

# MICRO BIOTEC 23

CONGRESS OF MICROBIOLOGY  
AND BIOTECHNOLOGY 2023

## BOOK OF **ABSTRACTS**

DECEMBER  
7<sup>TH</sup> - 9<sup>TH</sup>



UNIVERSIDADE DA BEIRA INTERIOR  
Covilhã

MICRO  
BIOTEC 23

# Congress of Microbiology and Biotechnology 2023



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UNIVERSIDADE DA **BEIRA INTERIOR**  
Covilhã



## Welcome to MICROBIOTEC 23

We would like to welcome you to MicroBiotec '23, which is held in the beautiful city of Covilhã.

Our congress venue, located at the Health Sciences Faculty of the University of Beira Interior, offers a prime setting at the heart of this inviting city. Covilhã, nestled amidst the stunning landscapes of Serra da Estrela and Serra da Gardunha, along with its historic villages, provides a splendid framework for our meeting. We are excited to gather in this vibrant city known for its warm hospitality, and we eagerly await the invaluable discussions and insights that will unfold during our congress.

Our scientific program comprises a wide range of presentations, including 5 plenary lectures, 15 keynote talks, 54 oral presentations, 1 round table, and 325 posters. These discussions delve into the latest advancements in Microbiology and Biotechnology. Over recent years, the world has faced an unparalleled wave of challenges, sparking remarkable progress within Microbiology and Biotechnology. These steps will be highlighted throughout the conference sessions, showcasing the profound influence these challenges have had on these fields. We are honored to have an impressive lineup of invited speakers who will share their expertise and perspectives with us.

Besides our scientific program, we feature a sponsors' exposition and talks that offer valuable chances for interactions with companies. We want to express deep appreciation to our sponsors and partners whose support is vital in enabling this congress and recognize the dedicated work of our PhD candidates and of the organizing and scientific committees. Additionally, a special acknowledgment goes out to our session chairs and committee awards whose contributions are invaluable for the success of our sessions.

As you immerse yourselves in the scientific content, discussions, and networking opportunities, we hope you may find solutions to your microbiology and biotechnology challenges and leave with relevant insights that will drive your research forward.

Enjoy your participation in MicroBiotec '23 and a memorable time visiting Covilhã.

Warm regards,

Susana Ferreira

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# Poster Session Overview



**P6.9 - COMPUTER-ASSISTED IDENTIFICATION OF DEEP EUTECTIC SOLVENTS EFFECT ON *Y. LIPOLYTICA* METABOLIC INHIBITION USING MOLECULAR DOCKING**

*Filipe S. Buarque, Bernardo D. Ribeiro, Maria A. Z. Coelho, Mara G. Freire, Matheus M. Pereira*

**P6.10 - OPTIMIZED PRODUCTION OF REFLECTINS AND CHARACTERIZATION OF THEIR REVERSIBLE SELF-ASSEMBLY**

*Iana Lychko, Cátia Soares, Inês Padrão, Tomás Calmeiro, Arménio Barbosa, Pedro Costa, Margarida Dias, Ana Cecília Roque*

## TOPIC 7

**P7.1 - BIOSYNTHESIS OF SILVER-BASED NANOPARTICLES USING SUPERNATANTS OF MICROBIAL CULTURES FOR CULTURAL HERITAGE PRESERVATION**

*António Carrapiço, Luís Dias, Elisabete Carreiro, Ana Teresa Caldeira, Maria Rosário Martins*

**P7.2 - EXPLORING THE POTENTIAL OF *S. CARPOCAPSAE* VENOM PROTEINS IN INNOVATIVE NANO-INSECTICIDES**

*Jorge Frias, Rui L. Reis, Nelson Simões*

**P7.3 - ENHANCING ANAEROBIC DIGESTION BY SIMULTANEOUS APPLICATION OF A COMBINED TREATMENT OF NANO-ZERO VALENT IRON AND MAGNETITE NANOPARTICLES**

*Nicolas Hoffmann, Gonzalo Tortella, Christian Vergara, Gilberto Martins, Olga Rubilar*

**P7.4 - DEVELOPMENT OF PLASMID DNA AND DRUG LIPID NANOPARTICLES: AN INNOVATIVE ROUTE AGAINST LUNG CANCER**

*Catarina Diniz, Diana Pedro, Mariana Matias, Adriana O. Santos, Ângela Sousa*

**P7.5 - FUNGAL LIPIDOMICS OF THE GENUS *LASIODIPLODIA***

*Francisca Freitas, Susana Aveiro, Diana Lopes, Artur Alves, Ana Cristina Esteves, Maria do Rosário Domingues*

**P7.6 - VIRAL DETECTION IN WASTEWATERS: COMPARISON OF BIOINFORMATIC TOOLS FOR VIROME ANALYSIS**

*André Filipe Santos, Mónica Nunes, Andreia Silva, Teresa Crespo, Victor Pimentel, Marta Pingarilho, Mafalda Miranda, Pieter Libin, Ricardo Parreira, Ana B. Abecasis, Sofia G. Seabra*

**P7.7 - COMPLETE GENOME OF *PEDOBACTER LUSITANUS* NL19: A COMPREHENSIVE GENOMIC ANALYSIS**

*Gonçalo Figueiredo, Hugo Osório, Marta V. Mendes, Sónia Mendo*

**P7.8 - TACKLING NON-HODGKIN LYMPHOMA ON TWO FRONTS: DUAL-TARGETING IMMUNOLIPOSOMES AS A NOVEL DRUG DELIVERY SYSTEM**

*Ana Leonardo, Ana S. André, Margarida Ferreira-Silva, Sandra I. Aguiar, Sara Nogueira, Marco Cavaco, Lurdes Gano, João D.G. Correia, Miguel Castanho, Manuela Gaspar, Luís Tavares, Frederico Aires-da-Silva, Joana N. R. Dias*

**P7.9 - AIMING AT THE AUTOMATION OF GENOME-WIDE REGULATORY NETWORK INFERENCE IN *SACCHAROMYCES CEREVISIAE***

*Diogo Couceiro, Maria Pereira, Carolina Parada, Romeu Viana, Miguel Cacho Teixeira, Pedro Tiago Monteiro*

# Poster Session

## Abstracts





# Poster Session

## Topic 7



Universidade da Beira Interior

## P7.1 - BIOSYNTHESIS OF SILVER-BASED NANOPARTICLES USING SUPERNATANTS OF MICROBIAL CULTURES FOR CULTURAL HERITAGE PRESERVATION

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### ABSTRACT

Microbial contamination of Cultural Heritage (CH) materials is one of its most prevalent and impacting preservation issues that can lead to visual, structural, and chemical changes<sup>1</sup>. Currently, different approaches try to address this issue by employing products and techniques that can lead to structural or chemical alteration of materials<sup>2</sup> and pose several environmental risks<sup>3</sup>. For these reasons, nanotechnological solutions can constitute new greener alternatives. Studies on metal-based nanoparticles (NPs) have described their efficient antimicrobial properties and long-term effects at low concentrations<sup>4</sup>. However, their stability is highly dependent on surface functionalization, and their chemical synthesis methods may also raise environmental issues. The use of microbial cultures lowers the environmental impact of metal-based NPs' synthesis and stabilizes them with probable antimicrobial potentiating molecules secreted by these microorganisms<sup>5</sup>. In this study, we have successfully synthesized metal-based NPs using supernatants of microbial cultures. Their morphological, chemical, and physical characterization using spectrophotometric, x-ray based, and electron microscopy techniques was made, and their antimicrobial activity evaluated against several microorganisms isolated from CH. Results show good antimicrobial potential and stability of the biosynthesized NPs and suggest that the distinct supernatants result in variable NPs properties. Therefore, while further optimization of the synthesis process is necessary, and comprehensive testing using mock-ups and real Cultural Heritage materials is pending, our findings confirm that this approach is a promising alternative to the current traditional biocides.

### References:

<sup>1</sup> Branysova, T. *et al. J. Cult. Herit.* 55, 245–260 (2022)

<sup>2</sup> Cappitelli, F. *et al. Microorganisms* 8, 1542 (2020)

<sup>3</sup> Kakakhel, M. A. *et al. Int. Biodeterior. Biodegrad.* 143, 104721 (2019)

<sup>4</sup> Rudramurthy, G. *et al. Molecules* 21, 836 (2016)

<sup>5</sup> Carrapiço, A. *et al. Microorganisms* 11 (2), 378, (2023)

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