



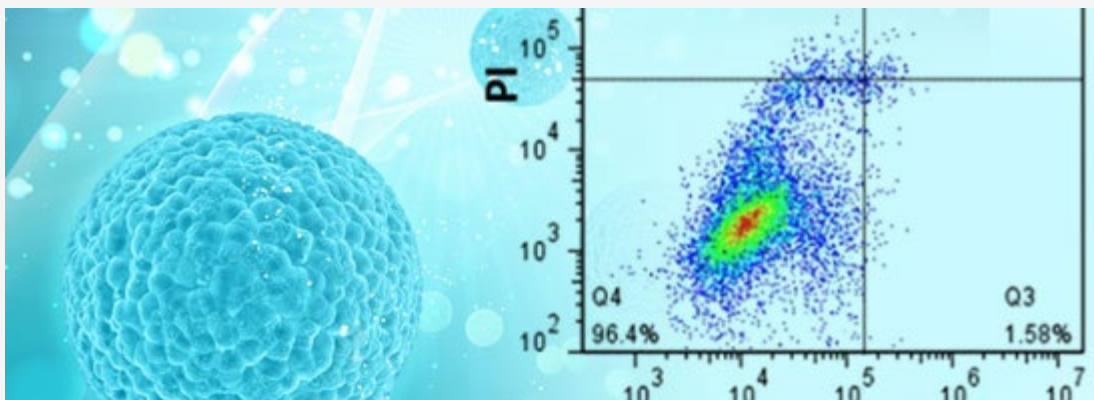
Implen Journal Club | August Issue

Here is our August issue of Implen Journal Club highlighting relevant publications where the Implen NanoPhotometer® helped researchers to unravel the mysteries of modern molecular biology.



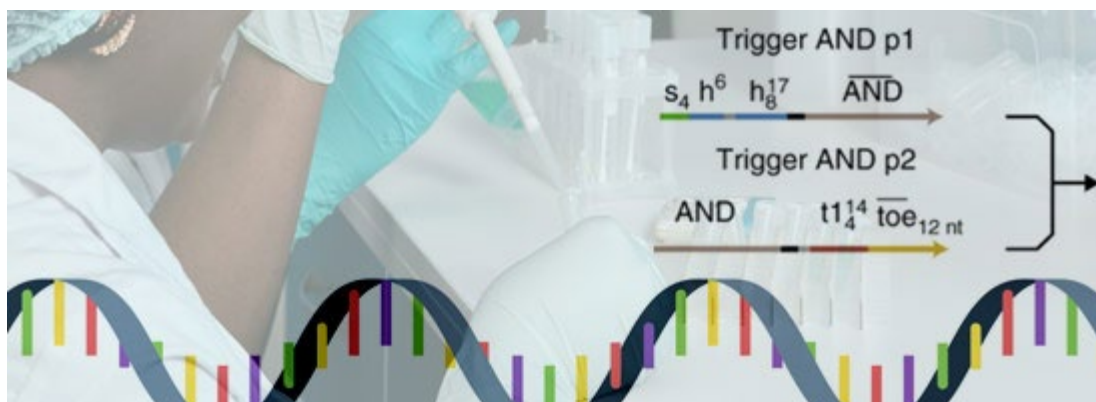
The first Implen NanoPhotometer® JournalClub issue this month highlights the publication of Seong- Jun Chun, Yingshun Cui, Chunzhi Jin, A Ra Cho, Shu-Kuan Wong, Hyung-Gwan Lee, Hee-Mock Oh and Chi-Yong Ahn from Korea Research Institute of Bioscience and Biotechnology, Korea University of Science and Technology and University of Tokyo published 2019 in International Journal of Systematic and Evolutionary Microbiology about a novel bacterium, strain Seoho-28T, which was isolated from a shallow eutrophic lake during the end of cyanobacterial harmful algal blooms and was characterized taxonomically and phylogenetically. The Nanophotometer was used to monitor cell growth by measuring optical density (OD) using a 1.00 cm path length cuvette from an initial OD 600 nm of 0.03 in R2A broth at 30 °C for 48 h.

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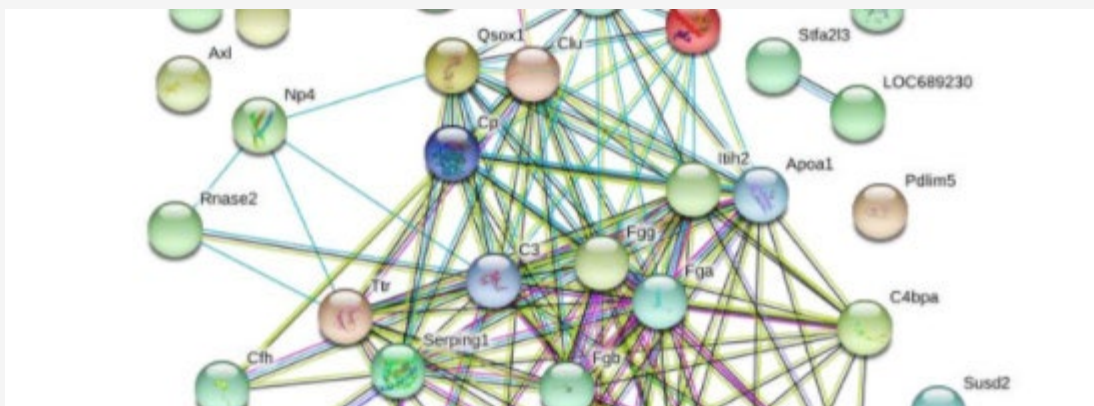
Next, we are going to feature the work of Yiping Zeng, Zhangyou Yang, Hong Li, Yuhui Hao, Cong Liu, Lin Zhu, Jing Liu, Binghui Lu and Rong Li from Third Military Medical University published 2017 in Nature Scientific Reports on drug resistance as a challenge for anticancer treatment. They employed a multifunctional graphene capable of integrating multiple functions in one system as a novel co-delivery system for small interfering RNA (siRNA) and doxorubicin (Dox), as well as for the controlled release of intracellular pH-triggered and heat-triggered Dox. A new approach for defeating drug resistance is the use of a co-delivery strategy that utilizes siRNA to silence the expression of efflux transporters together with a suitable anticancer drug for drug-resistant cells. UV/Vis spectra, collected on a NanoPhotometer® were used to measure the absorbance at 490 nm as the characterization peak to confirm the successful conjugation of Dox and loading concentration. Additionally, absorption spectra of folic acid (FA), polyethyleneimine-coated graphene (PPG), and PPG-FA in water were measured and the successful conjugation was determined at 283 nm.

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The third NanoPhotometer JournalClub issue highlights the publication of Lukas Oesinghaus and Friedrich Simmel from Technical University Munich, published 2019 in Nature Communications about combining Cas12a with strand displacement-based reaction circuits to add programmability to Cas12a-based DNA processing. They were able to establish SD gRNAs for in vitro strand displacement circuits and for transcriptional regulation in *E. coli*. After clean-up, DNA templates were quantified by their absorption at 260 nm on the NanoPhotometer®.

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The following publication of Yiming Li, Junke Long, Jiaquan Chen, Jing Zhang, Yi Qin, Yanjun Zhong, Fen Liu and Zhiyong Peng from Zhongnan Hospital of Wuhan University, The First Affiliated Hospital of Nanchang University, Central South University and University of Pittsburgh School of Medicine, published 2020 in Frontiers In Physiology is about identification of novel biomarkers for early diagnosis of sepsis-induced Acute Kidney Injury. Here they analysed urine proteins with spatiotemporal dynamics to sensitively monitor biological alterations using a systems biology approach. Total peptide concentrations of samples were measured on the NanoPhotometer® using the ProteinUV application prior to Orbitrap Fusion MS analysis.

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The last JournalClub issue is about the publication of Muhammad Syahmi Hishamuddin, Shiou Yih Lee, Nurulfiza Mat Isa, Dhilia Udie Lamasudin, Syafiq Asnawi Zainal Abidin and Rozi Mohamed from Universiti Putra Malaysia and Monash University Malaysia, published 2019 in Royal Society of Chemistry on early molecular responses to mechanical wounding in *Aquilaria malaccensis* triggering agarwood formation by applying a proteomics approach. Protein samples were extracted from wood tissues collected from drilled wounds at different time-points and analysed using LC-MS/MS coupled with bioinformatics. The NanoPhotometer® was used to determine total protein concentration using Bradford protein assay.

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