Biomedical Engineering Seminar Series

2 nd Semester, Academic Year 2019

Date: February 18, 2020
Time: 10.00 AM – 11.00 PM
Room 6373, 3rd level, Building 3,
Faculty of Engineering; Mahidol University

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"Journey of innovation; new diabetes screening and monitoring from Thai researchers for Thai people"

Measuring combination of blood sugar and glycated hemoglobin (HbA1c) is a way to monitor the diabetes progression. However, HbA1c level in the red blood cell keeps constant during its life cycle (120 days), which is somehow too long to be monitored in severe cases. In addition, in condition effecting red blood cell structure or hemoglobin production (hemolytic anemia, thalassemia, and etc.), HbA1c level can be unreliable. Therefore, monitoring the intermediate indicator outside the red blood cell could improve the way to control diabetes progression and treatment. Our group selected and modified DNA aptamers specifically bound human serum albumin (HSA) and glycated human serum albumin (GHSA), which is intermediated biomarker for kidney dysfunction and diabetes mellitus, respectively. Three sensor platforms, which are electrochemical, nanopore and graphene-based aptasensor have been developed. The fluorescent quenching graphene oxide (GO) and Cy5-labeled aptamers could be used for GHSA and HSA detection in both serum and urine samples. One part of our developed test kits have been used for screening of chronic kidney disease in Khon kaen province by collaborated with Chronic Kidney Disease Prevention in the Northeast of Thailand (CKDNET) team.

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