The main objective of the project is to develop an innovative medical technology for fast determination of various analytes using electrochemical immunosensors. The project is part of the civilization development trend of medical analytics, enabling rapid, sensitive and reliable diagnostics to be achieved in conditions requiring immediate results, for example in life-threatening situations due to myocardial infarction or the spread of microorganisms through the blood system. Currently used equipment does not provide the appropriate quality in these conditions. The project aims to broaden the scope of existing research, increase the capacity of biomarkers and pathogens, and use of the results to develop a fully functioning rapid and mobile diagnostic tool. Thanks to the developed technology, a diagnostic system will be developed in the form of: (1) microelectronic reader, which will be used by doctors, nurses and paramedics in non-laboratory conditions; (2) disposable diagnostic cassettes for the determination of protein and polypeptide assays of blood, urine and nasal swabs and other biological samples and (3) measurement data management system with accompanying infrastructure. In the longer term, the technology developed will be able to be used in patients' health self-control systems. This will enable rapid detection of bacterial, viral and fungal antigens, as well as cardiovascular and hormonal biomarkers. It is important to emphasize that the miniaturization of the measuring elements allows for the simultaneous determination of several different analytes in one analysis. The device will be used for diagnostics outside laboratory conditions. It will be part of the in-vitro diagnostic (IVD) device family, which is often referred to as the Point-of-Care (PoC) diagnostic.