The standard abbreviation for this structure is S1-C6-P3-H7. The scpi, which stands for "single channel," is the channel that makes up the biosensor and in some cases is also used to transduce (transmit) or detect (detect) a signal from a particular chemical. In general, scpi refers to any combination of single input channels and single output channels on a biosensor. A typical biosensor has one type of scpi--the Nernst electrode, which is also the portion of the sensor that detects signals from chemicals by binding them to proteins on its surface. The primary structure of the scpi is the amino acid sequence S1-C6-P3-H7. The first five of these are the standard amino acids used to build all peptides, but the last six are not standard amino acids. There are three possible combinations for this sixth group, which are given here as shown: Nomenclature for this group is still being determined and they will probably be called hydrophobic groups (similar to hydrophobic pockets found in proteins). The scpi may be used as a basis for other biosensors and can also be combined with other types of sensors such as fluorimeters, radiometers and electrodes. Some sensors, like the Nernst sensor, require two electrodes (which are also the scpi) to work; one is positive and one is negative. The negative electrode, or counter electrode (CE), serves not only as a reference point for the sensor, but it can also be used to modulate (change) the output of the sensor by adding chemicals that increase or decrease its viability. For this reason, there are three possible configurations for these electrodes: As of yet there seems to be no scientific consensus on which configuration works best under what circumstances.

The sensors can be further categorized by their applications in these areas: medicine, pharmacology and biotechnology. Medicine: These sensors are used in the diagnosis and treatment of human disease. A typical biosensor in a clinical laboratory is a Nernst sensor in a luminescence spectrometer. It is a chemical analysis tool that uses light to measure the absorption of light by small, controlled amounts of specific chemicals that determine whether or not they can cause disease or create antibodies that lead to it. The output from the sensor is usually monitored by an analog meter such as a voltmeter, ammeter or millivoltmeter (mV). The basic principle of this device is outlined in this diagram: The analog meter used to measure the output from the sensor is called a potentiometer. It consists of two or more individually variable resistance coils arranged around a central magnetic core. One end of each resistance coil, called the wiper, acts as a fine adjustment to alter the reading on the display. This type of meter is commonly used in all types of laboratory equipment, but has many other applications as well including irrigation systems for gardens and agriculture. Pharmacology: Biosensors are being developed for use in medicine to determine if compounds are potentially toxic or have therapeutic properties for specific diseases.

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