

# Lessons from Covid-19 research

Results and experience from the pandemic situation between March 2020 and August 2022.

## 1 Rapid response to the crisis

During the Covid-19 pandemic a large number of researchers put a great deal of effort into identifying solutions and approaches to controlling the virus and its spread. The SNSF enabled and supported these efforts with accelerated processes and special programmes. For example, in addition to its regular project funding, in March 2020 it launched the “Special Call on Coronaviruses” and in April 2020 the National Research Programme “Covid-19” (NRP 78). The projects in the National Research Programme “Covid-19 in Society” (NRP 80) will start from December 2022.

→ An overview, by scientific discipline, of the projects funded by the SNSF can be found at [snsf.ch/register](https://www.snsf.ch/register).

## 2 Selected findings and research contributions

### **Pandemic surveillance through wastewater monitoring**

Researchers have set up a wastewater monitoring system in six cities. Traces of viral RNA excreted by humans can be detected in wastewater. This enables the epidemiological situation to be monitored even after the withdrawal by the Federal Council of the measures deployed in response to the specific pandemic situation and even if only a few people are getting tested. Owing to the good experience gained through the project, monitoring has since been expanded to more than one hundred sites at the federal government’s request.

→ [data.snf.ch/covid-19/snsf/196538](https://data.snf.ch/covid-19/snsf/196538)

### **A game to communicate preventive measures in hospitals**

The risk of SARS-CoV-2 transmission is particularly high in hospitals, leading researchers to develop the computer game “Escape Covid-19”. Hospital staff practised appropriate preventive measures in

various scenarios. A comparative study showed that the game was far more effective in bringing about behavioural change than conventional information material.

→ [data.snf.ch/covid-19/snsf/198363](https://data.snf.ch/covid-19/snsf/198363)

### **Vaccines for immunocompromised individuals tested**

Two long-term studies in Switzerland are observing immunosuppressed patients over a period of many years: the HIV cohort and the transplantation cohort. Within these studies, researchers have set up a trial platform for clinical vaccination trials. It has enabled them to show, for example, that the mRNA vaccine from Moderna is similarly effective in immunosuppressed individuals to the Pfizer vaccine, and that people with HIV generally form antibodies, while this does not happen in many people who have received a transplanted organ.

→ [data.snf.ch/covid-19/snsf/196245](https://data.snf.ch/covid-19/snsf/196245)

### **Vaccination by nasal spray**

Researchers are working with international partners in a project to develop a vaccine that can be administered as a nasal spray. It results in the production of more antibodies in the nasal mucosa than is the case with the vaccines currently available. This could block multiplication of the viruses at an earlier stage. The vaccine could also provide protection against new variants, and no injections are required.

→ [data.snf.ch/covid-19/snsf/198473](https://data.snf.ch/covid-19/snsf/198473)

### **Measuring the viral concentration in the air**

Researchers have developed a biosensor capable of recognising airborne aerosols in which SARS-CoV-2 spreads. It enables the concentration of viruses in the air to be monitored continuously in all types of enclosed spaces. The first sensor systems are already in use in several nursing homes.

→ [data.snf.ch/covid-19/snsf/198258](https://data.snf.ch/covid-19/snsf/198258)

### **Modelling the impact of closing schools and borders**

Researchers have used a statistical model, the informative value of which was tested using actual Covid-19 case numbers, to demonstrate the impact of border and school closures and how the case numbers would have developed if these measures had not been taken. Modelling the closure of the border between Switzerland and Italy, for example, shows that without this closure the number of positive cases would have been more than twice as high.

→ [snsf.ch/article](https://snsf.ch/article)

### **Scientists review each other**

Researchers have established a database in which scientists worldwide enter data from ongoing studies of SARS-CoV-2 and evaluate them jointly. The database demonstrated its value as an important tool when it was used to show, for example, that the alleged therapeutic product hydroxychloroquine is not effective against the virus.

→ [data.snf.ch/covid-19/snsf/196190](https://data.snf.ch/covid-19/snsf/196190)

### **Registry of Covid-19 research projects**

The Covid-19 project registry at [data.snf.ch/covid-19](https://data.snf.ch/covid-19) provides a continuously updated overview of all

the coronavirus-related research carried out in Switzerland (funded by the SNSF, Innosuisse and Horizon 2020).

### 3 Lessons for research in crisis situations

During the pandemic the SNSF analysed its own funding practice and the general framework conditions for research to enable research to respond even more efficiently to future crises. The experiences of researchers were also input into the analysis. The following key points emerged:

**1. A well-positioned research landscape is the basis for responding rapidly in the crisis.**

Most of the work on Covid-19 was only possible because it was able to latch on to existing projects in basic research and make use of existing research infrastructure and skills.

**2. Rapid processes are decisive.**

Project selection and funding processes need to be accelerated in the crisis. This means that, in the future, a rapidly available crisis fund must be flanked by appropriate funding schemes with rapid approval procedures and the ability to respond to changing situations.

**3. Open access is vital for global cooperation in the crisis.**

The unparalleled global research collaboration during the pandemic was only possible because nearly all scientific publications in the field were published on an open access basis.

**4. Researchers must have access to laboratories and hospitals.**

The lack of access to laboratories and hospitals during lockdown made it difficult to work on many research projects. In future crises, access should be ensured throughout Switzerland and regulated uniformly.

**5. Pandemic research needs cohorts.**

A system for observing large numbers of people rapidly over long periods is needed in order to record the course of diseases and the efficacy of various interventions in the Swiss context. Large cohort studies of this kind are important in understanding long Covid in particular.

**6. Cooperation between research and the political sphere needs functioning channels.**

Existing expertise and new findings can only be incorporated into political processes if established communication channels exist between the scientific and political communities. Researchers suddenly become persons of public interest, and here they need uncomplicated support in keeping with the situation.

**7. The compatibility of work and family is especially important when workloads reach extraordinary levels.**

Many researchers worked incredibly long hours in their efforts to help manage the crisis. In future, young researchers with families in particular should be given more support – with childcare, for example.