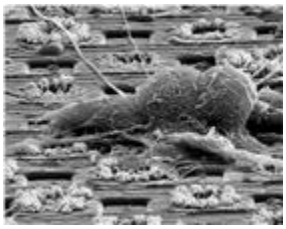
CMOS-Based Biosensors and Bioelectronics, an introduction to research at Bio Engineering Laboratory, BEL

Our research in general is rooted in **Physics** and in the **Engineering** disciplines and aims at developing microtechnological and microelectronics-based tools and methods (e.g., **C**omplementary **M**etal **O**xide **S**emiconductor, CMOS technology) to address issues and problems in **Biology** and **Systems Biology**.

Our focus is currently on three areas:

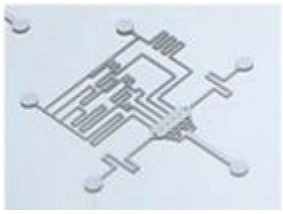
(1) Integrated Bio- and Chemosensor Microsystems

Microtransducers, such as cantilevers or electrodes are integrated in CMOS technology with dedicated analog and digital circuitry units in complex microsensor systems. Applications include label-free DNA analysis or the detection of biomolecules.



(2) Bioelectronics

Electroactive cells, such as heart cells and brain cells are interfaced with microelectronics. The cells are grown directly atop fully processed microelectronics chips carrying thousands of electrodes and featuring CMOS circuitry. The chips are used for, e.g., fundamental neuroscience and pharmacology.



(3) Microtechnology for Cell Handling and Analysis

Microtechnological and microfluidic means are used to address and handle cells, to characterize and analyze them with applications in single-cell analysis

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