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Highly sensitive label-free DNA-template silver nanoclusters (DNA-AgNCs) for *in vitro* detection of telomerase activity**Shi Ting Lee, Kasturi Muthoosamy, Ruman Rahman, Saad Tayyab, Nur Aliana Hidayah Mohamed and Siu Yee New**
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According to World Health Organization (WHO), early detection of cancer can increase the likelihood of survival due to a good response to treatment. However, current available methods for early cancer detection require specialized skills, longer time and higher cost. We aim to address the limitation in clinical research by developing a new cancer screening method that is simple, sensitive and cost effective. We focus on detection of telomerase, a potential biomarker that overexpressed in >80% of human cancers. To detect the telomerase activity, we use Silver Nanoclusters (AgNCs) as luminescent probe. The AgNCs were encapsulated using a DNA fragment with one end designed to stabilize the clusters of silver atoms, whereas another end is used to interact with telomerase. Our results showed that cancer cells containing active telomerase turn off the yellow luminescence of AgNCs; whereas the non-cancer cells remain bright. Our method could distinguish cancer cells from normal cells within one hour at 1000 times cheaper cost as compared to traditional method, Telomerase Repeated Amplification Protocol (TRAP), which usually takes more than three hours and requires labor-intensive steps. Moreover, it is possible to manufacture our assay into a simple kit that cost USD1 will aid patients' accessibility to such affordable service.

Biography

Shi Ting Lee has completed her Master's degree from University of Nottingham Malaysia. She is currently pursuing her PhD study from the School of Pharmacy, University of Nottingham Malaysia, under the supervision of Dr New Siu Yee. Her current interests are the syntheses and application of metal nanoclusters. She has published two papers in reputed journals.

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