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TALKS

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Abstracts submitted to the 47th FEBS Congress from 8th to 12 th July 2023 and accepted by the Congress Management Board are published in this Supplement of *FEBS Open Bio*. Late-breaking abstracts are not included in this supplement. The abstracts are available as two PDF files: Talks (Plenary Lectures, Symposia and Speed Talks) and Posters.

About these abstracts

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Indexing

Abstracts published in *FEBS Open Bio* Supplement for 47th FEBS Congress will be included individually in the Conference Proceedings Citation Index published by Web of Science.

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* The Abstract number begins with the letters PL, SS, S or ShT and can be found atop each abstract's title in the PDF file.

of genes related to chondrogenesis and the synthesis of ECM components were carried out. In summary, this study provides an in-depth description of dECM production and bioink formulation to be used in tissue engineering for meniscus implant 3D bioprinting. This work was supported by the National Center for Research and Development TECHMATSTRATEGIII/0027/2019-00 grant.

SpT-03.1-2
Development of immuno-PCR for sensitive quantification of SARS-CoV-2 nucleocapsid protein

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Accurately diagnosing people with suspected SARS-CoV-2 infection is essential to help manage COVID-19. Currently available SARS-CoV-2 diagnostics detect either RNA of the virus by RT-PCR or the presence of viral antigens in biological fluids by ELISA or similar techniques. Low sensitivity of antigen tests could lead to the risk of false negative results. Therefore, this study aimed to develop a highly sensitive immuno-PCR method for quantifying SARS-CoV-2 nucleocapsid (N) protein that combines the specificity of sandwich ELISA with the sensitivity of PCR. Recombinant N protein fragment was produced in *E. coli* as an expression system and purified using immobilized metal ion affinity chromatography. The antibodies against the N protein were raised in rabbits and mice. High-affinity polyclonal mice and rabbit N protein-specific antisera were purified using ammonium sulfate precipitation and used to develop sandwich ELISA for the quantification of N protein. Mice polyclonal serum was used as a capture for N protein. N protein bound to mice antibodies was detected with rabbit polyclonal sera. A double-stranded amino-DNA molecule of 77 base pairs was PCR-synthesized, covalently conjugated to a secondary goat anti-rabbit antibody and subsequently amplified and quantified by real-time PCR. The results were compared to analogous sandwich ELISA consisting of alkaline phosphatase-labeled goat anti-rabbit antibody. The sensitivity of immuno-PCR for quantification of N protein was increased by up to 7-fold compared to analogous ELISA, having a limit of detection of 92 pg/mL and a limit of quantification of 840 pg/mL. The developed immuno-PCR method thus has the potential to be used as a new antigen test for COVID-19 and beyond.

SpT-03.1-3
Bioactive natural peptides: from fighting antimicrobial resistance to anticancer opportunities

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Marine organisms, normally exposed to pathogens, are a promising source for bioactive peptides of biotechnological interest, whose composition, sequence and structures are different from those found in terrestrial species. Among them, antimicrobial peptides (AMPs) from fishes are highly studied due to their key role in the innate immune system of these vertebrates and their action against bacteria, viruses, yeasts and protozoa. As they show a broad spectrum of activity against multidrug resistant bacteria, AMPs could replace conventional antibiotics and slow antimicrobial resistance, that represents a global health crisis. Beyond this application, there is also a great interest towards their use as anticancer agents. Hence, we focused on a new natural AMP (chionodracine) from an Antarctic fish (*Chionodraco hamatus*) that has adapted to live in an extreme environment. Based on its scaffold, we successfully designed peptide mutants effective against ESKAPE/fungal pathogens. Previously published in: Olivieri C et al. (2018) RSC Adv 8, 41,331–41,346; Bugli F et al. (2022) Int J Mol Sci 23, 2164. As for the best active peptide mutant, we investigated its effect on bacterial virulence factors and then, the anti-biofilm activity against bacterial clinical isolates, which are the leading cause of nosocomial infections. Previously published in: Artini M et al. (2022) Int J Mol Sci 23, 13,494. Our results highlight the effect of this AMP on protease secretion. We also demonstrated that the peptide impaired biofilm development in the tested clinical strains. Moreover, a cytotoxic effect of the mutant was observed, only at the highest tested peptide concentrations, on human lung adenocarcinoma cells. The identification of AMPs that are active against human pathogens or that induce cancer cell death, but spare normal cells, may be beneficial for developing strategies to increase peptide selectivity toward specific cell targets and for understanding their mode of action.

SpT-03.1-4
Genomic and functional analysis of *Bacillus velezensis* P3.3S – a putative biocontrol agent of plant pathogens

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Plant diseases cause considerable losses in fruit and vegetable production during cultivation, handling, transport and storage. Therefore, increased interest was shown in recent years for the