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Simple and sensitive detection of heavy metal ions

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Heavy metal ion pollution is a serious environment problem that has attracted more and more attentions in recent years. Mercury ion (Hg^{2+}) and lead ion (Pb^{2+}) are two of the most toxic metallic pollutants even at an extremely low concentration. Copper ion (Cu^{2+}), an essential micronutrient element for human life, can cause adverse health effects when present in high concentrations. Considerable efforts have been devoted to the detection of heavy metal ions due to their high toxicity towards the ecosystem and human health. Unlike the traditional detection technologies, we have developed some simple and sensitive biosensors without the requirement of sophisticated instrumentation and skilled personnel. With the combination of DNAzyme, DNA machine and lateral flow biosensor, the visual instrument-free method offers a point-of-use solution for heavy metal ion analysis and provides a basis for the future work aiming at the development of household devices for sensitive detection of various analytes.

Biography

Lingwen Zeng obtained his PhD from McMaster University and Postdoctoral training from the University of Chicago. He is the Director of the lab for stem cell and molecular diagnostics, Guangzhou Institutes of Biomedicine and Health. He is the national chief scientist (973) and has published more than 50 SCI papers in reputed journals. He holds a post of a reviewer of Analytical Chemistry, Biosensors and Bioelectronics, Analysts, etc. His research interest is in the development of new technologies for human health, including molecular diagnosis of human critical diseases and detection of biotoxins, heavy metals for food safety and environmental pollution.

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