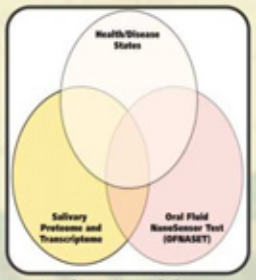
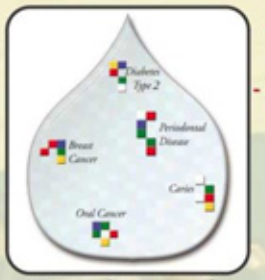
Salivary Biosensors: Diagnosing the Nano-Way

Revolutionary genome-wide research tools have spawned remarkable advances in human genomics and proteomics. Human saliva contains a repertoire of proteins, glycoproteins, lipids, metabolites, RNA & genomic information, making up some diagnostic analytes inherent in other body fluids like blood, CSF & urine. The possibility to identify and measure biomarkers in saliva via biosensors opens the avenue for diagnosis, early detection, monitoring progression of disease and compliance to treatment modalities.



Manifestation of disease markers in saliva and their detection by salivary diagnostic biosensors



Envisioned signatures for oral & breast cancer, type 2 diabetes, PDL disease & caries

CLINICAL APPLICATIONS

- Detection and Measurement of Drugs eg. marijuana,cocaine and alcohol
- Detection and Measurement of Hormones
- Detection of cardiovascular Diseases
- Detection of Oral Cancer
- Viral Infections
- Early Diabetes

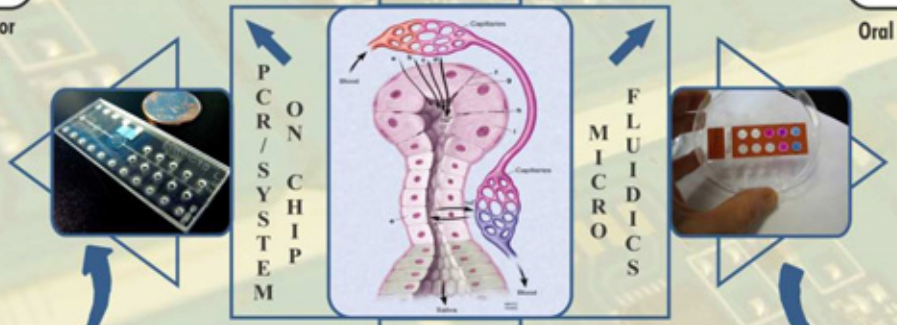
ADVANTAGES

- Non invasive
- Ease of collection
- Early detection of malignancies
- Bioterrorism surveillance

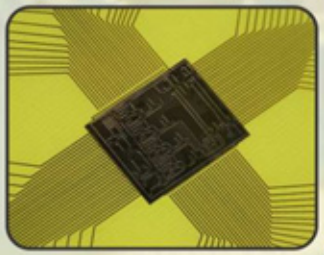
Oral Fluid NanoSensor Test

Vantix-biosensor

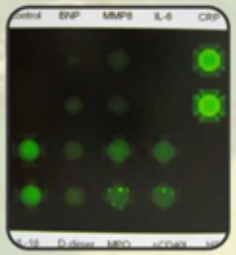
Transport of proteins and ions from serum



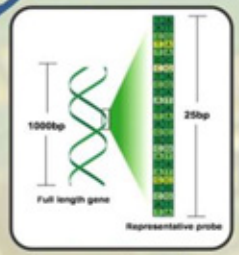
Into salivary gland ducts



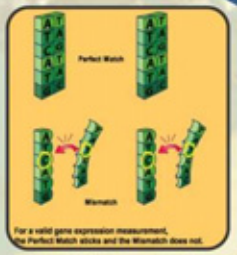
lab-on-a-chip a device that integrates several lab functions on a single chip millimeters in size



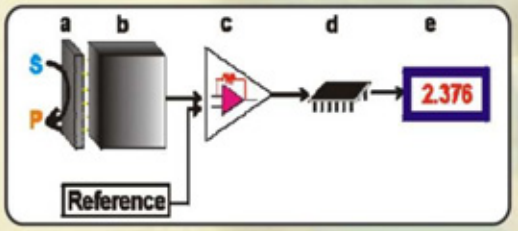
Fluorescence signatures of a control and nine protein markers of CVD



Integrated probe for identification of pathogen embedded in the chip

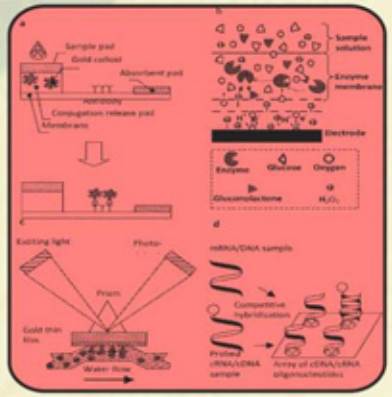


For a valid gene expression measurement the perfect match sticks and the mismatch does not



The main components of a biosensor. The bio-reaction (a) converts the substrate to product. This reaction is determined by the transducer (b) which converts it to an electrical signal. The output from the transducer is amplified (c), processed (d) and displayed (e)

Salivary biosensors could propel the oral Physician`s entry into primary health care



Various biosensing approaches for the detection of salivary biomarkers. (a) Local Surface Plasmon Resonance; (b) Enzyme sensor; (c) Surface Plasmon Resonance; (d) DNA chip