

COLLOQUIUM

Next-Generation Point-of-Care Platform for Quantitative Detection of a Blood Analyte – Towards Personalized Precision Medicine

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Field-effect-transistor (FET) based biosensors offer the promise of real-time, label-free electrical detection that is scalable and can be inexpensively mass produced. Current FET-biosensors, however, are either based on bulk semiconductors, which suffer from detection limits, or on nanowires/nanotubes, which are costly due to their complex fabrication processes. We propose to overcome these hurdles by using graphene as the basis for a new electronic biosensor platform technology. 2D-FET protein sensors combine the exceptional electrical properties of emerging atomically-thin planar nanomaterials, the selectivity of proteins, and low-cost fabrication to offer new diagnostic tools with much greater precision. The overall goal is the development of a next-generation hand-held POC platform technology based on functionalized 2D materials. We have done preliminary research on a glucose sensor as an initial demonstration of the approach, but for the proposed work the target analyte is flexible and can depend on the needs of Empiriko.



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14³⁰ – 15³⁰



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