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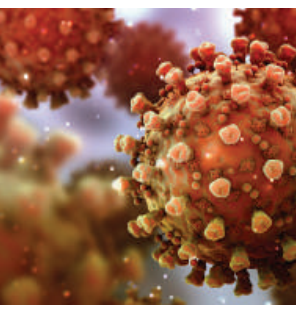
# Poster Presentation

## *Biotechnology 2021*





3rd World Congress on

Advances in Biotechnology

& International webinar on

Infectious Diseases, Biological Research and Medicine

December 15, 2021 | Webinar

# Synthesis and functionalisation of superparamagnetic nano-rods towards the treatment of glioblastoma brain tumours

**Kinana Habra**
Nottingham Trent University, UK

The complete removal of brain tumours is impossible to be achieved by surgery alone due to the complex finger-like tentacles structure of the tumour cells and their migration away from the bulk of the tumour at the time of surgery. The prognosis for Glioblastoma is 15 months after diagnosis. Carnosine, (β-alanyl-L-histidine), a naturally occurring dipeptide has been shown effectiveness against *in vitro* cultured mitotic cells A comprehensive theragnostic approaches are urgently required Recently, iron oxide nanoparticles have been used as biocompatible vehicles in preclinical and clinical trials. Multimodal approach of cancer therapy and imaging enlarged the traditional therapeutic window via using advanced designed iron oxide as a drug carrier and monitor by means of coating strategies.

## Speaker Biography

Kinana Habra is Pursuing her Ph.D. at Nottingham Trent University. Her main research area is Nanotechnology.

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*Notes:*

# Accepted Abstracts

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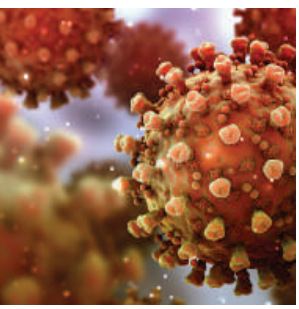

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# Using Nano pore sequencing technology to screen for potential marine plastic-degrading microorganisms and relevant enzyme-encoding genes

**Matan Oren**
Ariel University, Israel

The Nano pore Minion is a third generation high-throughput sequencing platform which is accessible to small-scale laboratories with a limited budget and/or personnel. The Nano pore technology has several advantages over other next generation sequencing technologies, including extra-long reads, high speed, data availability in real-time and mobility of the sequencing device. On the other hand, the Nan pore sequencing average error rate is still relatively high. We used the Nano pore Minion in our lab in recent years for different research purposes, including whole genome sequencing of sea urchin single cells and testing approaches for the rapid identification of Cov-2 variants within incoming passengers at the Ben-Gurion airport. Our main research is currently focused on the identification of plastic-degrading microorganisms and enzyme-encoding genes that are related to the breakdown of different plastic polymers. Our results demonstrate that the Nano pore Minion technology is suitable for this purpose and after tuning of library preparation, sequencing and bioinformatics; it may outcompete other available sequencing platforms.

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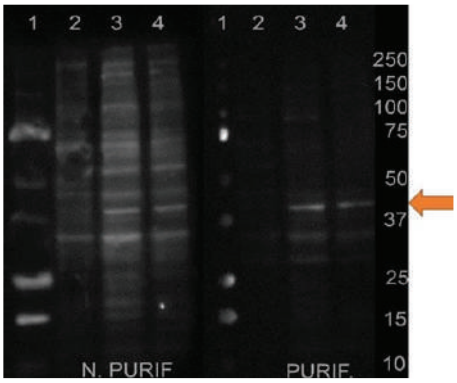
# The presence of bone metastases in patients with castration-resistant prostate cancer (CRPC) has a major impact in decreasing overall survival

**Marina de L Fontes**
São Paulo State University, Brazil

The presence of bone metastases in patients with castration-resistant prostate cancer (CRPC) has a major impact in decreasing overall survival1. Electrochemical biosensors are analytical tools that exhibit several benefits to the diagnostic area because they offer low cost, portability, high sensitivity and precision2. Regarding immunosensors, in which the recognition element is an antibody, the specificity is increased because it is a molecule capable of recognizing only a single antigenic determinant3. In this study, the multiple tolerization subtractive immunization (MTSI) was used to obtain murine monoclonal antibodies (mAbs) aiming at recognize new biomarkers present in metastatic cells derived from PC-3 cell line. MTSI is based on increasing of the cellular and humoral immune response against relevant, rare or weakly immunogenic antigens present in pathological conditions such as cancer and infections diseases4,5. The cyclophosphamide acts as immunosuppressive drug, eradicating T and B lymphocytes reactive to immunodominant antigens of no interest6,7. After cell fusion technique, cloning and screening of the hybridomas8, a mAb was identified capable of recognizing a 45 kDa protein in both extracts of the prostatic metastatic cell lines (PC-3 and LNCaP). This antigen is possibly located in the nuclear portion of malignant cells as verified by an indirect immunofluorescence assay. In addition, this biomolecule demonstrated complement-dependent cytotoxicity activity against PC-3 cells of manner dose-response fashion using propidium iodide as dead cells marker. The next step consists of immobilizing this mAb on a platform based on layer-by-layer technique and evaluating the sensitivity and specificity of the immunosensor in detecting circulating prostatic tumor cells.




Chemiluminescent western blotting assay to identify the approximate protein weight recognized by the antibody derived from hybridoma clone mAb50. 1: prestained protein ladder, 10 to 250 kDa. 2: Non-tumorigenic cell line RWPE- 3: tumorigenic cell line LNCaP. 4: tumorigenic cell line PC-3. Left side shows the mAb non purified and right side shows the mAb purified. The arrow indicates the identification of a protein of approximately 45 kDa.

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# Effect of Morphology and Plasmonic on Au/ZnO Films for Efficient Photo electrochemical Water

**Al-Shaikh H**
King Abdul-Aziz University, Saudi Arabia

To improve photo electrochemical (PEC) water splitting, various ZnO nanostructures (Nano rods (NRs), Nano discs (NDs), NRs/NDs and ZnO NRs decorated with gold nanoparticles) have been manufactured. The pure ZnO nanostructures have been synthesized using the successive ionic layer adsorption and reaction (SILAR) combined with the chemical bath deposition (CBD) process at various deposition times. The structural, chemical composition, Nano morphological and optical characteristics have been examined by various techniques. The SEM analysis shows that by varying the deposition time of CBD from 2 to 12 h, the morphology of ZnO nanostructures changed from NRs to NDs. All samples exhibit hexagonal phase quartzite ZnO with polycrystalline nature and preferred orientation alongside (002). The crystallite size along (002) decreased from approximately 79 to 77 nm as deposition time increased from 2 to 12 h. The bandgap of ZnO NRs was tuned from 3.19 to 2.07 eV after optimizing the DC sputtering time of gold to 4 min. Via regulated time-dependent ZnO growth and Au sputtering time, the PEC performance of the nanostructures was optimized. Among the studied ZnO nanostructures, the highest photocurrent density (Jph) was obtained for the 2 h ZnO NRs. As compared with ZnO NRs, the Jph (7.7 mA/cm2) of 4 min Au/ZnO NRs is around 50 times greater. The maximum values of both IPCE and ABPE are 14.2% and 2.05% at 490 nm, which is closed to surface Plasmon absorption for Au NPs. There are several essential approaches to improve PEC efficiency by including Au NPs into ZnO NRs, including increasing visible light absorption and minority carrier absorption, boosting photochemical stability and accelerating electron transport from ZnO NRs to electrolyte carriersas.

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