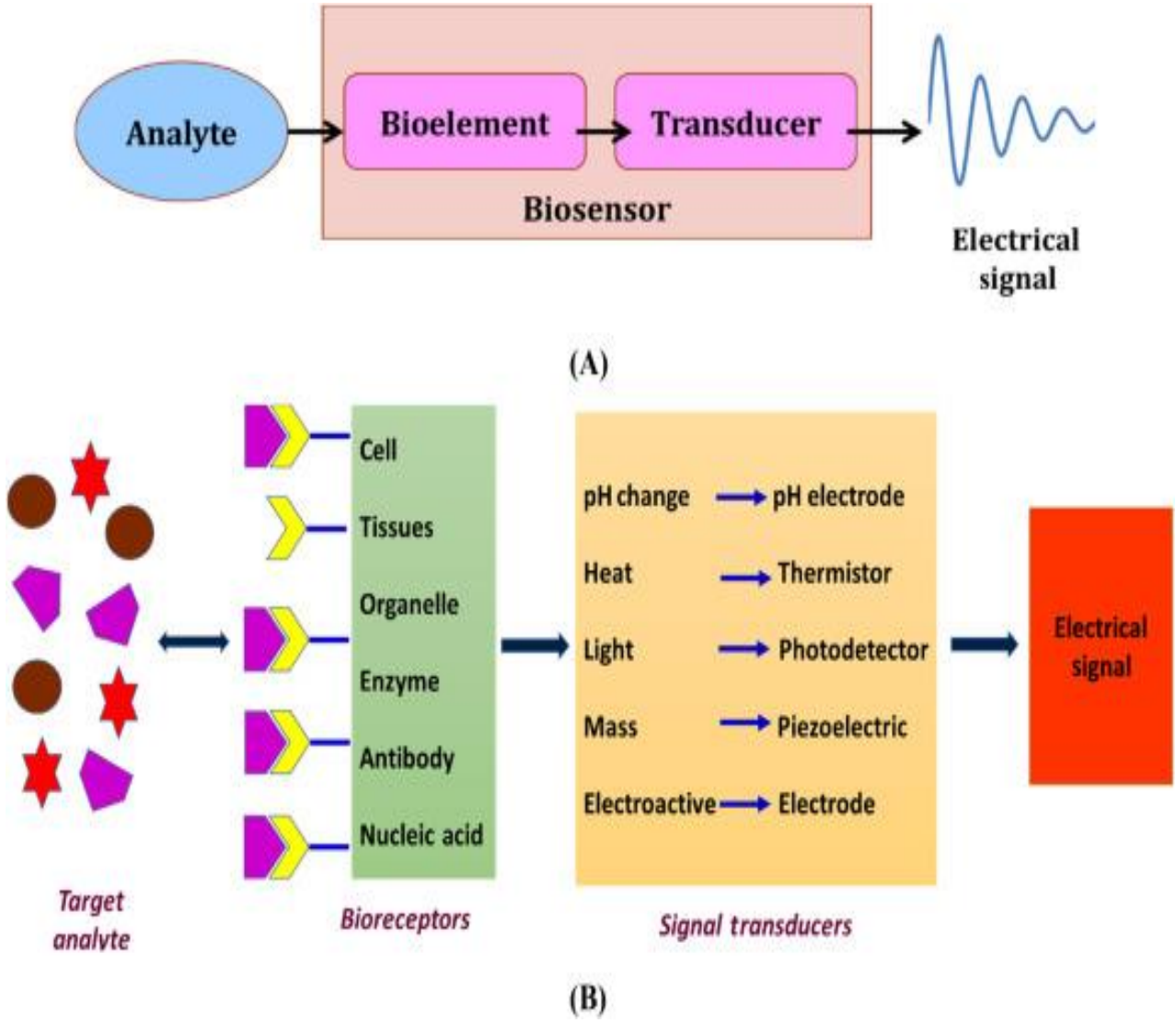
The term "biosensor" is short for "biological sensor." The device is made up of a transducer and a biological element that may be an enzyme, an antibody or a nucleic acid. The bioelement interacts with the analyte being tested and the biological response is converted into an electrical signal by the transducer. Depending on their particular application, biosensors are also known as immunosensors, optrodes, resonant mirrors, chemical canaries, biochips, glucometers and biocomputers. A commonly cited definition of a biosensor is:

"A chemical sensing device in which a biologically derived recognition is coupled to a transducer, to allow the quantitative development of some complex biochemical parameter."



Parts of a biosensor

Every biosensor comprises:

- A biological component that acts as the sensor
- An electronic component that detects and transmits the signal

Biosensor elements

A variety of substances may be used as the bioelement in a biosensor. Examples of these include:

- Nucleic acids
- Proteins including enzymes and antibodies. Antibody-based biosensors are also called immunosensors.
- Plant proteins or lectins
- Complex materials like tissue slices, microorganisms and organelles
- **Applications**

- Biosensor probes are becoming increasingly sophisticated, mainly owing to a combination of advances in two technological fields: microelectronics and biotechnology. Biosensors are highly valuable devices for measuring a wide spectrum of analytes including organic compounds, gases, ions and bacteria.

History of biosensors

- The first experiment to mark the origin of biosensors was carried out by Leland C. Clark. For his experiment, Clark used platinum (Pt) electrodes to detect oxygen. He placed the enzyme glucose oxidase (GOD) very close to the surface of platinum by trapping it against the electrodes with a piece of dialysis membrane. The enzyme activity was modified according to the surrounding oxygen concentration. Glucose reacts with glucose oxidase (GOD) to give gluconic acid and produces two electrons and two protons, thereby reducing GOD. The reduced GOD, the electrons, protons and the surrounding oxygen all react to give hydrogen peroxide and oxidized GOD (the original form), therefore making more GOD available for more glucose to react

with. The higher the glucose content, the more oxygen is consumed and the lower the glucose content, the more hydrogen peroxide is produced. This means either an increase in hydrogen peroxide or a decrease in oxygen can be measured to give an indication of the glucose concentration.