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Sommario/riassunto	<p>Bioelectric sensors are unique diagnostic principles and technologies. Although they share many traits with electrochemical sensors, especially regarding the common features of instrumentation, they are focused on the measurement of the electric properties of biorecognition elements as a reflection of cellular, biological, and biomolecular functions in a rapid, very sensitive, and often non-invasive manner. Bioelectric sensors offer a plethora of options in terms both of assay targets (molecules, cells, organs, and organisms) and methodological approaches (e.g., potentiometry, impedance spectrometry, and patch-clamp electrophysiology). Irrespective of the method of choice, "bioelectric profiling" is being rapidly established as a superior concept for a number of applications, including in vitro toxicity, signal transduction, real-time medical diagnostics, environmental risk assessment, and drug development. This Special Issue is the first that is exclusively dedicated to the advanced and emerging concepts and technologies of bioelectric sensors. Topics include, but are not restricted to, bioelectric sensors for single cell analysis, electrophysiological olfactory and volatile organic compounds sensors, impedimetric biosensors, microbial fuel cell biosensors, and implantable autonomous bioelectric micro- and nano-sensors.</p>