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Bosch and Randox: Strategic partnership brings highly multiplexing PCR to the point of care / BioMEMS technology enables fully automated, simultaneous testing for hundreds of genetic characteristics in just a few minutes

Waiblingen (ots) -

- Bosch and Randox Laboratories Ltd. enter partnership for Vivalytic analysis platform to jointly invest around 150 million euros.
- First test to feature novel BioMEMS technology will be a highly multiplexing sepsis IVD grade test.

Bosch has agreed on a strategic partnership with Randox Laboratories Ltd., a leading diagnostic and medical technology company. The two companies will invest around 150 million euros in joint research, development, and sales activities for new tests for the Vivalytic analysis platform provided by Bosch Healthcare. One goal is the development of a sepsis IVD grade (in-vitro diagnostics) test that will be the first to feature highly innovative and novel BioMEMS technology.

Trend toward decentralized, personalized diagnostics

Bosch wants to grow long-term in molecular diagnostics. To achieve this, the company is contributing its technology and manufacturing expertise across the fields of molecular diagnostics, microchip development and manufacturing, and miniaturization. "Globally, healthcare is moving toward decentralized and personalized diagnostics, that enable rapid interventions and individual treatment plans," says Marc Meier, managing director of Bosch Healthcare Solutions GmbH. "With our partner Randox, we want to further expand the test portfolio of our Vivalytic analysis device. Our fully automated molecular-diagnostic PCR tests provide clarity directly at the site of sample collection, shorten waiting times, and take the strain off the healthcare system," Meier adds.

One focus of the development partnership with Randox is the implementation of a highly sensitive multiplex test for sepsis on the Vivalytic analysis platform. This is a potentially life-threatening complication that can occur in conjunction with various infectious diseases. It can lead to multiple organ failure and requires immediate medical treatment. "Clinical outcomes in sepsis depend on timely diagnosis and appropriate early therapeutic intervention. Current methods of sepsis diagnosis are insufficient and time-consuming. With over 10 years of experience in the field of infectious diseases diagnostics, we aim to develop a state-of-the-art sepsis test using a highly multiplexing BioMEMS chip. Such a test could revolutionize sepsis diagnosis, ultimately leading to improved treatment outcomes and lower mortality rates from this life-threatening condition," says Dr. Peter Fitzgerald, Managing Director of Randox Laboratories Ltd. To this end, the functions of a high-performance silicon chip based on microsystems technology will be added to the test cartridges, combining the expertise of the Bosch development teams in the areas of MEMS chips, molecular diagnostics, and microfluidics.

More than 250 genetic characteristics in less than 15 minutes

The powerful BioMEMS chip adds a further innovative analysis method to the Vivalytic test cartridge, enabling it to test simultaneously and significantly faster for a large number of different genetic characteristics, e.g. pathogens such as viruses, bacteria, fungi and parasites, as well as their resistance to drugs, or to identify genetic mutations in tumors. It is called BioMEMS because it combines microelectromechanical systems (MEMS) with microfluidics for applications in the field of medical technology. In microfluidics, very small amounts of fluid in the microliter range are moved, processed, and analyzed in a very small space. Miniaturization allows qualitative biochemical polymerase chain reactions (PCR) to run in parallel in real time on a single BioMEMS chip. The analysis of liquids is left to a small microchip. The technology paves the way to move into nanofluidics, i.e. miniaturization by a factor of 1,000, allowing even more biochemical processes to run in parallel. "Our test cartridge is a highly complex laboratory the size of a smartphone, so to speak," Marc Meier explains. This will enable fully automatic testing of up to 250 genetic characteristics in one cartridge and in some instances in less than 15 minutes. Another future advantage of BioMEMS will be simpler and faster adaptation of new tests or existing tests on the chip itself. For example, new pathogens can be added to an existing test. With increasing miniaturization, the technology has potential to be used in oncology as well over the long term.

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