Beat: Health

EPFL AND INRAE HAVE DEVELOPED IN VIVO ARTIFICIAL PROTEINS AS A VACCINE

OVER COVID-19 OUTBREAK

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USPA NEWS - Scientists from EPFL and INRAE have developed a new approach to create artificial proteins, the results of which in vivo, as vaccines, have shown promise. This approach opens up the possibility of designing safer and more effective vaccines. The study is published in the journal Science.Vaccines are one of the most effective interventions to prevent the spread of disease. They stimulate the immune system to produce antibodies that protect us from infection. However, we still lack effective vaccines against many important pathogens. When vaccines do not work well it is often the immune system that does not produce the right type of antibody capable of neutralizing the pathogen. In the Protein Design and Immuno-Engineering Laboratory of the Faculty of Engineering Sciences and Technology at EPFL, scientists have developed a strategy to design artificial proteins that tell the immune system very precisely which antibodies to produce. . INRAE “‹“‹scientists have provided suitable support to present these artificial proteins to the immune system.

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BUILD PROTEINS LIKE LEGO----------

The EPFL team of scientists created artificial proteins using calculation methods that do not exist in nature. They have developed a design algorithm called TopoBuilder which makes it possible to virtually build proteins like Lego. These constructions were themselves grafted onto a support patented by INRAE, nanochains formed by the nucleoprotein of the respiratory syncytial virus, to create an immunogenic environment and thus stimulate the immune responses.

A DISEASE WITHOUT A VACCINE----------

Researchers have focused on designing de novo proteins that can lead to a vaccine against respiratory syncytial virus (RSV). RSV causes serious lung infections and is a leading cause of hospitalization for infants (bronchiolitis) and the elderly. But despite several decades of research, there is still no vaccine or cure for this virus. Artificial proteins were created in the laboratory and then tested on animals. These vaccine constructs have triggered the immune system to produce specific antibodies against the weak spots in RSV. This study is encouraging, as it will make it possible to generate much more precise vaccines which will induce the production of specific and functional antibodies depending on the disease that we want to fight.

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