


LinearDimensions
 SEMICONDUCTOR

LND-BAxK

ADDRESSABLE BIOSENSOR ARRAYS

GENERAL DESCRIPTION

The custom oligonucleotide microarray is synthesized using a semiconductor-based electrochemical-synthesis process. Each oligonucleotide probe is synthesized via a platinum electrode that is independently controlled by the synthesizer's computer. Synthesis is based on established phosphoramidite chemistry and occurs at thousands of sites simultaneously according to a computer algorithm that activates only specified electrodes. Since physical photolithographic masks or pre-built collections of oligos are not involved in the process, all probes can be easily changed without extra time or cost.

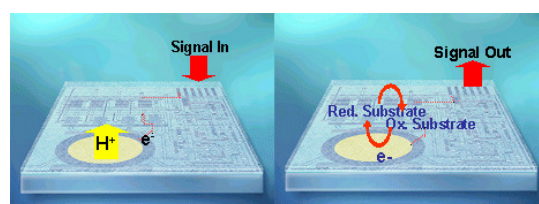
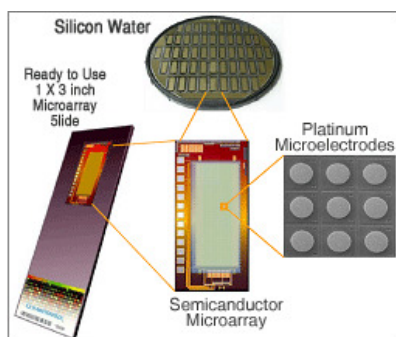
FEATURES

- Microarray of Electrodes
- SPI Addressable
- Electrical Control for Each Array Element and Segment
- Mux up to Four High Impedance Input Lines into Array or;
- Read Array
- 1k, 2.24k, 10k Array Sites

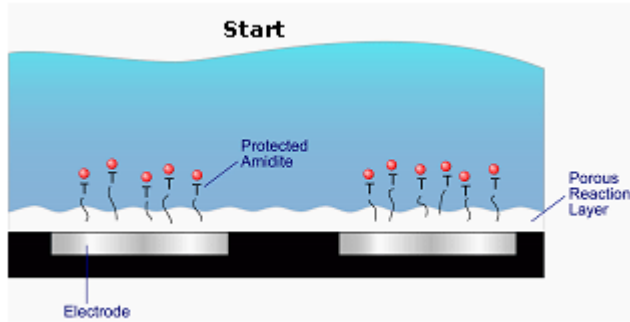
APPLICATIONS

- mRNA
- μ RNA
- SNP Genotyping
- Re-Sequencing

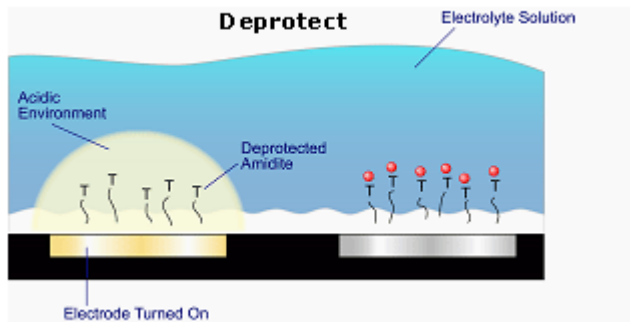
Custom Array Concept



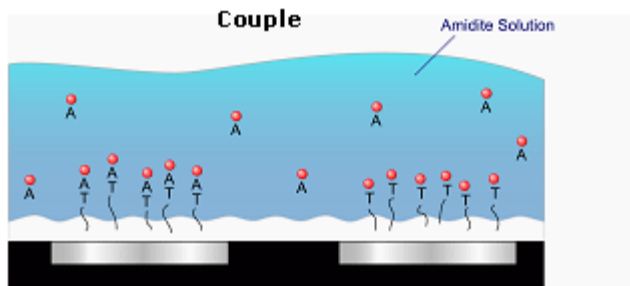
• Chemistry of in-situ oligonucleotide synthesis on microelectrodes.



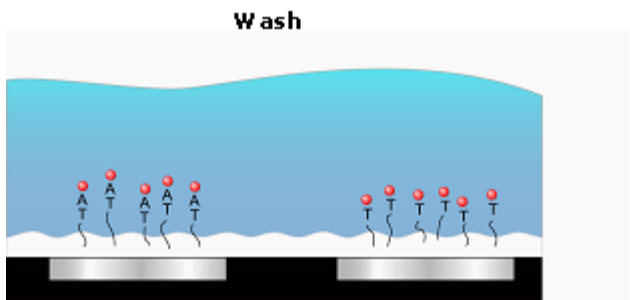
▶ The Linear Dimensions chips are produced in a form that allows protected thymines to be attached on the surface of each electrode.



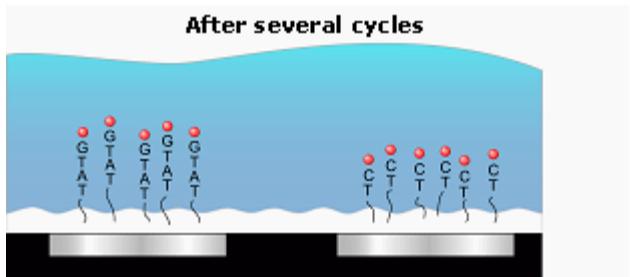
▶ By computer-controlled electronics, selected electrodes can be turned on to form an effective acidic local environment around the corresponding electrodes. The protection groups on thymines are cleaved off in the acidic environment.



▶ Microfluidic device supplies amidite solutions which couple to the deprotected nucleotide to form phosphodiester bond.



▶ The chip surface is washed to remove any free amidite on the solution.



▶ The repetition of selected deprotection-couple-wash steps results in the synthesis of oligonucleotides with a custom-designed sequence.