

Switzerland potential home for “Noah’s Ark” of microbes to preserve human health in perpetuity

Berne, Switzerland, 11 June 2020

A new study supported by world-leading scientists finds that the creation of a “microbial Noah’s Ark” is feasible and should move forward into a pilot project phase with Switzerland one of two locations. The ultimate aim is to preserve the trillions of microbes that are essential to human health.

- The trillions of microbes living inside and on top of our bodies are crucial for maintaining human health and essential for fighting off pathogens, such as SARS-CoV-2.
- These microbes are threatened by westernization, urbanization, and environmental change.
- Reduced microbiota diversity is linked to chronic diseases such as obesity, diabetes and asthma.
- Global scientists propose to safeguard the remaining microbes in the “Microbiota Vault”.
- Funding consortia from Switzerland, Portugal, Germany, Sweden, Canada and USA supported feasibility study.
- Next step is a 2-year pilot study to demonstrate the concept, costing around CHF 1 million.

The [Microbiota Vault](#) would gather beneficial germs from human populations whose microbiomes are uncompromised by antibiotics, processed diets and other ill effects of modern society that have contributed to massive loss of microbial diversity and an accompanying rise in health problems. The [human microbiome](#) includes the trillions of microscopic organisms that live on and in our bodies, contributing to our health in myriad ways.

The feasibility study was prepared by two independent Swiss firms ([EvalueScience](#) and [advocacy](#)) and supported by non-profit institutions and universities active in the field of the human gut microbiome. The funding consortia includes the Swiss [Gebert Rüt Foundation](#) along with the [Seerave Foundation](#), the [Calouste Gulbenkian Foundation](#) (Portugal), Rutgers University (USA), Kiel University (Germany), Canadian Institute for Advanced Research (Canada), Bengt E. Gustafsson symposium foundation (affiliated to Karolinska Institutet, Sweden) and UC San Diego School of Medicine (USA). The study found that the Microbiota Vault initiative has great significance and potential, and that its leaders should establish a pilot project that would include infrastructure to store microbes in a site such as Switzerland or Norway and a collaboration mechanism for collecting samples with a developing country. When fully operational, the Microbiota Vault would be a global backup store for all microbial samples, the originals of which would remain within local collections in the countries of origin.

[Dr. Pascale Vonmont](#), CEO/Director of Gebert Rüt Foundation and head of its Microbials programme said: “We are delighted to be working alongside such a renowned group of scientists on this critical mission to preserve in perpetuity a vital store for humanity’s well-being. The foundation seeks to generate a significant impact by exploiting the potential and widespread use of microbial resources, as the microbiome is known to contribute significantly to human health and microbes play an important role in the ecosystem too.”

[Dr. Manuel Fankhauser](#), Chief Scientific Officer of Seerave Foundation and member of the project team, commented: “We are very excited to have established a solid base for this ambitious global project. As a next step, a 2-year pilot phase will test the logistical and legal framework. Apart from around CHF 1 million of funding, this will require us to pool resources and networks across the globe. We have already visited multiple Swiss army bunkers that could be repurposed for the Microbiota Vault in phase 2. We hope to move forward as quickly as possible, before even more microbial diversity will be lost.”

The project is championed by world-leading microbiome scientists including [Maria Gloria Dominguez](#) and [Martin Blaser](#) at Rutgers University, USA, as well as two Nobel Laureates and supported by collaborators across the globe including Professor [Nicholas Bokulich](#) at ETH Zürich and Professor [Michael Scharl](#) at University Hospital Zürich. The researchers, who outlined their proposal in 2018 in the journal [Science](#), liken their idea to the [Svalbard Global Seed Vault](#), the world's largest collection of crop diversity created in case of natural or human-made disasters.

“Populations in modern societies have lost much of their microbiome because of the damage caused by overuse of antibiotics and other medicines, over-reliance on high fat, processed foods, and other factors of industrialization,” said **Blaser**. “The Microbiota Vault initiative will help us work with indigenous cultures, in whom the microbiome is more intact, to find microbes that could be stored, replicated, and reintroduced to protect the health of all people. When new pathogens arise, such as SARS-CoV-2, harnessing the good microbes to fight the bad is one potential approach.”

The researchers hope it may be possible one day to prevent disease by reintroducing lost microbes. But that could happen only if researchers first collect beneficial microbes, e. g. from remote Latin American and African populations that have the greatest microbiota diversity before they, too, experience the effects of urbanization. People living in urbanized societies have lost a substantial part of their microbiota diversity; the gut flora of most Europeans and Americans, for example, is half as diverse as that of hunter-gatherers in isolated Amazonian villages. Importantly, the characterization of samples stored in the Microbiota Vault would be available in a transparent and open access fashion, enabling researchers across the globe and optimizing use of information and use of the specimens in the local collections.

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About The Microbiota Vault www.microbiotavault.org

The Microbiota Vault aims to conserve the diverse human microbiota to ensure long-term health for humanity. It will do this by establishing a non-profit non-governmental organization, bringing scientists and policy makers together to ensure consensus, creating a global repository of coevolved human microbes, connecting existing regional collections and promoting regional capacity building.

The creation of the Microbiota Vault is planned in 3 phases:

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|-----------------|-------------|---------------------|------------------|------------------|
| Phase 1 (pilot) | 2021-2023 | Research Laboratory | >200 samples | CHF 1 million |
| Phase 2 | 2023-2028 | Repurposed Bunker | >10,000 samples | CHF 4 million + |
| Phase 3 | beyond 2028 | Dedicated Structure | >100,000 samples | CHF 10 million + |

Study availability

The feasibility study will be available for download to the public via www.microbiotavault.org as of June 11th, 18.00 pm CET.

About Gebert RUF Foundation www.grstiftung.ch

Gebert RUF Stiftung was established by entrepreneur Heinrich Gebert as a science and innovation foundation. Its objective is to promote «Switzerland as a top location for business and as a place to live» (purpose article). As a private funding agency guided by its mission statement «making science effective», it supports entrepreneurial projects which are committed to achieving an impact. The Foundation has been supporting applied research projects around the use of microbial resources in health and technology in Switzerland since 2016 with the inception of the annual CHF 2 million “Microbials” program.

About Seerave Foundation www.seerave.org

The Seerave Foundation aspires to broaden and enhance the Standard of Care for cancer patients. It aims to do this by augmenting current cancer therapies with novel and benign approaches based on the modulation of the nutrition, microbiome, and immune system axis. These will be evidence-based, lead to clinically proven benefits for patients and also contribute to more sustainable health care systems. To achieve its goal, Seerave Foundation is supporting key groups across the full spectrum of scientific and clinical research and is building coalitions with other organizations to accelerate key enabling initiatives such as the Microbiota Vault.

Swiss Media Contacts

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Videos

The following video is available for screen and social media:

<https://vimeo.com/425532720> (1 minute)

Kiel University in Germany has produced two videos relevant to the project:

<https://youtu.be/ybo6lCBi2qY> (3 minutes)

<https://youtu.be/9NqQ6iGJ8cl> (28 minutes)

Media contact with Rutgers University

Rutgers University–New Brunswick has broadcast-quality TV and radio studios available for remote live or taped interviews with Rutgers experts. For more information, contact Neal Buccino

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