracafe@fis.upv.es. You can follow the activity of the IVIO-UPV Chair on their: [blog](#) / [Twitter](#) / [Facebook](#)



Laboratory of Campus Gandia

Salva Ardid, a New Commitment to Research Talent

Researcher **Salva Ardid**, an expert in Neuroscience and Machine Learning, has recently joined Campus Gandia of the Universitat Politècnica de València under the framework of the Plan GenT, a program promoted by the Department of Innovation, Universities, Science and Digital Society to support talented researchers from the Valencian Community.

Salva belongs to the second generation of CIDEAGENT, an initiative integrated within this plan aimed at reversing the “brain drain” and promoting the retention and attraction of researchers and doctoral candidates of excellence for the development of research projects in institutions within the Comunitat.

His research activity focuses on the field of artificial intelligence and computational neuroscience, with a doctorate in the latter. Previously Salva Ardid carried out research residencies in the United States and Canada, where he worked on research projects in this scientific field.

“I’m interested in identifying the physiological mechanisms of brain function and dysfunction, in particular the neural substrates of learning and intelligence. To do this, in the Lab of Natural and Designed Intelligence research group, we build reinforcement learning models and both biological and artificial neural networks,” he indicates.



**LAB OF NATURAL
AND DESIGNED
INTELLIGENCE**

When asked about his most relevant research, the researcher highlights the project on meta-learning in the context of reinforcement learning. “Meta-learning mechanisms are capable of deducing learning algorithms by themselves, hence the alternative term ‘learning to learn’ is also used to refer to them. With these techniques, we’re able to optimize the behavior of the algorithms in terms of flexibility, agility and robustness,” he underscores.

Another one of his projects focuses on cognitive dynamics. This study combines experimental procedures (psychophysics and neuroimaging) with computational approaches (machine learning and neural circuit modeling) to study the dynamics, development, and decline of human cognition across the life span. Similarly, he also highlights other projects focused on the study of decision-making and selective attention.

Salva Ardid’s research work at Campus Gandia focuses on adapting brain mechanisms that are known to be computationally efficient, to introduce them into artificial intelligence architectures (such as deep learning neural networks) with the aim of achieving more flexible and powerful learning algorithms.

Salva has joined the campus to direct the research project called Artificial General Intelligence: Beyond Deep Learning, in which he intends to delve into Deep Learning and overcome the limitations it faces today through three main improvements: data pre-processing, increasing the dimensionality of the data through non-linear combinations; strengthening the neurobiological base of the algorithm, mainly with regard to the network architecture and its connectivity; the use of adaptive learning based on meta-learning mechanisms.



Salva Ardid

Customized Private 5G Networks



David Gómez

Researchers from Campus Gandia of the Universitat Politècnica de València (UPV) at the Institute of Telecommunications and Multimedia Applications (iTEAM) are leading a European project to offer customized 5G networks, a private “super WiFi” with “revolutionary” features for industries and other settings such as hospitals or universities. The **FUDGE-5G** project is funded by the EU H2020 program and has a budget of six million euros.

“Private 5G networks will be similar to a WiFi network, but with the difference that the spectrum is not shared, providing greater advantages. Combined with the technical characteristics of 5G, it will be possible to provide full coverage, Gigabit-per-second speeds and very low response times, without depending on the public network of a telecommunications operator. Another advantage it offers is privacy, since all the information that travels through these networks would only be accessible to their owners. They will be quite a revolution,” remarks **David Gómez**, 5G expert and project coordinator.

These networks are designed for closed scenarios with many users and/or connected devices, not for individuals. They are of particular interest to industry, as well as other settings such as hospitals and universities. “But these networks need a dedicated spectrum. Germany was a pioneer in reserving spectrum in the 3.5 GHz band locally for private 5G networks at the end of 2019, and by 2020 they had already granted 88 licenses. Many countries have followed in the footsteps of Germany, but the entire 3.5 GHz band spectrum in Spain has already been assigned, so we’ll have to wait for new 5G frequencies to be assigned in order to reserve spectrum for private networks,” according to David Gómez.

Gómez Barquero further explains that the FUDGE-5G project will establish guidelines for deployment of private 5G networks in the cloud in order to reduce infrastructure cost and increase the flexibility of the deployment, this adjusting to the needs of the end user. “FUDGE-5G opens up a new market for the telecommunications sector; it will offer the opportunity for a customized 5G network configuration, with all the benefits that this entails.”

FIVE TESTING GROUNDS

The project launched in September and will run until February 2022. It includes the development of different pilot tests for the deployment of these private 5G networks, which will be carried out in Norway with the operator Telenor.

The scenarios in which these tests will be carried out are a hospital (eHealth use case), the Norwegian public television NRK (multimedia use case), the Defense Agency of the Nordic country (security use case), the multinational ABB (Case of industry 4.0, where they will evaluate the performance of these networks for connected robotics applications), and in a university. “In the latter case, our goal is to connect the UPV campus with the campus of the Oslo metropolitan university and the German research institute, Fraunhofer FOKUS, in Berlin, deploying an Eduroam-style network with private 5G networks in different countries connected to one another,” states David Gómez.

The project partners also include the Valencian start-up Fivecomm, which will coordinate the implementation tests of this network at ABB.



Science and Society

1. Four Young Researchers Join Campus Gandia
2. Second Edition of the initiative "Bring a Female Scientist to School"
3. Tendencia al alza en la captación de fondos para investigación en el Campus de Gandia
4. Science Week 2020
5. First Mediterranean Night of Women Researchers in Gandia
6. Campus Researchers Take Part in the V Gandia Astroparticle Marathon

Four Young Researchers Join Campus Gandia

Juan González, Enrique Ramis, Blanca Feliu and Neus Montoro have been recruited by Campus Gandia thanks to the implementation of the Youth Guarantee in RDI program, promoting youth employment. An action that is part of the State Sub-program for Incorporation, part of the umbrella of the State Program for the Promotion of Talent and Employability in RDI, under the umbrella of the 2017-2020 State Plan for Scientific and Technical Research and Innovation.

The aim of the initiative, funded by the State Research Agency and co-financed by the European Social Fund (ESF) and the Youth Employment Initiative (YEI), is to hire qualified personnel under the age of 30 in technical and management RDI jobs for a two-year period.

Juan González, graduate in Telecommunications, Sound and Image Systems Engineering and specialized in Bioinformatics and Biostatistics, is joining the Immersive Interactive Media (IIM) Research & Development (R&D) Group at Campus Gandia, led by **Fernando Boronat**. For the coming two years, Juan will provide technical support in the line of research in immersive multimedia systems, virtual reality (VR) and augmented reality (AR), multi-sensory, interactive and collaborative network, additionally collaborating in the assembly and testing of new prototypes, as well as in their evaluation processes. At present, the research group is also carrying out research and innovation projects in other lines, in which he will also collaborate, such as the development of an innovative stereoscopic vision system and the design of a system to study facial paralysis.

Enrique Ramis has a Bachelor's Degree in Mechanical Engineering, as well as Master's Degree in Engineering, Processing and Characterization of Materials. On the campus, he will work in the team led by **Jesús Alba**, where he will conduct tests on the acoustic and thermal characterization of materials from sustainable natural resources in acoustic chambers. Currently, new materials are being developed using environmentally friendly, reusable and recyclable natural resources, but this entails a refocusing of technological, regulatory and modeling solutions. Enrique will work on the improvement, consolidation, programming and automation of characterization protocols for these materials and devices from the acoustic standpoint.



Blanca Feliu, Enrique Ramis, Neus Montoro and Juan González

Blanca Feliu studied both the Bachelor's Degree in Environmental Sciences and the Master's Degree in Assessment and Environmental Monitoring of Marine and Coastal Ecosystems at this University. She will now join the Research Institute for Integrated Management of Coastal Areas – IGIC, supporting the groups formed by **Silvia Falco**, **Francisco Martínez** and **Tomás Sogorb**. She will work on environmental research projects where she will conduct sampling in river, estuarine and marine ecosystems. In addition, she will collaborate in ecological, water resources management, aquaculture, topography, food technology and health science projects, that require chemical and organism analysis. Blanca will have the opportunity to get acquainted with the latest technology, used both by the University and by administrations and companies, which will allow her to develop her skills in monitoring systems.

Finally, Neus Montoro will provide technical support in RDI management and will participate in the promotion, popularization and dissemination of scientific activities. Neus is a graduate in Audiovisual Communication and has completed the Master's Degree in Digital Postproduction taught on Campus. Therefore, she is aware of the fundamental role of communication as a means of transferring scientific knowledge to society. "Scientific communication is vital to arouse society's interest in science and research, as well as to support researchers and attract funding."

Second Edition of the initiative “Bring a Female Scientist to School”

For the second year in a row, the Equality Committee of Campus Gandia UPV, in collaboration with the IVIO Chair and the Smart Tourism Chair, joined the 11defebrero.org national campaign in celebration of the International Day of Women and Girls in Science on February 11th. This campaign coordinated informative and awareness-raising activities in educational institutions to offer visibility to women scientists and this way create female role models in the STEM field (science, technology, engineering and mathematics) to promote full and equal access to participation in science for women and girls.



As part of this initiative, Campus Gandia presented “Bring a Female Scientist to School”, a program of activities that included the participation of women working in the STEM fields that share their experiences and perspectives in organized talks, workshops and demonstrations aimed at students.

Agenda

February 6th

“Do you know how to listen to music? Introduction to wave physics”: Explains the properties of sound and the important dimensions that environmental characteristics can add – [Romina del Rey](#) (research professor at the UPV) – year 3 and 4 of ESO – IES Rodolfo Llopis, Callosa d’En Sarrià.

February 10th

“Oceanography – Women at sea and marine research techniques”: History of women in oceanography and marine research techniques – [Josepa Costa](#) (Senior Technician at the Campus) and [Blanca Feliu](#) (Campus Researcher) – 4th, 5th and 6th grade – Colegio Joan Martorell, Gandia.

February 11th

“Conciliation, women and science” – [Maite Sebastià](#) (Campus Researcher) – year 3 and 4 of ESO, Colegio Carmelitas, Gandia.

“Oceanography – Women at sea and marine research techniques”: History of women in oceanography and marine research techniques – [Sandra Barrancos](#) (Senior Technician at the Campus) and [Blanca Feliu](#) (Campus Researcher) – year 4 of ESO – IES María Enríquez, Gandia.



Mónica Catalá

“¿What do you want to do be when you grow up? Science workshops” – [Pilar Sánchez](#) (Officer at the Campus) and [Mónica Catalá](#) (Campus Researcher) – year 1 of ESO – Biblioteca IES Ramón Muntaner (Xirivella).

“Science is fun” – [M^a José Canet](#) (research professor at the Campus) – 3rd, 4th and 5th grade. Colegio Sant Antoni de Pàdua.

February 12th

“The science of the senses” – [Isabel Pérez](#) (research professor at the Campus) and [Carla Sánchez](#) (Student of the Campus in Environmental Sciences) – primary school – Colegio Rótova-Alfauir.

February 13th

“The science of the senses” – [Isabel Pérez](#) (research professor at the Campus) and [Neus Montoro](#) (Officer at the Campus) – Preventorio infantil Nuestra Señora del Amparo Real de Gandia / 1st and 2nd grade – CEIP Verge de la Font de Vilalonga.

February 17th

“Women in Science” – [Pilar Sánchez](#), [Sandra Barrancos](#) i [Neus Montoro](#) (Senior Technicians at the Campus) – 5th and 6th grade – CEIP Sant Pere Apòstol – Alqueria de la Comtessa.

February 20th, 12:00 pm

“How do mobile phones work? From the walkie-talkie to 5G” – [Amparo Girona](#) (research professor at the Campus) – year 3 and 4 of ESO – Colegio Sagrado Corazón Carmelitas Vedruna.

February 22nd, 12:00 pm

“The magical female scientist” – Performance by ‘Los Gatos con Batas’ – Casa de la Cultura de Gandia. The magical female scientist is a show about Women, Science, Magic and Storytelling, in which the attendees thrilled to magic tricks with metals and mathematics. It is inspired by the life of Ada Lovelace and explains how stories shape us and how we shape stories.

February 24th

“What would you want to be if you were a boy? And a girl? And now... science is fun” – [Pilar Sánchez](#) (Officer at the Campus) and [Teresa Rubio](#) – 3rd grade – CEIP Miguel de Cervantes (Xirivella).

Throughout the month of February and online on [Pinterest “Dones i ciencia”](#). Bibliography and resources on “Women and Science” at the Campus Gandia Library.

Gender Gap

The conversation about the role of women in science today still revolves around the barriers and the invisibility, based on inequality due to gender stereotypes that persist in our society. We educators have a relevant role in the implementation of strategies aimed at ending the current gender gap in science, which start with the reeducation about the relationship between women and science. Workshops such as the one led by [Blanca Feliu](#), which highlights the role of women in marine research, or by [Romina del Rey](#), focused on wave physics, seek to promote scientific vocations in female students and eliminate gender stereotypes in male students.

Scientific Vocations Award

Campus Gandia received an award from the Official College of Graduates in Telecommunications Engineering of the Valencian Community for its work and trajectory in promoting scientific and technological vocations among girls.

Up-tick in Fundraising for Research at Campus Gandia

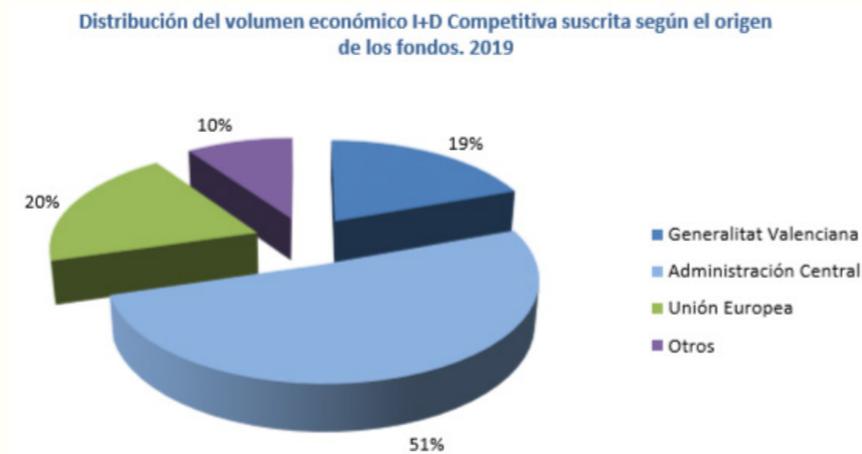
The amount of money raised from external funding sources in 2019 for the scientific activity carried out at Campus Gandia of the Universitat Politècnica de València continued with the up-tick initiated in 2016.

In 2019, the funding raised for scientific research amounted to 4,855,000 euros, according to the data published in the annual report on the results of the R&D&I activities at the Campus.

40% of the funding corresponds to signed contracts and agreements, while 60% comes from competitive grants, this percentage accounting for a total of 1,959,000 euros, which more than doubles the amount raised in 2018 (842,000 euros).

With respect to the competitive R&D&I activity, half of the financial volume comes from the Central Administration, which makes up 51% of the total funding and represents a considerable increase as compared to the figures from 2017 and 2018.

As for the R&D contracts and grant agreements signed in 2019, they have mostly involved businesses, followed by contracts/agreements with the administration and with other entities (universities, research centers, business associations and institutes). Thus, the financial volume of contracts and agreements with businesses (78%) has risen significantly with respect to the figures obtained in the last three years.



With respect to the spatial distribution of the actions contracted, 58% came from businesses in the Valencian Community and 37% from the rest of Spain, which indicates the tremendous impact that the research from the Campus on its immediate socio-economic environment. In turn, 5% of the actions originate from international (non-European) businesses.

In the analysis of the geographical origin of the funds, there is also a large increase in the financial volume of R&D contracts and agreements signed with international (non-European) entities, increasing from the sum of 5,000 euros in 2018 to 851,000 euros in 2019, representing 56% of the total volume.



COMMITMENT TO RESEARCH

The ability to obtain funding, a clear sign of the trust placed in the university by businesses and institutions, demonstrates the high quality of the research activity carried out on campus, which maintains its firm commitment to the generation and transfer of knowledge for scientific and technological progress, with the aim of making significant contributions to society.

RESEARCH INSTITUTE FOR INTEGRATED COASTAL ZONE MANAGEMENT

After barely 10 years in existence, the Research Institute for Integrated Coastal Zone Management (100% Campus Gandia institute) has managed to establish itself in the top 25 research structures of the 85 present at the UPV. It is composed of 65 people, of which 49 are PhDs. The research personal has a total of 57 six-year tenures of research under their belt, an indicator that validates the recognition of its high level of scientific output.

In addition, the mixed unit formed by the UPV and the Spanish Institute of Oceanography – Technology Unit for Marine Studies (UTEM, for its Spanish initials), based on the Campus (port of Gandia sheds), is conducting major scientific projects.

The full reports can be viewed in Spanish in the following links:

[R&D&I Results 2019](#)

[R&D&I Results 2018](#)

[R&D&I Results 2017](#)

[R&D&I Results 2016](#)

[R&D&I Results 2015](#)

[R&D&I Results 2014](#)

[R&D&I Results 2013](#)

[R&D&I Results 2012](#)

[Campus Gandia Bibliometric Analysis](#)

Science Week 2020

For the fourth year in a row, Campus Gandia of the Universitat Politècnica de València, the CEIC Alfons El Vell and the Universitat de València united their scientific and popularization capacities to coordinate the Gandia Science Week from November 16th to 20th, with activities aimed at promoting interest in science and technology and helping to bring it closer to the public.



This edition marks the 16th one organized by Campus Gandia, given that the initiative shares the same commitment to science and its dissemination that has governed the Campus since its inception.

OPENING CEREMONY: MURAL DEDICATED TO CLARA GRIMA

On Monday 16th, at 12.30 pm, the Inauguration of the Gandia Science Week 2020 took place with the presentation of the mural dedicated to Clara Grima, at the Campus Gandia Library (UPV).

Clara Grima is a mathematician, scientist, disseminator and writer of popular mathematics books. Her book, *Mathematics Watches Your Health*, offers an insight into mathematics as a powerful tool for understanding how disease spreads and how we can stop it. Her simple and beautiful models lead us to indisputable and objective conclusions about the development of infectious diseases and the importance of vaccination.

Borja and Clara Grima allow lay readers to understand the potential of mathematics in the control and prevention of epidemics in an entertaining and accessible manner. It consists of four initial chapters that go through concepts such as graph theory, game theory, functions and differential equations, with a novel perspective and a great sense of humor. The aim is "to fill our backpacks with the minimum necessary knowledge" to be able to understand and address the development of diseases with mathematics.

Clara Grima was at the fore of this opening ceremony, in which she gave a short talk. In the evening, at 7:30 p.m., she initiated the daily conferences to be held at the Casa de la Marquesa de Gandia with a fuller and more complete talk about this book.

The mural was the work of the urban artist **Flug**, a graduate of the Universitat Politècnica de València. This is an initiative that started two years ago with the aim of giving visibility to relevant scientists and disseminators through murals and the inauguration of laboratories named after them.

ENVIRONMENTAL AWARENESS WORKSHOPS

Four workshops were directed by Professor Víctor García and given by students of the Bachelor's Degree in Environmental Sciences at the Campus, aimed at enhancing the interest and active participation in scientific practice among young people. Elementary school students from the schools of Gandia participated in these workshops, which took place at the Casa de la Marquesa de Gandia, from Tuesday to Friday, offering a space for experimentation and scientific creation.

Monday 16th

Mathematics watches your health: model on epidemics and vaccines. Clara Grima. Universidad de Sevilla.

Tuesday 17th

Tourism businesses and COVID: challenges and opportunities. Lourdes Canós. Campus Gandia of the Universitat Politècnica de València.

Wednesday 18th

Cheer up girl, it's not that bad!: effect of pain on drug use. Lucia Hipólito. School of Pharmacy of the Universitat de València.

Thursday 19th

Habitability of the Universe. Fernando Ballesteros. Astronomical Observatory of the Universitat de València.

Friday 20th

Observatorios de ondas gravitatorias: tecnología punta para una ciencia fascinante. Isabel Cordeiro. Departamento de Matemáticas de la Universitat de València.

Gravitational wave observatories: cutting-edge technology for fascinating science. Isabel Cordeiro. Department of Mathematics of the Universitat de València.

EXHIBITION

May math be with you! A selection of books, both physical and digital, on recreational mathematics and mathematical dissemination on the occasion of the inauguration of the mural dedicated to Clara Grima. The exhibition was located throughout the month of November in the hall of the Campus Gandia Library (UPV) and at:

<https://polibuscador.upv.es/primo-explore/collectionDiscovery?vid=bibupv&collectionId=8198372770003706>

Gandia Science Week 2020 was sponsored by the Gandia Smart Tourism Chair, with the support of the Gandia City Council and the Chair for Scientific Dissemination of the Universitat de València, among other organizations.



Jesús Alba and Clara Grima with the mural dedicated to Clara Grima

First Mediterranean Night of Women Researchers in Gandia

Campus Gandia of the Universitat Politècnica de València (UPV) joined forces with some of the most representative institutions in research and scientific dissemination in the regions of Valencia and Murcia to celebrate the first Mediterranean Women Researcher's Night (Mednight) on 27 November 2020.

Mednight was an event associated with the European Union's "European Researchers' Night" initiative, funded by the Marie Skłodowska-Curie actions, which aimed to enhance the value of "Mediterranean science", making visible the range of scientific activities carried out in this setting and the figure of women in research, in addition to promoting scientific vocations among younger people.



Blanca Feliu



To this end, the participating institutions organized talks, workshops, virtual exhibitions and various shows that formed part of an extensive program that you could consult on the [official Mednight website](#), a portal that offers recent information about research and articles published by experts in various fields of science, such as the article on marine pollution by **Silvia Falco**, a campus professor and researcher at the Research Institute for Integrated Coastal Zone Management (IGIC).

ACTIVITIES IN GANDIA

As part of the program, Campus Gandia, in collaboration with the **EUCRANTE**, association, offered two environmental awareness activities focusing on the problem caused by microplastics and pollution in marine ecosystems. The activities were led by Campus research staff specialized in the marine environment. The activities were opened to everyone with prior registration.

- Microplastics: a marine problem of terrestrial origin. Online talk given by **Nuria Felis**.
- Discover microplastics (guided boat tour).

The guided boat tour that it was going to be given by Miguel Rodilla and Blanca Feliu, researchers at Campus Gandia, where the participants were

going to be able to see in situ the marine pollution problem caused by the presence of microplastics in the coastal area of Gandia, as well discover the work being done by these scientists in marine research projects. Due to the weather conditions, this workshop was cancelled.

MICROPLASTICS AND MARINE POLLUTION

It is estimated that around 80% of the plastics found in the sea come from land-based sources, such as rivers or irrigation canals, which are washed away by runoff and transported by currents.

Marine plastic waste has varying sizes, not only due to their different dimensions in manufacture, but also due to exposure to erosive processes such as ultraviolet radiation, wave force or temperature, which influence the fragmentation of waste particles without altering their chemical composition.

Given their small size, less than 5 millimeters, microplastics are not filtered during the treatment phases of wastewater treatment plants and end up in the sea, where they are ingested by organisms, both benthic and pelagic, that other living organisms feed on, until they finally reach humans through the food chain.

Given such a problem that affects both marine biodiversity and human health, research is essential for assessing the situation and determining measures to reduce the impact of this type of pollution on marine ecosystems.

Along these lines, Nuria Felis, has conducted the first research study on the density of microplastics in the southern area of the Gulf of Valencia, a project carried out as part of her the final project in the Master's Degree in Assessment and Environmental Monitoring of Marine and Coastal Ecosystems at the Campus, under the direction of professors Silvia Falco and Miguel Rodilla, both from Campus Gandia.

ACTIVIDADES UPV

For Friday 27, the Universitat Politècnica de València prepared a program of activities that included the debut of an audiovisual workshop that featured the Mediterranean Diet. All of this programming was completed with more activities on the Alcoi Campus and a special about Mednight on the UPV Radio program "Peer-reviewed", and the premiere of "They tell us about science", an audiovisual series of online interviews with seven female researchers from the Universitat Politècnica de València, who are some of the top Spanish scientists, according to the ranking prepared by the Group for the Dissemination of the h Index (DIH, for its Spanish initials). They are Amparo Chiralt, Mercedes Álvaro, M^o del Carmen Muñoz, M^o Victoria Borrachero, Josefa Mula, Sara Iborra y M^o Dolores Marcos



Nuria Felis

Campus Researchers Take Part in the V Gandia Astroparticle Marathon



V Maratón de Astropartículas @ Gandia-Safor
Gandia 2-4 diciembre 2020

I.E.S. Gregori Maians, Oliva
 I.E.S. Vall de la Safor, Villalonga
 I.E.S. Veles e Vents, Gandia

PONENTES:

Miquel Ardid, Universitat Politècnica de València
 Antonio Ferrer, Universidad de Valencia
 Luis del Peral, Universidad de Alcalá
 Joan Martínez Mora, Universitat Politècnica de València
 M^a Dolores Rodríguez Frías Universidad de Alcalá
 Julia Suso, Universidad de Valencia
 Jose Valle, Instituto de Física Corpuscular (IFIC), Valencia
 Avelino Vicente, IFIC, Valencia
 Juan Zúñiga, Universidad de Valencia

Organizadores:

Natalia Berbegall
 Paula Canet
 Ignacio Martínez Mora
 Joan Martínez Mora
 Vicent Ordiñana
 M^a Dolores Rodríguez Frías
 Francisco Savall
 Pilar Santatecla

GOBIERNO DE ESPAÑA MINISTERIO DE CIENCIA E INNOVACIÓN
 FECYT FUNDACIÓN ESPAÑOLA PARA LA CIENCIA Y LA TECNOLOGÍA

Campus Gandia of the Universitat Politècnica de València (UPV) took part in the V Astroparticle Marathon in Gandia and La Safor, an initiative held between December 2 and 4 in various educational institutions in Gandia, Oliva and Villalonga.

This initiative, organized by Campus Gandia researcher professors and experts in neutrinos, **Joan Martínez** and **Miquel Ardid**, featured talks, workshops and experiences carried out by expert staff from the University of Alcalá, Universitat Politècnica de València, University of Valencia and the Institute of Corpuscular Physics (IFIC, Valencia)

attended by secondary and high school students from I.E.S. Gregori Maians (Oliva), I.E.S. Vall de la Safor (Villalonga) and I.E.S. Veles e Vents (Grau de Gandia).

Astroparticle Physics is a field of research that combines Particle Physics, Astronomy and Cosmology. If Astronomy studies the Universe by looking at light (made up of particles called photons), Astroparticle Physics does it by studying other particles that come from the cosmos with energies that are much higher even than those produced in particle accelerators.



Miquel Ardid and Joan Martínez

These particles offer essential information about events that occur in the Universe, such as supernova explosions or the formation of black holes. The aim of Astroparticle Physics is to understand the composition and evolution of the Universe.

The objective of this Astroparticle Marathon was to promote vocations in STEM (Science, Technology, Engineering and Mathematics) among the youngest members of our community. What is the Universe composed of, what is dark matter and what are the cosmic rays that constantly pass through us from outer space? These are some of the topics chosen to spark an interest in Astroparticle Physics among the students present.

The activities were given by Miquel Ardid and Joan Martínez, from Campus Gandia (UPV); Luis del Peral, from the University of Alcalá; Antonio Ferrer and Julia Suso, from the University of Valencia; M^a Dolores Rodríguez, from the University of Alcalá; and Avelino Vicente and José Valle, from IFIC, Valencia.

Over the three days, the students had the opportunity to talk openly about science and the work carried out by researchers in order to learn more about their profession. "The students asked many questions about the mysteries of the Universe, which could be explained through astroparticle physics", commented Joan Martínez Mora.

The event ended with a closing ceremony held on Friday afternoon in the Conference room of Campus Gandia, with the talk titled "From the electron to the Higgs", given by Antonio Ferrer, followed by a round table discussion with the participation of all the experts attending initiative.

ASTROPARTICLE MARATHON

This V Astroparticle Marathon in Gandia and La Safor was part of a series of astroparticle marathons that have been carried out throughout the national territory during 2020: the I Astroparticle Marathon at the Huesca Planetarium in February, the II Marathon in Barco de Ávila in August, the III Marathon in Santiago de Compostela in October and the IV marathon in Teruel in November.

The action was funded by the Spanish Foundation for Science and Technology (FECYT) coordinated by M^a Dolores Rodríguez from the University of Alcalá.

Health

1. The Gandia Health Department, FISABIO, Campus Gandia and FAES Join Forces to Strengthen the Safor Health Innovation System
2. Arrhythmia and COVID-19, Increased Risk
3. POLISABIO 2020, More Funding for Health Research
4. INTEMASC, Collaborate With the Development of the APP to Detect Proper Placement of Masks
5. New Low-Cost System for Real-Time Monitoring of Vital Signs in COVID-19 Patients in Nursing Homes

The Gandia Health Department, FISABIO, Campus Gandia and FAES Join Forces to Strengthen the Safor Health Innovation System

SAFOR SALUT 2020

Safor Salut is a cooperation program that unites the scientific, technological, administrative and business capacities of three key agents in the health innovation system of the territorial region of La Safor and its surroundings: the Gandia Health Department through the Foundation for the Promotion of Health and Biomedical Research of the Valencian Community (FISABIO, for its Spanish initials), Campus Gandia of the Universitat Politècnica de València (UPV) and the Federation of Business Associations of La Safor (FAES, for its Spanish initials).

The main objective of the project is to strengthen and promote cooperation in research and innovation between the health, business and university network at the county level to determine their needs and generate innovative solutions and new business opportunities in the health sector through transfer of technology and knowledge, as well as through the development of collaborative methodologies between the three actors.



Safor Salut responds to the need for interconnection between the agents of the local innovation system, an indispensable factor in order to take advantage of the potential of each of the parties. The strategy enables the identification of unmet needs and opportunities for research, innovation and improvement in the healthcare environment, as well as the joining of the business network and the talent that resides at the University, thus making it possible to transfer the results obtained in research to market and the generation of new innovative products and services.

BACKGROUNDS

The Safor Salut project, which was very well received by the agents involved and their professionals, has a track record of success resulting from the Polisabio program. This initiative, based on the collaboration between Fisabio and the UPV, was born in 2017 with the aim of generating synergies and promoting new collaborations between UPV researchers and the staff of the Health Departments of the Valencian Community attached to FISABIO, giving rise to successful experiences throughout its three calls.

PRESENTATION OF THE PROGRAM

The presentation day of the Safor Salut program took place on June 12, 2019 at the Gandia Campus. Several companies presented innovative projects related to the health sector from different fields: technological, food, textile and hygiene.

At the same time, success stories were presented resulting from the collaboration between the Gandia Campus and the healthcare environment, such as the study of noise, electromagnetic and light pollution in neonatal wards or the treatment of obstruction of the central artery of the retina using ultrasound, among others. Starting this day, several collaboration proposals were identified and 4 collaborative projects of the three agents involved were developed.

In 2020 took place an online conference where the plan of work was announced, as well as the presentation of the current research activity of the three agents and the challenges detected, pitching capabilities and results that could respond to the challenges and the organization of bi and tri-lateral meetings for the possible implementation of research or innovation projects. After the conference, were held innovation pills and sessions on enabling technologies in the healthcare environment to identify new research and innovation projects.

SAFOR SALUT AND COVID-19

In the framework of the Safor Salut project with regard to the health emergency caused by COVID-19, it was carried out a focused action to identify specific challenges, since health research and innovation and the union of all agents is proving crucial, and it will continue to be so in the medium and long term.

NEW COLLABORATIVE PROJECTS

If you have an idea for a project or a solution related to the COVID-19 emergency of the or any other field of healthcare, and you need a partner from the healthcare, university or business environment to carry it out, please send it to the Safor Salut team by the website <https://saforsalut.es/ideas-retos/> and we will help you find the partners. Once the team has been assembled, the project idea can be developed with its own means or submitted to a competitive public call.

SAFOR SALUT BEYOND LA SAFOR

The action contemplates a possible continuity through to 2021, as well as the scalability of the program to other counties or regions of the Valencian Community.

SAFOR SALUT TEAM

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Arrhythmia and COVID-19, Increased Risk

Atrial fibrillation (AF) is an abnormal heart rhythm, also known as arrhythmia. This condition is the most common type of cardiac arrhythmia seen in clinical practice overall, since it affects more than 9 million people throughout Europe and approximately one million people in Spain. It is prevalent in 1.5-2% of the general population and it increases with age, reaching up to 17% of the population over 80 years of age. As a result of the aging population, its prevalence is expected to double in the next 50 years.

In recent years there have been remarkable advances in the understanding of AF, with the introduction of rapidly evolving therapies, such as new antiarrhythmic drugs and catheter ablation techniques, into clinical practice. However, the treatment of AF continues to have its limitations and has a significant economic impact for health systems, with approximately 1% of the overall health budget being allocated to it and more than 15% of the budget dedicated to cardiovascular diseases.

These limitations are the reasons behind the research work being carried out by **José Joaquín Rieta** and **his research team (BioMIT.org)**, which is always oriented towards social benefit. Their work has achieved tremendous repercussion with novel advances of great scientific impact, such as the development of electrocardiographic analysis methods that are capable of predicting the appearance of AF two hours in advance. These results are paving the way for preventive therapy, as well as for the development of analysis of electrocardiographic indicators that are capable of providing preoperative prediction of outcomes for the Cox-Maze AF surgical procedure.

Currently, Rieta is leading a transnational and multicenter research project in which research staff from national universities (Campus Gandia-Universitat Politècnica de València and Castilla-La Mancha), as well as foreign universities (United Kingdom, Italy and Sweden) are participating, along with six university hospitals from the Valencian Community and Castilla-La Mancha. This ambitious project is laying the groundwork for the development of personalized therapy for the disease, a significant advance that will lower the risks to patients and reduce hospital costs.

José Joaquín Rieta, research professor at Campus Gandia of the Universitat Politècnica de València in the field of Telecommunications for 25 years, is an expert in Biomedical Engineering, principally in the analysis and processing of atrial fibrillation signals, and recognized around the world as an expert in this matter.

Throughout his more than 20 years as a researcher, his work has achieved tremendous prestige and relevance, with an h-index ranking of 27. José J. Rieta has published 17 books related to Biomedical Engineering, around 80 articles in international scientific journals, has collaborated with research personnel from all over the world and has supervised numerous doctoral theses and research projects, making for an extensive academic career in research and education that has been summarized in the book "Escola Politècnica Superior de Gandia, XXV anys (1994-2019)", in which an entire chapter is dedicated to his career, as well as to the work of other professors and researchers at the campus.



José Joaquín Rieta

CARDIOVASCULAR PATIENTS AND COVID-19

People with AF or other cardiovascular diseases are particularly at risk for COVID-19. Although people with cardiovascular disease (CVD), such as high blood pressure, heart failure, or ischemic heart disease, have the same likelihood to be infected and have COVID-19 as those without CVD, very recent studies have shown that the coexistence of these underlying diseases with infection increases mortality and the possibility of suffering major complications.

Thus, 50% of patients hospitalized with COVID-19 had hypertension, up to 44% of those admitted to

the ICU suffered cardiac arrhythmias and 20% of those who overcame the disease had heart damage caused by the inflammation associated with COVID-19.

Given the risk that the virus poses to these patients, it is advisable to follow certain specific recommendations, such as avoiding going to the primary care consultation if it is not necessary; not going off the medication without the indication of a doctor; or maintaining self-care routines such as self-monitoring of blood pressure, heart rate, temperature, respiratory rate, O₂ saturation, blood glucose and weight.

POLISABIO 2020, More Funding for Health Research



The IV call for the **POLISABIO 2020** grants, the collaboration program between the Universitat Politècnica de València (UPV) and the Foundation for the Promotion of Health and Biomedical Research of the Valencian Community (FISABIO) started with two grant subprograms to fund Joint Preparatory Actions and Innovation Projects coordinated between UPV research staff and FISABIO professionals.

Due to the obligatory social distancing measures imposed by the COVID-19 pandemic, the Monitoring Commission of the POLISABIO Program held an online meeting to agree on the requirements for this call with the aim of creating synergies between the staff from both entities that will give rise to research and innovation projects with tremendous scientific-technical potential oriented towards innovative topics.

The meeting was attended by José Antonio Manrique, Mónica Vázquez, María Prada, Elena Carrió and Amparo Arlandis, from FISABIO; and by José Esteban, Jesús Alba (Campus Gandia), Juan Ignacio Torregrosa, Fernando Javier Conesa, Pilar Sánchez (Campus Gandia), Vicente Díez, M^o Carmen Rodrigo and Piotr Adam, from the UPV.

DEVELOPMENTS

POLISABIO 2020 consisted of two grant subprograms:

- UPV-FISABIO Preparatory Actions Subprogram for the exploration and formulation of Future Research and Innovation Projects.
- Support Subprogram for the development of Innovation Projects.

The requirements for this call features key changes with respect to previous calls. The budget allocated for the grants in this edition are higher, making for a budget of €120,000 compared to the €90,000 budgeted for 2019. This budgetary increase corresponds to an increase in the number of preparatory action projects and innovation projects that will benefit from the grant this year. In total, the grants will fund 12 preparatory actions for €5,000 each and 4 innovation projects for €15,000. In addition, the call is extended to all the centers associated with Fisabio of the Valencian Community.

Funding continued for a minimum of 3 preparatory actions for both the Alcoi and Gandia campuses, provided that the proposals meet the minimum quality standards required.

Applications with proposals aimed at promoting knowledge about SARS-COV2 and COVID-19 disease, as well as its socio-health impact, were positively evaluated.

STAGES OF THE PROGRAM

The POLISABIO 2020 program was carried out in three stages of operation:

STAGE I (Until 06/30/2020): presentation of expressions of interest on the part of the participants, based on capacities and or unsolved technical problems for the search of possible partners.

STAGE II (01/07/2020-15/07/2020): submission of applications. Participants may request competitive aid in any of its two modalities (Preparatory Actions or Innovation Projects).

STAGE III (September-November): evaluation of the applications received and result of the call.

EVOLUTION OF THE PROGRAM

The POLISABIO Partnership Program was launched in 2017 with the aim of generating synergies and stimulating new collaborations between researchers from the UPV and the staff of the Valencian Community Health Departments affiliated with FISABIO. Initially, the program was developed jointly only between FISABIO and the Alcoi and Gandia Campuses, with the hospitals in their vicinity. As a result of the success of the prior edition, the 2018 program was extended to the Vera campus and to the rest of the FISABIO centers in the province of Valencia. In 2019, the budget increased and more healthcare centers in Valencia and Alicante were incorporated, thus expanding this call to the entire Valencian Community.

Polisabio Team:

Campus de Gandia (UPV): **Pilar Sánchez**

Campus de Alcoi (UPV): **Vicente Díez**

Campus de Vera (UPV): **Laia Bielsa**

FISABIO: **Amparo Arlandis**



INTEMASC, Collaborate With the Development of the APP to Detect Proper Placement of Masks

With the **INTEMASC** app, the user will be able to verify the fit of the mask through the mobile camera quickly and easily. To this end, the research team is studying the implementation of artificial intelligence techniques to indicate to the user the possible problems with mask placement.

The application will detect hygienic and surgical masks, although this will depend on the results obtained in the experimentation phase, and can be extended to other types.

METHOD

The final objective of the project is to develop an image recognition system that will detect if a mask is fitted properly. The objective of the first stage is to create a corpus that trains neural networks through an Android application that will streamline this process.

In the development of machine learning models and, especially, of artificial neural networks, it is not necessary to know the precise solution to a problem, but it does require a considerable number of examples indicating how it has been solved. Therefore, the photographs taken by the users through the app will be collected with the mask worn properly and improperly. After collecting the photographs, a group of experts will label them indicating the placement problems detected by a second mobile application.

Jesús Tomás and **Jaime Lloret**, experts in mobile application development and artificial intelligence at Campus Gandia of the Universitat Politècnica de València (UPV) are in charge of a research project for the development of a mobile application to detect the proper placement of masks using artificial intelligence. This project is being carried out in collaboration with the surgical nursing group of the Hospital General d'Ontinyent (GEQUO), a FISABIO affiliate. The joint collaboration in this project is rooted on three research fields: artificial intelligence, health prevention and app development.

This application rises from the need to increase safety in the use of the mask and to raise awareness on the importance of its proper placement. Masks are the most effective complement to the recommended physical distance and hygiene measures to reduce the risk of transmission and infection of COVID-19. The effectiveness of the masks depends on the follow-up of some general hygiene measures, among which the adequate coverage of the mouth and nose stands out, blocking the droplets of large particles and splashes that may contain germs.



The problems to be detected are: no mask, non-symmetrical, loose, under the bridge of the nose, under the nose, underneath glasses, neck adjustment, beard, improper nose placement, improper elastic band placement, side gap. Eventually, the final version of the beta application for Android will be obtained, which will be implemented for iOS after testing and validating.

COLLABORATE WITH THE PROJECT

You can collaborate with the project by downloading the free **INTEMASC application** in the Play Store (only for Android) and taking selfies wearing the mask properly and improperly. A database will be created with all the photos, which used to develop the final version of the image recognition application to verify the fit of your mask.

DATA PROTECTION: The photographs will be treated completely anonymously and will only be used for the purposes described in the project. The use of the application implies the acceptance of the privacy policies on the part of the user.

POSITIVE IMPACT

In addition to raising awareness of the importance of proper mask placement, the project aims to achieve research results in artificial intelligence and to obtain statistical data on mask use, which will enable the development of future innovative solutions in these fields of research.

New Low-Cost System for Real-Time Monitoring of Vital Signs in COVID-19 Patients in Nursing Homes



Sandra Viciano, Marta Botella, Jaime Lloret and Sandra Sendra

Researchers from Campus Gandia of the Universitat Politècnica de València (UPV) have devised a new system for nursing homes that helps to monitor people infected with COVID-19 in real time. In addition, it is capable of alerting the medical and nursing staff in the event that there is a problem that requires immediate attention.

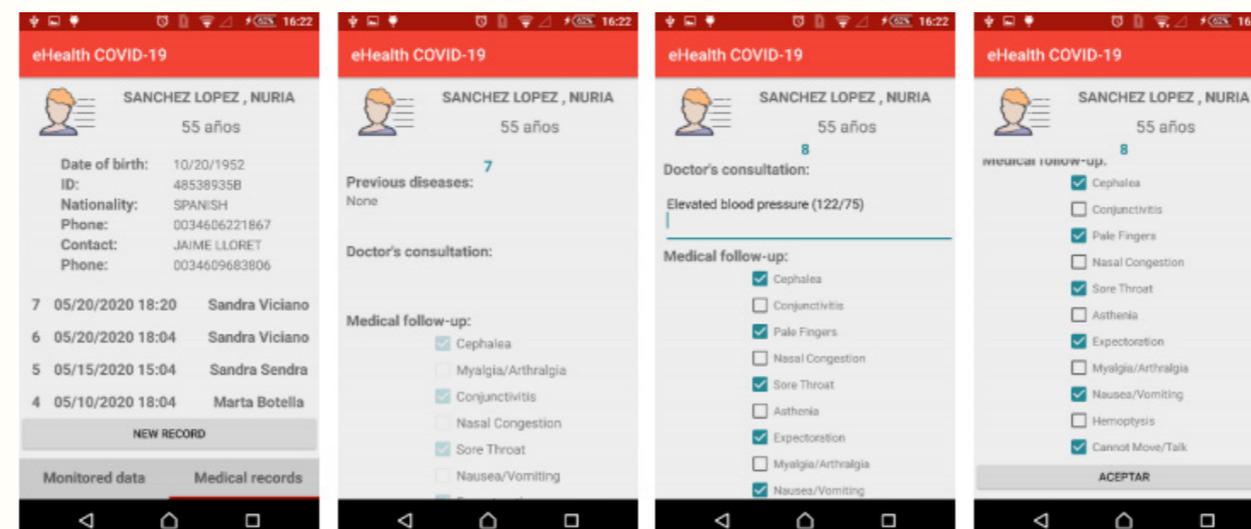
The system consists of an Android app (RTM-COVID) and an electronic device, a sort of pelvic belt that uses various sensors to monitor vital signs such as temperature, blood pressure, heart rate, oxygen saturation or blood in the urine. It can also monitor the respiratory rate of the person wearing it, instantly detecting breathing difficulties, as well as other parameters such as chills or dyspnea.

All the data collected by the different sensors in the system are recorded and processed on a local server in the nursing home's own network so as to preserve patient privacy and their clinical data.

"The system processes information in a way that is transparent for whomever is using it, combining the data from all the sensors and equipment. It analyzes it jointly and determines whether there is any situation that requires attention", according

Jaime Lloret and **Marta Botella-Campos**, campus researchers. With this application, the medical and nursing staff are informed in real time on the emergency level and they will be informed instantly if there is an alert, since the system sends an alarm to their mobile phones or tablet.

"These messages will only be sent when the emergency level is yellow or higher, which means that medical personnel will have 60 minutes or less to visit the sick person. The information provided in these messages includes an icon whose color determines the level of emergency, as well as the name of the person in need of medical attention and the cause of the alert", explains **Sandra Sendra**, also a campus researcher.



To determine the level of emergency, the system relies on the Manchester triage system, which classifies patients into five categories, each of which is associated with a color code and maximum service time. In addition, the solution devised by the project team will help medical staff to keep track of other subjective parameters, such as muscle pain, dizziness, coughing up blood, etc.

According to the researchers, the public health emergency caused by the SARS-CoV2 virus has revealed the need to supply medical professionals with remote monitoring methods that allow them to track the evolution of infected patients and receive alerts when their condition worsens. Although there are already applications aimed at assisting patients affected by diseases such as

diabetes or stroke, most of these systems are based on manual data entry and, given how little is known about the conditions caused by COVID-19, specific monitoring and follow-up methods have not been implemented to speed up triage and use the available resources more efficiently.

"For this reason, we have devised this system to monitor the vital signs of people infected by the Coronavirus in nursing homes and notify the medical personnel in charge of supervising their condition. Although the application can be downloaded on Google Play or the App Store for free, its access will be restricted and must be supervised by each organization to guarantee the privacy and security of the information. Also, since the system will be accessed locally, the installation of the server and the database can be carried out quickly and easily, so that it can be used by the different organizations as quickly as possible", concludes Jaime Lloret.

More information:

Botella-Campos, M.; Viciano-Tudela, S.; Sendra, S. and Lloret, J. (2020). Non-invasive Wireless Mobile System for COVID-19 Monitoring in Nursing Homes. In Proceedings of the 17th International Joint Conference on e-Business and Telecommunications – Volume 3: ICETE, ISBN 978-989-758-446-6, pages 7-16. DOI: 10.5220/0010023700070016

Social Sciences

1. Impact of COVID-19 On the Tourism Industry
2. Online Arts & Entertainment in the Times of COVID-19, More Necessary than Ever
3. 60% of Spanish Families Rate Teachers “Very Good” or “Outstanding” for Their Online Teaching Efforts and Implication
4. The Project “Women and Fishing in Gandia and La Albufera”, an Example of Gender Equality
5. Campus Gandia Helps Restore the Legacy of Joaquín Pérez Arroyo, Pioneer in Valencian Animation

Impact of COVID-19 On the Tourism Industry

The world has been upended. We were confident in our jobs, in our freedom to move anywhere and to hang out with our friends and families whenever we wanted, but now this has all changed with the appearance of the pandemic we are experiencing. The world has come to a halt, travel has ended and tourism has ceased to exist.

As tourists, the first thing that overwhelms us is the uncertainty. Many people, ourselves included, had been planning trips that have suddenly been canceled. There is uncertainty about receiving refunds for the payments we have made or about booking new dates. Some travel companies are offering free cancellation for any reservations made by their clients. Others are providing vouchers for the amount of the ticket or reservation that has been canceled. Transportation has been reduced to a minimum and many companies have offered to transport medical supplies or cover trips to hospitals for free.

Travel agencies have essentially stopped their activity. Museums and exhibitions are offering free virtual tours online. Many conferences have been canceled or have switched to virtual mode. Hotels have been closed, although some, especially in large cities, have been medicalized to care for patients or to host healthcare workers. Bars and restaurants have had to close, except the ones offering food delivery and takeaway, some of them providing meals to disadvantaged groups.

The figures for the tourism sector had been positive until this point, with a largely upward trend before the pandemic. For example, in February 2020, Spain received visits from 4.4 million international tourists, 1% more than in February 2019 (Frontur, 2020); the total expenditure by international tourists who visited Spanish destinations in February increased by 1.2% compared to the same month in 2019, and the average daily expenditure also increased by 5.3% over the same period (Egatur, 2020).



In global terms, according to the INE, the share of tourism to the GDP of 2018 equaled 12.3% of the total, an important percentage over the global amount, taking into account that this indicator includes all the goods and services produced in Spain in a given period. In terms of employment, the World Travel & Tourism Council (2019) calculated a total of 2.8 million jobs in the sector. But now all these figures have completely changed in the new environment we are now operating in.

How will this pandemic affect tourism businesses? We don't know. According to Exceltur (2020), the sector will lose 55,000 million euros in Spain, that is, a decrease in the tourism GDP of 32.4%, with the Valencian Community suffering an even greater loss of 33.6%. However, given the experience of the 2008 economic crisis, with which some compare the economic outcome after the health crisis is resolved, we know that tourism recovered before other sectors and that it contributed to the country's wealth by improving the results in GDP and job creation (Tourism Satellite Account, 2017).

In any case, the recovery of activity in the tourism sector and the economy in general will strongly depend on public fiscal policies (postponing or reducing taxes, for example) and on actions aimed at facilitating access to credit to prevent loss of liquidity, among other things.

The current scenario is exceptional and there is much to be understood, studied and analyzed. The professors [Cristina Santandreu](#) and [Lourdes Canós](#) supervised the Final Project in the Bachelor's Degree in Tourism by the student Paula Ribes Noguera, titled "Analysis Of the Impact of COVID-19 on Spanish Tourism". "With these results, we hope to contribute our grain of sand to understanding what is happening. We want freedom of movement to return and for tourism to come back stronger than ever. In this extraordinary situation, one of the things we realize is how valuable our experiences are when we travel, so we have to keep dreaming about them and never give up on them".



Lourdes Canós

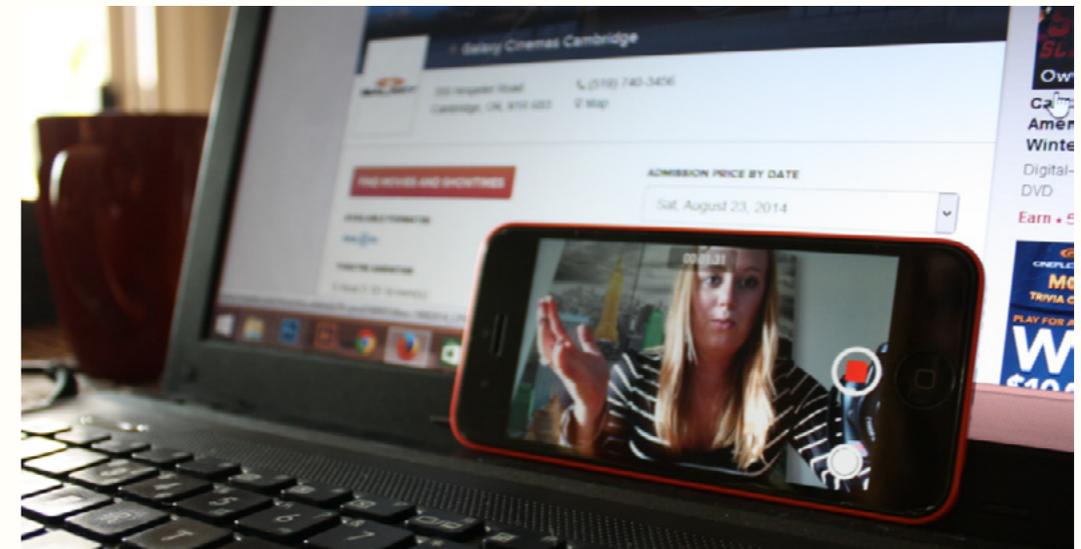
Online Arts & Entertainment in the Times of COVID-19, More Necessary than Ever



As these new initiatives crop up, the ones dedicated to music, art, culture and online learning stand out most. For musicians and other professional performers, this is probably one of the toughest and most difficult times in their careers. Most have seen their scheduled income opportunities, such as concerts, tours or album launches, either canceled or delayed indefinitely. And no one knows when they will be able to perform on stage again in any kind of live music venue.

As we all adjust to the new reality of life under self-quarantine, a number of artists are taking the show online and livestreaming their performances on YouTube or Instagram. Livestream concerts are the new hot ticket during quarantine, with the first online festival **#yomequedoencasafest**, held on the weekend of March 13-15 2020, featuring 30-minute concerts by 50 different artists performing live on their personal Instagram accounts. This first ever online music festival was so well received by the online audience that it was repeated on the following weekend.

As we navigate the crisis of the COVID-19 pandemic, society and Web 2.0 have taken on a fundamental role in our day-to-day lives. New forms of entertainment have emerged that we can all enjoy from the safety and comfort of our homes and that go beyond traditional family board games. Thanks to the digital age, we are more connected than ever, and despite our confinement and social distancing, our schedules are full of plans, such as virtual meetups with friends and family on videoconferencing apps.



The weekends of the month of March 2020 were set to the sound of this musical initiative, in which 163 artists participated for a total of 83 hours of live music. Immediately, other online festivals began to pop up, such as MantitaFest, Canción A Domicilio, Caloret Fest, Cuarentena Fest, etc.

This has been a totally new experience for people, one in which rapid adaptation has been key to lifting our spirits and enjoying all the entertainment available to us from home. Many artists have begun doing livestream performances with excellent sound quality, offering a reverse-box-office option, that is to say, the consumer can pay what they consider a fair price for the concert they have just seen.

It's true that during these difficult times, we're hearing music all the time, either from balconies or on the screens of our mobile phones. We could say that these concerts and the many different genres of music are helping us get through this quarantine, helping us escape and discover new styles of music and new offerings that we would never have discovered before.

Aline García, author of the article, says: "I am so excited by the new possibilities offered by this new paradigm, that I am currently working on a research project for my Final Master's Project, which will study the impact of these online concerts in a time of pandemic, supervised by **Marga Cabrera** (Social Media expert at Campus Gandia)".

60% of Spanish Families Rate Teachers “Very Good” or “Outstanding” for Their Online Teaching Efforts and Implication



Rebeca Díez and Marga Cabrera

Researchers from Campus Gandia of the Universitat Politècnica de València (UPV) conducted a study gain insight into Spanish family perception of the online education their children are receiving. The study focused exclusively on primary and secondary education, with one conclusion standing out from the preliminary results: Spanish families have very high opinions of the effort and involvement of their school teachers. Nearly six out of ten respondents give them a rating of outstanding or very good, and 23% give them a pass.

The survey was distributed in late April and 2,270 parents all throughout Spain took part. From the results, we can conclude that under the circumstances, families are generally satisfied with the quality of teaching that their children are receiving, with three out of four declaring themselves either satisfied or very satisfied. However, one in four think it needs a lot of improvement. In addition, parents have high opinions of homeroom teacher overall, although they score higher in primary school than in secondary school. In this level of education, respondents perceive a lack of coordination when handing in assignments or a calibrating the student homework load.

DOING LESS WORK THAN BEFORE

More than half of the respondents (58.6%) say that during the confinement their children dedicated less time to school subjects (classes and homework) than before. And in terms of total hours, the study offers these results: 19% of students spend an average of one to two hours, 43% between two and four hours and 24% between four and six hours. Furthermore, many of them (44%) require explanations to understand their assignments.

HOME COMPUTERS AND INTERNET CONNECTION

The study also addresses the availability of IT equipment – computers, tablets and smartphones – to attend online classes and carry out the homework assignments. It concludes that 93% of the respondents have more than one computer or tablet. With regards to internet connection, 35% state that theirs “is good, but if we all go connect at the same time, it slows down” and 57% do not have any problem when it comes to browsing the web, regardless of who connects to it.

REGARDING THE SCHOOLS

The preliminary results of this study also indicate that the majority of schools (53%) did not have any online teaching system in place before the start of the pandemic, and 17.5% did, but barely used it. The preliminary results of this study also indicate that the majority of schools (53%) did not have any online teaching system in place before the start of the pandemic, and 17.5% did, but barely used it. There are also perceived differences between public, semi-private and fully-private schools, the latter receiving the highest scores. The answers indicate that fully-private schools interact much more with students, they keep track of them, they work longer hours and students have greater relationships with each other in virtual classrooms. The study was carried out by [Marga Cabrera](#), [Rebeca Díez](#) and [Alberto López](#), from the Department of Audiovisual Communication, Documentation and Art History at Campus Gandia of the Universitat Politècnica de València.



Alberto López

The Project “Women and Fishing in Gandia and La Albufera”, an Example of Gender Equality

The project “Women and fishing in Gandia and La Albufera”, under the direction of **Paloma Herrera**, expert in women and fishing and professor in the Degree in Environmental Sciences at Campus Gandia of the Universitat Politècnica de València, is included in the guide, “Good practices in the area of entrepreneurship promoted by women in the sector and in the field of gender equality”, published by the Ministry of Agriculture, Fisheries and Food.

This guide compiles a series of projects and initiatives that are considered good practices in their respective categories within the fisheries

and aquaculture sector, both from the business perspective – through innovative initiatives led by women – and from the perspective of the promotion of gender equality in this area of activity.

The study directed by Paloma Herrero can be found in unit 2 on Gender Equality, under the section “Visibility of women in the maritime sector”. The general aim of the study is to showcase the role of women in the fishing sector of Gandia and La Albufera, putting a spotlight on their influence on the sustainability of the marine and coastal ecosystem, in line with the Participatory Local Development Strategy of the GALP La Safor (funding the study) on promoting female employment in the fishing sector.

The study surges from the need to recognize the labor and social rights of women workers in the fishing sector, as well as to analyze the current situation in order to design and subsequently implement effective gender policies that

constitute a perceptible change in a sector characterized by occupational segregation.

Measures have been carried out to make the work of the fisherwomen visible, strengthen their presence and influence in public life, promote female entrepreneurship within the sector and promote cohesion and communication among the workers. A total of ten interviews, two workshops (in El Palmar and Gandia) on the current role of women in fishing and the problems and opportunities they face, as well as a meeting at the Gandia Fishermen’s Association on female employment in the fishing sector, were conducted as part of this study.

The conclusions of the study propose female associationism as a means of transforming the socio-labor reality of women in the sector through their participation and organization, rooted in the exchange of experiences, support and awareness, both at the individual and collective level. A good example of the importance of women’s associationism and its contribution to the implementation of gender

equality in the fishing sector is the *Associació Dones del Mar Grau de Gandia (ADOMAR)*, also included in the guide of good practices. This association, established in 2018, has enabled fisherwomen to increase their representation in the sector through a unified voice, working together to achieve greater recognition and the protection of their collective interests and rights.

Paloma Herrera is currently working on a high level scientific and technical research project through the Ministry of Science, Innovation and Universities with researchers from the UPV, UNED and the Spanish Institute of Oceanography, focusing on the situation of the fishing guilds of the Spanish Mediterranean, with a very important part dedicated to women.

More information about the results of these studies in: “*The sea is our life*”. *Woman in the fishery sector of the Valencian Community*, Paloma Herrera Racionero, Emmánuel Lizcaino, Luis Miret-Pastor, Yesmina Mascarell.



Pictures: ADOMAR



Pictures: ADOMAR

Campus Gandia Helps Restore the Legacy of Joaquín Pérez Arroyo, Pioneer in Valencian Animation

Like Salvatore Di Vita in *Cinema Paradiso*, Joaquín Pérez Arroyo discovered his love of cinema by accident. Born in the town of Lucena in the province of Cordoba in 1895, Pérez Arroyo was a lover of this art in all its formats. He came to Valencia to do his military service, where he met Teresa Maset, who would later become his wife, and would subsequently settle here the remainder of his life. The Civil War saw him working as an usher in the Benimàmet cinema out of sheer economic survival, while he painted fans for the militia women.



Quinito

With the war over at the age of 46 and no real trade or skills to speak of, Pérez Arroyo began a self-taught career in the world of animated films. Out of a family-run studio that was basically disconnected from the Catalan and Madrid trends of the time, he created a sensational film heritage in the Golden Age of Spanish animation. Almost 80 years later, **Raúl González**, animation expert at Campus Gandia of the Universitat Politècnica de València, is at work restoring this legacy.

70 RESTORED FILMS

Thanks to the work of Monaj, the coordination of the Valencia Film Library, and the collaboration of the Spanish, Catalan and Navarre film libraries, and the Ibi Toy Museum, the research project that was launched in 2017 has already restored 70 of his more than 110 films. This compilation has been included by the Institute of Cinematographic Sciences (ICAA) in the NEW SPANISH FILMS/Films from our archive catalog that were presented in the current MARCHÉ DU FILM, one of the parallel activities of the Cannes Festival.

A pioneer and forerunner, Pérez Arroyo produced a copious production of animated



Raúl González

short films between 1941 and 1959 for the Valencian brands Juguetes Payá and Industrias Saludes, that, thanks to him, became film producers and manufacturers of toy projectors. He designed and patented six different models of these toy projectors and created a hundred films for home screening. He was a self-taught forerunner who made the transition to television animation.

In addition, Pérez Arroyo produced seven 35mm animated short films for the Compañía Industrial de Film Español SA, known as CIFESA, the most important Spanish film production company at the time, which revolved around a character named Quinito. And he worked for Publicidad Levante and his own company, PASSA.

A MAN AHEAD OF HIS TIME

Since 2012, Raúl González Monaj has been interested in the work of this animator from Cordoba based in Valencia. Monaj gained access to the material thanks to Pérez Arroyo's family. He also found original films in flea markets, purchased some online and received the selfless collaboration of several owners.

Some of the animated short films found were very deteriorated and the restoration work on the part of the film library proved very laborious.

The result of this research is the project website, which details how "Pérez Arroyo used resources and techniques that were typical of high-quality animation, such as camera movements (panning, traveling, tracking, etc.), animated backgrounds, drop shadows, various shots, sweeps and even animated special effects".

The documentary titled "Pérez Arroyo: alma de animador" (soul of the animator), produced by Admirable Films, with the support of the IVC-Valencian Audiovisual Institute. His legacy, virtually unknown until now, has come to light to reveal the work of a man that was ahead of his time and, without a doubt, an essential Valencian reference in the Golden Age of Spanish animation.

More information: <http://grupoanimacion.upv.es/elcinedeperezarroyo/>



<http://cienciagandia.webs.upv.es/en/>



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