

Press Release

10 MILLION EUROS FOR DEVELOPING NEW, BREAKTHROUGH DRUGS AGAINST VIRAL INFECTIONS

Leipzig, October 18th, 2023

Today the Federal Agency for Disruptive Innovation announced the participants in the third and final phase of the Broad-Spectrum Antivirals SPRIND Challenge. Four teams will each receive up to 2.5 million euros over the next 12 months to further develop new drug options against viral diseases.

Since the COVID-19 pandemic, we know: Viruses are a threat to human health worldwide. Despite the considerable success of vaccines, antiviral drugs are also needed to help sufferers. For many viral diseases there are still no effective drugs or therapeutic treatments. Yet, looking at outbreaks of SARS-CoV-1, MERS-CoV, Ebola, or influenza has made it clear that we must prepare for future epidemics and pandemics.

In order to achieve breakthroughs in the development of new antiviral drugs, the Federal Agency for Disruptive Innovation called upon innovators and researchers to participate in this SPRIND Challenge two years ago. In the 3-year challenge, several teams each with different solution strategies compete to find the most promising active ingredients based on new technology platforms.

A jury from science and industry has now selected four candidates from the remaining six teams who will participate as finalists in the last stage of this innovation competition. The following teams were able to convince the jury that their work can produce new antiviral drugs with the potential to be used successfully against viruses that are still unknown today.

- **CRISPR ANTIVIRALS** uses the CRISPR/Cas13 antiviral defense system, perfected over millions of years of bacterial evolution, to block the replication and cytopathic effects of RNA viruses such as SARS-CoV-2 by cleaving their viral genome and mRNA. Prof. Dr. Elisabeth Zeisberg (UMG) and her team have found a way that promises to be particularly robust against viral mutations.

- **iGUARD**, led by Prof. Dr. Axel Schambach (MHH), is developing next-generation RNAi-based molecular therapeutics against respiratory viral infections. The team uses machine learning to automatically identify targets as well as an optimized vector platform for delivery and preclinical validation in human-derived, patient-relevant models. This automatic identification of target structures is expected to allow antiviral therapeutics to be developed much faster than before.

- **MUCBOOST**, led by Dr. Daniel Lauster (FU Berlin. Spin-off MucosaTec GmbH), is developing an upgrade against pathogens by enhancing the antiviral efficacy of mucus, the coating of our airways. This upgrade works according to a modular principle and can be flexibly adapted to a wide variety of viruses. At the same time, the approach has the potential to reduce transmissibility by making the viruses adhere more strongly to the mucus: It thus acts like a molecular mask.

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· **VIRUSTRAP** uses DNA origami technology to build nanoscale traps for viruses. To this end, the team led by Prof. Dr. Hendrik Dietz (TUM, spin-off Capsitec GmbH) constructs half-shells of single-stranded DNA that enclose and neutralize viruses. The size and shape of the shells can be flexibly adapted to different viruses.

Over three years, the selected four teams will collectively receive around 4.7 million euros from SPRIND. For the allocation of funds in the SPRIND Challenges, the Federal Agency for Disruptive Innovation is utilizing a new innovation funding mechanism in Germany, the pre-commercial procurement process. Compared to other mechanisms for government innovation funding, pre-commercial procurement is much faster and allows greater flexibility in the use of the funds, so that even smaller teams and start-ups can afford to participate without prior funding application expertise.

“SPRIND Challenges have quickly established themselves as an effective funding tool for bridging the ‘valley of death’ between basic research and proof of concept,” explains Dr. Jano Costard, Challenge Officer at SPRIND. “By funding different approaches over several years and evaluating their development progress, we can select the best solution. To ensure these new drug options are further developed and produced so they are readily available when needed, we now still need an Advance Market Commitment (AMC) from the public sector to address market failures that cripple private investment in pandemic drugs.”

An AMC guarantees the acceptance of products, in this case broad-spectrum antivirals, with clearly defined product characteristics. When the AMC is established, these products are not yet available, so they have to first be developed. However, the market commitment is not made to specific companies. It is addressed instead to all market participants that meet the predefined performance criteria of the product. This way, scientists can overcome the crucial hurdle of investment, namely demand uncertainty. Such advance market commitments have been shown to create a “pull effect” by establishing an otherwise nonexistent market.

In turn, by eliminating demand uncertainty, investors, like venture capitalists or pharmaceutical companies, can invest in the development of new technologies since they no longer bear both developmental and technological market risks but “merely” the technological risks. This concept has already proven successful in the areas of CO₂ sequestration and vaccine development.

Further information on this SPRIND Challenge and the participating teams can be found at <https://www.sprind.org/de/challenges/antiviral>.

About SPRIND Challenges

SPRIND Challenges are innovation competitions that aim to generate solutions to the major societal and technological challenges of our time. They create the vision of a better future and gather the scientists, innovators, and entrepreneurs who can make this vision a reality. That is why Challenge teams are funded quickly, without unnecessary bureaucracy, and immediately launch into a multi-stage competition. At the end of each stage, the teams’ work is evaluated and only the most promising remain in the Challenge, receiving further financial support to develop their idea.

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About SPRIND

The Federal Agency for Disruptive Innovations (SPRIND) was founded on December 16, 2019, with its registered office in Leipzig. The sole shareholder is the Federal Republic of Germany, represented by the Federal Ministry of Education and Research (BMBF) and the Federal Ministry of Economics and Climate Protection (BMWK). SPRIND fills a gap in the German innovation landscape by finding new, groundbreaking technologies for the major challenges of our time, while ensuring that the value created by the resulting companies and industries remains in Germany and Europe. SPRIND is financed by funds from the federal budget and managed by Rafael Laguna de la Vera and Berit Dannenberg.

CONTACT

Christian Egle
Referent of the Management
christian.egle@sprind.org

Federal Agency for Disruptive Innovation (SPRIND)
Lagerhofstr. 4
04103 Leipzig, Germany