

Biomarker analysis: bridging the gap between research and medical practice

MyCartis's Evaluation platform provides multiplex detection of biomarkers ideal for research and analysis.

The concept of personalized or precision medicine has been widely accepted as a valuable approach to improve patient outcomes. Although the debate about the definitions between the two terms is ongoing, the focus of the biopharmaceutical industry has been on developing effective therapeutics for specific patient populations that would benefit most from the treatment. The old blockbuster mentality has been replaced by interest in technologies that allow one to determine the right genomic makeup and explore the proteome by identifying specific biomarkers to predict how the patient will respond to medication. The Precision Medicine and 21st Century Cures initiatives have gained momentum and support from biopharmaceutical companies, solution providers, regulatory agencies and legislators in the United States.

Although not widely available, today's access to patient's biomarker information has the potential to make health care more personal and effective in terms of treating diseases and improving quality of life. MyCartis, a new player in the translational research market, wants to contribute to this process by developing broadly available next-generation multiplex biomarker analysis solutions at both technical and content levels. The company was jointly formed in 2014 by two innovative companies: the Lausanne, Switzerland-based Evaluation business unit of Biocartis (Mechelen, Belgium), with its high-end multiplex technology; and Pronata (Zwijnaarde, Belgium), with expertise in next-generation biomarker discovery. The combined knowledge at MyCartis forms a strong foundation for making a huge impact on the research and clinical diagnostic market in the future. By building bridges between research and medical practices, the company aims to improve health and quality of life for future generations.

Accelerating innovation in biomarker analysis

A biomarker is a characteristic that can be objectively measured and evaluated as an indicator of specific biological processes or conditions. Biomarkers have an essential role in determining the physical state of an individual, which helps to maintain his or her health. Biomarker evaluation of different molecular structures can provide insight and valuable information for the diagnosis of complex diseases, guidance of therapy, or prediction of disease outcome or progression. Experts have discovered that such information cannot be obtained using a single biomarker; combined knowledge about many analytes is required. Importantly, such a syndromic panel



Figure 1: Major components of the Evaluation biomarker platform technology

consists of a variety of biomarkers such as proteins, nucleic acids and small molecules. These different types provide information on the genetic background (e.g., in targeted cancer therapy), the protein expression pattern (e.g., for assessing inflammation status), the metabolic content (e.g., in kidney function) or even the pathogenic content (e.g., human papilloma virus profiling in cervical cancer) of a person.

Most biomarker analysis technologies used in current clinical practice allow the detection of single or multiple biomarkers of the same nature. MyCartis's Evaluation platform provides a one-technology-fits-all solution to enable researchers to quantitatively and qualitatively detect and validate biomarkers and assay providers regardless of their physical nature. This is multiplexing in its true sense. The ability to quantify different types of markers on a single platform will help produce more comprehensive and coherent multiplex data sets, which will facilitate integration into syndromic assay formats. MyCartis believes that we are all equal but not identical at the molecular level and that personalized health care needs new and integrated syndromic approaches.

The unique Evaluation technology consists of three major components: a novel type of digitally encoded microparticle; a uniquely designed assay plate composed of 16 individual actuated microfluidic channels that allow fast kinetics and random sample access; and an instrument with software that provides the user with dynamic control over assay conditions and tools for data processing and reaction monitoring (Fig. 1). Therefore, all steps of a typical assay protocol (incubations, washing and optical readout) are integrated in a single platform for fast and simple workflows. Different chemistries and assay concepts enable the real-time measurement of proteins, nucleic acids and small molecules.

Partners in the healthcare revolution

With a strong belief in cocreation, MyCartis aims to revolutionize current healthcare systems by seeking partners that match its vision. By sharing ideas, knowledge and expertise with selected partners, MyCartis hopes to accelerate the personalization of health care. More specifically, as a technology-driven company, it focuses on creating a network of partners for assay-development opportunities in clinical research areas of autoimmune, neurodegenerative, cardiovascular, inflammatory and infectious diseases.

The high-end Evaluation technology is also available as an open platform, allowing researchers and assay developers to clinically validate their biomarker panels. In addition, it permits easy development of new custom-made multiplex assays or the seamless translation of existing assays in such a format. MyCartis wants to eventually develop ready-to-use multiplex assays for the research and clinical communities through its own development efforts as well as via strategic partnerships with reagent providers and assay developers. The company has a strong biomarker patent portfolio in areas such as cardiovascular (heart failure), renal and maternal (pre-eclampsia) diseases.

MyCartis has an eye on the *in vitro* diagnostics market as an area for future work. Although Evaluation is currently intended only for research use and not diagnostics, the company is planning to develop a next-generation version that will be suitable for clinical diagnostics.

contact

Wouter Laroy, VP Scientific Marketing
MyCartis
Ghent-Zwijnaarde, Belgium
Tel: +32 9 241 11 40
E-mail: wlaroy@mycartis.net