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A prospective on applications of biosensors in medical field

講演者：Prof. Jean Louis Marty

Biocapteurs-Analyses-Environnement,
Université de Perpignan Via Domitia, France

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Abstract

Many researchers worked on the development of biosensors for wide spread applications. The research output was very promising, and as a result, governmental and private companies invested and promoted research in the biosensor field. The number of publications increased exponentially and “start up” companies were created to transfer the technology from laboratory to commercial applications

Recent years have witnessed an increasing demand of biosensors for medical applications. Commercial biosensors have been developed for the detection of glucose for diabetes people, lactate sensor for sportsmen and urea sensor to monitor dialysis. It is anticipated that in the coming years, scientists will focus to monitor the human body in all aspects: livers will be monitored to make sure that enzymes are functioning correctly in filtering out the toxins, hearts will be monitored to avoid the heart attacks, cancer will be detected in its earliest stages. Indeed the body will be monitored continuously to determine possible health concerns that may arise

Protein biomarkers are one of the important classes of biomarkers, which can be indicative of disease state according to their high or low expression in serum. Several tumor markers found in biological fluids are important for early stage screening of diseases because they are usually asymptomatic until advanced stages when the prognosis of survival is poor. In our group we are working on, MUC1 and NS1 proteins which are associated with early diagnosis of breast cancer and dengue virus respectively. Diagnostic accuracy for detection of these biomarkers is very limited therefore; current research needs to focus on developing disposable bio-affinity sensing devices for the reliable and sensitive detection of these biomarkers. The outstanding sensitivity and selectivity of fabricated bio-affinity biosensors can potentially pave their way to be translated into point of care devices for early and precise detection of breast cancer and dengue virus.

お問い合わせ：センサ医工学分野　三林（03-5280-8091）、當麻（03-5280-8092）