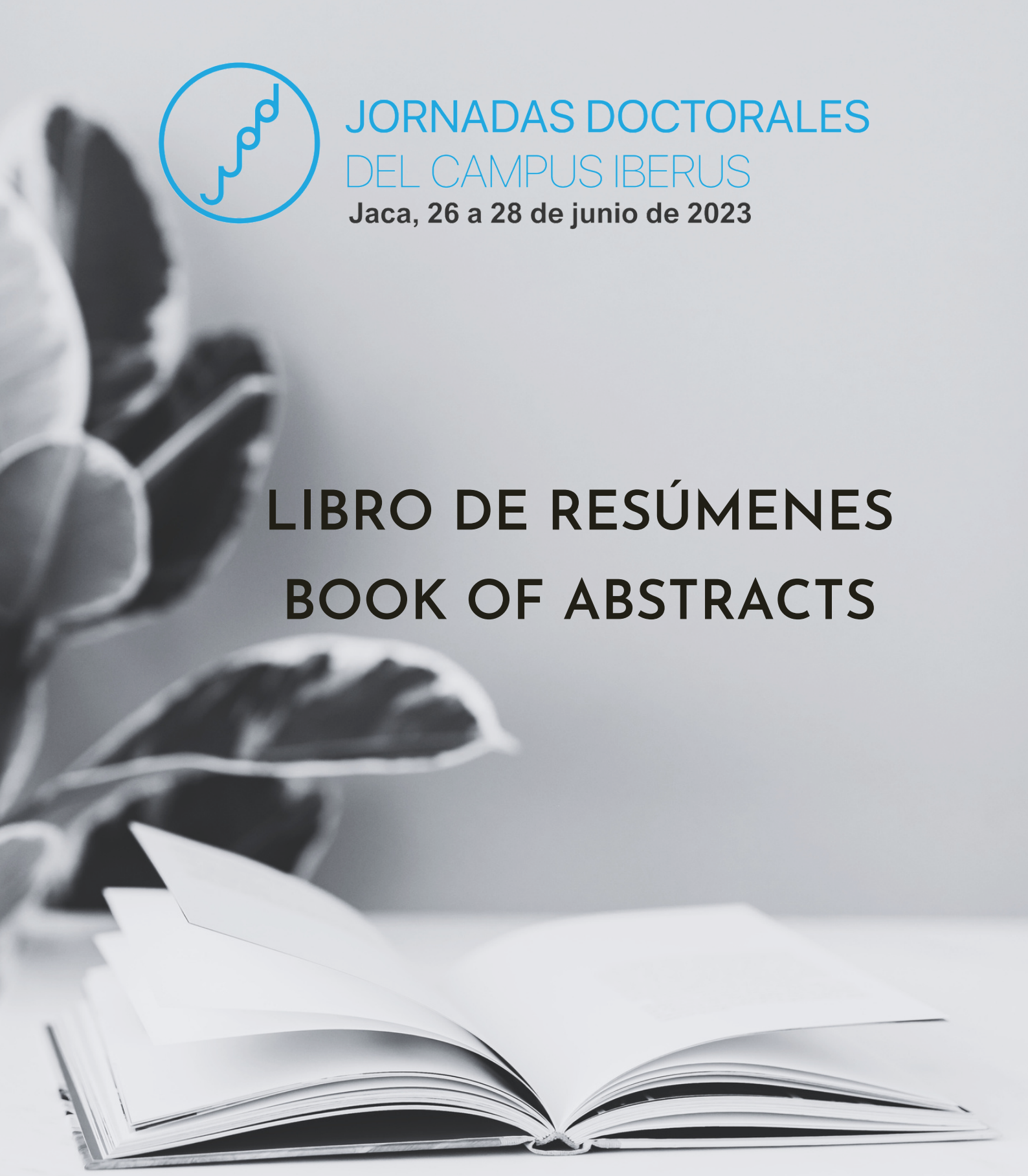
JORNADAS DOCTORALES
DEL CAMPUS IBERUS

Jaca, 26 a 28 de junio de 2023

LIBRO DE RESÚMENES
BOOK OF ABSTRACTS



campus iberus
CAMPUS DE EXCELENCIA INTERNACIONAL DEL VALLE DEL EBRO

Universidad Zaragoza

upna Universidad Pública de Navarra
Nafarroako Unibertsitate Publikoa

Universitat de Lleida

UNIVERSIDAD DE LA RIOJA

Título: Libro de resúmenes/ Abstract Book - IX Jornadas Doctorales de Campus Iberus

Zaragoza, junio 2023

Actividad financiada con cargo a los fondos recibidos de los gobiernos de Catalunya, La Rioja, Aragón y Navarra para potenciar y consolidar la excelencia docente y científica, la internacionalización del sistema universitario y generar nuevas relaciones colaborativas con los diferentes actores del valle del Ebro.

Desde su primera edición, en 2014, las Jornadas Doctorales han tenido como objetivo facilitar las relaciones entre los doctorandos de Campus Iberus, independientemente de su área de investigación; además, se ofrecen actividades dirigidas a mejorar las competencias transversales de los investigadores en formación. Desde el principio se ha contado con el apoyo de las Escuelas de Doctorado de las Universidades de Zaragoza, Pública de Navarra, Lleida y de la Escuela de Máster y Doctorado de la Universidad de La Rioja.

En esta novena edición de las Jornadas, un año más, más de cuarenta doctorandos de las cuatro universidades de Campus Iberus, así como de la Universidad colombiana de Los Andes, presentan su investigación doctoral, en un ambiente marcadamente multidisciplinar. Es importante resaltar (y agradecer) el esfuerzo que realizan los participantes para que tanto el contenido como la forma faciliten el seguimiento de las presentaciones por investigadores de otras disciplinas.

El programa se completa con conferencias, mesas redondas y actividades de formación. Desde aquí queremos igualmente agradecer a los ponentes sus interesantes contribuciones y su implicación con esta iniciativa.

Esperamos que todos los participantes encontréis satisfechas vuestras expectativas académicas y de formación y que, además, disfrutéis de la experiencia en las "Jornadas de Jaca".

Gracias a todos por vuestra participación

***** ***** *****

Since its first edition, in 2014, the objective of the "Jornadas Doctorales" has been to facilitate connections between PhD students in Campus Iberus, regardless of their research area. In addition, activities aimed at improving the transversal skills of trainee researchers are offered. It has been possible thanks to the support of the Doctoral Schools of the Universities of Zaragoza, Pública de Navarra, and Lleida and the Master's and Doctoral School of the University of La Rioja.

In this edition, over forty PhD students from Campus Iberus and from the University of Los Andes (Colombia), present their doctoral research in a multidisciplinary environment. It is important to highlight (and thank) the participants efforts so that both the content and the form of the presentations facilitate the understanding by researchers from other disciplines.

The schedule of the "Jornadas Doctorales" includes conferences, round tables and training activities. At this point we would like to thank the speakers for their interesting contributions and their involvement with this initiative.

We hope that all the participants will find your academic and training expectations satisfied and that, in addition, you will enjoy the experience in the "Jornadas de Jaca".

Thanks to all for your participation

Talleres y Ponencias

Workshops and Keynotes

Taller 1 // Workshop 1

Cómo identificar, entender y manejar las emociones durante el proceso de doctorado
How to become aware, understand and manage emotions during the doctoral process

Agnès Ros-Morente
Profesora agregada del departamento de Pedagogía
Universidad de Lleida

Es bien sabido que **las emociones** juegan un papel fundamental en la vida de cualquier ser humano. Además, esta importancia es aún mayor, si cabe, durante los procesos de aprendizaje. Manejar nuestras emociones de manera adecuada puede ser de gran ayuda para nuestro proceso de tesis doctoral, además de incrementar nuestro bienestar psicológico y reducir la ansiedad propia de este periodo.
En este taller intentaremos entender un poco más los procesos emocionales y procuraremos adquirir herramientas para el manejo de los mismos.

****

It is well known that **emotions** play a fundamental role in the life of any person and the importance is even greater, if possible, during the learning process. Managing our emotions properly can be of great help for our doctoral thesis process, in addition to increasing our psychological well-being and reducing the anxiety typical of this period.
In this workshop we will try to understand a little more the emotional processes and we will try to acquire tools to manage them.

Taller 2/ Workshop 2

La ética de la ciencia
The ethics of Science

Thomas S. van Zanten*, Laura Asín Pardo
Researcher at INMA (CSIC-UNIZAR)

La ética trasciende todo lo que hacemos, por lo que sin duda incide también en cómo hacemos y en cómo la sociedad percibe la ciencia. La relación entre ética y ciencia es esencial en nuestras vidas. Por lo tanto, es crucial que los científicos sean conscientes de esta interacción desde el principio de su carrera, que la comprendan y que la manejen de manera apropiada. Si bien la ética en la ciencia siempre ha sido un aspecto muy importante que se debe trasmitir a los estudiantes, hoy en día, dado que las posibilidades de las nuevas tecnologías que se desarrollan son inimaginables, debe de estar en una posición relevante. Hay que ser conscientes de la responsabilidad que los científicos tenemos, ya que no todo lo que se puede hacer se debe hacer.

En este taller exploraremos la ética en la ciencia desde múltiples perspectivas. Analizaremos la ética en la ciencia de manera general, pero también examinaremos casos específicos y relevantes, como el uso de aplicaciones de inteligencia artificial, las revistas depredadoras, las dobles afiliaciones y la ética en la investigación con animales pequeños.

****

Ethics transcends everything we do, so it undoubtedly also affects how we do science and how society perceives it. It is crucial that scientists, early in their career, are aware of this interaction, understand it, and manage it properly. Although ethics in science has always been a fundamental aspect to transmit to students, nowadays, given the possibilities of the new technologies, it must occupy an even more relevant place. We must be aware of the responsibility that scientists have, since not everything that can be done should be done.

In this workshop we will explore ethics in science from multiple perspectives. Along with an overview, we will examine some specific and relevant cases, such as the use of artificial intelligence applications, predatory journals, dual affiliations, and ethics in small animal research.

Taller 3

Buenas noticias: tu tesis me interesa

Rubén Marín A.
Responsable de la Unidad de Cultura Científica (UCC+i) de la UR

Con el Doctorado se abre una etapa en la vida académica en la que los doctorandos no son sólo estudiantes sino investigadores en formación, lo que conlleva la responsabilidad de transferir su conocimiento para el desarrollo de la sociedad. Esta sesión tiene como objetivo dotar a los doctorandos participantes de herramientas para una difusión eficaz de sus tesis doctorales.

"Consejo de Sabios o Doctorandos Inquietos. Explorando oportunidades y desafíos en la Universidad de La Rioja"

Mario Sergio Pino-Hurtado[1], Domingo Carbonero Muñoz[1], Álvaro Eraña Martínez[1], Alejandro León Cristóbal[1], David Gómez de Segura Zorzano[1], Paula Eguizábal Marcos[1], Silvia Donis Martínez[1] y Ana Ponce de León[1]

[1] Universidad de La Rioja, Logroño, La Rioja, España.

La Escuela de Máster y Doctorado (EMYDUR) de la Universidad de La Rioja (UR) se dedica a brindar una formación de excelencia a los estudiantes de doctorado, impulsando acciones para satisfacer sus necesidades y fomentar su desarrollo en la investigación. En respuesta a esto surge el "Consejo de Sabios", un grupo de estudiantes de doctorado encargado de abordar las principales inquietudes que pueden surgir durante esta etapa investigadora.

La colaboración entre este Consejo y la EMYDUR ha sido fundamental para la organización de las I Jornadas Científicas: "Calidad de la investigación y oportunidades del doctorado", celebradas en febrero de 2023. Los temas tratados incluyeron la evaluación de la investigación como indicador de calidad, las oportunidades de movilidad internacional, los contratos predoctorales y las ayudas, así como las experiencias profesionales en el ámbito empresarial e institucional. Según la opinión de los participantes, estas fueron un éxito, expresando su gran satisfacción con el contenido, la organización y los ponentes del evento.

Iniciativas como esta ejemplifican la responsabilidad de nuestra universidad en fortalecer la formación y las oportunidades para los estudiantes, creando un entorno propicio para la investigación y el desarrollo académico. Sin embargo, el compromiso va más allá, pues planeamos abordar otras inquietudes y además elaborar una "Guía de preguntas-respuestas" que brinde orientación adicional a los futuros doctorandos. Nuestro objetivo final es fortalecer el apoyo y la calidad de la investigación en la UR, asegurando que se cuente con los recursos necesarios para alcanzar el éxito en esta trayectoria académica y profesional.

La comunidad Iberus Connect: experiencias de apoyo e intercambio entre doctorandos internacionales

Jorge Guío[(a)]*, Yamilka Toca[(a)] , Alvaro Eraña[(b)]

a) University of Zaragoza

b) University of La Rioja

**jguio@unizar.es*

La iniciativa **Iberus Connect** surge en la primavera de 2020, en pleno confinamento a causa de la crisis COVID 19, al constatar las necesidades de orientación manifestadas por parte de doctorandos procedentes de otros países. El programa tiene como objetivo integrar a estudiantes internacionales que estén realizando su doctorado en las universidades del consorcio Campus Iberus mediante la creación de una comunidad de doctorandos.

En el marco de este proyecto se puso en marcha un programa de acompañamiento (mentoría) para doctorandos internacionales de nuevo ingreso por parte de doctorandos más experimentados mediante la creación de dos figuras clave: los embajadores y los mentores. Los embajadores tienen la labor de organizar actividades académicas y sociales, con la intención de ayudar al resto de estudiantes de doctorado y favorecer la integración de los estudiantes internacionales. Los mentores, por su parte, son responsables de ejercer un acompañamiento de los estudiantes internacionales y ayudarles con aspectos académicos o administrativos.

Desde el curso 2020-2021, doctorandos de las cuatro universidades han formado parte de la comunidad como mentores o embajadores y han prestado su apoyo para intentar facilitar la integración académica y social de estudiantes internacionales. La realización de seminarios sobre aspectos académicos de interés para los doctorandos, así como la organización de actividades sociales y encuentros interdisciplinares, ha permitido crear una red apoyo y orientación entre doctorandos para cuestiones de diversa índole. Los estudiantes que han formado parte de la comunidad han valorado muy positivamente esta iniciativa y han destacado la importancia de contar con este tipo de programas de acompañamiento en la etapa del doctorado, ya que puede ser un período desafiante y exigente, especialmente en el caso de los doctorandos internacionales.

Comunicaciones de los doctorandos

PhD students communications

"Disminución de valores en variables asociadas a la deserción universitaria en Colombia, por medio de un servicio digital de meditación"

Alejandro Arias Salazar

Programa Doctorado en Gestión de la Innovación Tecnológica

Universidad de los Andes, Colombia.

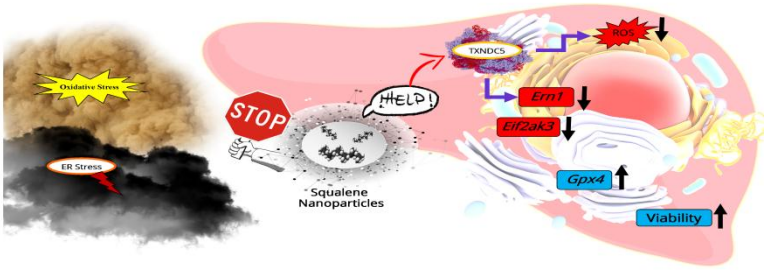
Este poster representa el informe de un estudio exhaustivo que tuvo como objetivo investigar los efectos de la meditación de la Atención plena (Mindfulness) en variables relacionadas con la deserción universitaria en Colombia, utilizando servicios digitales de meditación. La muestra consistió en 104 estudiantes de una universidad colombiana, y se empleó un diseño cuasiexperimental en el que dos grupos participantes practicaron meditación de manera consecutiva durante un mes, utilizando distintos servicios de meditación en línea, mientras que un tercer grupo se mantuvo sin meditar, sirviendo como grupo de control. Con el propósito de evaluar la intención de deserción y otras variables asociadas al abandono universitario, se aplicaron escalas psicométricas validadas, tales como el NEPS, el CAPS-34 y el MAAS. Los resultados obtenidos revelaron una variación significativa en ciertas variables relacionadas con la deserción universitaria en los grupos que practicaron meditación, lo que sugiere que la utilización de servicios de meditación en línea podría contribuir a la reducción de los valores asociados con la intención de abandonar los estudios universitarios. A pesar de estos resultados alentadores, se requiere de investigaciones adicionales que respalden y confirmen estos hallazgos iniciales. No obstante, los resultados preliminares arrojan indicios prometedores y sugieren que la meditación mindfulness podría tener un impacto positivo en la retención y permanencia de los estudiantes en el ámbito universitario. La implementación de programas de meditación en línea podría convertirse en una estrategia valiosa para abordar el desafío de la deserción estudiantil en las instituciones académicas.

Integrating a Mediterranean diet with marine resources as a drug delivery system can effectively impact Fatty Liver Disease

Seyed Hesamoddin Bidooki [1,*], María A. Navarro [1,2,3], Susana De Matos Fernandes [4] and Jesús Osada [1,2,3,*]

1. Departamento de Bioquímica y Biología Molecular y Celular, Facultad de Veterinaria, Instituto de Investigación Sanitaria de Aragón-Universidad de Zaragoza, E-50013 Zaragoza, Spain
2. Instituto Agroalimentario de Aragón, CITA-Universidad de Zaragoza, E-50013 Zaragoza, Spain
3. Centro de Investigación Biomédica en Red de Fisiopatología de la Obesidad y Nutrición (CIBEROBN), Instituto de Salud Carlos III, E-28029 Madrid, Spain
4. MANTA—Marine Materials Research Group, Universite de Pau et des Pays de l'Adour, E2S UPPA, 64 600 Anglet, France

Graphical Abstract:



The main source of fat in the Mediterranean diet, virgin olive oil, contains squalene, which has been found to enhance liver metabolism (1). Its bioavailability is decreased as a result of its extreme hydrophobicity. Squalene has been incorporated into chitosan nanoparticles (NPs) that come from the outer skeleton of shellfish, including crab, lobster, and shrimp, to improve its transport and amplify its effects. On the other hand, TXNDC5 protects hepatic cells against apoptosis carried on by stress (2). Hence, this present study describes the protection function of chitosan-based squalene nanoparticles on different cellular stresses in mouse hepatocytes. The objective of this project is classified underneath:

- Synthesis and physicochemical characterization of chitosan-based squalene-loaded nanoparticles
- Chitosan encapsulation efficiency
- Biological activity evaluation such as the viability, reactive oxygen species (ROS) and squalene protection under stress circumstances of the AML12 and HepG2 cell lines in the presence of these nanoparticles with squalene.
- The squalene uptake efficiency of this drug delivery system in cells and animal models.

In conclusion, molecular mechanisms of squalene action in non-alcoholic fatty liver disease using chitosan nanoparticles as a drug delivery system and its impact on human health will be specified in this project.

References

1- Herrera-Marcos LV, Martínez-Beamonte R, Arnal C, Barranquero C, Puente-Lanzarote JJ, Herrero-Continente T, Lou-Bonafonte JM, Gonzalo-Romeo G, Mocciaro G, Jenkins B, Surra JC. Dietary squalene supplementation decreases triglyceride species and modifies phospholipid lipidomic profile in the liver of a porcine model of non-alcoholic steatohepatitis. The Journal of Nutritional Biochemistry. 2023 Feb 1;112:109207.

2- Bidooki SH, Alejo T, Sánchez-Marco J, Martínez-Beamonte R, Abuobeid R, Burillo JC, Lasheras R, Sebastian V, Rodríguez-Yoldi MJ, Arruebo M, Osada J. Squalene loaded nanoparticles effectively protect hepatic AML12 cell lines against oxidative and endoplasmic reticulum stress in a TXNDC5-dependent way. Antioxidants. 2022 Mar 18;11(3):581.

Estudio Comparativo entre España y Ecuador, de la Reinserción social de la persona privada de Libertad

Cabezas Condor Alexandra Elizabeth

a) Universidad de Zaragoza, C. de Pedro Cerbuna, 12, 50009 Zaragoza

**811767@unizar.es*

Ecuador es un país en vía de desarrollo ubicado en América del Sur, en el cual un alto nivel de delincuencia y las cárceles se encuentran abarrotadas de personas privadas de libertad, las mismas que no tienen una reinserción social adecuada por lo que vuelven a delinquir, por lo general las personas que tuvieron detención, o sentencia ejecutoriada y cumplieron la pena vuelven a reincidir en el cometimiento de un delito, por varios motivos.

Lo que quiero destacar es la inseguridad ciudadana en el Ecuador y la crisis carcelaria que los últimos años se ha incrementado.

El Instituto Nacional de Estadísticas y Censos (INEC), en el año 2021, registró un aumento anual del índice de criminalidad. Los casos de homicidio intencional, en el año 2020, fueron 1.372 y hasta el mes de octubre del 2021 se reportaron 1.885, representando un 40% de incremento.

El alto índice de reincidencia delincuencial, el hacinamiento y lo inadecuado de las instalaciones carcelarias son factores que contribuyen a esta dolorosa realidad (Tapia, 2021).

Las personas privadas de libertad, durante el transcurso del cumplimiento de su condena, pasan largo tiempo encerrados en sus celdas, deambulando por los patios del centro penitenciario, o en el peor de los casos, planificando nuevos delitos. Aunado a esto, los datos señalan que el 31% de los privados de libertad poseen educación media; está limitada preparación académica hace difícil su rehabilitación o reinserción en la sociedad.

España es un país cada vez menos violento forma parte de una tendencia global "bastante acusada", según el psicólogo Luis de la Corte, que habla en representación del Consejo General de Psicólogos de España: "La violencia se ha reducido mucho más de lo que el sentido común sugiere", asegura. Aunque "esta evolución es más clara en los países con mayor nivel de desarrollo", matiza. Precisamente España es uno de los países con tasas de asesinato más bajas no sólo de la Unión Europea, sino del mundo, por debajo de Alemania, Francia o Portugal. Como estadística, mueren 0,7 de cada 100.000, habitantes, lejos de la media mundial, que asciende a 5,3. Sólo Irlanda, Holanda, Austria y Singapur tienen una tasa menor.

Por tal motivo se toma como referencia al sistema penitenciario y reinserción social a España, con el fin de mejorar las normas y políticas de Ecuador; y así reducir el nivel de delincuencia, para poder contrarrestar los problemas que enfrenta el sistema penitenciario y por ende la reinserción social, la misma que afecta a la ciudadanía y a la seguridad ciudadana.

La involucración de museos y centros de interpretación con su entorno territorial e histórico. Un caso de estudio original en El museo Orús de Utebo (Zaragoza).

Carlos Campelo Gaínza(ª).

a) Investigador Predoctoral en Formación, Departamento de Historia del Arte, Facultad de Filosofía y Letras, ccampelo@unizar.es – 601021837. Despacho C103, Edificio Cervantes

Cualquier museo a lo largo de su carrera ha tenido en numerosas ocasiones que abordar la compleja labor de implicarse con su entorno. Aunque en muchos casos puedan convivir el museo tradicional con el nuevo museo surgido en los años 80 de siglo XX, la señal que más llama la atención es ese transito que también se da en estas instituciones de ámbito local y que se traspasa entre el museo que conserva unas colecciones y se comporta como organismo cerrado, sin buscar este peso social que hace tiempo ocupó el panorama museístico y los que ahora son parte de él y se atreven a abrir sus puertas a su entorno y a su ciudadanía, para que se involucren en sus colecciones y en su entidad cultural.

Uno de los primeros temas que surgen al analizar este fenómeno es esencialmente el dilema entre atraer a un público foráneo con el fin de cautivar a más turismo al mismo o hacerlo hacia uno enraizado con la institución que permita la posibilidad de involucrar a su población. En estos tiempos de despoblación es cuando se empiezan a producir los cambios más notables en este campo, los cuales se han ido sucediendo hasta hoy en los museos modestos. La renovación y adaptación de sus políticas museísticas para que se ajusten a esta inclusión de cercanía ha sido una de las revoluciones más importantes de los museos locales. Uno de los ejemplos de esta circunstancia, sería la propuesta que realiza el museo Orús. Se puede decir que esta instauración cultural ha sido cómplice y partícipe de una de las grandes trasformaciones museísticas que se han producido en museología en los últimos tiempos. En este terreno en el que se desarrollan sus experiencias, ha asumido la introducción de un programa amplio y complejo sobre la trama de abarcar a su ciudadanía, construyendo herramientas sobre su propio patrimonio y usando recursos pertenecientes a su entorno territorial e histórico para dar solución a una involucración necesaria para afrontar su preexistencia y continuidad.

El punto de partida fundamental en este caso es conocer en profundidad estos museos especializados, ya que por una parte muestran las colecciones de los artistas que poseen y por otra, consiguen su doble funcionalidad en cada localidad en este caso, como centro cultural. Además, aquí es donde se centraría la ejemplaridad de estas instituciones en cuanto a su relación con el entorno como eje temático de la contribución a las Jornadas, pues es a partir de las actividades que realizan para involucrar a su ciudadanía donde radica su ejercicio. El ejemplo seleccionado quiere convertirse también en referente de su contexto poblacional en el término de la difusión de su patrimonio a través de recursos intrínsecos nacidos de su mismo territorio y su propia historia, cuya misión es la involucración con su entorno desde la teoría, la metodología y la técnica aplicadas a la museología, la museografía y la puesta en valor de sus monumentos y sitios.

IMPROVING THE PERFORMANCE OF A CO2 REFRIGERATION CYCLE WITH A THERMOELECTRIC SYSTEM

Chavarren D.[(a)*], Casi A.[(a)], Alzuguren I.[(a)], Aranguren P.[(a)], Rodriguez A.[(a)]

a) Public University of Navarra, Pamplona (Spain)

**david.chavarren@unavarra.es*

The artificial production of cold has driven the development of human society, given its contribution to food and sanitary product preservation, as well as its use for thermal comfort in homes and vehicles, and as a solution for heat dissipation in electronic equipment. One of the most relevant systems for cold production is vapor compression cycles, which were developed 150 years ago [1]. Despite the significant benefits achieved with refrigeration cycles, they present major environmental challenges. Globally, the refrigeration sector is responsible for 7.8% of greenhouse gas emissions [2] and 20% of total electricity consumption [3].

The present doctoral research will focus on addressing the two main problems faced by vapor compression cycles. Firstly, it will work with natural refrigerants, such as carbon dioxide, due to its low environmental impact as it has a low Global Warming Potential (GWP). Secondly, the problem of the high energy consumption of refrigeration machines will be addressed by trying to reduce it. To achieve this objective, a computational model capable of simulating the refrigeration cycle will be developed. The model will be used to optimize the design of a thermoelectric subcooling system (TESC) that enhances the efficiency of refrigeration cycles. This system will allow to dissipate a higher heat flow to the environment and as a consequence will increase the cooling capacity with a very low energy consumption, which will result in a better coefficient of performance (COP) of the cycle. The TESC will be manufactured and then installed in a commercial refrigeration cabinet for energy testing. The obtained results will be used to verify improvements in COP and lower energy consumption compared to the cabinet without the TESC system.

References

[1] American Society of Mechanical Engineers. Perkins Vapor-Compression Cycle for Refrigeration: A historic mechanical engineering landmark [Internet]. 2020. Available from: http://www.scienceve.com/10-greatest-inventions-changed-

[2] Morlet V CDDJL. The impact of the refrigeration sector on climate change / 35th Informatory Note on Refrigeration Technologies. International Institute of Refrigeration [Internet]. 2017; Available from: www.iifiir.org

[3] Dupont J L. The role of refrigeration in the global economy / 38 th Informatory Note on Refrigeration Technologies. International Institute of Refrigeration. 2019;

Enhancing Forest Management: Decision Support Tools for Assessing Ecosystem Services in a Changing Climate

Irina Cristal[(a)*]

a) University of Lleida, Lleida, Spain
**Irina.cristal@ctfc.cat*

The rapid pace of forest ecosystem change, driven by climate change and increasing frequency of disturbances such as forest fires, droughts, and pest outbreaks, necessitates improved solutions for forest management and planning. Traditionally, forest management focused primarily on maximizing timber production based on historical yield information. However, the recognition of forests' multifunctionality and the diverse services they provide to humans has shifted the paradigm towards considering multiple ecosystem services in management strategies. Despite this shift, there is a lack of tools and methods for effective implementation at the operational level.

To address these challenges, this doctoral research examines three main facets: (1) the selection of suitable models for predicting forest dynamics under changing climate conditions, (2) the development of robust methods for evaluating ecosystem services, and (3) the assessment of how emerging technologies, such as machine learning, contribute to advancing our understanding of forest dynamics or pose challenges.

As a tangible outcome of this research, a decision support tool has been developed, integrating forest simulations and ecosystem services modeling. This tool aids in making informed management plans by providing predictions of short- and long-term forest dynamics and ecosystem services and enabling scenario analyses. Given the uncertainties associated with climate change impacts on forest dynamics, addressing these challenges becomes crucial. By exploring the choice of models, evaluating ecosystem services, and leveraging emerging technologies, this PhD research contributes to enhancing forest management practices in the face of global changes.

Interactions of Humic Acid with Pristine Poly (Lactic Acid) Microplastic in Aqueous Solution

Ricardo H. P. Pedroza*, Calin David, Pablo Lodeiro, Carlos Rey-Castro
Department of Chemistry, Physics, Environmental and Soil Sciences, University of Lleida – AGROTECNIO-CERCA Center, Rovira Roure 191, 25198, Lleida, Spain.
ricardo.depaula@udl.cat

Microplastics are the plastic particles in the size range between 1 µm and 5 mm [1]. They are ubiquitous in the environment, being detected in waters [2–4], soils [5–8], atmosphere [9–11], and even in remote regions i.e., Arctic [12] and Antarctica [13]. The microplastics are a concern due to their potential toxic effects to organisms [14–17]. In addition, due to their high hydrophobicity and large specific surface area they can interact with other contaminants present in the environment. Therefore, the microplastics can also act as vectors of transportation of contaminants in the environment and food chain, being able to promote the bioaccumulation of toxic substances [18]. The interactions between microplastics and other chemical compounds is dependent on multiple factors, which include the microplastic properties and the characteristics of the environmental matrix where they are present [19,20]. Among these factors, the presence of natural organic matter in the environment represents a key role. Natural organic matter is a heterogeneous class of organic molecules that contain carbon, hydrogen, and oxygen, and can be found throughout the environment [21]. The organic matter can interact with pollutants by complexation or hydrophobic interactions, affecting their adsorption either by a direct competition for the adsorption sites, or by forming complexes between the microplastic and the pollutant. Despite this crucial role, only a few works [22–26] were found in the literature including a detailed explanation on the interactions between organic matter and microplastics, and none of them relates to biodegradable microplastics. In this study we assessed the interactions between organic matter and a biodegradable microplastic, hereby represented by humic acid and poly (lactic acid) (PLA), respectively. The interactions were evaluated based on the results of adsorption experiments in aqueous solution. The results demonstrate that adsorption of humic acid onto PLA is dominated by physisorption while chemisorption is the rate-limit step. In addition, studies of the effects of pH, ionic strength, and PLA concentration on the adsorption of humic acid onto PLA demonstrated that electrostatic interactions and aggregation are important. The humic acid was characterized by Fourier-transform infrared (FTIR) spectroscopy, excitation-emission matrix (EEM), and parallel factor analysis (PARAFAC), before and after interacting with PLA. This set of analyses demonstrated that PLA caused alterations in the molecular structure of humic acid, primarily attributed to modifications in hydrogen bonding and hydrophobic interactions. Therefore, we hypothesize that the carboxylic groups of humic acid formed dimers in contact with PLA. This study provides new insights into the interactions between organic matter and a biodegradable microplastic in aqueous systems.

References

[1] J.P.G.L. Frias, R. Nash, Microplastics: Finding a consensus on the definition, Mar. Pollut. Bull. 138 (2019) 145–147. doi:10.1016/j.marpolbul.2018.11.022.

[2] T. Zhang, B. Jiang, Y. Xing, H. Ya, M. Lv, X. Wang, Current status of microplastics pollution in the aquatic environment, interaction with other pollutants, and effects on aquatic organisms, Environ. Sci. Pollut. Res. 29 (2022) 16830–16859. doi:10.1007/s11356-022-18504-8.

[3] F.O. Campos da Rocha, S.T. Martinez, V.P. Campos, G.O. da Rocha, J.B. de Andrade, Microplastic pollution in Southern

Atlantic marine waters: Review of current trends, sources, and perspectives, Sci. Total Environ. 782 (2021). doi:10.1016/J.SCITOTENV.2021.146541.

[4] A.A. Koelmans, N.H. Mohamed Nor, E. Hermsen, M. Kooi, S.M. Mintenig, J. De France, Microplastics in freshwaters and drinking water: Critical review and assessment of data quality, Water Res. 155 (2019) 410–422. doi:10.1016/j.watres.2019.02.054.

[5] H. Ya, B. Jiang, Y. Xing, T. Zhang, M. Lv, X. Wang, Recent advances on ecological effects of microplastics on soil environment, Sci. Total Environ. 798 (2021) 149338. doi:10.1016/j.scitotenv.2021.149338.

[6] Y. Chen, Y. Wu, J. Ma, Y. An, Q. Liu, S. Yang, Y. Qu, H. Chen, W. Zhao, Y. Tian, Microplastics pollution in the soil mulched by dust-proof nets: A case study in Beijing, China, Environ. Pollut. 275 (2021) 116600. doi:10.1016/J.ENVPOL.2021.116600.

[7] M. Kumar, X. Xiong, M. He, D.C.W. Tsang, J. Gupta, E. Khan, S. Harrad, D. Hou, Y.S. Ok, N.S. Bolan, Microplastics as pollutants in agricultural soils, Environ. Pollut. 265 (2020) 114980. doi:10.1016/j.envpol.2020.114980.

[8] J. Wang, X. Liu, Y. Li, T. Powell, X. Wang, G. Wang, P. Zhang, Microplastics as contaminants in the soil environment: A mini-review, Sci. Total Environ. 691 (2019) 848–857. doi:10.1016/j.scitotenv.2019.07.209.

[9] Q. Jia, Y. Duan, X. Han, X. Sun, J. Munyaneza, J. Ma, G. Xiu, Atmospheric deposition of microplastics in the megalopolis (Shanghai) during rainy season: Characteristics, influence factors, and source, Sci. Total Environ. 847 (2022) 157609. doi:10.1016/j.scitotenv.2022.157609.

[10] Z. Liu, Q. Huang, L. Chen, J. Li, H. Jia, Is the impact of atmospheric microplastics on human health underestimated? Uncertainty in risk assessment: A case study of urban atmosphere in Xi'an, Northwest China, Sci. Total Environ. 851 (2022) 158167. doi:10.1016/j.scitotenv.2022.158167.

[11] V.C. Shruti, G. Kutralam-Muniasamy, F. Pérez-Guevara, P.D. Roy, I.E. Martínez, Occurrence and characteristics of atmospheric microplastics in Mexico City, Sci. Total Environ. 847 (2022) 157601. doi:10.1016/j.scitotenv.2022.157601.

[12] M. Bergmann, F. Collard, J. Fabres, G.W. Gabrielsen, J.F. Provencher, C.M. Rochman, E. van Sebille, M.B. Tekman, Plastic pollution in the Arctic, Nat. Rev. Earth Environ. 2022 35. 3 (2022) 323–337. doi:10.1038/s43017-022-00279-8.

[13] A.R. Aves, L.E. Revell, S. Gaw, H. Ruffell, A. Schuddeboom, N.E. Wotherspoon, M. Larue, A.J. Mcdonald, First evidence of microplastics in Antarctic snow, Cryosphere. 16 (2022) 2127–2145. doi:10.5194/tc-16-2127-2022.

[14] L. Lei, S. Wu, S. Lu, M. Liu, Y. Song, Z. Fu, H. Shi, K.M. Raley-Susman, D. He, Microplastic particles cause intestinal damage and other adverse effects in zebrafish Danio rerio and nematode Caenorhabditis elegans, Sci. Total Environ. 619–620 (2018) 1–8. doi:10.1016/j.scitotenv.2017.11.103.

[15] H. Ju, D. Zhu, M. Qiao, Effects of polyethylene microplastics on the gut microbial community, reproduction and avoidance behaviors of the soil springtail, Folsomia candida, Environ. Pollut. 247 (2019) 890–897. doi:10.1016/j.envpol.2019.01.097.

[16] L. Lu, Z. Wan, T. Luo, Z. Fu, Y. Jin, Polystyrene microplastics induce gut microbiota dysbiosis and hepatic lipid metabolism disorder in mice, Sci. Total Environ. 631–632 (2018) 449–458. doi:10.1016/j.scitotenv.2018.03.051.

[17] H. Jin, T. Ma, X. Sha, Z. Liu, Y. Zhou, X. Meng, Y. Chen, X. Han, J. Ding, Polystyrene microplastics induced male reproductive toxicity in mice, J. Hazard. Mater. 401 (2021) 123430. doi:10.1016/j.jhazmat.2020.123430.

[18] T. Sun, S. Wang, C. Ji, F. Li, H. Wu, Microplastics aggravate the bioaccumulation and toxicity of coexisting contaminants in aquatic organisms: A synergistic health hazard, J. Hazard. Mater. 424 (2022) 127533. doi:10.1016/J.JHAZMAT.2021.127533.

[19] O.S. Alimi, J. Farner Budarz, L.M. Hernandez, N. Tufenkji, Microplastics and Nanoplastics in Aquatic Environments: Aggregation, Deposition, and Enhanced Contaminant Transport, Environ. Sci. Technol. 52 (2018) 1704–1724. doi:10.1021/acs.est.7b05559.

[20] Y. Sun, X. Wang, S. Xia, J. Zhao, New insights into oxytetracycline (OTC) adsorption behavior on polylactic acid microplastics undergoing microbial adhesion and degradation, Chem. Eng. J. 416 (2021) 129085. doi:10.1016/j.cej.2021.129085.

[21] H.E. Hartnett, Dissolved organic matter (DOM), Encycl. Earth Sci. Ser. (2018) 375–378. doi:10.1007/978-3-319-39312-4_155/COVER.

[22] L. Ding, Y. Luo, X. Yu, Z. Ouyang, P. Liu, X. Guo, Insight into interactions of polystyrene microplastics with different types and compositions of dissolved organic matter, Sci. Total Environ. 824 (2022) 153883. doi:10.1016/j.scitotenv.2022.153883.

[23] H. Luo, C. Liu, D. He, J. Sun, A. Zhang, J. Li, X. Pan, Interactions between polypropylene microplastics (PP-MPs) and humic acid influenced by aging of MPs, Water Res. 222 (2022) 118921. doi:10.1016/j.watres.2022.118921.

[24] A. Abdurahman, K. Cui, J. Wu, S. Li, R. Gao, J. Dai, W. Liang, F. Zeng, Adsorption of dissolved organic matter (DOM) on polystyrene microplastics in aquatic environments: Kinetic, isotherm and site energy distribution analysis, Ecotoxicol. Environ. Saf. 198 (2020) 110658. doi:10.1016/j.ecoenv.2020.110658.

[25] W. Chen, Z.Y. Ouyang, C. Qian, H.Q. Yu, Induced structural changes of humic acid by exposure of polystyrene microplastics: A spectroscopic insight, Environ. Pollut. 233 (2018) 1–7. doi:10.1016/j.envpol.2017.10.027.

[26] J. Zhang, S. Zhan, L. Bin Zhong, X. Wang, Z. Qiu, Y.M. Zheng, Adsorption of typical natural organic matter on microplastics in aqueous solution: Kinetics, isotherm, influence factors and mechanism, J. Hazard. Mater. 443 (2023) 130130. doi:10.1016/j.jhazmat.2022.130130.

Development of perovskite solar cells

F. Diaw-Ndiaye[(a,b)*], E.Planes[(a)], M.Bernechea[(b,c)], L. Perrin[(a)] and L. Flandin[(a)]

a) Université Savoie Mont Blanc, LEPMI UMR 5279 / Bâtiment Hélios - Av. Du Lac Leman - 73376 LeBourget-du-Lac Cedex

b) University of Zaragoza, Instituto de Nanociencia y Materiales de Aragón (INMA), Campus Río Ebro, C/ Mariano Esquillor, s/n, 50018, Zaragoza

c) ARAID, Government of Aragon, 50018, Zaragoza, Spain

*fatou.diaw-ndiaye@univ-smb.fr / fatoudiawn@unizar.es

The interest in renewable energy sources is growing year after year due to the climate change and other environmental issues produced by traditional resources. The photovoltaic (PV) conversion allows to gather the energy from the sun. PV setups rely on complex devices, composed of very dissimilar materials assembled at the micro- and nano- scale. Emerging PV technologies are being developed to improve the performance and the stability of the devices.[1] The objective of this work is the fabrication and characterization of solar cells based on perovskites as active layer to optimize the materials and their properties. Two types of PV (drop casted and spin coated) devices were fabricated under air processing using simple $MAPbI_3$ with AVAI, and mixed halide perovskites $MAPbI_{3-x}Cl_x$ (Figure 1). The resulting power conversion efficiencies (PCE) of the devices are 10.7% for drop casted devices and 12.9% for spin coated cells. Ultraviolet-Visible (UV-vis) and photoluminescence spectroscopy, X-ray diffraction and scanning Electron Microscopy have been used to understand the compositions and morphology of the perovskite layer. These results are of great interest for the study and development of new devices that combine the excellent perovskite's PV properties with quantum dots materials ($CsPbBr_3$ and Bi_2S_3). This technology aims to enhance stability at UV and obtain solar cells with extended light absorption, up to the infrared.[2]

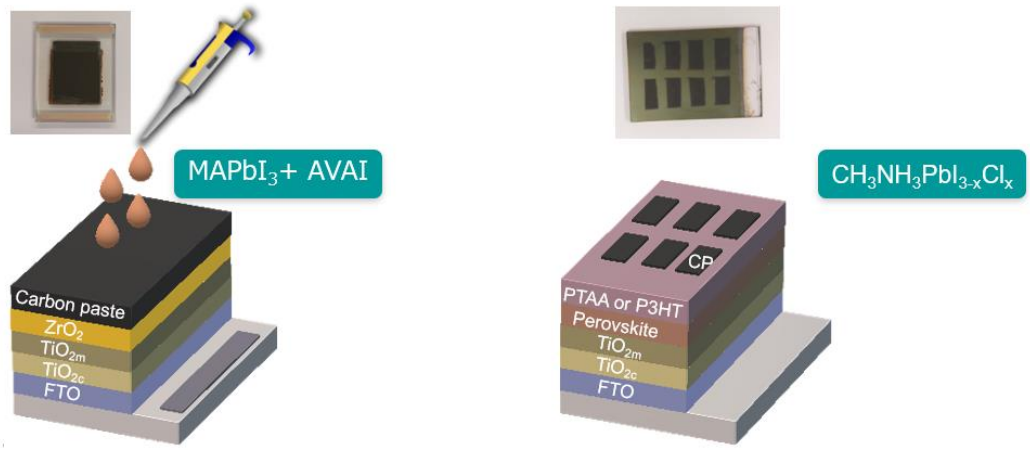


Figure 1. Diagram of the two types of devices and their corresponding images. Drop casted solar cells (left) and spin coated solar cells (right).

References

1. Polman A, Knight M, Garnett EC, Ehrler B, Sinke WC. Photovoltaic materials: Present efficiencies and future challenges. *Science (80-)*. 2016;352(6283). doi:10.1126/science.aad4424
2. Rakshit S, Piatkowski P, Mora-Seró I, Douhal A. Combining Perovskites and Quantum Dots: Synthesis, Characterization, and Applications in Solar Cells, LEDs, and Photodetectors. *Adv Opt Mater*. 2022;2102566. doi:10.1002/adom.202102566

The outsourcing of care and its repercussion among the agents of the system: Home care and Telecare in the municipality of Zaragoza

Dieste Campo, Mar
Universidad de Zaragoza, Facultad de Ciencias Sociales y del Trabajo
m.dieste@unizar.es

Law 39/2006, of 14 December, on the Promotion of Personal Autonomy and Care for Dependent Persons was presented as an instrument to overcome the traditional model of care distribution and attend to a population with growing care needs (Fantova, 2015). Furthermore, this law, although in a limited way (Recio et al., 2015) offers a definition of professional care, as that provided by a public institution or company or autonomous professional, and expresses the need to promote such professionalisation and refers to attention to quality in employment, although it does not specify measures for its supervision.

Based on the professionalisation of care, the Law has created employment linked to care activities for the elderly and dependent persons. However, the main characteristics of this employment sector are feminisation and precarious working conditions, as the neoliberal policies deployed in recent years have favoured the commodification of the services included in the law, which are now provided by private providers (Roca, 2018).

For the purposes of this Doctoral Thesis, two services provided at the local level have been selected: the Home Care Service and the Telecare Service. These two services have been selected as the object of research because at present, in Zaragoza, although they are public services, they are outsourced, so their provision is provided by private providers. Therefore, the employers of the workers are private companies. Moreover, these are services whose purpose is to keep users in their homes, which not only has social and health benefits for them, but also leads to a reduction in public spending, as home-based services are cheaper than institutionalisation (Genet et al., 2011).

The management of public services by private companies is a political decision that has implications for both the working conditions of the workers and the provision of the service itself. However, the public administration continues to have the ownership of the service and, therefore, the responsibility for its provision, as well as the possibility of auditing and supervising it (Ramos, 2018).

The main objective of this doctoral thesis is to evaluate the effects of the outsourcing of these two home care services for the elderly at the local level. Specifically, it aims to analyse the quality of home care and telecare services provided by private managers, and how this management model affects workers, users and families.

Fantova, F. (2015). Crisis de los cuidados y servicios sociales. *Zerbitzuan: Gizarte zerbitzuetarako aldizkaria= Revista de servicios sociales*, (60), 47-62.

Genet, N., et all. (2011). Home care in Europe: a systematic literature review. *BMC health services research*, 11(1), 1-14.

Ramos, F. (2018). La reversión a la gestión directa de un servicio público y sus implicaciones laborales. Revista Internacional y Comparada de relaciones laborales y derecho del empleo, 6 (3), 106- 138.

Recio, C., Moreno-Colom, S., Borràs, V. y Torns, T. (2015). La profesionalización del sector de los cuidados. *Zerbitzuan. Gizarte zerbitzuetarako aldizkaria = Revista de servicios sociales*, 60, 179-193.

Roca, M. (2018). Desigualdades de género en el Servicio de Ayuda a Domicilio: políticas, discursos y prácticas. *Revista Internacional de Organizaciones*, 20, 59–80.

LEISURE: PHYSICAL AND INTERGENERATIONAL

Álvaro Eraña Martínez[(a)*], Mª Ángeles Valdemoros San Emeterio [(a)] & Jesús Vicente Ruiz Omeñaca[(a)]

a) University of La Rioja, Spain

**alvaro.erana@unirioja.es*

My doctoral research has the objetive of analyze the experiences of physical-sports leisure shared by grandparents and their grandchildren (between 6 and 12 years old) residing in the north of Spain. The research is linked to the I+D+I Project "Ocio intergeneracional en el marco de la nueva normalidad. Educación, oportunidades y desafíos" (PID2020-119438RB-I00) [2021-2024] funded by the Ministry of Science and Innovation. It also has close links with the Research Network on Service-Learning in Physical Activity and Sport for Social Inclusion (RIADIS) of the Higher Sports Council of Spain. Ref. 01/UPB/22. The methodological design of this research is based on a triangulation of quantitative and qualitative methods in favour of data collection about intergenerational scenarios of physical and sports leisure and relationships between grandparents and grandchildren (from 6 to 12 years old). Methodology includes a quantitative study, carried out through "RETOÑOS" questionnaire, and a qualitative one, through discussion groups for data collection. The foreseeable results on physical-sports leisure shared between grandparents and grandchildren residing in the north of Spain in the coming year are focused on the review and update of the scientific literature on the topics under study, and also in the analysis of the questionnaire and discussion groups data. It is intended to know the perception of grandparents and grandchildren about shared leisure physical activity and identify the habits and interests of grandparents and grandchildren when they share their time together, either due to family necessity or willingly to improve family relationships and networks.

References

Sanz-Arazuri, E., Valdemoros-San-Emeterio, M. Á., Sáenz de Jubera-Ocón, M., Alonso-Ruiz, R. A., & Ponce-de-León-Elizondo, A. (2023). INTERGENERATIONAL PHYSICAL ACTIVITIES AND WELL-BEING IN CHILDHOOD. *rimcafd*, 23(89).

Alonso Ruiz, R. A., SÁENZDE JUBERA OCÓN, M., & Sanz Arazuri, E. (2020). Tiempos compartidos entre abuelos y nietos, tiempos de desarrollo personal. *Revista Española de Pedagogía, 78(277)*, 415-434

Social Mentoring as a methodology of intervention with adolescents at risk of social exclusion: project description and preliminary results

Lady Alexandra Durán Oliveros [(a)*]

a) Public University of Navarre, Arrosadia Campus, 31006, Pamplona

*ladyalexandra.duran@unavarra.es

In Spain, the intensification of social exclusion processes in the 2018-2021 period has mainly affected people under 18 years of age (Ruiz Villafranca et al., 2022). The multidimensional and intergenerational nature of social exclusion requires both individual and collective interventions based on comprehensive and relational approaches. In this scenario, social mentoring programs stand out as complementary strategies to social policies that seek to promote the social inclusion of diverse individuals and groups, involving civil society.

My doctoral research aims to analyze the methodology of social mentoring and to elaborate methodological guidelines for the implementation of social mentoring with adolescents at risk of social exclusion. The research methodology is a mixed case study whose unit of analysis is the UPNA's Nightingale Project. In this project, university students (mentors) accompany sixth grade students (mentees) throughout the academic year to create a space for meeting and sociocultural dialogue between people from different backgrounds.

The literature review shows that social mentoring tends to improve the emotional, academic and behavioral development of mentees (Prieto & Feu, 2020; Pryce, 2012; Sánchez-Aragón et al., 2021). However, there are knowledge gaps and risks associated with inadequate implementation that call for further reflection and research by the academic and professional community (Rhodes et al., 2009; Sánchez et al., 2021).

Preliminary results show that UPNA's Nightingale Project helps to promote intercultural coexistence, enhance life skills in both mentors and mentees and strengthen social support networks. However, there are sociocultural gaps between mentors and mentees that need to be tackled to avoid the reproduction of social inequalities in mentoring relationships.

References

Prieto, Ò., & Feu, J. (2020). La mentoria social com a eina de treball amb joves en context d'immigració. *Pedagogia i Treball Social: revista de ciències socials aplicades*, *9*(2), Article 2.

Pryce, J. (2012). Mentor Attunement: An Approach to Successful School-based Mentoring Relationships. *Child and Adolescent Social Work Journal*, *29*(4), 285-305. https://doi.org/10.1007/s10560-012-0260-6

Rhodes, J., Liang, B., & Spencer, R. (2009). First do no harm: Ethical principles for youth mentoring relationships. *Professional Psychology: Research and Practice*, *40*(5), 452-458. https://doi.org/10.1037/a0015073

Ruiz Villafranca, R., Soriano Segovia, Y., & Fresno García, J. M. (2022). Capítulo 6. La crisis de la COVID-19 aumenta los procesos de exclusión social. En L. Ayala Cañón, M. Laparra Navarro, & G. Rodríguez Cabrero (Eds.), *Evolución de la cohesión social y consecuencias de la COVID-19 en España*. Fundación FOESSA : Cáritas Española Editores.

Sánchez, B., Anderson, A. J., Weiston-Serdan, T., & Catlett, B. S. (2021). Anti-Racism Education and Training for Adult Mentors Who Work With BIPOC Adolescents. *Journal of Adolescent Research*, *36*(6), 686-716. https://doi.org/10.1177/07435584211043288

Sánchez-Aragón, A., Belzunegui-Eraso, A., & Prieto-Flores, Ò. (2021). Revisión sistemática de la evaluación de la mentoría social dirigida a jóvenes vulnerables. *OBETS. Revista de Ciencias Sociales*, *16*(2), 481. https://doi.org/10.14198/OBETS2021.16.2.16

"Human Myodural Bridges: act or artifact?"

Ruth Esteban-Marín[(a,b)*], Yolanda García-Mesa[(b)] Patricia Cuendias[(b)] Francisco Naves[(b)] Marian Franco[(a)] José A. Vega[(b)]

a) Ph.D. Program in Health and Sports Sciences, University of Zaragoza.
b) Department of Morphology and Cell Biology, SINPOS Group, University of Oviedo. *ruthesteban@unizar.es*

Introduction

The myodural bridge complex (MDBC) is a bilateral system of dense connective tissue bands that connects the suboccipital musculature with the dura mater at two first cervical levels. It has been described in various vertebrate species, including humans, and its functional significance is controversial. In physiotherapy, they are considered the morphological substrate for certain manipulations... This study presents: Macroscopic anatomy; magnetic resonance imaging; MDBCs in fetuses and adults; Innervation in adults.

Materials and Techniques

Identification and dissection of MDBC in 8 adult subjects (University of Oviedo). MDBC specimens were routinely embedded and used for structural techniques and PAP immunohistochemistry. Fetal material were obtained from the embryoteca of the Complutense University of Madrid and corresponded to 3 specimens. Magnetic resonance images were obtained from 4 adults individuals at the Central University Hospital of Asturias.

Results

MDBCs were consistently found in the studied hemi-heads based on their location and the mobilization of the dura mater. However, MDBCs could not be reliably identified through magnetic resonance imaging. The structure of MDBCs, was typical of connective tissue, with a predominance of a non-oriented fibrillar component; and occasional presence of striated muscle tissue. The innervation of MDBCs involved free nerve endings and sensory nerve formations of variable morphology. Large-sized sensory nerve formations with a thick multilayered capsule, an intracapsular space occupied by an amorphous tissue of unknown lineage, containing immunoreactive nerve formations for neurofilament proteins and S100 protein, were detected at the connective tissue-muscle tissue border.

Discussion and Conclusions

In adult humans, MDBCs are differentiated entities, with a variable number of connective tissue or connecto-muscular bridges that connect the dura mater to the nuchal musculature and septum. However, their identification through imaging techniques remains challenging. The presumed innervation of MDBCs by mechanoreceptor-proprioceptor fibers suggests their potential involvement in reflex nerve arcs related to the therapeutic effects of cephalo-cervical manipulation.

References

Enix DE, Scali F, Pontell ME. The cervical myodural bridge, a review of literature and clinical implications. J Can Chiropr Assoc. 2014;58:184–192.

Hallgren RC, Hack GD, Lipton JA. Clinical implications of a cervical myodural bridge. AAO J. 1997;7:30–34.

Humphreys BK, Kenin S, Hubbard BB, Cramer GD. Investigation of connective tissue attachments to the cervical spinal dura mater. Clin Anat. 2003; 16:152-9.

Kahkeshani K, Ward PJ. Connection between the spinal dura mater and the suboccipital musculature: evidence for the myodural bridge and a route for its dissection - a review. Clin Anat. 2011; 25:415-22.

Scali F, Marsili ES, Pontell ME. Anatomical connection between the rectus capitis posterior major and the dura mater. Spine. 2011; 36:E1612-E1614.

Scali DC, Pontell ME, Enix DE, Marshall E. Histological analysis of the rectus capitis posterior major's myodural bridge. Spine J. 2013;13:558–563.

Scali F, Pontell ME, Welk AB, et al. Magnetic resonance imaging investigation of the atlanto-axial interspace. *Clin Anat.* 2013;26(4):444–449.

Pontell ME, Scali F, Enix DE, Battaglia PJ, Marshall E. Histological examination of the human obliquus capitis inferior myodural bridge. Ann Anat. 2013;195:522–526. doi: 10.1016/j.aanat.2013.04.013.

Zheng N, Chung BS, Li YL, Liu TY, Zhang LX, Ge YY, Wang NX, Zhang ZH, Cai L, Chi YY, Zhang JF, Samuel OC, Yu SB, Sui HJ. The myodural bridge complex defined as a new functional structure. Surg Radiol Anat. 2020; 42:143-53.

Zheng N, Yuan XY, Chi YY, Liu P, Wang B, Sui JY, et al.. The universal existence of myodural bridge in mammals: an indication of a necessary function. Sci Rep., 2018; 7:8248.

Standard of living for European Entrepreneurs

Ana Fañanás-Biescas [(a)*], Saúl Palacios[(b)], Raquel Ortega-Lapiedra
Universidad de Zaragoza, Gran Vía, 2 - 50005 Zaragoza, Spain
Universidad de Zaragoza, Gran Vía, 2 - 50005 Zaragoza, Spain
Universidad de Zaragoza, Gran Vía, 2 - 50005 Zaragoza, Spain
**abiescas@unizar.es*
**spalacios@unizar.es*
**rortega@unizar.es*

My doctoral research pretends to complete a panoramic view of entrepreneurs' work experience by addressing their psychosocial needs and requirements. Observing the impact of external factors on perceived standard of living throughout the different stages of working life has motivated this study, which is conducted with a gender equality perspective, using female empowerment, health and equality as building blocks. Ultimately, this thesis aims to answer the following question: How do gender and age affect the circumstances of entrepreneurs to manifest a given level of job satisfaction and living standard? Furthermore, are causality -direct or reverse- or simultaneity conditions that determine the relation between variables behavior changes?

EQLS is used as a reference data source in order to complete this overview of psychosocial indicators, as well as its financial, educational and instrumental requirements. We aim to determine whether there is a relationship between the perception of a certain standard of living and the employment situation of individuals, differentiating between the population whose main activity is entrepreneurship or self-employment, as opposed to salaried personnel who work as employees, with a focus on gender and age. The protagonism of women at home, without economic support, with the economic responsibility for the care of their family, is shown as a cause for businesses to start, but not grow (Novelo, Carrillo & Barreto, 2021).

The perception of the standard of living of entrepreneurs is analyzed using different mechanisms to determine the relationship between variables related to satisfaction with life and job. U Mann-Whitney test is applied to compare the differences between age groups for workers and entrepreneurs, and it is observed that the gender perspective has an impact on work-life comfort perception, being women happier than men in all cases, except for the senior group of employed workers.

The identification of key factors and relationships will allow the creation of a robust model of quality of work, showing trends in European human capital perceptions. This model should facilitate decision and policy makers to minimize the effect of ageism and family-work conflict focused mainly on the gender role.

References

Novelo, A. F., Carrillo, A. L. B., Barreto, G. C. C. (2021). Driving and restraining forces of female Latin American entrepreneurship. Telos: Revista de Estudios Interdisciplinarios en Ciencias Sociales, 23(3), 668-691.

"Aumento de peso y cambios en la composición corporal en trasplante renal"

Emilia Ferrer López

Programa de Doctorado Ciencias de la Salud y Deporte

Universidad de Zaragoza

Introducción

La prevalencia de sobrepeso y obesidad aumenta después de un trasplante renal, debido entre otros factores a una reducción de la actividad física en los primeros meses, aumento del apetito y toma de inmunosupresores y corticoides.

Objetivos

Conocer la ganancia de peso postrasplante.

Determinar si existe relación entre ganancia de peso e hipertensión, diabetes, dislipemia, diabetes de novo. Evaluar la modificación de la composición de masa muscular y masa grasa.

Metodología

Estudio longitudinal prospectivo, septiembre 2020-abril 2023. Se recogieron datos demográficos y antropométricos.

Fueron realizadas 4 mediciones a los 0, 3, 6, 12 meses (T1-T4), con báscula de precisión Tanita ® (mide 5 veces, de pie a pie, de mano a mano, de mano izquierda a pie derecho, de mano derecha a pie izquierdo y de mano izquierda a pie izquierdo, permitiendo cubrir el 100% de la superficie corporal).

Resultados

Se analizaron 92 pacientes, 68,5% varones, edad 58 ± 18,5 años, 67,4% menores de 65 años.

El 63% recibía tratamiento mediante hemodiálisis, 7,6 % prediálisis. 90,2% donante cadáver, para un 12% no fue el primer trasplante. El 88% presentaba hipertensión, 53,3% dislipemia, 36% sobrepeso, 22,8% enfermedad cardiovascular, 20,7% diabetes.

Peso medio pretrasplante 72,5 ± 5,8 kg (mín. 42-máx. 133), a los 12 meses 75,10 ± 15,7 kg (mín. 43,3-máx. 125). Ganancia de peso global 3,62 ±6 ,50 kg. Los hombres ganaron 3,66 ± 6,86 y las mujeres 3,50 ± 5,77kg. Se encontraron diferencias estadísticamente significativas entre los que fue el primer trasplante 3,03 ± 6,54 kg y los que no 7,86 ± 4,50 kg (p= 0,020), entre los que no desarrollaron diabetes de novo 4,30 ± 6,62 kg vs los que si 1,18 ± 5,53 kg (p= 0,041) y, en el IMC T1: 24,84 ± 4,45 (mín. 14-máx. 37), T4: 26,17 ± 4,63 (mín. 16,2-máx. 38,1), (p <0,001).

El sobrepeso paso del 36,95% en T1 al 39,13% en T4, la obesidad del 9,78% en T1 al 18% en T4.

El análisis multivariante mostró diferencias en el análisis de las varianzas de medidas repetidas en las mediciones de peso de los distintos períodos T1 y T2, T3 y T4: (p= 0,022); encontrándose las diferencias (Bonferroni) en T1 y T2 (p= 0,042), T1 y T4 (p <0,001) , T2 y T4(p <0,001).

Respecto al % de masa muscular, T1: 51,4 ± 10,9 y T4: 53,5 ± 11,3 (p <0,001); Bonferroni: T1 y T2 (p <0,001), T1 y T3 (p <0,001), T1 y T4 (p <0,001).

Con relación a la masa grasa, T1: 23,6 ± 9,8 y T4: 24,5 ± 9,10 (p = 0,003), Bonferroni: T2 y T4 (p <0,001), % agua corporal 55,47 ± 7,63 y T4: 54,55 ± 6,56, Bonferroni: T3 y T4 (p = 0,020).

Conclusiones

Se produjo un leve aumento de peso en los 3 primeros meses, siendo a partir del 6º mes cuando se produjo el mayor aumento de peso. Encontrándose una ganancia de peso menor del 15%, siendo el aumento del IMC mayor del 5%. La masa muscular aumento en mayor medida que la masa grasa.

Sustainable development of plant protein-based food products with bioactive compounds from agricultural by-products

Jose Miguel[(a)*], Maria Jose Beriain [(a)] Maite M. Aldaya [(a)]

Institute for Sustainability & Food Chain Innovation, Universidad Pública de Navarra, Campus Arrosadia,

** josemiguel.gonzalez@unavarra.es*

The research work of the PhD student focuses on the study of circular economy models of possible application in the agri-food industry, from the perspective of environmental sustainability and its technological and nutritional viability.

The introductory phase of the thesis focuses on quantitatively demonstrating how the minimisation of food waste and loss is an efficient way of mitigating the environmental impacts of agri-food industries. For this purpose, the environmental impacts (in terms of protection against global warming and minimisation of the use of local water resources) that an organisation such as a food bank can avoid with its normal activity during one year were evaluated.

The next phase of the thesis focuses on the assessment of the environmental impacts of the business as usual scenario and the scenario using by-products from the Ebro valley agricultural industry to obtain biocompounds of interest that can be used for human consumption. The selected by-products come from tomato and broccoli production, from which the extraction of lycopene and glucosinolate is proposed. To ensure the environmental viability of this by-product revaluation proposal, simultaneous water footprint and carbon footprint assessments will be carried out for all production phases: agricultural production, post-harvest treatment, extraction and packaging.

Once conclusions have been reached on the environmental viability of the extraction of biocompounds, the aim is to develop a new product with a vegetable and mixed protein base that can be enriched with the biocompounds studied. The interest in developing this new product lies not only in the possible enrichment with biocompounds, but also in the development of new protein-based products that respond to new trends in more sustainable production systems, while maintaining the nutritional quality of the original product. To this end, meat matrices of Navarrese origin with extensive production systems and vegetable protein matrices will be selected that do not present allergenic risks, as is often the case with vegetable meat analogues due to the presence of soya.

With the conclusions obtained, this doctoral thesis aims to contribute to the development of a more sustainable and resilient food chain in the region of Navarra.

Human embryo: scientific and legal perspectives in the light of vulnerability and ethics of responsibility

Bruna Guesso Scarmagnan[(a)*]

a) Universidad Pública de Navarra-UPNA, Av. Cataluña, s/n, 31006 Pamplona, Navarra, Universidade Estadual do Norte do Paraná-UENP, Av. Manoel Ribas, 215, Centro, Jacarezinho-Paraná, 86400-000, Brasil

**bruna.guesso@gmail.com*

My doctoral research focuses on the biological and legal aspects of the human embryo. While the embryo has immense scientific potential, it is also inherently vulnerable. To ensure responsible and ethical practices, it is crucial to understand the scientific and legal perspectives surrounding the embryo. Scientifically, extensive studies on embryogenesis have provided valuable information on cell differentiation, tissue formation, and embryo development. Innovative techniques such as gene editing and stem cell research have expanded understanding of the potential of the embryo. However, these advances raise ethical concerns regarding the permissible scope of research, the use of human embryos and their long-term implications. Legally, the human embryo presents interdisciplinary challenges, including determining the legal personality, reproductive rights, and legal status of the embryo. Embryo vulnerability needs a legal framework that considers its status and rights in alignment with social values. Thus, through the deductive method, through bibliographical and legal reviews, the attempt to balance the protection of the embryo with individual freedoms requires a comprehensive analysis of legal responsibilities and ethical obligations in embryonic research, assisted reproduction and storage and disposal of embryos. In this way, an integrated and interdisciplinary approach that combines scientific knowledge and legal considerations is necessary to go through the complexities that involve the human embryo. It is concluded that responsible research practices must be promoted, observing ethical and legal guidelines. Collaboration between the scientific and legal communities can lead to informed policies that strike a balance between scientific knowledge and ethical considerations, ensuring the responsible and ethical treatment of the human embryo.

References

ABELLÁN SALORT, José Carlos. *Bioética, Autonomía y Libertad*. Madrid: Alcalá, 2006.

ANDORNO, Roberto. *Bioética y dignidade de la persona*. 2. ed. Madrid: Tecnos, 2012.

BARBAS, Stela Marcos de Almeida Neves. Direito do genoma humano. Coimbra: Almedina, 2007.

BARTH, Wilmar Luiz. Engenharia genética e bioética. *Revista da Teologia PUCRS,* Porto Alegre, v. 35, nº 149, Set. 2005, p. 361-391. Disponível em: http://revistaseletronicas.pucrs.br/ojs/index.php/teo/article/view/1694/1227. Acesso em: 01 jun. 2023.

BLÁZQUEZ RUIZ, Francisco Javier. *Bioética y Derecho*. Pamplona: Ediciones Eunate, 2009.

BLÁZQUEZ RUIZ, Francisco Javier. Eugenesia, normatividad jurídica y sociedad tecnológica. Retos bioéticos de la nueva genética. *Cuadernos Electrónicos de Filosofía del Derecho*, 2009.

BLÁZQUEZ RUIZ, Francisco Javier. *Fundamentos biológicos del derecho nacionalsocialista*. In: BLÁZQUEZ RUIZ, Francisco Javier. Nazismo, Derecho, Estado. Madrid: Editorial Dykinson, 2014. p. 85-117.

BOBBIO, Noberto. *A era dos direitos*. Tradução de Carlos Nelson Coutinho. Rio de Janeiro: Elsevier, 2004.

CÓDIGO DE NUREMBERG. Tribunal Internacional de Nuremberg, 1947. Disponível em: https://www.ufrgs.br/bioetica/nuremcod.htm. Acesso em: 01 jun. 2023.

DWORKIN, Ronald. *Domínio da vida*: aborto, eutanásia e liberdades individuais. Tradução Jefferson Luiz Camargo: revisão da tradução Silvana Vieira. São Paulo: Martins Fontes, 2003.

DWORKIN, Ronald. *Levando os direitos a sério*. Tradução e notas por Nelson Boeira. São Paulo: Martins Fontes, 2002.

HABERMAS, Jürgen. *O futuro da natureza humana*: a caminho de uma eugenia liberal? Tradução Karina Jannini. 2. ed. São Paulo: Marins Fontes, 2010.

JONAS, Hans. *O princípio responsabilidade*: ensaio de uma ética para a civilização tecnológica. Rio de Janeiro: Contraponto; Ed. PUC-Rio, 2006.

KANT, Immanuel. *Fundamentação da Metafísica dos Costumes*. Tradução de Paulo Quintela - Lisboa: Edições 70, 2007.

OVIEDO. Convenção sobre Direitos Humanos e Biomedicina, 1997. Disponível em: https://www.boe.es/buscar/doc.php?id=BOE-A-1999-20638 Acesso em: 01 jun. 2023.

SANDEL, Michael J. *Contra a perfeição*: ética na era da engenharia genética. Tradução Ana Carolina Mesquista. 1. ed. Rio de Janeiro: Civilização Brasileira, 2013.

SARLET, Ingo Wolfgang. *As dimensões da dignidade da pessoa humana: uma compreensão jurídico-constitucional aberta e compatível com os desafios da biotecnologia*. In: SARLET, Ingo Wolfgang; LEITE, George Salomão. Direitos fundamentais e biotecnologia. São Paulo: Método, 2008. p. 13-44.

SINGER, Peter. *Ética Prática*. Tradução de Jefferson Luiz Camargo. 3. Ed. São Paulo: Martins Fontes, 2012.

SOUTULLO, Daniel. *Terapia génica ayer y hoy*, 2002. Disponível em: https://www.ugr.es/~eianez/Biotecnologia/tgdaniel.htm. Acesso em27 mai. 2023.

TERRIBAS I SALA, Núria. *Bioética y Derecho*. In: FEITO GRANDE, Lydia; DOMINGO MORATALLA, Tomás. Investigación en Bioética. Madrid: Editorial Dykinson, 2012. p. 217-232.

Transcriptional regulation in cyanobacteria: from basic research to biotechnological applications

Jorge Guío[(a,b)*], M. Teresa Bes[(a,b)], M. Luisa Peleato[(a,b)], María F. Fillat[(a,b)], Emma Sevilla[(a,b)]

a) CYANOFUR group, Department of Biochemistry and Molecular and Cell Biology, Faculty of Science, University of Zaragoza

b) Institute for Biocomputation and Physics of Complex Systems, University of Zaragoza

**jguio@unizar.es*

My doctoral research focuses on the study of transcriptional regulation in cyanobacteria. Cyanobacteria are photosynthetic microorganisms, that is, they are able to produce nutrients using water, carbon dioxide and the energy provided by light, liberating oxygen in the process. For this reason, they have an enormous ecological importance, being the main primary producers in aquatic ecosystems.

Cyanobacteria are well known for their numerous biotechnological applications, such as biofertilization or biofuel production. In order to implement and improve these applications it is essential to understand the molecular mechanisms that control gene expression. This process is called transcriptional regulation and is carried out by transcriptional regulators. Consequently, understanding the role and mechanism of action of transcriptional regulators is of interest, since it is the first step to develop biotechnological applications of cyanobacteria.

In my PhD we focus on a family of transcriptional regulators called FUR (Ferric Uptake Regulator) proteins. We have described new mechanisms that control the activity of FUR proteins in response to environmental stimuli and we have unveiled new roles for these proteins. We have described how the activity of FurA is controlled by sunlight (Guío *et al.*, 2021) and how this regulator is capable of modulating its activity in response to 2-oxoglutarate, a metabolite that acts as a signal of nitrogen deficiency (Guío *et al.*, 2020). On the other hand, transcriptomic studies revealed that another FUR protein, FurC is involved in nitrogen metabolism control (Sarasa-Buisan, Guío, *et al.*, 2022) and bioinformatic studies unveiled that FurC also plays a key role in carbon metabolism regulation (Sarasa-Buisan, Guío, *et al.*, 2023 (*submitted*)).

Taken together, all these findings are of great interest, not only because they allow us to better understand transcriptional regulation in cyanobacteria, but also because this knowledge lays the foundations for implementing and improving biotechnological applications of these organisms.

References

Guío, J., Bes, M. T., Balsera, M., Calvo-Begueria, L., Sevilla, E., Peleato, M. L., & Fillat, M. F. (2021). Thioredoxin Dependent Changes in the Redox States of FurA from *Anabaena* sp. PCC 7120. *Antioxidants, 10*(6).

Guío, J., Sarasa-Buisan, C., Velázquez-Campoy, A., Bes, M. T., Fillat, M. F., Peleato, M. L., & Sevilla, E. (2020). 2-oxoglutarate modulates the affinity of FurA for the *ntcA* promoter in *Anabaena* sp. PCC 7120. *FEBS Letters, 594*(2), 278-289.

Sarasa-Buisan, C., Guío, J., Broset, E., Peleato, M. L., Fillat, M. F., & Sevilla, E. (2022). FurC (PerR) from Anabaena sp. PCC7120: a versatile transcriptional regulator engaged in the regulatory network of heterocyst development and nitrogen fixation. *Environmental Microbiology, 24*(2), 566-582.

Sarasa-Buisan, C., Guío, J., Peleato, M. L., Fillat, M. F., & Sevilla, E. (2023). Expanding the FurC (PerR) regulon in *Anabaena* (*Nostoc*) sp. PCC 7120: Genome-wide identification of novel direct targets uncovers FurC participation in central carbon metabolism regulation. *Submitted*

High added value alternatives for use of post-consume polylactic acid in biotechnological applications.

Ana Hernández Jiménez[(a)]*, Calin David, Pablo Lodeiro Fernández, Carlos Rey Castro

a) Universitat de LLeida, Campus Agroalimentario, Forestal y Veterinario, Av. de l'Alcalde Rovira Roure, 191. 25198 Lleida

ana.hernandez@udl.cat

Plastic production presents an exponential growth over the years due to their widespread commercial applications and its use for everyday life. Unfortunately, just a small amount of this plastic is recycled when discarded, while most of it is released directly into the natural environment where it can persist for several years until its complete degradation[1]. To overcome this issue, there is a growing motivation towards the development of bio-based polymers, which are eco-friendly and biodegradable, to replace conventional petroleum-based plastic products.[2] A biodegradable plastic is supposed to mineralize into water, carbon dioxide and biomass once it ends up in the environment.[3]

Poly (lactic acid) (PLA) is one of the most utilized biodegradable plastic over the last years. It is produced form annually renewable agro-resources as such sugarcane, corn, wheat or rice starch. PLA is safe for food packaging applications.[4]

We are currently working with commercial PLA bottles, which are considered compostable, because PLA can be degraded readily in the soil under the influence of heat, oxygen and organisms[1]. However, a fraction of the manufactured bioplastic ends up out of the waste management cycle for different reasons (littering, manufacturing discards, etc.). The use of these discarded PLA materials for secondary applications with high added value is therefore advisable in a circular economy context.

The ground PLA from bottles was characterized through FTIR, NMR, SEM, DSC, GPC and N_2 BET isotherms, as a function of the duration of different degradation treatments.[2] From this characterization, we can assess the use of different green solvents and methodologies in order to dissolve the PLA plastic into nanoparticles that are going to be used as drug carriers.

These results represent a preliminary study to assess the possibility of using recycled biodegradable plastic bottles, more specifically, PLA-based nanoparticles[5] as controlled drug delivery systems of some active substances[6], such as fertilizer, phytohormone or biostimulant into soils. The method of PLA reprecipitation will be studied to characterize the controlled release rate of the encapsulated substance into water or soils and to provide the key factors that should be considered to decrease environmental hazardous effects into the nature.

References:

(1) Yadav, N.; Nain, L.; Khare, S. K. Studies on the Degradation and Characterization of a Novel Metal-Free Polylactic Acid Synthesized via Lipase-Catalyzed Polymerization: A Step towards Curing the Environmental Plastic Issue. *Environ. Technol. Innov.* **2021**, *24*, 101845. https://doi.org/10.1016/j.eti.2021.101845.

(2) Swetha, T. A.; Ananthi, V.; Bora, A.; Sengottuvelan, N.; Ponnuchamy, K.; Muthusamy, G.; Arun, A. A Review on Biodegradable Polylactic Acid (PLA) Production from Fermentative Food Waste - Its Applications and Degradation. *Int. J. Biol. Macromol.* **2023**, *234*, 123703. https://doi.org/10.1016/j.ijbiomac.2023.123703.

(3) Haider, T. P.; Völker, C.; Kramm, J.; Landfester, K.; Wurm, F. R. Plastics of the Future? The Impact of Biodegradable Polymers on the Environment and on Society. *Angew. Chem. Int. Ed.* **2019**, *58* (1), 50–62. https://doi.org/10.1002/anie.201805766.

(4) Farah, S.; Anderson, D. G.; Langer, R. Physical and Mechanical Properties of PLA, and Their Functions in Widespread Applications — A Comprehensive Review. *Adv. Drug Deliv. Rev.* **2016**, *107*, 367–392. https://doi.org/10.1016/j.addr.2016.06.012.

(5) Lee, B. K.; Yun, Y.; Park, K. PLA Micro- and Nano-Particles. *Adv. Drug Deliv. Rev.* **2016**, *107*, 176–191. https://doi.org/10.1016/j.addr.2016.05.020.

(6) Arpagaus, C. PLA/PLGA Nanoparticles Prepared by Nano Spray Drying. *J. Pharm. Investig.* **2019**, *49* (4), 405–426. https://doi.org/10.1007/s40005-019-00441-3.

Review of regional minimum incomes. An analysis in a new context linked to the Minimum Vital Income benefit.

Maite Huerta Tardío[(a)*]

a) Public University of Navarra, Av. Cataluña, s/n, 31006 Pamplona, Navarra

**maite.huerta@unavarra.es*

The fight against poverty and social exclusion is a cardinal objective in advanced societies and the first of the Sustainable Development Goals of the United Nations 2030 Agenda. The European Union's recommendations are aimed at improving the match between the income guarantee system and the transition to inclusion and employment, reducing inequalities in benefits between territories, as well as promoting and organising the last network of economic benefits in order to achieve greater progress in reducing poverty. In this respect, the diversity of economic benefits and of the autonomous models of inclusion make this task very difficult and limit the capacity to reduce the exclusion of the most vulnerable households.

Several European countries have increased their efforts to adapt public policies to growing situations of vulnerability and emerging profiles of need. In the case of Spain, there have been important changes in the fight against poverty in the recent period. The approval of the Minimum Vital Income, in 2020, has given rise to a new scenario in the income guarantee system, which is established as a great opportunity to respond to the challenge of homogenising the benefits that form the ultimate economic safety net.

Therefore, the objective of the research is linked to the analysis of minimum income programmes from the approach of governance, management and their results in order to generate knowledge that allows us to obtain empirical results and make evidence-based public policy recommendations. In addition to examining the articulation of theses programmes, it aims to assess their adequacy to the new challenges and profiles in terms of poverty and social exclusion.

References

Analysis of milk caseins variants in dairy cattle herds

L. Jiménez-Montenegro[ab]

[a]*ETSIAB-ISFOOD, Public University of Navarre, Campus de Arrosadia 31006, Pamplona, Spain.*
[b]*Albaitaritza Genetics S.L., Polígono Akaborro Calle 8-B, Irurtzun, Spain.*

RESUMEN: La leche de vaca constituye un alimento básico para la población mundial. Se trata de una fuente importante de macro y micronutrientes (Giglioti et al., 2020; Sebastiani et al., 2020). Sin embargo, hay numerosas personas que manifiestan intolerancias y problemas digestivos relacionados con su consumo. Es por ello, que se está estudiando la posible implicación que tiene la fracción proteica de la β-caseína en la manifestación de otras intolerancias que no radican en la lactosa (Rangel et al., 2016). En esta línea, surge la leche A2, un tipo de leche que solo contiene β-caseína A2 y carece de la β-caseína A1, de la cual se han reportado numerosos problemas digestivos derivados de su consumo (Brooke-Taylor et al., 2017; Kuellenberg de Gaudry et al., 2022). Para poder seleccionar genéticamente los animales del rebaño y autentificar este producto durante su comercialización, se precisan técnicas sensibles y rápidas como es la qPCR. Además, la selección genética de animales para la conversión de granjas de leche a producción de leche A2 (Alfonso et al., 2019), requiere del desarrollo de estudios de asociación entre los polimorfismos de la β-caseína y los caracteres de interés productivo. Con ello se quiere determinar si esta conversión podría afectar al nivel genético y productivo de las granjas. En este sentido, se pretende estudiar el transcriptoma de la glándula mamaria de animales con genotipo A1A1 y A2A2 para β-caseína, para ver qué genes se expresan de forma diferencial entre uno y otro genotipo. El objetivo último de este proyecto es, por tanto, incrementar el valor añadido de la leche mediante dos acciones: la selección en favor de proteínas de interés y la mejora de los conocimientos de las bases genéticas y moleculares que están relacionadas con la producción láctea.

References

Alfonso, L., Urrutia, O., & Mendizabal, J. A. (2019). Conversion to A2 milk production with regard to a possible market demand for dairy farms: Possibilities and implications. *ITEA Informacion Tecnica Economica Agraria*, *115*(3), 231–251. https://doi.org/10.12706/itea.2019.001

Brooke-Taylor, S., Dwyer, K., Woodford, K., & Kost, N. (2017). Systematic review of the gastrointestinal effects of A1 compared with A2 β-casein. In *Advances in Nutrition* (Vol. 8, Issue 5, pp. 739–748). American Society for Nutrition. https://doi.org/10.3945/an.116.013953

Giglioti, R., Gutmanis, G., Katiki, L. M., Okino, C. H., de Sena Oliveira, M. C., & Vercesi Filho, A. E. (2020). New high-sensitive rhAmp method for A1 allele detection in A2 milk samples. *Food Chemistry*, *313*. https://doi.org/10.1016/j.foodchem.2020.126167

Kuellenberg de Gaudry, D., Lohner, S., Bischoff, K., Schmucker, C., Hoerrlein, S., Roeger, C., Schwingshackl, L., & Meerpohl, J. J. (2022). A1- and A2 beta-casein on health-related outcomes: a scoping review of animal studies. In *European Journal of Nutrition* (Vol. 61, Issue 1). Springer Science and Business Media Deutschland GmbH. https://doi.org/10.1007/s00394-021-02551-x

Rangel, A. H. D. N., Sales, D. C., Urbano, S. A., Galvão, J. G. B., de Andrade Neto, J. C., & Macêdo, C. de S. (2016). Lactose intolerance and cow's milk protein allergy. *Food Science and Technology*, *36*(2), 179–187. https://doi.org/10.1590/1678-457X.0019

Sebastiani, C., Arcangeli, C., Ciullo, M., Torricelli, M., Cinti, G., Fisichella, S., & Biagetti, M. (2020). Frequencies evaluation of β-Casein gene polymorphisms in dairy cows reared in central Italy. *Animals*, *10*(2). https://doi.org/10.3390/ani10020252

"Space and time limits of scanning-EMG potentials"

Mahima Kallingal Muraleedharan[(a)*], Armando Malanda Trigueros[(a)], Javier Navallas Irujo[(a)]

a) Universidad Pública de Navarra
**mahima.kallingal@unavarra.es*

My doctoral research is about developing techniques and algorithms in the processing of single-needle multiscanning-EMG signals. Scanning- EMG is a technique to study the anatomy and physiology of the motor units(MU) which are the basic units of a skeletal muscle. Single-needle multiscanning-EMG is the most advanced development in the field of scanning electromyographic technique. Here we use a single needle to record the working of the motor units, which ensure cost effective and comfort to the patient undergoing diagnosis. The principal goal in this research is the development of tools that are reliable in testing the algorithm developed to process the scanning-MUP signals in the spatial and the temporal dimensions.

The steps involves the design and implementation of novel algorithms that can effectively handle the complex nature of single-needle multiscanning-EMG signals. These algorithms will encompass spatial processing techniques, enabling the extraction of valuable spatial information from the recorded signals. Furthermore, temporal processing algorithms is developed to analyze the temporal characteristics of the scanning-MUP signals. The research also emphasizes the importance of ensuring the reliability and validity of the developed algorithms.

The outcomes expected from this research includes the development of advances tools for the processing of the single-needle multiscanning-EMG signals which can contribute to the understanding of the structure and assesment of the motorunit activity. The proposed research has the potential to transform how we comprehend and diagnose muscle-related conditions. Let us embrace this exciting journey contributing to the golden triangle of scientific knowledge, clinical usefulness, and commercial exploitation in the field of clinical neurophysiology.

References

1. Corera Í, Malanda A, Rodríguez-Falces J, Navallas J. Masked least-squares aver-aging in processing of scanning-EMG recordings with multiple discharges. Med Biol Eng Comput. 2020 Dec;58(12):3063-3073.
2. Navallas J, Stålberg E.Studying motor end-plate topography by means of scan-ning-electromyography. Clin Neurophysiol. 2009 Jul;120(7):1335-41.
3. Malanda A, Navallas J, Rodriguez-Falces J, Rodriguez-Carreño I, Gila L.Averaging methods for extracting representative waveforms from motor unit action potential trains. J Electromyography and Kinesiology. 2015 Aug;25(4):581-95.
4. Van Dijk JP, Eiglsperger U, Hellmann D, Giannakopoulos NN, McGill KC, Schindler HJ, Lapatki BG.Motor unit activity within the depth of the masseter characterized by an adapted scanning-EMG technique. Clin Neurophysiol. 2016 Sep;127(9):3198-3204.

Forest use suitability: towards sustainable management of forest ecosystem services

Goran Krsnik[(a)*], Keith Reynolds[(b)], Philip Murphy[(c)], Steve Paplanus[(d)], Jordi Garcia-Gonzalo[(a)], José Ramón González Olabarria[(a)]

a) Centre de Ciència i Tecnología Forestal de Catalunya, Ctra St Llorenç de Morunys, km2. 25280 Solsona, Spain
b) US Department of Agriculture, Forest Service Research, 3200 SW Jefferson Way, Corvallis, OR 97331, USA
c) InfoHarvest, Inc., Seattle, WA 98165, USA
d) Mountain View Business Group, 428 Flying Orchid Dr, San Marcos, TX 78666, USA
**goran.krsnik@ctfc.cat*

Management of forest lands considering multi-functional approaches is the basis to sustain or enhance the provision of specific benefits, while minimizing negative impacts to the environment (Díaz-Balteiro and Romero, 2008). Defining a desired management itinerary to a forest depends on a variety of factors, including the forest type, its ecological characteristics, and the social and economic needs of local communities (Egoh et al, 2008). In such scenario, geographical information technologies in combination with multi-criteria spatial planning offer good solutions to assess the complexity of geospatial processes and ease decision-making, overcoming methodological constraints (Marques et al, 2021; Acosta and Corral, 2017; Ananda and Herath, 2009). In this thesis, we improve methodological and terminological base for a sustainable management of forest ecosystems services, by establishment of the term forest use suitability (FUS), aiming to increase human well-being, potentiate the provision of forest ecosystem services and reduce environmental risk (Bouwma et al, 2018; Castro et al, 2011; Dialy et al, 2009). A strategic assessment of the FUS (namely productive, protective, conservation-oriented, social and multifunctional) at regional level, based on the provision of forest ecosystem services and trade-offs between FUS alternatives, can be used to develop management strategies that are tailored to the specific needs and conditions of the forest (García-Nieto et al, 2013). The present study assesses the provision of multiple forest ecosystem services and employs a decision model to identify the FUS that supports the most present and productive ecosystem services in each stand in Catalonia. For this purpose, we apply the latest version of the Ecosystem Management Decision Support (EMDS) system, a spatially oriented decision support system that provides accurate results for multi-criteria management (Reynolds and Hessburg, 2014). We evaluate 32 metrics and 12 associated ecosystem services indicators to represent the spatial reality of the region. According to the results, the dominant primary use suitability is social, followed by protective and productive. Nevertheless, final assignment of uses is not straightforward and requires an exhaustive analysis of trade-offs between all alternative options, in many cases identifying flexible outcomes, and increasing the representativeness of multifunctional use. The assignment of forest use suitability aims to significantly improve the definition of the most adequate management strategy to be applied.

References

Acosta, M., & Corral, S. (2017). Multicriteria decision analysis and participatory decision support systems in forest management. *Forests*, *8*(4), 215–216. https://doi.org/10.3390/f8040116

Ananda, J., & Herath, G. (2009). A critical review of multi-criteria decision making methods with special reference to forest management and planning. *Ecological Economics*, *68*(10), 2535–2548. https://doi.org/10.1016/j.ecolecon.2009.05.010

Bouwma, I., Schleyer, C., Primmer, E., Winkler, K. J., Berry, P., Young, J., Carmen, E., Špulerová, J., Bezák, P., Preda, E., & Vadineanu, A. (2018). Adoption of the ecosystem services concept in EU policies. *Ecosystem Services*, *29*(March 2017), 213–222.

Castro, A. J., Martín-López, B., García-LLorente, M., Aguilera, P. A., López, E., & Cabello, J. (2011). Social preferences regarding the delivery of ecosystem services in a semiarid Mediterranean region. *Journal of Arid Environments*, *75*(11), 1201–1208. https://doi.org/10.1016/j.jaridenv.2011.05.013

Daily, G. C., Polasky, S., Goldstein, J., Kareiva, P. M., Mooney, H. A., Pejchar, L., Ricketts, T. H., Salzman, J., & Shallenberger, R. (2009). Ecosystem services in decision making: Time to deliver. *Frontiers in Ecology and the Environment*, *7*(1), 21–28.

Diaz-Balteiro, L., & Romero, C. (2008). Making forestry decisions with multiple criteria: A review and an assessment. *Forest Ecology and Management*, *255*(8–9), 3222–3241. https://doi.org/10.1016/j.foreco.2008.01.038

Egoh, B., Reyers, B., Rouget, M., Richardson, D. M., le Maitre, D. C., & van Jaarsveld, A. S. (2008). Mapping ecosystem services for planning and management. *Agriculture, Ecosystems and Environment*, *127*(1–2), 135–140. https://doi.org/10.1016/j.agee.2008.03.013

García-Nieto, A. P., García-Llorente, M., Iniesta-Arandia, I., & Martín-López, B. (2013). Mapping forest ecosystem services: From providing units to beneficiaries. *Ecosystem Services*, *4*, 126–138. https://doi.org/10.1016/j.ecoser.2013.03.003

Marques, M., Reynolds, K. M., Marques, S., Marto, M., Paplanus, S., & Borges, J. G. (2021). A participatory and spatial multicriteria decision approach to prioritize the allocation of ecosystem services to management units. *Land*, *10*(7). https://doi.org/10.3390/land10070747

Reynolds, K. M., & Hessburg, P. F. (2014). An Overview of the Ecosystem Management Decision-Support System. *Environmental Science and Engineering*, 3–22. https://doi.org/10.1007/978-3-642-32000-2_1

DETERMINATION OF THE PHYSICOCHEMICAL COMPOSITION OF AGRICULTURAL AND FARMING PRODUCTS TO ASSESS THEIR QUALITY USING SPECTROSCOPY-BASED TECHNIQUES

Sara León-Ecay[(a)]*

[(a)]Institute for Innovation & Sustainable Food Chain Development (IS-FOOD), School of Agricultural Engineering and Biosciences, Universidad Pública de Navarra, 31006 Pamplona
**sara.leon@unavarra.es*

My doctoral thesis is focused on the main objective of designing a methodology to determine the quality of beef meat in an effective, accurate and non-destructive way. This kind of new analytical methods have become a priority for the meat industry [1]. It is such since meat quality is currently evaluated by means of physicochemical or sensory tests that, in many cases, are not able to meet the basic needs of speed and precision demanded by today's modern food processing facilities. By using spectroscopic technologies there is no need of sample preparation prior to analysis, which allows not only to analyze a wide range of samples, but also to monitor their quality [2]. As there is a need of meat and carcasses standard identification employing effective and low-cost technologies, in the present study, the use of technologies in the visible (VIS: 380-800 nm), near (NIR: 800-2500 nm) and mid-infrared (MIR: 2500-25000 nm) ranges of the electromagnetic spectrum is proposed.

Each region brings different advantages, so they are applied for different purposes. For instance, near-infrared spectroscopy (NIRS) has been applied mainly to predict meat chemical composition and also, meat quality traits in different animal species [3]. To date, NIRS has been the most applied methodology for food quality and safety assessment.

To go a step further on the state of the art, the potential of VIS, NIR, MIR and hyperspectral imaging technology (HSI) to assess beef quality will be evaluated. Subsequently, the functioning and performance of the different technologies applied will be compared. HSI has been developed by combining the advantages of NIRS and traditional artificial vision systems. It is a particularly useful technique in situations where multiple quality attributes need to be considered. This is of special interest in meat grading systems where both intrinsic and extrinsic factors need to be considered. Therefore, the main goal is to build a non-destructive model for the classification and prediction of beef meat according to its quality parameters.

References

1. Jia W, van Ruth S, Scollan N, Koidis A. Hyperspectral Imaging (HSI) for meat quality evaluation across the supply chain: Current and future trends. Curr Res Food Sci. 2022;5:1017–27.

2. Zareef M, Chen Q, Hassan MM, Arslan M, Hashim MM, Ahmad W, et al. An Overview on the Applications of Typical Non-linear Algorithms Coupled With NIR Spectroscopy in Food Analysis. Food Eng Rev. 2020 Jun;12(2):173–90.

3. Prevolnik M, Čandek-Potokar M, Škorjanc D. Ability of NIR spectroscopy to predict meat chemical composition and quality - a review. Czech J Anim Sci. 2004 Nov 30;49(11):500–10.

Effectiveness of an Online multimodal Rehabilitation Program in improving symptoms and Quality of Life in people with Long COVID

Sandra León Herrera[a, b]*, Bárbara Oliván Blázquez[a, b], Rosa Magallón-Botaya[b, c]

a) *Department of Psychology and Sociology, University of Zaragoza, C. Pedro Cerbuna 12, 50009 Zaragoza, Spain.*

b) *Institute for Health Research Aragón (ISS Aragón), C. San Juan Bosco 13, 50009 Zaragoza, Spain.*

c) *Department of Medicine, Psychiatry and Dermatology, University of Zaragoza, C. Domingo Miral s/n, 50009, Zaragoza, Spain.*

*tsandraocupacional@gmail.com

A significant percentage of people infected with SARS-CoV-2 continue to show or develop multisystemic symptoms that may persist for months or even years after infection. Some of these symptoms may include general, respiratory, neurological, digestive, musculoskeletal and musculoskeletal symptoms.

The heterogeneity of symptoms makes the numerous findings on this syndrome refer to it as a multisystemic condition that implies a multidisciplinary approach, adopting an approach based on symptomatic management.

In recent years, the use of technology has been raised as an alternative to the provision of various rehabilitation services at a distance. This especially increased during the COVID-19 pandemic, when contact between patients and health professionals was limited. This type of care is commonly referred to as "telerehabilitation".

The general objective of my doctoral research is to analyze the effectiveness of a Multimodal Online Rehabilitation program in the improvement of the characteristic symptoms of persistent COVID and, consequently, in the increase of quality of life. As a secondary objective, is proposed to analyze the factors associated with the effectiveness of the intervention.

A randomized clinical trial was designed with two parallel groups.

Patients assigned to the control group would follow the usual treatment provided by their primary care physician.

Patients assigned to the intervention group would follow the usual treatment provided by their primary care physician and participate in a multidisciplinary online multimodal rehabilitation program. The program is aimed at addressing the symptoms of people with long-standing COVID and improving their quality of life. This objective is pursued by providing, during 8 consecutive sessions via videoconference, exercises and therapeutic recommendations related to physical activity, respiratory rehabilitation, cognitive rehabilitation, nutrition, sleep hygiene, use of community resources and emotional management. All the content offered during the sessions will also be available to patients on a Moodle-like platform.

As foreseeable results, it is expected that the implementation of the program will improve the symptoms and quality of life of the participants and that some of the factors associated with its effectiveness are the group factor, the global, multidisciplinary and personalized approach to the disease and the content accessibility and program recommendations.

As a foreseeable conclusion, we would affirm that an Online Multimodal Rehabilitation program in a group of 8 sessions is an effective technique in the care and multidisciplinary management of persistent COVID.

Safety Image on Different Tourism Destinations: Tourism Safety Analysis

Chin Han Lin[(a)*], Nayra Llonch-Molina [(a)], Jordi Arcos-Pumarola[(b)]

a) University of Lleida , 25003 Lleida, Catalonia, Spain

b) CETT Barcelona School of Tourism, Hospitality and Gastronom, 08035 Barcelona, Catalonia, Spain

**cl13@alumnes.udl.cat*

The negative impact of tourism safety can affect entire destinations, regions, and/or countries (Pizam & Mansfeld, 2006). Depending on their severity, tourism safety alter consumers' perceptions of the affected destinations, and in extreme cases, tourists may avoid ever travelling there again (Holcomb, 2004). tourism safety are foreseeable, while their impact on destination image is not only persistent but also significantly correlated with tourist flows. Therefore, it is possible and valuable to analyse tourism safety as factors that affect the safety of tourist destinations. In recent years, research on the safety of tourism destinations has gradually attracted the attention of public and private stakeholders, including government agencies, policymakers, and scholars and researchers from different disciplinary backgrounds (Perry & Potgieter, 2013). Before tourists begin their journeys, destination safety is a top consideration, and word of mouth regarding the destination, especially user-generated content, has increasingly impacted tourists' decision-making (Marine-Roig, 2019). Beyond that, such user-generated content not only provides data for academic research but has also become an important basis for destination marketing and management organisations to improve their destinations in order to meet tourists' needs, including safety. Tourists' image of destination safety reflects the current state of local social indicators, meaning that tourists and residents have a similar sense of safety at the destination. Research on the safety image of tourist destinations can thus not only furnish data about tourism safety and the quality of life at destinations but also inform the strategies and actions of governments and stakeholders towards improving the local quality of life. To those ends, this thesis has three objectives: 1) to analyse streams and trends in the literature on tourism safety; 2) to identify and analyse the most relevant factors of tourism safety; and 3) to comprehensively synthesise findings regarding tourism safety image from both the literature and the study.

References

Holcomb, J. L. (2004). The effect of tourist personal theft on future travel decisions (Doctoral dissertation, University of Central Florida).

Marine-Roig, E. (2019). Destination image analytics through traveller-generated content. Sustainability, 11(12), 3392. https://doi.org/10.3390/su11123392.

Perry, E. C., & Potgieter, C. (2013). Crime and tourism in South Africa. Journal of human ecology, 43(1), 101-111. https://doi.org/10.1080/09709274.2013.11906616.

Pizam, A., & Mansfeld, Y. (2006). Toward a theory of tourism security. In Mansfeld, Y, Pizam, A. (Eds.), Tourism, security and safety from theory to practice (1-27), Burlington, MA: Elsevier, Butterworth-Heinemann, (Chapter 1). https://doi.org/10.1016/B978-0-7506-7898-8.50004-7.

NURSING CARE IN PATIENTS WITH DEPENDENCY-RELATED SKIN INJURIES IN THE COMMUNITY: A SITUATION-SPECIFIC THEORY DEVELOPMENT

Natalia Maella Rius

University of Lleida, Campus d'Igualada, Av. Pla de la Massa, 8, 08700 Igualada, Barcelona

nmr4@alumnes.udl.cat

Dependence is a state in which persons, by reason of lack or loss of physical, psychological or intellectual autonomy, require significant assistance or help in carrying out their usual day-to-day activities[1]

The way in which these people interact with the environment, due to their dependency, can lead to skin lesions known as dependency-related skin injuries (DRSI)[2] that include ulcers caused by pressure, moisture, friction, combined factors and skin tears.

DRSI are a major public health problem worldwide in terms of prevalence[3], mortality[4,5], impact on patients' quality of life[6,7] and that of caregivers[8,9]; and economic[3,10], ethical, legal[11–13] and patient safety considerations[14].

Wound care is a complex field of practice; using a nursing model as a frame of reference can help practitioners structure problems, theories, abstract concepts and inconsistent treatments.[15] Situation-specific theory focuses on a specific nursing phenomenon that reflects nursing practice and is limited to a specific population or a particular field of practice".

In the literature there is no information on a specific care model for patients with DRSI; only tools for its classification, prevention and treatment are mentioned; so the aim of this project is to generate a specific-situation theory for patients with DRSI in the community setting.

It is a socially relevant topic given the progressive increase in life expectancy in the population and thus in dependency, a priority for clinical practice[16] and relevant for the nursing discipline, since this profession is historically responsible for wound care[17], and theories are needed to guide practice in specific situations and ensure their concordance with the nursing method and language. In addition, from clinical experience it is clear that there may be sufficient elements to generate a situation-specific theory that could provide nurses with a conceptual framework for the comprehensive care of the patient with DRSI.

References

1. Council of Europe. Recomendación Nº (98) 9 Del Comité de Ministros a los Estados miembros relativa a la dependencia. 18 Septiembre. 1998;(98):5.
2. García-Fernández FP, Agreda JJS, Verdú J, Pancorbo-Hidalgo PL. A new theoretical model for the development of pressure ulcers and other dependence-related lesions. J Nurs Scholarsh. 2014;46(1):28-38.
3. Demarré L, Van Lancker A, Van Hecke A, Verhaeghe S, Grypdonck M, Lemey J, et al. The cost of prevention and treatment of pressure ulcers: A systematic review. Int J Nurs Stud. 1 de noviembre de 2015;52(11):1754-74.
4. Nolasco Bonmatí A, García C, Verdú Soriano J. Análisis y evolución de la mortalidad por úlceras por presión en España: período 1987-1999. Gerokomos Rev la Soc Española Enfermería Geriátrica y Gerontológica. 2003;14(4):212-26.
5. Takahashi PY, Cha SS, Kiemele LJ. Six-month mortality risks in long-term care residents with chronic ulcers. Int Wound J. diciembre de 2008;5(5):625-31.
6. Langemo DK. Quality of Life and Pressure Ulcers: What is the Impact? Wounds. 2005;17(1):3-7.
7. Gorecki C, Nixon J, Lamping DL, Alavi Y, Brown JM. Patient-reported outcome measures for

chronic wounds with particular reference to pressure ulcer research: A systematic review. Vol. 51, International Journal of Nursing Studies. Pergamon; 2014. p. 157-65.
8. Baharestani MM. The lived experience of wives caring for their frail, homebound, elderly husbands with pressure ulcers - PubMed [Internet]. Vol. 7, Adv Wound Care. 1994 [citado 19 de noviembre de 2021]. p. 40-52. Disponible en: https://pubmed.ncbi.nlm.nih.gov/7827738/
9. García-Sánchez FJ, Martínez-Vizcaíno V, Rodríguez-Martín B. Barriers and facilitators for caregiver involvement in the home care of people with pressure injuries: A qualitative study. PLoS One. 1 de diciembre de 2019;14(12).
10. Torra-Bou J, García-Fernández F, Perez-Acevedo G, Sarabia-Lavin R, Paras-Bravo P, Soldevilla-Ágreda J, et al. El impacto económico de las lesiones por presión. Originales. 2017;28(2):83-97.
11. Soldevilla Agreda JJ, Navarro Rodríguez S. Aspectos legales relacionados con las úlceras por presión . Gerokomos . 2006;17(4):203-24.
12. Cuculic D, Sosa I, Petaros A. Decubitus ulcers and ligature marks as evidence in a homicide case. Forensic Sci Int. 2015;254:e13-7.
13. Seyhan S. Decubitus ulcer development: An investigation on its effect and evidence in home care patients. Indian J Palliat Care. 2018;24(4):505-11.
14. Torra-Bou JE, Verdú-Soriano J, Sarabia-Lavin R, Paras-Bravo P, Soldevilla-Ágreda JJ, García-Fernández FP, et al. Las úlceras por presión como problema de seguridad del paciente. Gerokomos. 2016;27(4):161-7.
15. Probst S, editor. Cuidado de heridas en enfermería. Un enfoque centrado en la persona. 3.ª ed. Barcelona: Elsevier Ltd; 2021.
16. García-Fernández F, Torra-Bou JE, Pancorbo-Hidalgo P. Prevalencia de lesiones por presión y otras lesiones cutáneas relacionadas con la dependencia en centros de atención primaria de salud de España en 2017. 2019;30(4):192-9.
17. Pancorbo-Hidalgo PL. Advances in nursing research on wounds: achievements, opportunities and challenges. Enfermería Clínica (English Ed. 1 de marzo de 2021;31(2):67-70.

Análisis del efecto del juego en las relaciones socioafectivas de estudiantes universitarios

Carlos Mallén Lacambra ([a])

a) Motor Action Research Group (GIAM), INDEST, Instituto Nacional de Educación Física de Catalunya (INEFC), Universidad de Lleida (UdL), Lleida, España, E-mail: carlos.mallen@udl.cat. https://orcid.org/0000-0003-0620-5229

Educar en las relaciones socioafectivas es uno de los retos de la Educación Física contemporánea (Pastor et al., 2016), ya que el juego es un contexto de aprendizaje idóneo para educar la dimensión relacional de los participantes (Ben Chaâbane, 2019). El objetivo de este estudio es mostrar el efecto del Juego Deportivo Tradicional (JDT) de "Oso, Guardián y Cazador" en las relaciones socio-afectivas entre los miembros de un grupo de estudiantes universitarios españoles. En este estudio transversal descriptivo,

13 alumnos con experiencia deportiva previa (6 hombres (46%); 7 mujeres (54%); Medad= 20,15; SD = 0,75), jugaron al “Oso, Guardián y Cazador”. Este JDT propone un gran reto relacional para los jugadores, ya que posee una estructura y una lógica interna original y singular: red única de interacciones motrices, red original de cambios de roles y subroles (Parlebas, 2001), presencia de agresividad motora regulada (Vigne y Bodin; 2012), etc. Para este estudio, se solicitó a los participantes que respondieran un cuestionario sociométrico antes y después de jugar “Oso, Guardián y Cazador” con el fin de evaluar la influencia del juego en las relaciones socioafectivas. El análisis comparativo entre el pre y post test, antes y después de jugar, mostró cambios en las elecciones y rechazos entre los miembros del grupo. Este estudio muestra la influencia de los Juegos Deportivos Tradicionales en la red de relaciones socio-afectivas y, en consecuencia, revela el gran interés de la práctica de Juegos Deportivos Tradicionales para una educación relacional rica y diversa.

Palabras clave: Cuestionario sociométrico, sociograma, relaciones interpersonales, Educación Física, Praxeología Motriz

Evolución de la Población de la comarca Pirineo de Navarra durante los años 2000-2020

Miguel Ángel Miranda González

Programa Doctorado Patrimonio, Sociedades y Espacios de Frontera.

Universidad Pública de Navarra.

El título de la tesis es *Dinámicas sociodemográficas recientes en los municipios del cuadrante nororiental de Navarra*. El cuadrante nororiental de Navarra lo limito a la comarca Pirineo. Una parte importante del trabajo es la disminución de población que ha sufrido la zona de estudio en casi todos sus municipios con sus núcleos de población. En algunos casos la población de un buen número de municipios tiende a desaparecer, en otros, los menos, se produce un proceso de realimentación donde la población neorural adopta un comportamiento
urbano asumido, que no tiene que ver con el comportamiento rural tradicional.

En el póster expondré la evolución de la población en sus diferentes núcleos de la comarca Pirineo y lo compararé con el crecimiento sostenido que ha tenido la Comunidad Foral de Navarra. El intervalo temporal va desde el año 2000 hasta el año 2020. Mediante gráficos de *cajas y bigotes* se podrá observar que año tras año la mayor parte de las poblaciones se agrupan por debajo de la mediana de población y algunos núcleos quedan muy distantes de la media de la población, tanto por la mayor parte de las poblaciones se encuentran entre el cuartil Q1 y el cuartil Q2 mientras que los valores más altos de la población son superiores al cualtil Q3.

Mediante cartografía coroplética se podrá observar la distribución de la población según su tamaño a lo largo de la superficie comarcal.

RECONFIGURATION OF IDENTITIES IN MIGRATORY PROCESSES FROM AN INTERDISCIPLINARY PERSPECTIVE: NARRATIVE TRAJECTORIES OF VENEZUELAN MIGRANT INDIVIDUALS

Ruth Mary Morales Robles

a) *Universidad de Lleida, Doctorado Educación, Sociedad y Calidad de vida. Directora: Dra. María López Teulón.*
b) *Universidad de Valparaíso, Doctorado sobre Estudios Interdisciplinarios. Director: Dr. Alberto Moreno Doña.*

**rmr16@alumnes.udl.cat* *ruthmmr78@gmail.com*

The purpose of my doctoral research is to understand the processes of identity reconfiguration in Venezuelan migrants reconfiguration of identity in Venezuelan migrants through their narrative trajectories. Currently, migratory movements manifest continuities and discontinuities in the identity axes (individual/collective), arising from uncontrollable micro/macro cultural logics. A milestone that has generated public/private interest from multiple perspectives is the massive exodus of Venezuelans (Bermejo-Bejarano and González-Guerrero, 2021). According to data provided by UNHCR (2022) and Rv4 (2022), the number of migrants and refugees reaches seven million people, each one materializing diverse transformations and lived and felt subjectivities.

Note: Kamishibai developed 2 participants during 2021-2023. Each set has stories.

For this purpose, **the theoretical debates** were approached interdisciplinary from the complexity of different authors and approaches. The methodological approach resorted to the postpositive paradigm, under the qualitative approach, which seeks the essence and meanings of the subjects of study using the biographical-narrative method as the most suitable for addressing sociocultural phenomena (Beverly, 2013). The founding inclusion criteria were: 9 informants of Venezuelan nationality, distributed in the most recurrent destinations such as Chile and Spain. Various collection techniques were used, such as a) the in-depth interview from which the testimonial narratives and life stories are derived; b) the photo-ethnographic interview, and c) Kamishibai (theater on paper) taking into consideration the meanings of the identity transformations that they experience. The analyses were carried out through grounded theory, safeguarding the textual nature of the oral/visual narratives.

The findings make visible the complex interweaving of political, affective, axiological, and sociocultural categories in the temporospatial line as an identity-reconfiguring axis. Situated research **is of value and importance** due to its interdisciplinary nature, impregnated with symbolic universes, meanings, images, acts of affection, and an accumulation of realities and identities reconfigured from the most intimate part of the being.

Keywords: reconfiguration, identities, migration, narratives, journeys.

Referencias.

Bermejo-Bejarano, C., y González-Guerrero, I. (2021). Rostros de la migración: construcción discursiva de sensibilidades sociales. Ciência Política, 16(32), 45-73.

Beverly, J. (2010) Testimonio: sobre la política de la verdad, trad. de Irene Fenoglio y Rodrigo Mier, México, Bonilla Artigas Editores.

R4V Inter-Agency Coordination Platform for Refugees and Migrants from Venezuela. (2022). *RMRP 2022. Regional Refugee and Migrant Response* https://www.r4v.info/sites/default/files/2022-03/RMRP%20 2022_Final%20Version_WEB2.pdf.

UNHCR (2022). Venezuela Situation June 2022. https://reliefweb.int/report/venezuela-bolivarian-republic/unhcr-venezuela-situation-fact-sheet-june-2022?gclid=Cj0KCQjwi46iBhDyARIsAE3nVraarDzJXkTSxJiOX8TE1QbCNH-ASogkMPpiPobT24kt921K-LZXE3QaAly7EALw_wcB

ACCURACY OF THE DERIVED NEUTROPHIL-TO-LYMPHOCYTE RATIO FOR THE DIAGNOSIS OF ACUTE APPENDICITIS IN CHILDREN: A DIAGNOSTIC STUDY

Julio Cesar Moreno Alfonso
Ciencias de la Salud
Universidad Pública de Navarra

- **Aim of the Study**: To determine the accuracy of derived neutrophil to lymphocyte ratio (dNLR) for diagnosis of acute appendicitis in children.

- **Methods:** Prospective diagnostic study of patients with acute appendicitis and controls with non-surgical abdominal pain who were admitted at our hospital from 2020 to 2022. White blood cell count (WBC), neutrophil to lymphocyte ratio (NLR) and dNLR were compared between groups.

- **Main results:** 202 patients were included: 101 cases with acute appendicitis (69% male, age 9.9 ± 3.3 years) and 101 controls with non-surgical abdominal pain (44% female, age 9.4 ± 3,6). WBC, NLR and dNLR were significantly higher in the acute appendicitis group than control (16.47 ± 5.14 *vs.* 11.18 ± 4.18 x 10^3/µL, *p*= < 0,0001; 9.58 [IQR 9.4] *vs.* 3.36 [IQR 5.1] *p*= < 0,0001; and 5.25 [IQR 3.8] *vs.* 2.39 [IQR 2.7] *p*= < 0,0001, respectively). The sensitivity, specificity, positive predictive value, negative predictive value, area under the receiver operating characteristic curve and cutoff point of dNLR for diagnosis of acute appendicitis were 71%, 74%, 73%, 72%, 0.811 and 3.78, respectively (Fig. 1). Positive and negative likelihood ratios of WBC, NLR and dNLR were 1.95 and 0.26; 2.05 and 0.32; and 2.77 and 0,39, respectively.

- **Conclusions:** dNLR is a novel, inexpensive and noninvasively inflammatory biomarker that shows a high accuracy for diagnosis of acute appendicitis.

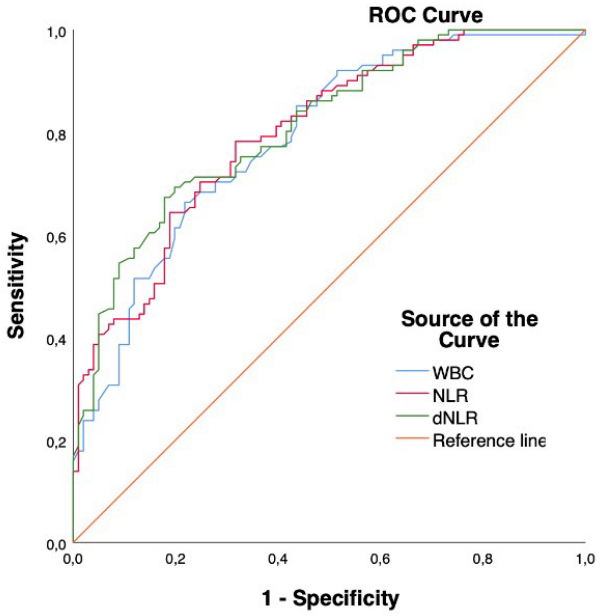


Figure 1. ROC curve of WBC, NLR and dNLR for the diagnosis of acute appendicitis in children.

Association among psychological, addictive, lifestyle behavior and highly prevalent affective disorders in primary health care adults.

Fátima Méndez López de la Manzanara[1,2*], Bárbara Oliván Blázquez[1,2,3], Rosa Magallón Botaya[1,2,4]

1. Aragonese Primary Care Research Group (GAIAP), Institute for Health Research Aragón (IIS Aragón), Zaragoza, Spain. 2. Research Network on Chronicity, Primary Care and Health Promotion (RICAPPS), Carlos III Health Institute, Madrid, Spain.
3. Department of Psychology and Sociology, University of Zaragoza, Zaragoza, Spain.
4. Department of Medicine, Psychiatry and Dermatology, University of Zaragoza, Zaragoza, Spain.

* fmendez@iisaragon.es / fmendez@unizar.es

Depression and anxious symptoms are prevalent in the general population. The way we manage our care, physical and emotional health and/or discomfort is highly influenced by our own abilities, skills and attitudes despite life's circumstances(1).

The principal aim of my doctoral research is to analyses the relationship between psychological constructs (selfefficacy, activation, health literacy, resilience, personality traits, sense of coherence, self-esteem), and the presence of affective-emotional problems (anxiety, depression) and addictions in primary health care.
Descriptive, bivariate, multivariate and moderation analysis of data from 391 participants of 35-74 years old in primary health care centres located in Aragón (Spain) were performed between July 2021 and July 2022(2). The primary outcomes were severity of depression, severity of anxiety, and addictive behaviours. A detailed set of secondary outcomes included psychosocial or personal factors on health behaviour, social support, lifestyle patterns, quality of life, the use of health and social resources, and chronic comorbid pathology.

Low sense of coherence (β = - 0.058; p = 0.043), low self-esteem (β = −0.171; p=0.002), and low self-efficacy (β = −0.122; p= 0.001), are predictors of having more severe depressive symptoms. Furthermore, low self-esteem (β = −0.120; p= 0.012), low self-efficacy (β = −0.092; p=0.004), and high problematic use of ICT (β = 0.169; p = 0.001), are predictors of having more severe anxiety symptoms. Moderation analyses were significant in the effect of selfefficacy (b = −0.040, p=0.001) and resilience (b = −0.024, p=0.033) on the relationship between problematic ICT use and anxiety.

The analysis of psychological constructs and lifestyles impact on the mental health of people and communities will provide evidence that will make it possible to better address and prevent these prevalent problems and address their improvement from a more global and holistic perspective. The evaluation of psychological constructs should be incorporated into health services to improve people's ability their self-care, the level of knowledge of managing their disease and their physical, mental and social health.

References

1. Antonovsky A. The salutogenic model as a theory to guide health promotion. Health Promot Int. 1996;11(1):11–8.
2. Méndez-López F, Oliván-Blázquez B, Domínguez-García M, Bartolomé-Moreno C, Rabanaque I, Magallon-Botaya R. Protocol for an observational cohort study on psychological, addictive, lifestyle behaviour and highly prevalent affective disorders in primary health care adults. Front Psychiatry. 2023 May 23;14:1121389.

Effect of oatmeal concentration on the nanoemulsion lipid digestibility and β-carotene bioaccessibility: an *in vitro* semi-dynamic digestion study.

Anali Parsi, Laura Salvia-Trujillo, Olga Martín-Belloso
University of Lleida
ap34@alumnes.udl.cat

My doctoral research is being focused on food structure-function relationship: interactions between food matrices and nanoemulsion and their impact on lipid *in vitro* digestibility and β-carotene bioaccessibility

interactions between food matrices and lipid *in vitro* digestibility in complex food systems, including nanoemulsions

The incorporation of nanoemulsions into meals can be an effective strategy for food fortification with lipophilic bioactive compounds. However, the impact of food (micro) structure on their digestion remains unclear. Hence, this study aimed to investigate the *in vitro* lipid digestibility of nanoemulsions after their incorporation into oatmeals at varying oat concentrations.

In order to achieve this purpose, β-Carotene was solubilized into corn oil (0.5% w/w) to form an enriched O/W nanoemulsion (4% *w/w*) with Tween80 (0.4% *w/w*) as emulsifier. The nanoemulsion was mixed with oatmeals at different oat concentrations (10% and 20% *w/w*) at a 1:4 ratio. The nanoemulsion-oatmeal mixtures were subjected to an *in vitro* gastrointestinal digestion system through a semi-dynamic gastric model, monitoring gastric emptying (GE), followed by a static small intestinal model. Viscosity, free fatty acid (FFA) release, and β-carotene bioaccessibility were evaluated during the digestion.

An increase in oatmeal concentration from 10% to 20% and, hence, an increase in caloric content and viscosity of the meal, resulted in a decrease in GE rate from 4.51 mL/min to 2.56 mL/min. Lipid digestibility, indicated by the percentage of FFA release, declined from 47.9% to 34.2% with increasing oatmeal concentration (10% to 20%). This reduction in lipid digestibility can be attributed to oat-derived carbohydrates and proteins, which interact with the lipid fraction and inhibit pancreatic lipase activity (Grundy et al., 2017). There was a negative correlation between total FFA release and viscosity. Since polysaccharides develop viscosity when chains or coils interpenetrate to form entangled networks (Ellis et al., 1995), it was expected that the viscosity of nanoemulsion-oat 20% (277±5.66 mPa.s) would increase in compare to nanoemulsion-oat 10% (15.65±1.06 mPa.s). This trend also affected β-carotene bioaccessibility due to the less availability of FFAs for micelle formation.

Higher oatmeal concentrations in the mixed food matrix with nanoemulsion caused the food to empty more slowly from the stomach and somewhat led to the controlled digestion and absorption. Therefore, this slower emptying rate can lead to satiety, aiding in nutrient utilization and health benefits.

Implementation and evaluation of the effectiveness of a digital health intervention in the quality of life of women survivors of breast cancer

Gustavo Adolfo Pimentel Parra[(a)]*, María Nelia Soto Ruiz[(a)], Cristina García Vivar[(a)], Leticia San Martín Rodríguez[(a)], Paula Escalada Hernández[(a)]

a) Public University of Navarra, Department of Health Sciences

** pimentel.149803@e.unavarra.es*

My doctoral research seeks to respond to the physical, psychosocial, occupational, and spiritual health needs experienced by long-term survivors of breast cancer (LTS-BC) because of the late effects or sequelae caused by cancer and treatment. This thesis will allow the development of a personalized digital health intervention based on artificial intelligence in LTS-BC that allows improving their quality of life from Primary Care. This will offer greater coverage and better care, management, and follow-up for this population whose specific needs are not usually covered by the health system. In this way, it seeks to provide new knowledge that improves care for LTS-BC and their families, from the context of Primary Health Care. The study will use a randomized experimental design and will be framed within the *Medical Research Council* methodological framework based on three phases: Phase I (design) or literature review of digital health interventions, needs of LTS-BC and recommendations from clinical practice guidelines focused on LTS-BC, for the development of the content of the intervention; Phase II (pilot) or exploratory trial to assess acceptability and feasibility of the intervention; Phase III (evaluation) or randomized controlled trial. The results obtained could indicate a reduction in the cost-effectiveness ratio in the future, which would imply an economic reduction and therefore less pressure for the health system, especially for the provision of oncological services. Likewise, it will contribute to the development of new tools for cancer care, coinciding with the commitment of the national and regional Strategic Plans for care to cancer. Finally, it should be noted that this thesis is part of the CUMACA-M project (Cuidados Más Allá del Cancer -Mama) subsidized by the Carlos III Institute within the call for health research projects, so the research context It is propitious to carry out a thesis with significant results.

References

1. Sociedad Española de Oncología Médica (SEOM). Monográfico SEOM de Largos Supervivientes en Cáncer Ia Parte [Internet]. España, Madrid: Sociedad Española de Oncología Médica (SEOM); 2012. 84 p.
2. Sant M, Chirlaque Lopez MD, Agresti R, Sánchez Pérez MJ, Holleczek B, Bielska-Lasota M, et al. Survival of women with cancers of breast and genital organs in Europe 1999 – 2007: Results of the EUROCARE-5 study. Eur J Cancer. 2015;51(15):2191–205.
3. Barnadas A, Algara M, Cordoba O, Casas A, González M, López T, et al. Recomendaciones para el seguimiento de las mujeres supervivientes de cáncer de mama. Madrid, España: Sociedad Española de Oncología Médica (SEOM); 2017. 28 p.
4. Baeyens-Fernández JA, Molina-Portillo E, Pollán M, Rodríguez-Barranco M, Del Moral R, Arribas-Mir L, et al. Trends in incidence, mortality and survival in women with breast cancer from 1985 to 2012 in Granada, Spain: a population-based study. BMC Cancer. 2018;18(1):781.
5. García-Vivar C, Elizondo N, Ambrosio L. Primary care nursing is essential to fully implement survivorship care plans for long-term cancer survivors and their families. Cancer Nurs. 2019;42(3):177–8.
6. Soto-Ruiz N, Escalada-Hernández P, San Martín-Rodríguez L, Ferraz-Torres M, García-Vivar C. Web-Based Personalized Intervention to Improve Quality of Life and Self-Efficacy of Long-Term Breast Cancer Survivors: Study Protocol for a Randomized Controlled Trial. Int J Environ Res Public Health. 2022;19(19):12240.

DAILY MOBILITY, ACCESSIBILITY, AND RURAL YOUTH. STRATEGIES AND LIFE TRAJECTORIES IN THE MID-NAVARRE

Gonzalo Reguera-Zaratiegui[(a)*]

a) Public University of Navarre (UPNA)

**gonzalo.reguera@unavarra.es*

Youth decapitalization in rural areas, accentuated by population ageing and other demographic disparities, constitutes one of the essential challenges for social and territorial cohesion. The impossibility of integrating in conditions of equality constitutes one of the main indicators of the processes of social and territorial peripheralization. For example, to consolidate social capital in the territory and strengthen its resilience, as the social decapitalisation of many European regions prevents them from benefiting from the programmes provided by the European Commission.

Based on fieldwork carried out in a southern European region, we explore the social perceptions, daily mobility strategies and life trajectories of rural youth. The research includes interviews with experts, profiles of young people of different nationalities and backgrounds, as well as a focus group discussion. The research is part of the Project funded by the Spanish Program of R&D+i. "Focus on rural gap: accessibility, mobilities and social inequalities" («RURAL ACCESS») PID2019-111201RB-I00/ AEI/ 10.13039/501100011033.

The outcomes yielded that there are strong interconnections between physical and social mobility for the rural youth, such as commuting to educational institutions and distant labour markets, which could increase the opportunities and qualifications. Neglecting mobility policies contributes to rural declines and leaving the future of the young at a crossroads. The future plans of rural youth are conditioned by spatial-temporal frameworks. Perceptions of employability, access to services and opportunities in the local environment modify the expectations of their peer group and the vision of the future of the region. These changes in the social imaginary of youth are challenging the cohesion policies.

References

- Brovarone, Elisabetta; Cotella, Giancarlo y Staricco, Lucia (Eds.). (2021). Rural Accessibility in European Regions. Routledge.
- Döner, F. N., Figueiredo, E., Rivera, MJ. (2020). Crisis and Post-Crisis in Rural Territories. Switzerland: Springer.
- Camarero, L., Oliva, J. (2019). Thinking in rural gap: mobility and social inequalities. Palgrave Communications, 5(95), 1-7.
- Oliva, J. (dir) (2018). Movilidades, trayectorias vitales y sostenibilidad rural. Movilidades, trayectorias vitales y sostenibilidad rural. Pamplona, Universidad Pública de Navarra.
- Milbourne, P. y Kitchen, L. (2014). Rural mobilities: Connecting movement and fixity in rural places. Journal of Rural Studies, 34, 326-336.
- Osti, G. (2010). Mobility Demands and Participation in Remote Rural Areas. Sociologia Ruralis, 50(3), 296-310.
- Kaufmann, Victor; Bergman, Manfred y Joye, Dominique (2004). Motility: mobility as capital. International Journal of Urban and Regional Research, 745-756.
- Li, Y., Westlund, H., Liu, Y. (2019). Why some rural areas decline while some others not: An overview of rural evolution in the world. Journal of Rural Studies, 68, 135-143.
- Gobierno de Navarra (2020): Desigualdades territoriales en Navarra. Retos y propuestas. Pamplona. Observatorio de la Realidad Social.
- Unión Europea (2016): Declaración de Cork 2.0. una vida mejor en el medio rural. Luxembourg: Oficina de Publicaciones de la Unión Europea.

EFFECT OF SALINITY ON SEED QUALITY OF GRAIN LEGUMES

Yoerlandy Santana-Baños[a*, b], Mikel Prat Preciado[a], Andoni Zubiria Arraiza[a], Sergio Carrodeguas Díaz[b], Idoia Ariz Arnedo[a], Esther M González[a]

*[a]Department of Science, Institute for Multidisciplinary Research in Applied Biology, Public University of Navarra, Pamplona 31006, Spain. *yoerlandy83@gmail.com*

[b]Department of Agricultural Sciences, University of Pinar del Río "Hermanos Saíz Montes de Oca", Pinar del Río 20100, Cuba.

Grain legumes are crucial in promoting sustainable agriculture and food security. *Phaseolus vulgaris* L. (common bean) and *Glycine max* L. (soybean) are among the most widely grown and consumed grain legumes. However, *Vigna unguiculata* (L.) Walp. (cowpea) has shown great potential against common beans and soybean in tropical regions affected by abiotic factors such as salinity. In this study, we aimed to evaluate the effect of salinity on the seed quality of these edible legumes, exploring the mechanisms responsible, which are not yet known precisely. The seeds used were harvested from crops established under tropical conditions in Cuba. They were subjected to irrigation conditions, including a control group (no salinity) and another group exposed to moderate salinity during their development cycle. The results revealed that the applied salt stress did not affect seed quality in the cowpea cultivars. However, a reduction in biomass, length and thickness of soybean seeds was observed, suggesting an increased sensitivity of this legume to salt stress. Despite the differences found among the legumes studied, it was observed in all cultivars that salinity caused an increase in the relative proportion of seed testa. This finding suggests that this increase in the testa could be considered an adaptation mechanism to the stress caused by salinity in these legumes. Furthermore, the potential of cowpea as a viable alternative in tropical regions affected by salinity is evident. These results contribute to scientific knowledge and may be useful for management strategies and crop selection under adverse salinity conditions.

Acceptance of technology and continuous training: An empirical study in workers.

Claudia Tobías-Marín [(a)*], Carmelo A. Juárez-Castelló[(a)] & Alfonso J. Gil[(a)]

a) University of La Rioja, Logroño (La Rioja).

**claudia.tobias@unirioja.es*

Accepting and using technology is a challenge for workers in the changing business context (Alshurideh et al. 2019, and, Alhashmi et al. 2020). Companies demand human resources management training from their employees, tending to integrate technology into the production processes (Davis, 1989, Davis et al. 1992, and, Dutot, 2015). Following the TAM model (Fishbein and Ajzen, 1975; and, Ajzen, 1991), this work aims to analyze the role of continuous training in developing the acceptance and use of technology. The survey was the research technique. Three hundred thirty-six employees of the Autonomous Community of La Rioja participated in the study. The hypotheses were analyzed through structural equations, following the example of the article by Barclay, Higgins, and Thompson (1995). The data shows that training is positively related to perceived usefulness and ease of use, these two constructs are positively related to technology use, and technology use is positively related to perceived performance. Regarding moderation effects, it was found that the perceived need for training negatively moderates the relationship between training and ease of use. This work complements the TAM model related to training and indicates the effectiveness of training in the acceptance of technology by workers.

References:

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes.* 50 (2), 179–211.

Alhashmi, S., Alshurideh, M., Al-Kurdi, B., & Salloum, S. A. (2020, March 24). *A Systematic Review of the Factors Affecting the Artificial Intelligence Implementation in the Health Care Sector* [Conference]. The International Conference on Artificial Intelligence and Computer Vision, Marrakesh, Morocco. DOI: 10.1007/978-3-030-44289-7_4

Alshurideh, M., Salloum, S. A., Al-Kurdi, B., & Al-Emran, M. (2019, February). Factors affecting the Social Networks Acceptance: An Empirical Study using PLS-SEM Approach [Conference]. 8th International Conference on Software and Computer Applications, Penang, Malaysia. DOI: 10.1145/3316615.3316720

Barclay, D., Higgins, C., & Thompson, R. (1995). The Partial Least Squares (PLS) Approach to Causal Modeling: Personal Computer Use as an Illustration. In Walter de Gruyter (Ed.). *Technology Studies* (pp. 285-309). New York.

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly,* 13(3), 319–340.

Davis, F. D., Bagozzi, R. P., & Warshaw, P. R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, 22(14), 1111–1132.

Dutot, V. (2015). Factors influencing Near Field Communication (NFC) adoption: an extended TAM approach. *The Journal of High Technology Management Research*, 26(1), 45–57

Fishbein, M., & Ajzen, I. (1975). Chapter 10: Strategies of Change: Active Participation. In Addison-Wesley Publishing Company (Ed.). *Belief, attitude, intention and behavior: An introduction to theory and research* (pp. 411-450). Sydney.

Reducing the Energy Consumption of Neural Network Accelerators with Fault-Tolerant Microarchitectural Mechanisms

Yamilka Toca-Díaz[1], Nicolás Landeros Muñoz[2], Alejandro Valero[1], and Rubén Gran-Tejero[1]

1 Dept. of Computer Science and Systems Engineering, University of Zaragoza, Spain.
2 Dipt. di Elettronica, Informazione e Bioingegneria, Politecnico di Milano, Italy
e-mail: yamilka@unizar.es

My PhD research focuses on designing on-chip memories for Convolutional Neural Network (CNN) inference accelerators operating at low supply voltage (Vdd) to reduce the power consumption of these devices. Like any other digital circuit, current CNN accelerators are affected by variations in the manufacturing process, making transistors vulnerable to permanent faults when operating at low Vdd below the minimum safe supply voltage (Vmin) defined by the worst-case transistor. These faults mainly affect on-chip memories storing neural network parameters and employing most of the transistors of the device.

A safe and effective solution to save energy, commonly referred to as Dynamic Voltage Scaling (DVS), is to relax the existing voltage guardband by pushing Vdd downward Vmin [1]. Extending the capability of DVS by aggressively underscaling Vdd beyond Vmin is a challenging task due to the high number of permanent faults appearing in vulnerable memory bitcells, forcing them to be stuck at a given logic value [2].

In this research, we analyze the impact of faults on the accuracy of CNN accelerators. To do so, we have chosen a number of widely used CNN applications, such as AlexNet, VGG, or MobileNet, modeled a CNN accelerator inspired by state-of-the-art accelerator models from both academia and industry, like DaDianNao [3] or Google's TPU [4], and identified different fault patterns in the on-chip memory storage. Based on these observations, we propose a pair of microarchitectural mechanisms to tolerate faults at low Vdd. These mechanisms transform the data representation of those neural network parameters with a low number of faults, and provide an alternative fault-free storage for those parameters with a high number of faults.

Experimental results show that the proposed techniques maintain the original accuracy of the applications despite the presence of faults, whereas the average energy savings of the enhanced on-chip memory are by 46% with respect to the on-chip memory of a conventional accelerator.

References

[1] J. Leng, Y. Zu, and V. J. Reddi. GPU Voltage Noise: Characterization and Hierarchical Smoothing of Spatial and Temporal Voltage Noise Interference in GPU Architectures. In Proceedings of the IEEE 21st International Symposium on High Performance Computer Architecture, pages 161–173, 2015.

[2] B. Salami, O. S. Unsal, and A. Cristal Kestelman. Comprehensive Evaluation of Supply Voltage Underscaling in FPGA on-Chip Memories. In Proceedings of the 51st Annual IEEE/ACM International Symposium on Microarchitecture, pages 724–736, 2018.

[3] Y. Chen, T. Luo, S. Liu, S. Zhang, L. He, J. Wang, L. Li, T. Chen, Z. Xu, N. Sun, and O. Temam. DaDianNao: A Machine-Learning Supercomputer. In Proceedings of the 47th Annual IEEE/ACM International Symposium on Microarchitecture, pages 609–622, 2014.

[4] N. P. Jouppi et al. In-Datacenter Performance Analysis of aTensor Processing Unit. In Proceedings of the 44th Annual International Symposium on Computer Architecture, pages 1–12, 2017.

COMPARISON AMONG THE LONOMIA VENOMS COMPOSITION AND ITS EFFECTS ON POTENTIAL PREDATORS

Diana M. Toro-Vargas[(a)*]

a) Universidad de Los Andes, Bogotá, Colombia

**dm.toro@uniandes.edu.co*

The genus Lonomia (Lepidoptera: Saturniidae) is medically relevant since the venom inside the caterpillar spines induces hemorrhages in humans1,2,3,4. A recent study revisits the genus diversity and proposes three speciesgroups5: obliqua, achelous and electra. There are several case reports of the first two groups but no one for the last, and has been proved that the Brazilian antivenom is not equally effective for all envenomations6, aspects that suggest that venoms of different species have a different composition which is a challenge for antivenom production. On the other hand, few studies have described the interactions of these caterpillars species with other organisms as host plants7, parasitoids7, and predators8, and no one of these relates these interactions with the venom composition. It is conceivable that the close relation

between an interaction of type “arm- race” like predatorcaterpillar, and venom composition is caused by the high metabolic cost of producing venom9,10. Consequently, a better understanding of the venom composition, and its variation between species, as well as interspecific interactions, is required to better comprehend such selective forces and in shaping the ecological role of a specie. Omics approaches are currently supplying strong tools for comprehending the evolutionary ecology of venom11. The objective of this research is to comprehend the differences in the venom composition among the three Lonomia groups analyzing those in the light of prey-predator interaction, and using proteomics as an omic approach.

References

Arocha-Piñango CL, Guerrero B. Lonomia genus caterpillar envenomation: clinical and biological aspects. Haemostasis. 2001;31: 288–293

Carrijo-Carvalho LC, Chudzinski-Tavassi AM. The venom of the Lonomia caterpillar: an overview. Toxicon. 2007;49: 741–757.

Gamborgi GP, Metcalf EB, Barros EJ. Acute renal failure provoked by toxin from caterpillars of the species Lonomia obliqua. Toxicon. 2006;47: 68–74.

Duarte AC, Crusius PS, Pires CA, Schilling MA, Fan HW. Intracerebral haemorrhage after contact with Lonomia caterpillars. Lancet. 1996;348: 1033.

González, C., Ballesteros-Mejia, L., Díaz-Díaz, J., Toro-Vargas, D. M., Amarillo-Suarez, A. R., Gey, D., ... & Rougerie, R. (2023). Deadly and venomous Lonomia caterpillars are more than the two usual suspects. PLoS neglected tropical diseases, 17(2), e0011063.

Sano-Martins, I. S., González, C., Anjos, I. V., Diaz, J., & Goncalves, L. R. C. (2018). Effectiveness of Lonomia antivenom in recovery from the coagulopathy induced by Lonomia orientoandensis and Lonomia casanarensis caterpillars in rats. PLoS neglected tropical diseases, 12(8), e0006721.

Toro-Vargas DM, González C, Rougerie R, Amarillo-Suárez AR (2023) Characterization of morphological and biological aspects of venomous caterpillars of the genus Lonomia Walker (Lepidoptera: Saturniidae) in Colombia. PLoS ONE 18(5): e0285010. https://doi.org/10.1371/journal.pone.0285010

Favalesso, M. M., Chiyo, L., Casafús, M., Guimarães, A. T. B., & Peichoto, M. E. (2020). RELATO DE EVENTOS PREDATÓRIOSEM Lonomia spp.(Saturniidae: Hemileucinae). Oecologia Australis, 24(1).

van Thiel, J., Khan, M. A., Wouters, R. M., Harris, R. J., Casewell, N. R., Fry, B. G., ... & Richardson, M. K. (2022). Convergent evolution of toxin resistance in animals. Biological Reviews, 97(5), 1823-1843.

Mohammadi, S., Yang, L., Bulbert, M., & Rowland, H. M. (2022). Defence mitigation by predators of chemically defended prey integrated over the predation sequence and across biological levels with a focus on cardiotonic steroids. Royal Society Open Science, 9(9), 220363.

Sunagar, K., Morgenstern, D., Reitzel, A. M., & Moran, Y. (2016). Ecological venomics: How genomics, transcriptomics and proteomics can shed new light on the ecology and evolution of venom. Journal of Proteomics, 135, 62-72.

Dias da Silva, W., ROCHA CAMPOS, A. M., GONCALVES, L. C., HIGASHI, H., & Yamagushi, I. K. (1996). Development of an antivenom against toxins of Lonomia obliqua caterpillars. Toxicon (Oxford), 34(9), 1045-1049.

Lozano Morales. (2022). Proteomics and immunoproteomics of Lonomia casanarensis and Lonomia orientoandensis venoms. Magister thesis. Universidad de los Andes

Rattner, B. A., Horak, K. E., Warner, S. E., Day, D. D., & Johnston, J. J. (2010). Comparative toxicity of diphacinone to northern bobwhite (Colinus virginianus) and American kestrels (Falco sparverius). In Proceedings of the Vertebrate Pest Conference (Vol. 24, No. 24).

Groen, S. C., & Whiteman, N. K. (2021). Convergent evolution of cardiac-glycoside resistance in predators and parasites of milkweed herbivores. Current Biology, 31(22), R1465-R1466.

The Conquest of the Huasteca Frontier in Northeastern Mexico

José Luis Urrutia Jácome

Universidad Pública de Navarra

muxni@yahoo.com.xx

Not all regions of the Kingdom of New Spain expanded equally. Thus, this territorial conquest must be seen as a gradual and complex process. The diversity of cultural, economic, and political structures of indigenous societies and their unique environments played a very important role in this process. For the geographic and cultural region known as *Huasteca*, we consider the foundation of the Santi Esteban del Puerto village by Hernan Cortes in 1522 as the beginning of Spanish conquest and the annexing of its territory and inhabitants to the monarchy. Here, the vice-royal structure had to adapt to several geographic and social conditions.

As a result of the clash between Europeans and indigenous northern populations a *frontier space* was configured to the north and northwest of the *Huasteca.* Here, military architecture played a predominant role as a social nucleus of settlement, embodied as fortresses or *presidios*, defensive walls, and towers. The viceroyalty scheme needed to create specific conquest strategies for each part of this large area of constant conflicts or the "frontier war". As a result, a staggered process of acculturation emerged and led to the genesis of the different syncretic societies that formed the Hispanic Empire in America in this region.

Study of disintegration of agency in subjects with ADHD

Demyan Vakhrameev ([a])

a) Programa Doctorado en Ingeniería de Sistemas e Informática,

Universidad de Zaragoza.

The diagnosis of ADHD is becoming more common and better understood with every year, yet I don't believe that we have a good solution for the problem. So far the most widely recommended solution is medication, however even people who take this option are not 'cured' of the handicap.

While ADHD is often considered a disability, I would argue that the greatest harm that the condition causes to those who have it is a feeling of loss of agency - an inability to move or do things they want to do. I would also argue that this symptom arises due to the ADHD subjects' attempts to live their lives as a neurotypical person would.

In mild cases the symptom of loss of agency is described as laziness, however, this description quickly becomes inappropriate when the person in question is simply unable to move forward with their life, no matter how much they want to. Moreover, the same symptom is treated very seriously in medical cases such as with patients with dementia.

I believe that by conducting a phenomenological and a theoretical (philosophy, embodied cognition) study on the nature of agency and related mechanisms I will be able to shine some light on the problem of how a 'lazy' person and specifically a 'lazy' person with ADHD can live their life in a way that does not cause disintegration of their agency.

If the study is successful - it should help alleviate or nullify disintegration of agency caused by behavioural and psychological sources. This will allow for future work to more clearly address the disruptions caused to a person's agency by mechanical, rather than behavioural, sources such as Alzheimer's disease.

Selection of Aquatic-origin Lactic Acid Bacteria and their safety for Subsequent Application in Human and Animal Health

Augusto Vargas-González [(a)]*, Miguel Barajas[(a)], Tania Pérez-Sánchez[(b)]

a) Public University of Navarre, Health Sci. Fac., Avenida Barañain SN, Pamplona

b) University of La Rioja, Dept. of Agri. & Food C/Madre de Dios 53, Logroño

**augusto.vargas@unavarra.es*

This doctoral research focuses on the identification and evaluation of lactic acid bacteria (LAB) derived from aquatic organisms for their potential use in human and animal health. Salmonid species, particularly their embryonic or vesiculated larval stage, are used as a model. LAB, including species such as *Lactiplantibacillus plantarum*, *Pediococcus acidilactici*, and *Leuconostoc mesenteroides*, are known to have probiotic properties, while others like *Carnobacterium maltaromaticum* and *Carnobacterium divergens* are considered commensal or opportunistic pathogens. The aim of this study was to isolate and identify LAB strains from healthy fish and conduct safety assays to assess their suitability.

Mucus samples were collected from various parts of healthy fish obtained from commercial fish farms in Northeast Spain. LAB strains were isolated and identified using molecular techniques. In vitro antagonism assays were performed to evaluate the inhibitory effects of LAB strains and their supernatants on various fish pathogens. Antibiotic resistance activity assays were conducted to determine the susceptibility of the LAB strains to different antimicrobial agents. Cytopathic effect assays were carried out on a fish cell line, and a toxicity assay was performed on salmonid embryonic eggs.

The results showed the presence of various LAB species, including *L. plantarum*, *L. mesenteroides*, and *P. acidilactici*, as well as some pathogenic species such as *C. maltaromaticum* and *C. divergens*. The LAB strains exhibited inhibitory effects against the tested fish pathogens to varying degrees. Antibiotic resistance assays revealed resistance patterns among the LAB isolates. Cytopathic effect and toxicity assays demonstrated differences in the effects of the LAB strains on fish cells and embryonic eggs.

These findings suggest that the methodology employed in this study holds promise for further refinement. Additional techniques such as measuring immune response markers and cellular cytotoxicity could enhance the selection of safe LAB isolates. The research contributes to the investigation of LAB as potential alternatives to antibiotics in animal production and human health, following a One Health approach.

References

Balouiri, M., Sadiki, M., and Ibnsouda, S. K. (2016). Methods for in vitro evaluating antimicrobial activity: A review. *Journal of Pharmaceutical Analysis* 6, 71–79. doi: 10.1016/j.jpha.2015.11.005.

Li, T., Teng, D., Mao, R., Hao, Y., Wang, X., and Wang, J. (2020). A critical review of antibiotic resistance in probiotic bacteria. *Food Research International* 136, 109571. doi: 10.1016/j.foodres.2020.109571.

Pérez, T., Balcázar, J. L., Peix, A., Valverde, A., Velázquez, E., de Blas, I., et al. (2011). Lactococcus lactis subsp. tructae subsp. nov. isolated from the intestinal mucus of brown trout (Salmo trutta) and rainbow trout (Oncorhynchus mykiss). *International Journal of Systematic and Evolutionary Microbiology* 61, 1894–1898. doi: 10.1099/ijs.0.023945-0.

Pérez-Pascual, D., Vendrell-Fernández, S., Audrain, B., Bernal-Bayard, J., Patiño-Navarrete, R., Petit, V., et al. (2021). Gnotobiotic rainbow trout (Oncorhynchus mykiss) model reveals endogenous bacteria that protect against Flavobacterium columnare infection. *PLoS Pathog* 17, e1009302. doi: 10.1371/journal.ppat.1009302