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Tisková zpráva

Scientists collaborate with companies to develop new solutions for the prevention and diagnosis of viral and bacterial diseases

Olomouc (January 30, 2024) - **Palacký University Olomouc has launched a new research project—INTERVIR—aimed at implementing innovative methods to combat viral and bacterial diseases. Over the next four years, scientists will collaborate with private companies to develop and test new materials for the prevention and diagnosis of these diseases. The project will focus on creating cost-effective, efficient, and widely accessible sensors capable of detecting infectious agents. Funded by the Johannes Amos Comenius Operational Programme, particularly through the Intersectoral Cooperation for ITI Call, the project has a budget of 63.7 million Czech koruna. The initiative also aims to foster collaboration between academia and businesses in the Olomouc region, accelerating the transfer of research findings into practical applications.**

The INTERVIR project addresses two critical global health challenges: the lack of preparedness for pandemics and the growing issue of antibiotic resistance.

“We will focus on developing new solutions for prevention, early diagnosis, and minimizing the impact of diseases caused by viral and bacterial pathogens. Drawing on lessons learned during the COVID-19 pandemic, we recognize that collaboration between university researchers and industry experts can lead to the rapid implementation of innovations in practice,” said the principal investigator Petr Jakubec from CATRIN at Palacký University. Scientists from CATRIN will work alongside colleagues from other faculties at the university, including the Faculty of Medicine and Dentistry, Faculty of Education, Faculty of Health Sciences, and the Sts Cyril and Methodius Faculty of Theology. The commercial sector is represented by the pharmaceutical companies Farmak and MedicProgress.

In collaboration with its partners, the research team will focus on four key areas: the development of advanced antiviral and antibacterial protection incorporating new materials, the diagnosis of viral infections and other serious diseases, the antibacterial and antiviral properties of selected proteins and peptides, and the analysis of the impact of pandemics on individuals' lives and the environment in relation to technological changes.

“In the area of prevention, there is a clear need for new materials with antimicrobial properties that can be applied not only in the pharmaceutical industry but also in the cosmetics, textiles and food sectors. In partnership with MedicProgress, we will focus on developing antimicrobial additives—substances that enhance the properties of various products,” Jakubec explained.

The research team has also identified a gap in the market for reliable, fast and affordable biosensors suitable for clinical use. “These biosensors will be developed in collaboration with FARMAK, utilizing graphene materials combined with specific molecules capable of detecting the monitored pathogens. In agreement with University Hospital Olomouc, we will focus on detecting bacteria

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responsible for hospital-acquired infections," explained Michal Otyepka, leader of one of the research areas.

To combat bacterial resistance to antibiotics, the researchers aim to develop new substances that combine antimicrobial nanomaterials with peptides. Their synergistic effects could further enhance antimicrobial efficacy. Using a cost-effective method, the team plans to develop peptides from the cathelicidin group—well-known antimicrobial peptides found in human skin—and peptides derived from lactoferrin, a powerful immune component of breast milk. The project will also include an analysis of the pandemic's impact on individuals' lives and a strategy for the commercialization of biosensors.

"INTERVIR is the first major project that directly supports collaboration between the commercial and academic sectors in the Olomouc region. It lays the foundation for submitting future projects and deepening the cooperation between the university and commercial companies," concluded Jakubec.

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