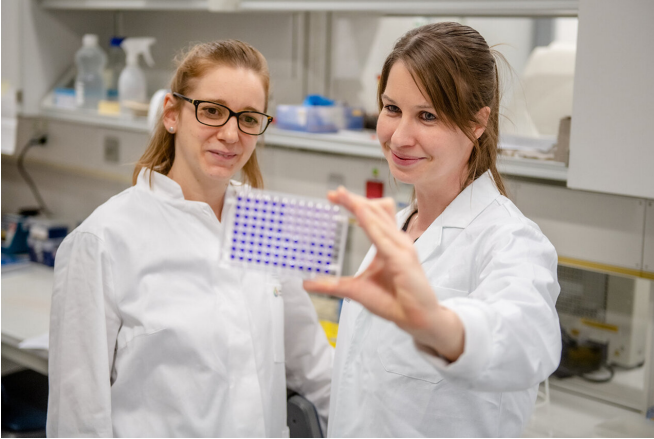


Helping the body overcome SARS-CoV-2

14 February 2022



Kathrin Sutter (left) and Stephanie Pfänder in the lab.
Credit: RUB

As messenger substances, interferons stimulate various responses of immune cells and play a key role in activating the immune system. They are proven active agents against various diseases, especially type I interferon alpha 2, which has been widely used against hepatitis C and B. "However, there are different subtypes of interferons whose clinical potential has not yet been fully explored," says Stephanie Pfänder.

The researchers comprehensively analyzed the cellular response to these IFN subtypes. Using transcriptome analyses, it was possible to identify key IFN-stimulated genes which were differentially regulated after exposure to a specific interferon. Their information is translated into proteins. Proteome analyses showed how the [protein expression](#) in primary lung cells changes after the stimulation with different interferons. The researchers refer to the cellular reaction caused by the interferon subtypes as immune signature.

Certain subtypes elicit particularly effective immune response

"We showed that certain interferon-alpha subtypes

are highly effective against SARS-CoV-2," says Kathrin Sutter. "The antiviral activity of the different subtypes varies considerably." For example, the alpha-5 subtype elicited a particularly effective immune signature against the virus. The [antiviral effect](#) that the researchers measured in cell culture increased even more significantly when combined with the antiviral drug remdesivir.

"Our study allows us to draw conclusions about which induced proteins and genes are particularly important in the fight against SARS-Cov-2," says Stephanie Pfänder. In addition, the findings may offer an alternative in the treatment of COVID-19 patients through the early administration of specific interferon alpha subtypes with a strong antiviral effect.

More information: Jonas Schuhenn et al, Differential interferon-? subtype induced immune signatures are associated with suppression of SARS-CoV-2 infection, *Proceedings of the National Academy of Sciences* (2022). [DOI: 10.1073/pnas.2111600119](#)

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