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Press Release

BioCopy files patent application to develop future broad-spectrum vaccines

- The new patent application covers a method for testing current as well as future mutations to develop broad-spectrum vaccines with extensive protection
- BioCopy technology can be used cross-manufacturerly to optimize different vaccines
- This allows mutants to be warded off proactively before emerging. It is an important step in the fight against any pandemic.

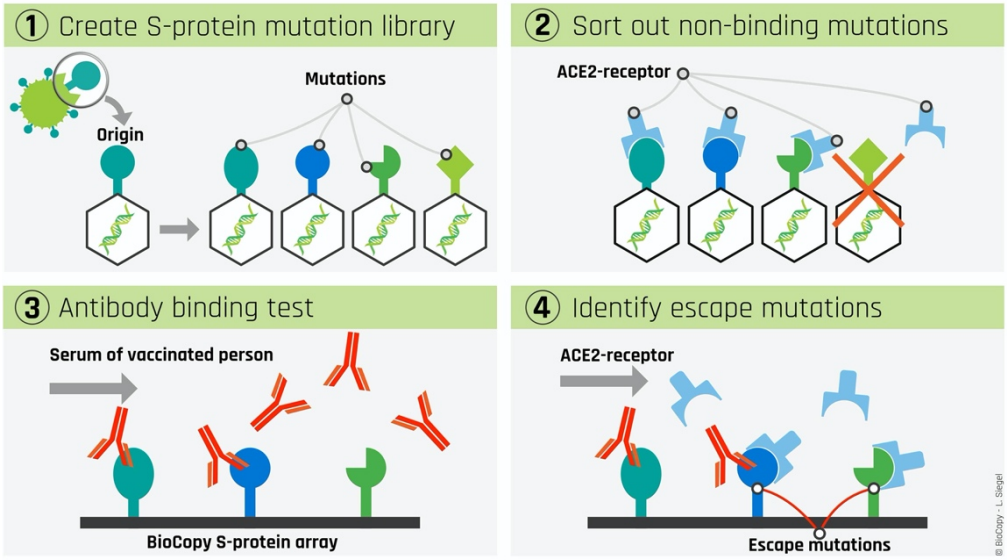
Emmendingen 23.03.2021

BioCopy GmbH has filed a new patent application for a method that, for the first time, will allow to test the efficacy of existing vaccines not only against existing mutations, but also against mutations that are not yet existant. It is now possible to design and preproduce a vaccine prophylactically against future mutations.

On February 19, 2021, a request to develop methods to establish broad-spectrum vaccines against COVID-19, but also future corona variants, appeared as an editorial letter in the Science Journal (https://science.sciencemag.org/content/371/6531/759). BioCopy took the first step in this direction by filing a process patent. BioCopy patented a method to detect mutants before they arise in order to design a tailor-made vaccine that will contain future pandemics as well. It fulfills the essential requirements of Sir Jeremy Farrar (https://www.telegraph.co.uk/global-health/science-and-disease/vaccines-could-ready-within-100-days-next-pandemic-starting/), Chairman of SAGE (Emerging Pandemics Advisory Group), to limit new pandemics within 100 days.

With this new method (see figure below), BioCopy combines its highly innovative protein mapping platform for developing new vaccines with established high-throughput screening systems, such as the phage display systems from MorphoSys or Yumab. This makes it possible to simulate not only current mutants, but also any number of future mutants not yet existing. Appropriate selection procedures will reduce the quadrillions of possibilities to a few thousand escape mutants, having the potential to bypass existing vaccines. These mutant components will then be measured on BioCopy arrays to identify mutations having the highest hazard potential. This will provide a basis for scientific assessment to design a vaccine against escape mutants before they emerge. BioCopy is searching for partners in the field of bioinformatics, who are able to provide further reliable predictions based on the data. Once completed, the process for developing "future vaccines" can be used

not only for a pathogen such as the COVID-19 pandemic, but can be extended to all viruses transmitted from animals to humans. For the first time a possibility is created to ward off mutations before they occur - a virologist's long-awaited desire.



BioCopy's method to design vaccines against future potential virus mutants: 1. BioCopy creates a mutation library with a large number of mutations in the S protein of the Sars-Cov2 virus using a classical phage library method. 2. BioCopy selects the abundance of S protein mutations for binding to the cellular receptor ACE2, as only these have the potential to still be infectious. All S-protein mutants that do not show binding to the corresponding cellular receptor ACE 2 are automatically removed. 3 BioCopy uses its DNA for protein copying technology and produces a microarray that separates the individual S-protein mutations into individual spatially separated measurement points. The microarray is then rinsed with serum from a Sars-Cov2 patient. The binding of antibodies in the blood against individual Sars-Cov2 mutants can be detected using BioCopy SCORE technology. This is done for all mutants parallel, in a single step and in high throughput. 4. In the final step, the same microarray is rinsed with ACE2. Again, binding is detected using BioCopy SCORE technology. All S-protein mutations that show binding to ACE2 receptor in this step are potential escape mutations.

Last year, BioCopy was able to demonstrate that antibodies from corresponding therapies against COVID-19 were weakly effective against certain mutants [(Nature Communications volume 12, Article number: 1577 (2021)](). In the context of the upcoming development of future vaccines, tests will show whether existing diagnostics and therapies respond to future virus mutants. Using this new method, vaccine development is well equipped for the future.

Dr. Günter Roth (CEO BioCopy) comments: "BioCopy's newly filed process, which is referred to internally as "future vaccines," is molecularly looking ahead with established display methods, used by companies such as MorphoSys or Yumab. We are not only testing existing mutants or ones that have been described, but also those that could arise. We are no longer reacting to present mutations, but are developing vaccines that could proactively ward off mutants before they become hazardous. Similar prophylaxis, has never yet existed.

BioCopy plans to develop the method to the stage of industrial application and to validate it on an exemplary basis. For this purpose, discussions will be initiated in the near future with leading vaccine manufacturers but also with regulatory bodies in order to establish a preventively designed vaccine as a new vaccine class."

About BioCopy:

BioCopy GmbH is a young development company with holding headquarters in Aadorf (Switzerland) and a research unit in Emmendingen, Germany. Behind BioCopy is a multi-award winning team of more than 20 experts and specialists with a broad know-how (biology, physics, engineering and microsystems technology and economics). BioCopy's platform technology is protected by a broad patent portfolio with 13 granted patents and 2 pending patents, all having long terms of well over 10 years. BioCopy's CEO and main founder is Dr. Günter Roth, a biochemist and physicist. Günter Roth released co-publishings with CureVac 10 years ago.

The BioCopy team is complemented by renowned board members, including Prof. Dr. Alexander von Gabain (co-founder of Intercell AG, now Valneva SE), Rainer Boehm (ex-interim CEO and Chief Commercial and Medical Affairs Officer Novartis Pharma) and Pascal Brenneisen (ex-CEO Novartis Switzerland).

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