(Aβ) plaque buildup, with limited current treatments, underscoring the need for innovative diagnostic and therapeutic strategies. The selective degradation of amyloids via small molecule-catalyzed photo-oxygenation of Aβ has been considered an efficient way to inhibit Aβ aggregation in AD. This work presents the rational design, synthesis, and evolution of novel multifunctional benzimidazole-derived photoactivable AIE (aggregation-induced emission) probes with theranostic potential for AD. Our findings show that benzimidazole-functionalized probes can potentially interact with Aβ aggregates and reduce Aβ fibril formation, making them therapeutically effective. The probes' capacity to photooxygenate Aβ, block reactive oxygen species (ROS)-mediated apoptosis, chelate metal ions like Fe(III), good cellular uptake, and mitigate metal-induced aggregation and oxidative stress demonstrates their promise as effective theranostic agents in AD. These fluorescent probes' multipotent activity could significantly improve early detection and give a potential therapeutic strategy for slowing the progression of AD. This study opens up new possibilities for creating a multifunctional molecule as a comprehensive diagnostic and therapeutic tool in neurodegenerative disorders.

**P-2.113**

**Qcm-based Polyphenol Monitoring for Enhanced Olive Cultivation**

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Polyphenols are plant-derived molecules that play several metabolic roles. In agricultural products, polyphenols content is considered a key quality marker, improving the antioxidant ability, preservation, colour, flavour, and aroma. In olive cultivation, the analysis of polyphenols levels in olive fruits is a biomarker for plant health and growth, environmental influences, and harvest quality. In this regard, the Quartz Crystal Microbalance (QCM) technique is highly versatile, enabling the detection of polyphenols in complex matrices such as olive derivatives. Its high precision in measuring mass changes allow for the detection and quantification of polyphenols in olive samples to monitor the ripening degree, to optimize the harvest planning, and to get high-quality products. In this work, we present the preparation of novel functional bio-derived polymers as probes for the functionalization of sensors for real-time polyphenols detection in a commercial quartz crystal microbalance equipped with a dissipation monitoring system (QCM-D). These probes were synthesized by simple coupling reactions and their ability to bind to olive polyphenols was evaluated. This platform offers a promising tool for rapid, accurate polyphenol detection, enabling improved quality control and optimization of olive cultivation and food production.
PRIN 2022-2022M4WB3M (LS9)LOVE-CUPB53D23017860006

**P-2.114**

**Reproducing Vascular Deformation Around Cancerous Tumours with Mechanical Stimulation in the Chicken Chorioallantoic Membrane**

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Cancerous tumours are well-known for their ability to recruit blood. This recruitment helps them to get access to gas exchanges and nutrients, and spread metastasis. The biochemistry approach of this recruitment has received a lot of attention. However, the mechanical aspect of this deformation has not been thoroughly investigated.
The CAM of chicken embryo is a widely used biological model in cancer research and tissue engineering. Here we put a glass bead onto the CAM in order to mimic the weight of a tumour biopsy.
A vascular spoke wheel pattern appears within few days and a tissue encapsulation/gastrulation can happen around the bead. This phenomenon suggests a slow active creep of the membrane due to a constant spherical weight stimulation. Preliminary results show an anisotropic response of the organ and highlight the balance between an active response to this stimulation, a global growth of the tissue and a viscoelastic deformation. The tissue response depends on the embryo's development stages. Younger embryos are softer materials than old embryos, which are denser and thicker, hence they show less vascular deformation.
This work highlights a generally overlooked aspect of vascular deformation which can have a significant impact in research on tumour treatments using the CAM model. It can provide a better insight into what happens in this key phase of tumour growth.

**P-2.115**

**Optical Sensing and Structural Investigation of Mutants Sars-cov-2 Spike Glycoproteins Via Infrared Spectroscopy Coupled with Mof-based Sensor Platform**

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SARS-CoV-2 pandemic stressed out the necessity to develop efficient biosensing systems for pathogens detection, to guarantee an accurate air-quality monitoring and preventive actions. Standard sensors are generally based on biochemical essay, focusing on an extracted sample and involving its pretreatment with a time-consuming and no reagent-free procedure. Here, a novel strategy is presented for the optical sensing of airborne SARS-CoV-2, combining vibrational spectroscopy with a Metal-Organic Frameworks (MOFs)-based biofunctionalized platform. Spike glycoprotein subunits 1 is considered as biomarker and a comparative spectroscopy characterization of three variants (a, g and o) is