

100 days of solitude: the spring of COVID-19 through the eyes of 15 young virologists of the INITIATE program

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Dear Editor,

We are 15 PhD students being trained in the Innovative Training Network INITIATE, which is featured in the accompanying Virus Research Consortium Series article. We began working on PhD projects in the field of virology between October 2019 and March 2020, just when SARS-CoV-2 appeared to cause the current COVID-19 pandemic. The imposition of lockdown measures affected our research projects, but also our lives. We have shared these experiences at the INITIATE's website (https://initiate-itn.eu/blog/), and here we like to report our common experiences.

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At the beginning of 2020, SARS-CoV-2 and COVID-19 were still largely unknown to the world. Due to the fast spread of the virus from China around the globe and across Europe, many things seem to have been turned upside down. The consequences of the current pandemic also impacts scientists in various ways. Immunologists and epidemiologists like America's Anthony Fauci or Sweden's Anders Tegnell have suddenly become widely known public figures. Most other scientists, however, are forced to cut back their activities or even shut down their laboratory work and some are locked in a new country, sometimes far away from home.

This is also true for us, 15 PhD students scattered all over Europe, working on different areas of immunology and virology. As early-stage researchers, we are part of INITIATE, a European funded training network with the aim of educating a new generation of scientists in the emerging field of antiviral immunometabolism. The program was launched with the intent of developing new strategies against potential viral outbreaks. Roughly one year after we started, it seems ironic that the very same thing we set out to fight has now manifested itself into reality, undermining our efforts. Depending on our location and specific field of research the impact of COVID-19 can be felt differently:

- "There is an intense feeling of loneliness, inadequacy and futility." (Mihai, Trinity College Dublin)
- "As a new PhD student, and also ex-pat, it was even tougher for me to cheer up." (Susma, Erasmus MC, Rotterdam)
- "Not being involved in SARS-CoV-2 research is frustrating, especially for a virology researcher." (Chiara, Utrecht University)
- "After that pandemic, we will be more motivated than ever" (Coralie, Trinity College Dublin)
- "Research has now, more than ever, priority importance, and I am glad to have the opportunity to make my contribution." (Adriana, Stimunity, Paris)

Naturally, COVID-19 has taken a large toll, not only on our day to day life, but also on our work as scientists. With viral infections standing at the very center of our research efforts, it is incredibly frustrating to watch the pandemic unfold across the globe without being able to help. But every little contribution we can make to our colleagues working on the new virus makes us proud.

As most research institutes across Europe are closed, we need to develop strategies to continue with our projects from home. Instead of working in the lab, most of us are now reading literature, writing reviews, or designing experiments for when we eventually return to the lab. Practically though, our projects are on hold, and these months will leave a big gap in our PhD research. A gap that we will hopefully fill once we can go back to normal – whatever "normal" will mean. With limited time and funding on our hands, this situation leaves us with great uncertainty about the future.

Regardless, this break from work gives us the opportunity to take a step back, focus, and look at our scientific career from a different perspective. Never before has it been more clear how incredibly valuable research on pathogenic viruses is. We may not be able to solve this crisis, but perhaps we can help to prevent the outbreak of SARS-CoV-3. If that isn't motivation enough to come back with full force once this is over, we don't know what it is.

When it comes to the effects of the pandemic on our private lives, the daily check of the Johns Hopkins University website is now part of our morning routine. Alongside SARS-CoV-2, fear and anxiety have also spread, and most of us have been acting as a "support line" for family and friends. But when will we be able to embrace them tightly again? Countless video-calls are a great remedy for the evenings in isolation, and they definitely help us feel closer to home.

How we keep ourselves in good spirits varies from country to country. For some of us, the farthest allowed expedition – for some of us only with a certificate - is to the nearest market. Shared meals with flat mates followed by extended table talks become the highlight of long days of "polar-bearing". Others live in countries with an "intelligent lockdown", where walks in the park help us to maintain a healthy mental state. But these activities are performed either individually or in small cautious groups, in contrast to the loud and happy crowds from the previous years. Spring brought sunny days, but festivities such as St. Patrick's Day in Ireland or King's Day in the Netherlands passed almost unnoticed. Once back to "normal", the ordinary things we used to take for granted will be the ones we appreciate most.

However, even in these exceptional times that greatly affect us both professionally and personally, we did not lose faith or enthusiasm. We are looking forward to going back to our experiments with renewed efforts and determination. In 2006, Nanshan Zhong recapitulated the

lessons learned from the SARS-epidemic in China: "As Franklin P Jones said, experience is the marvelous thing that enables you to recognize a mistake when you make it again. What has happened with the spread of SARS-CoV must not be allowed to happen again"

Despite this warning, we now bear witness to SARS-CoV-2. Next time, we must and can do better. We hope that this pandemic helps the world to realize the importance of scientific research. Even if many of us are not directly involved in coronavirus-related research, we are grateful to be virologists in times when virology is more recognized and respected than ever. And, despite all the frustration and sacrifices, we are grateful to witness these unique times when real-time epidemiology and not textbook knowledge is part of our day-to-day life.

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