

第191回 創薬科学セミナー

日時：2024年10月31日（木曜日） 17:00～ 18:30

場所：創薬科学研究館2階 講義室

対象：特になし

『Engineering of Electrode Interface for Highly Sensitive Biomolecular Sensing: From Macro to Small molecule』

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Current diagnostic methods for detection of various cells or biomarker proteins take a long time to achieve reliable outcomes and does not recognize the association between genetic variation and diversity by using nucleic acid or antibody as common recognition element. Whole antibodies are large in size and relatively expensive to produce in mammalian cells. In contrast, small affinity peptides can be created synthetically in a reliable and cost-effective manner. Thus, they can be used in a wider variety of sensing paradigms including peptide-based electrochemical sensors for high-throughput capture and detection of biomarkers in a miniaturized device.

In this talk, I will be showing a peptide-based electrochemical biosensor that could detect various targets including small molecule, virus and biomarker protein. The identified peptide-displaying phage clones and phage-free synthetic peptides were characterized using enzyme-linked immunosorbent assays and electrochemical analysis. To create more advanced sensor system, our group has fabricated novel functional electrodes, for example, nanozyme-assisted MIP, black phosphorus-gold nanoparticle, 2D-2D NCL-GO nanoarchitecture, and hydrogel. It was observed that developed sensing systems were capable of highly sensitive and specific detection of their corresponding target molecules with lower detection limit, better binding constant and recovery. More detailed results of protein detection will be also presenting in this talk.

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ペプチドを用いた最新センシング技術に関する講演です。
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