New contagious vaccines should spread independently. Researchers warn that this could have irreversible consequences.

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The first part of this article was about vaccines, which are contagious. It is sufficient to vaccinate a few individuals with it. The vaccinated pass on the virus, so that eventually whole populations become immune. So far, there has been practically no social discussion about this - although these research projects are financed with taxpayers' money.

With transmissible vaccines, scientists want to both eliminate plagues and protect hard-to-reach wild animals from infection. As recently as 2016, they said it was unlikely that contagious genetically engineered vaccine viruses would be used in humans unless there were "extraordinary circumstances" due to safety and ethical concerns.
https://royalsocietypublishing.org/doi/10.1098/rspb.2016.1903

"Vaccinate one, reach many" - that would not only help to save money for vaccination campaigns.

Safety requirements are lower for animal vaccines
For example, a contagious vaccine could reach animals that are so shy or withdrawn that they cannot be vaccinated by humans. Or of which there are so many, such as mice, that mass vaccination is impossible. One of the reasons why scientists are currently focusing on vaccines for animals: "It usually takes fifteen to twenty years to develop a vaccine for humans. For animals it is more like two to five years. That's simply because animals don't live that long and that's why, among

other things, the safety requirements for new vaccines are much lower," explained Deutschlandfunk. https://www.deutschlandfunk.de/selbstausbreitende-impfstoffe-auf-stiller-mission-im-urwald-100.html

The scientists involved keep raving about being able to use the infectious vaccines to forestall dangerous pathogens that could spread from animals to humans and trigger a pandemic: "In the next five years, we could be able to achieve a high vaccination rate against 'emerging › to reach zoonotic pathogens," predicted three scientists (who themselves hold or have applied for various patents) back in 2015. https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.3001607

Stop pandemics before they start

In the meantime, it is no longer "just" about curbing rabbit diseases. The researchers are targeting dangerous pathogens such as Ebola, rabies, hantaviruses, MERS, Lassa fever, Marburg fever or sleeping sickness, but parasites such as the fox tapeworm and other flagella are also conceivable targets. Such vaccines could, among other things, contribute to the conservation of great apes, the scientists hope, because Ebola viruses, for example, are not only extremely dangerous for humans, but also for chimpanzees and gorillas. https://www.deutschlandfunk.de/selbstausbreitende-impfstoffe-auf-stiller-mission-im-urwald-100.html

According to a model calculation, a 95 percent reduction in transmission of the African Lassa virus could be achieved in less than a year with a contagious vaccine for rodents. If

there is no longer any Lassa virus among rats, then none can spread to humans, according to logic. Consequently, pandemics would be prevented before they even begin - science would be one step ahead of the scourge.
https://www.bag.admin.ch/bag/de/home/krankheiten/krankheiten-im-ueberblick/lassa.html

There would also no longer be a need for vaccination teams who may not be able to vaccinate because of war or because they are being attacked by the local population, as happened with the 2018 Ebola outbreak in the Democratic Republic of Congo.
https://www.telegraph.co.uk/global-health/science-and-disease/ebola-workers-attacked-warns-mistrust-communities/

Researchers see “no reason” not to use them
"Early and targeted release of a low-transmission, self-spreading vaccine during an outbreak could create local herd immunity and prevent the outbreak from becoming a pandemic," The Telegraph quoted a report from the Johns Hopkins Center for Global Security as saying. . In future outbreaks, he sees "no reason" why vaccines that spread themselves should not be used, a Johns Hopkins scientist told the newspaper in January 2022.
https://www.telegraph.co.uk/technology/2020/01/28/could-self-spreading-vaccines-stop-global-coronavirus-pandemic/

The transferable vaccinations developed for animals would therefore also benefit humans - an argument that the scientists involved repeatedly put forward. They also always emphasize the threats posed by viruses. The US “Agency for International Development” has already found over 900 viruses that have the potential to spread from wild animals to humans, they wrote in the journal “Nature Ecology & Evolution” in 2020, for example.
https://www.nature.com/articles/s41559-020-1254-y

Genetically modified virus

In theory, the building instructions for contagious vaccines are simple:
1. Take a harmless yet highly contagious virus that ideally affects only the animal species being vaccinated. It serves as a kind of framework.
2. Then you cut out a gene from the genome of the dangerous virus against which the vaccination is supposed to protect. This gene must be well selected. It corresponds to the blueprint for a characteristic small feature of this dangerous virus.
3. Finally, insert that gene into the harmless virus and give the transmissible vaccine.
4. If the transmissible vaccination works, the body then creates antibodies against the harmless backbone and against the characteristic of the dangerous virus - and is protected in case of eventual later contact with it.

In the event of an impending danger, rapid adjustment would be possible – that was the idea
About a dozen research groups worldwide would work on such contagious vaccines. "Almost everyone cooperates with each other," reported the "Deutschlandfunk" 2020.
https://www.deutschlandfunk.de/selbstausbreitende-impfstoffe-auf-stiller-mission-im-urwald-100.html

Critics argue that it is difficult to predict which of the "myriad viruses" circulating among wildlife could become a threat to humanity. But the scientists involved have an answer: once the basic structure has been established, it can be quickly equipped with genes from the viruses that pose a

threat, depending on the situation. So far, their preferred framework has been the cytomegalovirus (CMV).
https://www.nature.com/articles/s41559-020-1254-y

The advantages of CMV

• They attack very specifically only one species of mammal. For example, there are human, bat, chimpanzee, gorilla, mouse and other CMV. Because they are so specific, the risk that such a vaccine virus could unplannedly spread to another species, such as humans, is considered very small.

• CMV are very contagious, but usually harmless (except for pregnant women or people with a weakened immune system).

• The vaccination framework can be used in all individuals, regardless of whether they have ever been infected with cytomegalovirus or not. Therefore, there can be no herd immunity to these new transmissible vaccines.
• CMV are transmitted in a variety of ways: with breast milk, saliva, urine and semen.

Tuberculosis and Ebola vaccines under development

• An experimental, but not (yet?) infectious vaccine against tuberculosis with a cytomegalovirus as the basic structure has already been tested on monkeys. Mice and monkeys have also been experimentally vaccinated against Ebola with a CMV-based vaccine. The scientists specifically mentioned the possibility of a self-spreading vaccine: "In the present study, the vaccine was administered directly to the animals, the immunity after animal-to-animal spread [...] must now be examined," they wrote in 2016.
https://www.nature.com/articles/srep21674

Four years later, "Quantamagazine" reported on one of Spain's former rabbit vaccine researchers, who is now developing a transmissible vaccine against swine fever.
https://www.quantamagazine.org/can-vaccines-for-wildlife-prevent-human-pandemics-20200824/

According to "The Daily Mail", corresponding tests are currently being carried out on pigs in several places in Europe. Millions of pigs have died from African swine fever.
https://www.dailymail.co.uk/health/article-10536697/The-vaccine-spreads-immunity-passing-like-virus.html

«We now have to show that this technology can work»

Critical points of such projects are briefly addressed again and again in the research work and specialist articles mentioned, but not discussed in depth. They give the impression that any problematic issues are manageable. This includes, among other things, the concern that the vaccine virus, once released, could mutate and become dangerous or infect other animal species or humans.

"I think maybe there were just too many concerns about releasing a genetically modified virus. Many people have reservations about it. We scientists now have to show that this technology can work and that it is safe. I hope that if we succeed, we can also use these apparently ideal tools," said one of the key participants in early July 2020 on "Deutschlandfunk".
https://www.deutschlandfunk.de/selbstausbreitende-impfstoffe-auf-stiller-mission-im-urwald-100.html

But one of the former Spanish rabbit vaccination researchers disagreed: «None of this should be in the hands of molecular

biologists alone, because their specialty is molecular biology. I think we need an international set of rules for these activities."

Viruses are good for surprises

Confidence that infectious vaccines will do what is expected of them is based, among other things, on mathematical calculation models.

However, one could be wrong, the Spanish rabbit vaccination researcher warned in an article in "National Geographic" and described an example from 2018. At that time, Spanish researchers noticed that a certain myxoma virus was no longer just rabbits, but suddenly also wild rabbits died. https://www.nationalgeographic.com/science/article/the-controversial-quest-to-make-a-contagious-vaccine

The reason: this myxoma virus had "paired" with a smallpox virus and was therefore able to cross the species barrier again.

"I don't know if a mathematical model would have predicted that something like this would happen 70 years can happen later," said the scientist [after the virus was deliberately released – editor's note]. Red.].

Significant security risks outweigh potential benefits

Another open question: What happens, for example, if you vaccinate rats en masse against Lassa fever in Africa to protect people - and the animals then no longer die from the virus, but instead reproduce, attack the food and all that contaminate drinking water?

Research on infectious vaccines is being pushed ahead without clearing up fundamental doubts, without risk assessments, without taking legal objections into account and much more, criticized scientists in January 2022 in the science magazine "Science".
https://www.science.org/doi/10.1126/science.abj5593

The "significant safety risks [...] outweigh the potential benefits," was the conclusion of another group of scientists in the journal "Nature Ecology & Evolution".
https://www.nature.com/articles/s41559-021-01394-3

So far, the production and release of such self-propagating vaccines are not regulated. "Your favorite tech billionaire could do whatever the hell with any pathogen with his own money," The Intercept quoted this week as saying the director of a firm that advises on biosecurity issues.
The article was about laboratory accidents, hundreds of which had been reported in the USA alone in the last 18 years, reported "The Intercept" and described hair-raising events: a mouse infected with Sars escaped (luckily it was caught again), sometimes a researcher inexplicably became infected with antibiotic-resistant bacteria in the laboratory, sometimes a student hid for days that she had been infected through a needle stick in the laboratory and ended up in the hospital with a dangerous chikungunya infection. What if a similar accident happened with a contagious vaccine?
https://theintercept.com/2022/11/01/biosafety-lab-accident-chikungunya-virus/?utm_medium=email&utm_source=The%20Intercept%20Newsletter

The sponsors have an obligation

Given the objections raised by experts, it is not reassuring that the UK Department of Health and Human Services assured The Daily Mail that no trial of a self-propagating vaccine would take place without "strict regulatory and ethical scrutiny".
https://www.dailymail.co.uk/health/article-10536697/The-vaccine-spreads-immunity-passing-like-virus.html

Both the WHO and the "World Organization for Animal Health" (OIE) expressed concern in 1993 about the use of pathogens to control animal plagues. At that time, important international bodies such as the WHO or the International Plant Protection Convention (IPPC) were involved beforehand, the critics point out. But now the development is progressing without anything similar happening. The sponsors of such research projects must also face up to their responsibility, the critical scientists demand in their article.

Research funded with tax money – also in the EU

Experiments and model calculations that work towards such vaccines have been or are being funded with tax money and private foundations. Among other things, the EU is named as a sponsor with the "Horizon 2020" program, the NIAID led by Anthony Fauci, the Bill and Melinda Gates Foundation, the "Omidyar Group" (named after Ebay founder Pierre Omydiar), the US National Institutes of Health» and the research agency DARPA of the US Department of Defense.

Original article in German:

https://www.infosperber.ch/gesundheit/uebertragbare-impfstoffe-ungeahnte-risiken-und-chancen-2/