Biointelligent sensor for measuring viral activity

Today, genome editing is almost as easy as programming software. However, the generation of viral vectors as initial material is still associated with many expensive and error-prone handling procedures. Viruses are generated via complex biological processes that have to be optimised virus-specifically in order to produce high-quality therapeutics. A new method is needed that simplifies and optimises these processes.Today, genome editing is almost as easy as programming software. However, the generation of viral vectors as initial material is still associated with many expensive and error-prone handling procedures. Viruses are generated via complex biological processes that have to be optimised virus-specifically in order to produce high-quality therapeutics. A new method is needed that simplifies and optimises these processes.

Fraunhofer IPA is the overall coordinator of the European biointelligence project BioProS, which is funded with over 6 million euros as part of the HORIZON Europe programme. In this project, a biointelligent sensor for measuring viral activity for the production of therapeutics is being developed. The Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB brings in its expertise from the innovation field of virus-based technologies under the leadership of Prof. Dr. Susanne Bailer. The project started on 1 July 2022 and will run for 48 months.

The goal of BioProS is to optimise the production processes for therapeutic viruses through better quality control. A biohybrid sensor technology monitors cell-based virus infection cycles in real time. For this purpose, optical sensor technology is combined with cell-based measurement principles.

Within the project, among other things, a platform technology is being developed that can be adapted to several specific substances and virus types. This allows applying it in different industries and production environments. Since such a platform technology is complex, numerous European partners from different disciplines such as biology, engineering and mechanical engineering or computer science are involved.

Digitisation must span the entire manufacturing chain and utilise all the advances that have been made in intelligent personalised production in recent years.

The convergence of technical, informational, and biological systems are the basis of biointelligence. This new paradigm opens up a huge innovation space globally. Because Europe is at the forefront of manufacturing excellence, BioProS will make a significant contribution to sustainable and resilient manufacturing processes in the EU. Digital and bio-based process chains have the potential to revolutionise many industries and ensure their competitiveness.

Seven partners from five countries are represented in the BioProS consortium. Besides the Fraunhofer Society with their Institutes for Manufacturing Engineering and Automation IPA and for Interfacial Engineering and Biotechnology IGB in Stuttgart (Germany) these are Cellink (Sweden), NecstGen (Netherlands), Eberhard Karls Universität Tübingen (Germany), EurA AG (Germany), ElveSys (France) and Politenico di Milano (Italy). The consortium gathers all the necessary expertise under its roof and forms the basis for international partnerships.

In close cooperation with other European initiatives and with the support of an industrial advisory board, the project partners want to realise the vision of biointelligent manufacturing and demonstrate the applicability of disruptive technologies in an industrial setting. This will foster research for biointelligent methods and global applications while guaranteeing technological sovereignty for Europe in the long term.

Press release

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Further information

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