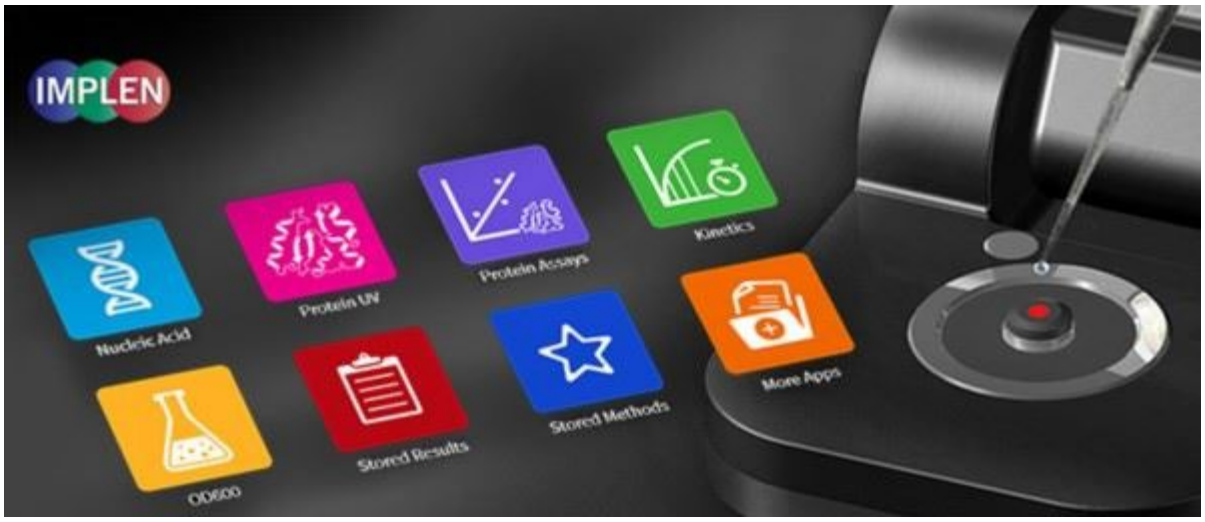
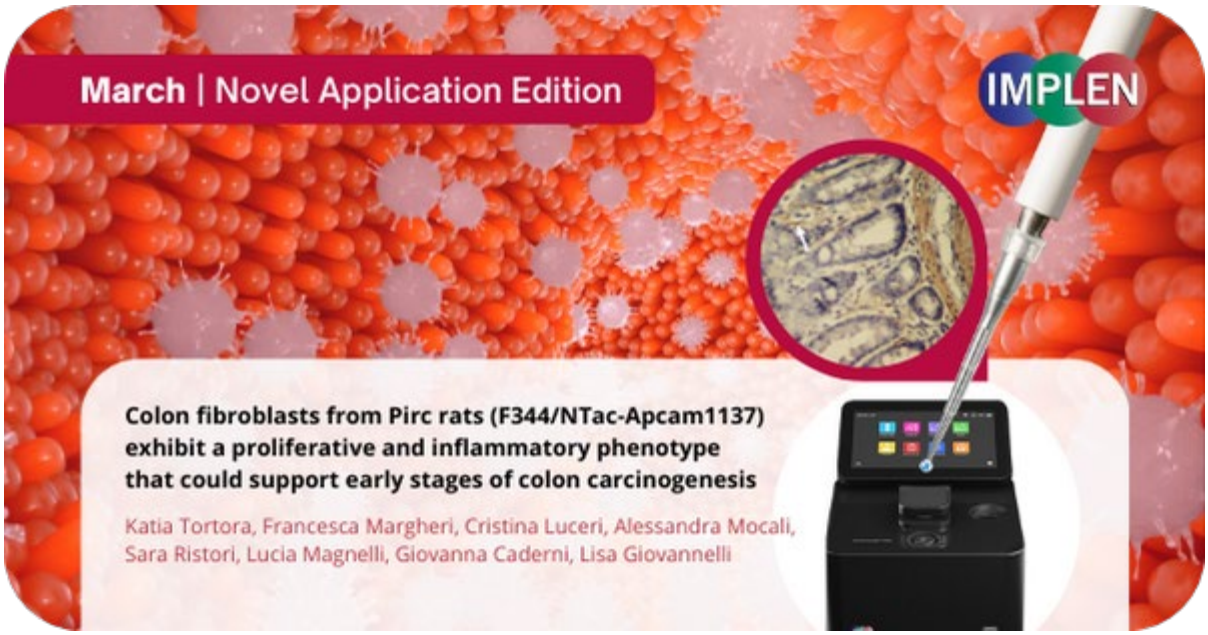


Implen Journal Club | March Issue

Welcome to our March issue of the #Implen #JournalClub in 2022.
Novel Applications Issue

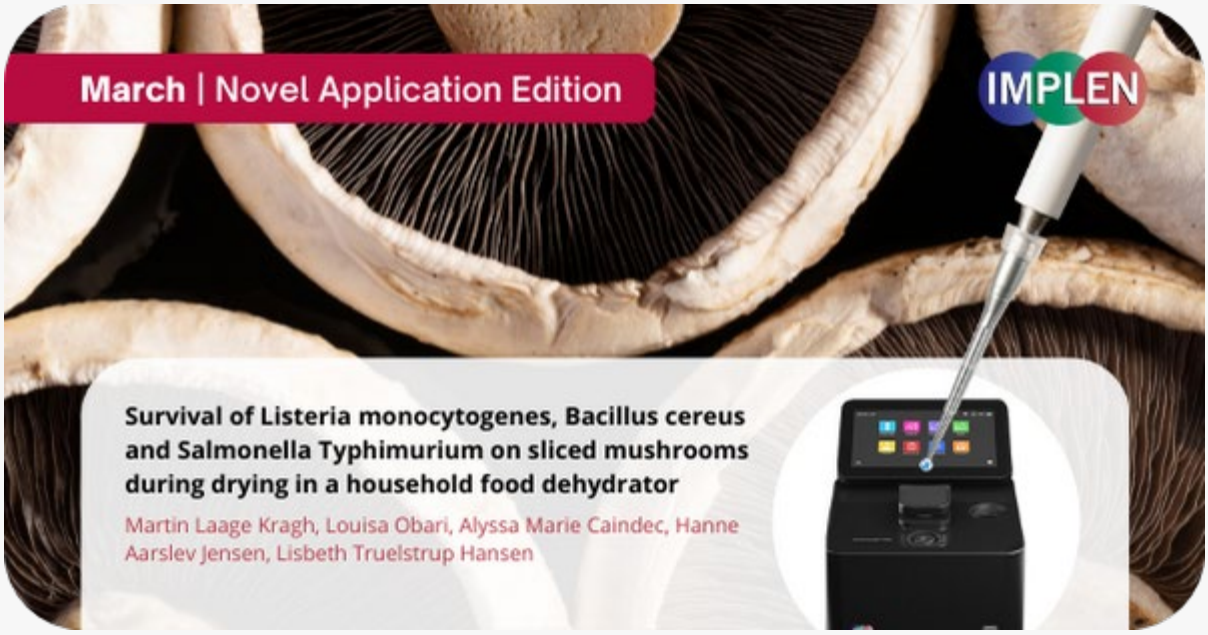


In the first issue of Implen NanoPhotometer® Journal Club: Novel applications issue, we are exploring the work of Tortora et al. who have shown in the journal of Tumor Immunology and Microenvironment for the first time that a proliferative and inflammatory phenotype characterizes the tumor suppressor gene Apc mutated colon fibroblasts at very early stages of colon carcinogenesis, favoring the establishment of a protumorigenic environment for preneoplastic lesion development. Mutations in APC represent the earliest event in sporadic colorectal carcinogenesis (CRC) onset and cause familial adenomatous polyposis syndrome (FAP), a heritable disease that increases the risk of colon cancer development. Early pharmacological targeting of these dysfunctions might be valuable for tumor prevention in familial adenomatous

polyposis patients.

The NanoPhotometer® was used to quantify RNA, crRNA and the dye-incorporation rate in comparing the expression profiles of Pirc colon mucosa (cy5-labeled) to that of a pool of RNAs from samples of WT rat colon mucosa (cy3-labeled).

Learn more

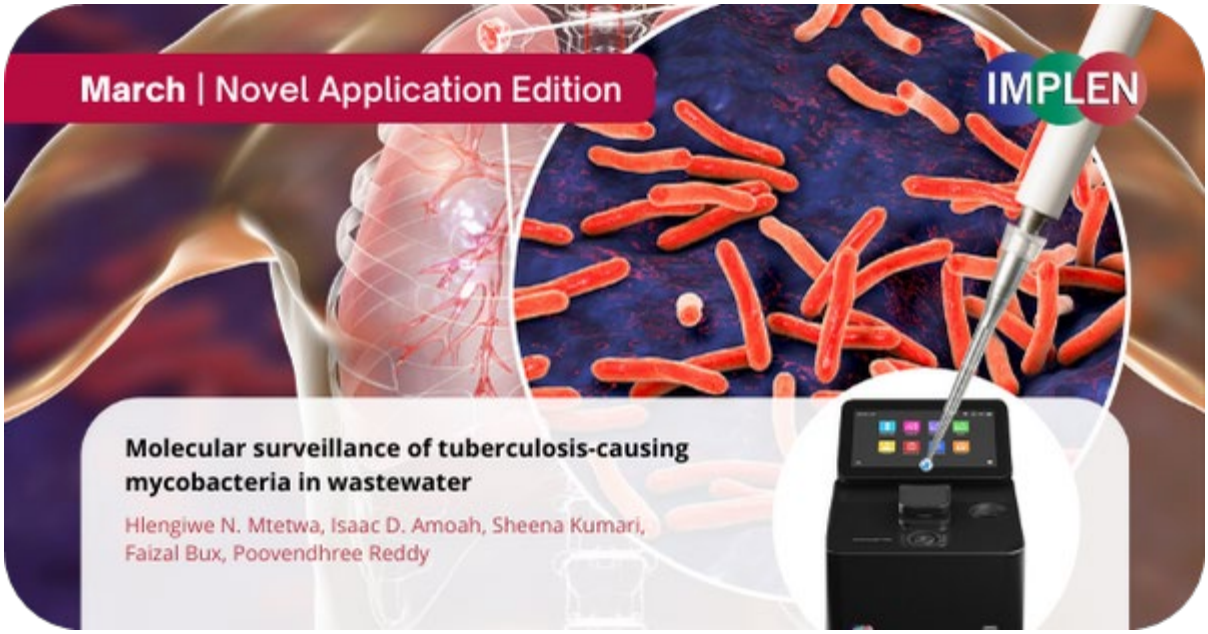


In the second issue of the Implen NanoPhotometer® Journal Club we are covering the topic of food safety. The historic view on low-moisture foods (LMFs) as safe due to the lack of microbial growth in these foods has been challenged in recent years as there has been an increase in outbreaks or recalls of LMFs contaminated with foodborne pathogens. LMFs are defined as foods that are naturally low in moisture or have been through a drying process to inhibit growth and toxin production of foodborne pathogens. Examples of LMF products include cereals, herbs, spices, honey, milk powder, pasta, peanut butter and dried meat, fruit and vegetables that are all considered less vulnerable to growth of foodborne pathogens and spoilage.

Kragh et al. has recently demonstrated by combining results from hot-air drying and subsequent storage underlines that hot-air drying and prolonged storage cannot be relied on alone to reduce the microbial and pathogen load on Portobello mushroom and suggest that manufacturers of dried mushrooms should not rely on drying as their primary critical control point for attaining food safety, but rather implementation of additional pre- and/or post-drying treatments to secure better elimination of the microbial load is recommended.

For the Inoculation of mushrooms using standardized strain cocktails, bacterial cells from pre-cultures were harvested and resuspended peptone saline, bacteriological peptone and NaCl to a final absorbance at 600 nm of 1 with the NanoPhotometer® NP80.

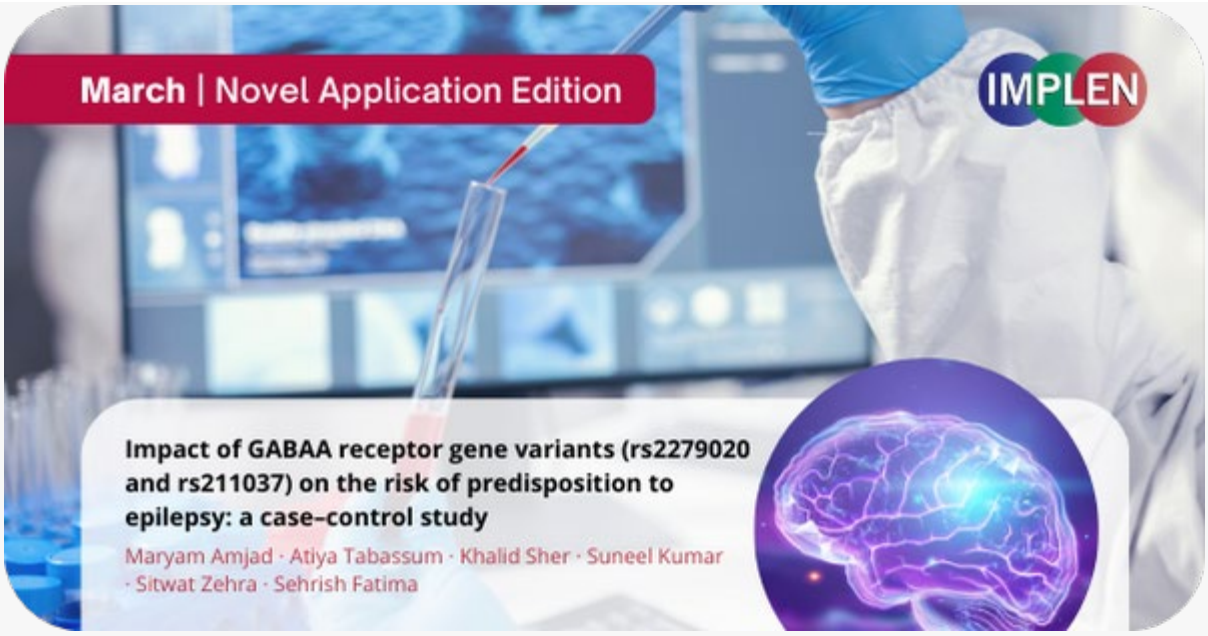
Learn more



Next issue is highlighting the advancement of molecular methods in the surveillance of tuberculosis infections to extend beyond clinical diagnostics and hospitalization data. a In 2019, an estimated 10.0 million people worldwide were infected with tuberculosis, with 1.5 million deaths per year. Mtetwa et. al. recently presented the use of conventional and advanced polymerase chain reaction techniques to detect tuberculosis-causing mycobacteria in wastewater in KwaZulu Natal (KZN), South Africa to provide information on potential infection risks and help in assessing the efficiency of wastewater treatment plants in removing these organisms. In resource-poor countries, monitoring of tuberculosis/drug-resistant tuberculosis (DR-TB) is a major challenge because assays are costly and time-consuming, and laboratories are ill-equipped. Wastewater-based epidemiology (WBE) is a useful method, especially when clinical diagnosis resources are limited and reporting systems are unavailable or inefficient. Additionally, these methods could theoretically be used to ascertain the potential risk of TB infection in community settings due to exposure to wastewater.

The NanoPhotometer® NP80 was used in this study to quantify the forward primers (FP) and reverse primers (RP) of template DNA.

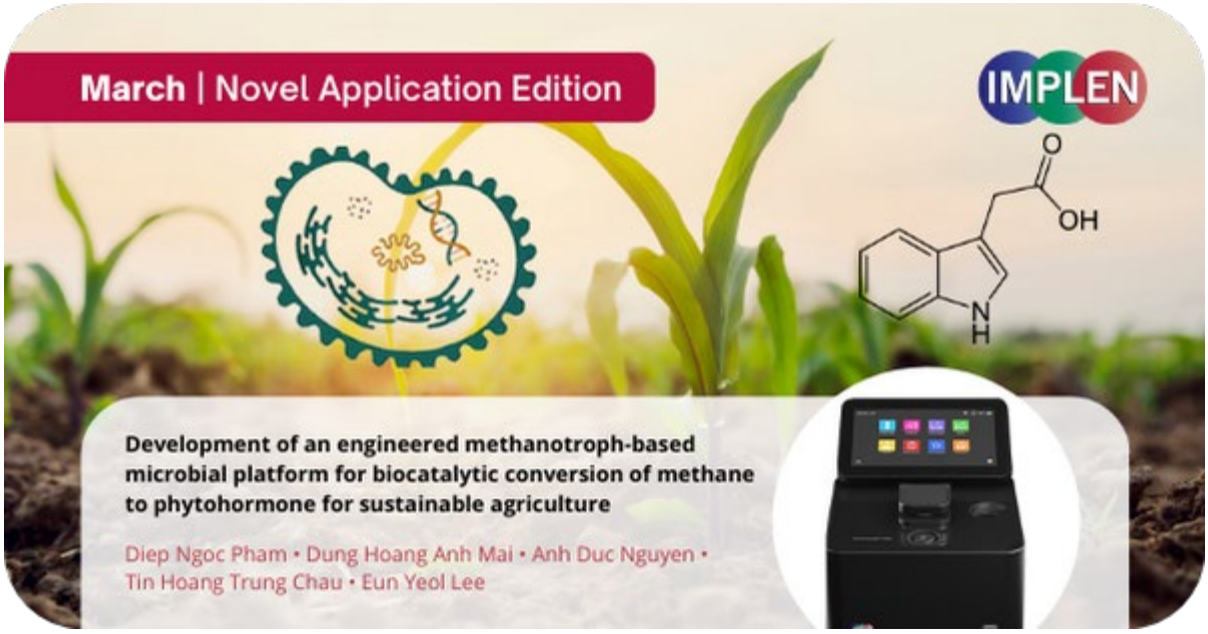
Learn more



The fourth issue is covering Epilepsy, one of the most common neurological disorders and is a growing matter of concern globally as it can equally affect individuals of all races, ages, and genders, with the incidence rate higher in developing states. Seizures are the characteristic features of epilepsy which are initiated due to hypersynchronous excitation of neurons that disrupts the normal functions of the brain. Neuronal inhibition is facilitated when GABA binds to its receptor, thus variations in different subunits of GABAA receptors hold great potential as a risk factor for genetic generalized epilepsies. Amjad et al. recently published in the Journal of Neurological Sciences a study that revealed that the studied variations in different subunits of GABA receptors were not associated with predisposition to epilepsy in the targeted population. However, the possible risk factors observed in the current study like presence of TG haplotype, residency in industrial areas, positive family history, and parental consanguinity might contribute some information in the already existing limited baseline data regarding epilepsy.

The NanoPhotometer® P-Class was used in this work for the quantification of DNA isolated from whole blood using a salting-out approach.

Learn more



Methane is an important target for reducing greenhouse gasses emission, owing to its abundance and highly global warming potential. In nature, methanotrophic bacteria are a unique group of bacteria capable of oxidizing methane. Bioconversion of methane to value-added products, therefore, has become a promising and sustainable approach for industrial biomanufacturing. Pham et al. proposed in the Chemical Engineering Journal, a proof-of-concept for the development of methanotroph-based plant growth-promoting bacteria (PGPB) which can utilize and convert methane into phytohormones to induce beneficial adaptation and growth promotion of plants. One of the value products produced by the methanotrophic bacteria in this study, was indole 3-acetic acid (IAA/Auxin), a phytohormone for plant growth. Their findings provide a novel methanotrophic platform for the conversion of renewable sources to value-added products. These results demonstrated a sustainable, ecofriendly approach using a methanotrophic platform to convert waste gas to value compounds, which can enhance the productivity and growth of plants and simultaneously reduce methane emissions from agricultural activities.

The NanoPhotometer® was used to record the OD600 values. In Addition, IAA was analyzed by a chemical method resulting in a pink product and the absorption was measured at a wavelength of 520 nm using the NanoPhotometer®.

Learn more

Visit www.implen.de to find out how the NanoPhotometer® can improve your research.

IMPLEN

made in Germany

If you no longer wish to receive these emails, simply click on the following link Unsubscribe.

©2022 Implen. All rights reserved.