



Smart Medicine

New Concepts for the Rapid Adaptation and Production of Vaccines

Background

Vaccinations preventively protect the population from serious diseases and relieve health systems economically through reduced patient admissions. It typically takes 8 to 17 years to bring a new vaccine to market. In the COVID-19 pandemic, the development process was accelerated to enable the first vaccine approval in a very short time. Pandemic outbreaks like COVID-19 are becoming increasingly likely due to worldwide population growth and globalization. Against this background, the Smart Medicine project takes on a holistic view of the development of vaccines, from the pharmacological level to production, to logistic and economic issues.

Project description

The Smart Medicine project aims to identify potentials for accelerating vaccine development along the value chain and to summarize these in the form of a concept paper. Over the course of the project, it will therefore be investigated which aspects are decisive key factors for the rapid adaptation of already existing vaccines in the areas of research and development, clinical testing, approval and distribution, while taking into account the economic effects and framework conditions. Due to the easy adaptability of the newly approved mRNA vaccines, a special focus of the project is on this technology.

The following topics will be explored:

- Technological innovations in pharmacological production
- Formulation of vaccines
- Validation of efficacy
- Resilience of vaccine production in the face of supply shortages and global logistics networks

Range of services

Fraunhofer IMW looks at the socio-economic aspects in vaccine production. In a first step, a global market analysis of traditional and COVID-19 vaccines shows current developments in the growing vaccine market. Functioning supply chains were crucial for the success of the COVID-19 vaccine campaigns. Through interviews with experts, the weaknesses of vaccine supply chains are identified and approaches for designing resilient business models are developed.

Client:



Fraunhofer-Gesellschaft

Project partners:

Fraunhofer Institute for Ceramic Technologies and Systems IKTS

Fraunhofer Institute for Cell Therapy and Immunology, Branch Bioanalytics and Bioprocesses IZI-BB

Fraunhofer Institute for Microengineering and Microsystems IMM

Project page:



<https://s.fhg.de/Smart-Medicine>

Project duration

1.5.2022 – 30.4.2023

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