J Biosens Bioelectron 2016, 7:2 (Suppl)
http://dx.doi.org/10.4172/2155-6210.C1.028

Peroxynitrite detection: Recent innovations and remaining challenges

Serban F Peteu
Michigan State University, USA

The most harmful of the reactive nitrogen and oxygen species *in vivo* is peroxynitrite ($ONOO^-$), the reaction product of nitric oxide and superoxide. When present in excess, peroxynitrite is known to disturb the physiological balance in organisms leading to the nitro-oxidative stress. Its extended action over time through nitro-oxidative reactions *in vivo* is clinically correlated with chronic degenerative diseases, such as: Cardiac (myocarditis; graft rejection; heart failure), vascular (atherosclerosis; aging; hypertension); neurodegenerative (Parkinson's; Alzheimer's; multiple sclerosis); diabetes and complications (neuropathy; nephropathy; retinopathy) and inflammation (chronic; toxic origin; arthritis). The ability of biosensors for rapid and real-time analysis in a multi-analyte format at relatively low cost will allow the quantitative and qualitative detection of $ONOO^-$. The peroxynitrite sensitive and selective sensors and probes will facilitate a screening-type analysis and potentially prevent these numerous diseases. Consequently, many efforts are underway to detect peroxynitrite in biological media. This invited review will critically discuss for the first time the very latest innovations in the field of peroxynitrite biosensors and probes for *in vivo* and *in vitro* studies with the remaining challenges. Thus, the main trends will be extracted, in order to chart the future directions and hence create an instrumental outlook.

serbanfpeteu@gmail.com

From circulating tumor cells to Fetal Nucleated Red Blood Cells (FNRBCs)

Zhao Xing-Zhong
Wuhan University, P R China

Fetal nucleated red blood cells are special cells only existed in the peripheral blood of pregnant woman and fetus. This talk start from brief introduction of microfluidics development, then summarizing the basic principle and procedure used in the FDA approved product CellSearchTM and its subsequent developments in circulating tumor cells isolation, followed by the research in our group on the capturing, analyzing of the circulating tumor cells from cancer patients and fetal nucleated red blood cells from the peripheral blood of pregnant women and their immunofluorescent assay.

xzzhao@whu.edu.cn