

A novel lab-on-cartridge device for the measurement of HbA1C

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Piramal intends to leverage its expertise in biosensors/immunosensors and microfluidics to design and develop the world's first QDx A1C, a paradigm shift, point-of-care, self-calibrating (using on-board reagents and micro pumps in a micro fluidic cartridge format) high performance (sensitivity ng/mL, & specificity as per antibodies), inexpensive (<\$1.00) cartridge for rapid (in minutes) quantitative measurement of low concentration disease markers in whole blood/serum samples which, will result in a point-of-care, and- held device for rapid screening and diagnosis of diabetic disease markers. Our proposed method utilizes a novel; inexpensive microfluidic cartridge based electrochemical immunosensor. The electrochemical immunosensor utilizes Enzyme Immunoassay in microliter of blood sample using Chronoamperometry technique and the Highly Reliable Methodology of On-Board Reagent Washing. We have demonstrated the Proof-of-Concept of QDx A1C using HbA1C as our target marker in patient whole blood samples with a detection range of 5% to 15% HbA1C. The developed technology platform can now be easily adapted for low cost, sensitive and rapid measurement of cardiac/thyroid markers and infectious diseases in low resource settings such as in semi-urban and rural areas in the developing countries.

Biography

Vijaywanth Mathur is the Vice President of Diagnostics R&D at Piramal Enterprises in Mumbai, India. He has 18+ years of Research & Development experience and 12 patents in the field of electrochemical biosensors/immunosensors and medical diagnostic instrumentation. He has worked in major US based diagnostic companies and startup companies where he has released six different families of medical diagnostic instruments from concept to production. He did his M.S. from Case Western Reserve University, Cleveland, Ohio and his career interests include lab-on-chip, microfluidics, Bio MEMS and electrochemical DNA/aptamer biosensors.

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