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Published in:
European Journal of Immunology

DOI:
[10.1002/eji.202070125](https://doi.org/10.1002/eji.202070125)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2020

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Esser, C., Boots, A. M., Caignard, A., Ciraci, C., Grcevic, D., Knapp, S., Montoya, M., Di Rosa, F., Saksida, T., Stravinskiene, D., & Deniz, G. (2020). The impact of COVID-19 lock-downs for European (female) immunologists - our views as members of the EFIS gender and diversity task force. *European Journal of Immunology*, 50(12), 1855-1862. <https://doi.org/10.1002/eji.202070125>

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The impact of COVID-19 lock-downs for European (female) immunologists – our views as members of the EFIS gender and diversity task force

EFIS action towards gender and diversity

A task force on “Gender and diversity” was recently founded by the European Federation of Immunological Societies (EFIS). It aims at coordinating action on matters pertinent to our community that have a European (and beyond) dimension, in our case we want to promote diversity with respect to gender and ethnicity in immunology. Our group met for the first time in Belgrade, Serbia, in January 2020. The COVID-19 pandemic prevented a second in-person meeting, which we then scheduled to take place virtually in July 2020. In this article, we reflect on the effects and challenges of COVID-19 measurements for immunologists, and for female immunologists in particular, and immunology as a field.

The impact of COVID-19 crisis on European Immunologists

When the World Health Organization (WHO) declared COVID-19, a disease caused by the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2), a pandemic in early spring 2020 (see here), European governments responded with an array of protective measures, which differed across the countries both in timing and strictness. Without exception, these measures affected personal lives and work of scientists around the globe in unprecedented ways. The strictest measures were complete or partial lock-downs, which resulted with stay-at-home regulations; in some countries, people were not allowed to leave their homes without a special permit. Unnoticed by many, an earthquake in Zagreb, Croatia, worsened the pandemic

misfortune for scientists in that country [1]. In countries in which scientists had to stop most of the experimental work, those on tenure-track, post-docs, Ph.D. students or master students were especially affected [2]. Career-wise this group represents the most “fragile” group of scientists because missing out on experiments for months is particularly difficult and a direct threat to their careers. Our strong belief is that it was and is a responsibility of supervisors, mentors, institutes and funding agencies to support all early career researchers. For instance, the major German funding institution, the Deutsche Forschungsgemeinschaft, tried to mitigate negative effects by additional funds or deadline prolongations (see document here). In this respect, we think that our individual views from ten countries across Europe illustrate some over-arching issues, which surfaced with new vigor due to the pandemic. These are: (i) the biased burden of care-work typically placed on women, and (ii) the high risks and mental stress for early career scientists in a science system, which has a high level of financial/professional/personal insecurity. Both issues are a danger to the goal of diversity in science as well, further exacerbating the existing gender gap [3,4]. On the upside, we think that (iii) the chances of digital communication for many aspects in research and teaching need to be mentioned. The realization that videoconferences can work very well and that not all meetings have to be in person will certainly add to our future means of communication. Many during the crisis have come to cherish the fact that time spent at airports, in traffic jams, or long commutes to work can be used much better. Therefore, some in-person/face to face meetings will simply vanish as they are unnecessary.

The impact of COVID-19 pandemic on female scientists

At the very least, we believe that colleagues, employers and funding bodies need to understand this situation of mental stress, financial insecurity, missed opportunities, and the very real threat to career plans [2]. It was not easy when everyone worked from home, and it needed and still needs a special effort and additional empathy. It is also important to acknowledge the gendered perspective and the danger of losing hard-won ground for women in science, technology, engineering and mathematics (STEM) again, as pointed out by Australian scientists (see document here). This was first highlighted by anecdotal evidence from editors of scientific journals [5], then surveys also later showed that the brunt of care-work at home was on women. This was especially challenging for mothers of young children (schools and kindergartens closed) or having sick dependents in the household, which made it much more difficult for the “carers” to work efficiently, and to write publications or grant applications [6, 7]. For example, in Spain only 29% of submitted projects had a female leader in the prestigious Instituto de Salud Carlos III (ISCIII) project call and just 28% of the grants were awarded to female principal investigators. Unfortunately, Spain is no exception regarding this imbalanced situation.

As the Turkish representatives of the EFIS Task Force diversity team, Günnur Deniz and Ceren Ciraci started a survey in Turkey to determine the influence of the COVID-19 pandemic on immunologists regardless of their gender. Currently, they sent the survey to approximately 250 members of the Turkish

Society of Immunology, of whom 50 members responded. Data obtained so far indicate that 60% of the responding immunologists spent less time on academic work during the pandemic than before. Interestingly, 20% of the survey participants stated that the COVID-19 pandemic had hampered their studies, while 30% believe it never affected them. About half of the respondents said that the on-going pandemic only partly affected them. Other data from the survey suggest that 50% of the participants are not worried about losing their jobs due to the pandemic, while 40% were partly worried and 10% definitely worried about losing their jobs (unpublished data).

By using the social media of the Italian Society of Immunology, Clinical Immunology and Allergology (SIICA Facebook and twitter accounts) and with the help of the SIICA Junior Faculty, Francesca Di Rosa collected some information on the changes in the time dedicated to work by male and female immunologists during the COVID-19 pandemic. The most evident effect of the lock-down was a 10-hour/week drop in the time dedicated to work by women with children, going from about 45 hours to 35 hours per week. In contrast, men (with or without children), and women without children did not report a similar drop. A survey performed by a team of researchers at the Politecnico University of Milan focused on the space wherein university faculty members all over Italy worked during the COVID-19 pandemic [8]. Most of those working in “wet research” biomedical fields such as immunology had been working full time at the University before the lock-down. One question of the survey was whether at the time of the pandemic they did their work from home in a room of their own, or rather in a shared room. The difference between men and women was striking only 31% of women versus 57% of men performed their work from home in a room of their own (Rossi-Lamastra and Migliore, manuscript in preparation). About a century after publication of Virginia Woolf's famous book, entitled “A Room of One's Own” [9], we still have a long way to go to achieve gender equality in Academia.

Moreover, at a recent EMBL online conference “The impact of the COVID-19 crisis on women in science: Challenges and solutions”, speakers highlighted the global experience of women scientists, and elaborated on many of these aspects [10]. In the light of all these experiences, a

special “Women in Immunology” session is planned during the European Congress of Immunology 2021, dedicated to the impact of COVID-19 pandemic on women immunologists with the contributions of renowned scientist speakers. Our task Force also plans to provide a grant and an award for scientists in minority groups in developing countries within EFIS member states.

COVID-19 pandemics and fake news

One additional aspect warrants consideration as well. Obviously, communicating immunology and fighting fake-news became very important. For instance, the German Society of Immunology together with the German Society of Virology published a statement about vaccines (see statement here). This was an important step to help counter-act the worrying developments of calls to let the pandemic run almost freely in the hope of achieving herd-immunity, of fake-news spreading, and a rise in misinformation by anti-vaxxers and conspiracy theorists. The International Union of Immunological Societies set up webinars with excellent talks about COVID-19-related science (see here). In some cases, scientists stepped up as great communicators for public understanding of science in the media and social networks. Many more shared their knowledge in their own, smaller circles. We certainly need more of this, and – for this area as everywhere – the female voices and perspectives need to be heard, not ignored or silenced by journalists and politics [11].

The consequence of COVID-19 pandemic for researchers and the future of funding

As the pandemic will continue most likely for months, perhaps even years, until a vaccine, a cure or efficient drugs are available, we need to learn quickly and limit the damage to science and scientists where possible. Infection rates are rising again in many countries since the end of summer 2020. Shoulder shrugging is not an option because the consequences are dire if too many talented researchers decide that academic science, as a profession, will fail them by default. Diversity matters for making science better because “diverse research teams are more likely to come up with new ideas and perspectives” (see

here and [12]). This is even more important because together with virology, our field has become a focus of global interest, and suddenly huge grants for studying SARS-Cov-2/COVID-19 became available as well. Certainly, SARS-CoV-2/COVID-19 will be a topic at the next European Congress of Immunology, ECI, scheduled to take place in Belgrade in 2021. We will offer a gender and diversity perspective at this conference as well.

Conclusions

There is no doubt that the SARS-CoV-2 pandemic has impacted us all and will continue to do so. On the one hand, combined immunology, virology and epidemiology knowledge helps finding solutions for keeping the virus at bay (e.g. by identifying the major routes of exposure, or the development of an effective vaccine; now expected in 2021 [13]). On the other hand, the crisis has laid bare the necessity to communicate science and how we work. There is room for improvement in clearly translating scientific processes and knowledge to the public, but also for ensuring a fair presentation of gender and diversity in science, e.g. in the media.

Wet lab research at the bench came to a stop almost completely in many countries, with exceptions for COVID-19 related work. For an experimental science such as immunology, this meant that the mainstay of all our work was impeded dramatically. However, the lock-down measures made everyone realize that working from home is possible in today's digital world. Indeed, remote work may increase productivity if conditions are right and if this instrument is used sensibly. This concerns meetings, writing, data analyses and various “dry” research.

On the downside, working from home can lead to isolation and stress as the line between work and home blurs, or because the fruitful interactions of scientific discussions decrease. An important aspect was what may be called the penalization that comes as a result of care taking and home-schooling of children or nursing sick dependents during lock-downs. Women scientists took on these duties in particular and found themselves to be unduly limited in their professional output and the acquisition of grants.

Overall, the various lock-down regulations have delayed most research projects (albeit to different extents). Clearly, those on non-permanent contracts, especially

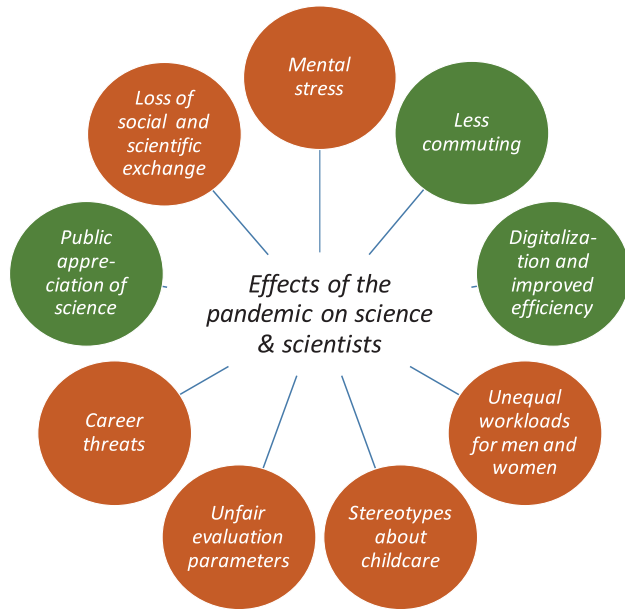


Figure 1. Summary of issues discussed in the text. Orange and green indicate negative or positive effects, respectively.

early and mid-career scientists, are likely to have suffered the most; they suffered not only by the lack of experimental progress but also by the lack of day to day live interactions with their peers and supervisors. The latter may have affected team spirit and mental wellbeing, which added to the pressure to finalize projects in time, as this is essential to further their careers, and to keep labs going (Figure 1).

Recommendations

First, issues of gender and diversity as exposed by the pandemic need to be acknowledged and facts of biases and the causes of unfairness no longer ignored. Second, based on this knowledge, the aim of equity must be integrated into the science policy of funding agencies, any evaluation of scientific progress, and academic structures and decisions. They must facilitate and safeguard the contribution of all scientists, to take advantage of true diversity of contributions for the advancement of knowledge and to preserve young talents for the future of science. This might be done by prolonging contracts or postponing evaluation deadlines and removing any intrinsic/unconscious/de facto penalization for raising children, as regards the effects of corona on scientists. Third, on the local level, institutional bodies need to exercise strong leadership, and establish measures to mentor and help their staff coping with the financial, professional and mental stress caused by the pandemic,

which is by far not over yet. Finally, this can be the time to open a discussion in the society about the current scientific system, which has financial/professional/personal insecurity for scientists built in by default, at a time when reliable and independent science is needed more than ever to guard against fake news and manipulations, to offer solutions and suggest interventions at a global level.

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European female immunologists share their experiences during COVID-19 lock-downs

Some smaller-scale and national surveys, studies and analyses of available data have recently been published, and although a major study is warranted, this will take more time. In the following, we, as members of the EFIS gender and diversity task force, share our very individual experiences, which we wrote down in mid-august 2020, a time when strict measures eased, yet the possibility of a second wave lingered. Together, our stories highlight the differences and the similarities of experiences by the female EFIS members.

Mieke Boots, The Netherlands

Working from home is possible but team spirit and mental wellbeing are at risk by loss of day to day personal interactions

The Netherlands chose for an intelligent lock-down to manage the spread of COVID-19. This mainly involved social and physical distancing but without strict confinement at home (excluding frail older adults in care homes). For most people, including myself, professor of immunology at the University Medical Center in Groningen, working from home became the rule. I have to admit that I was in shock during the first weeks by the mere fact that all research and teaching activities were cancelled, that all lab work was suspended and that my priorities of a fortnight ago became obsolete. So unreal. A world upside-down. Our rheumatologists had to counsel their patients by phone. I took solitary walks to help me cope with the new situation. After a few weeks, we started digital group meetings to assess the impact of COVID-19 measures on our research plans and discussed how to best deal with this in order to prevent delays/deliver on time. In essence, the wet work shifted to database research, involving our patient and health registries, and to manuscript preparation and writing. In June, our PhD students and post docs were allowed back in the lab for essential experiments. The positive things I took from this period is that you can do almost everything while working from home in today's digital world. I supervised students writing their essays via skype and even visited the online EULAR Congress this year. In addition, the video meetings worked well, albeit that I noticed a few kids wreaking havoc behind the backs of their (mostly) moms. Unlike before, cats and dogs joined our meetings now and then, making us smile. Still, the day-to-day personal interactions with PhD students and mentees, usually creating a lot of positive energy, were sadly missed. We should be aware that these young scientists are under a lot of pressure to finalize their PhD in time (3-4 years) and that young post-docs need to excel in short-term projects to advance in their scientific careers. I recommend that the institutional bodies address this issue jointly to preserve these young talents for the future of science, especially given that the pandemic is not yet under control and while waiting for an effective vaccine which may take a few years.

Anne Caignard, France

Loss of fruitful interactions in the lab

On March 16, France established an official lock-down act with strict measures of social distancing, such as the closure of schools and universities, and the suspension of all non-essential economic activities. In Paris, a dense city, there was high rate confinement (red zone); limited movements within a 1 km perimeter from home and restricted contacts were the rule. Keeping in touch with friends, family and neighbors by phone, or video calls were important interactions and were also the occasion to communicate on scientific issues of immunology and infection with colleagues during the anxious climate of confinement.

INSERM (Institut National de la Santé et de la Recherche Médicale) recommended working from home for those not involved in infectious diseases. Therefore, for two months home office became the rule. In the lab group, we organized weekly meetings by video conference. These meetings were devoted to post docs and PhD students that presented their work or alternatively journal club seminars attended by all. Each team further organized additional meetings and regular (twice a week) meetings for student mentoring. Respecting an established schedule, special authorizations were given for on-site work to PhD students and postdocs to maintain minimal research activity especially for translational research projects with patients' samples. Working from home hampers the everyday life of the lab and the frequent and fruitful interactions between members of the unit.

Since the end of confinement research activity is still slow due to difficulties with ordering and delivery of reagents. Traveling is still very controlled, many meetings are cancelled or postponed. All PhD thesis defenses, and thesis committee meetings are done by video conference. Master's degrees were limited to bibliographic dissertations. In Paris, the university has decided to extend the duration of financial support of PhD students for 4 to 8 months. Post-doctoral contracts may be managed on a case by case basis and are still matter of concern. With the end of the summer, active testing of healthy and symptomatic people showed an increase in the number of positive cases; the health crisis is still present, and its impacts will be long-lasting.

Günnur Deniz and Ceren Ciraci, Turkey

A survey and job security

Early March, before the lock-down in Turkey, graduate and undergraduate students were already worried about becoming infected with SARS-CoV-2 as many of them have to use public transportation to come to work. Moreover, their household often includes people who are older than 65 and younger than 18. While age is a risk for serious illness, the younger were considered better

spreaders and this was a worry. The following week in mid-March, schools, restaurants, public places and so on closed until early June. During this period, classes, department meetings, thesis defenses and similar tasks became online events, thus everyone had to modify and re-shape their class materials into an online version. It was much more difficult and laborious than expected to adopt the new online system because it came with many technical difficulties. The severity of the pandemic forced the majority of scientists to suspend their ongoing projects, as they would not be able to meet the deadlines for the upcoming project report dates.

Since Turkish scientists could not produce any new data, lab meetings have quickly turned into journal clubs. On the upside, some of the activities - such as serving as a jury member on thesis defenses, attending project panels and seminars - turned out to be more practical online than in person because people saved on travel time. On the downside, maintenance of the laboratories still had to continue. For instance, liquid nitrogen supply for the cell freeze tanks and maintenance of some equipment required our continuous attention. During the course of the lock-down, only faculty members were allowed on campus. Hence, those chores were added to the scientists' "to do list" as well.

It is understandable with the continuing pandemic that concerns about the extra pressures on scientists' careers are high. In summary, since the pandemic at least, Turkish scientists doubled their efforts regarding their scientific and daily activities regardless of their career stage.

Charlotte Esser, Germany Communication is key

Germany tried containment of the virus at first but, as this became increasingly impossible, decided for a moderate lock-down, starting in mid-March and heralded in with a stern TV-speech by Chancellor Angela Merkel. All major events had to be cancelled. Schools, kindergartens and shops closed (except supermarkets, pharmacies and other health-related shops), as well as restaurants, church services, and visits to nursing homes and so on. Only a few members of "system-relevant" professions, such as doctors and nurses, and later on scientists as well, could get limited access to kindergartens for their children. Meetings of more than two people in public became forbidden, unless they were family or from the same household. However, we could still leave the house and spend time in the sun of an extraordinarily friendly-weathered spring this year. In my institute, working from home ("home-office") became the rule, with few exceptions for experimental work or necessary maintenance. A main worry was the animal facility, but necessary measures were implemented to ensure that it could continue to function without compromising the health of the staff. It is terrible to read reports that in other institutes valuable lab mice were culled (see news article here). However, given the circumstances, my own home-office experience as a scientist at an advanced career stage, with a permanent contract, without major care duties, and enough room at home was positive. I am well aware of this privileged situation, and know that my younger colleagues in the lab, and especially those with children, had very different experiences and felt the dangers to their career much more acutely. I spent a productive time, writing and applying for grants. Connecting regularly and often with my team by video, email, or telephone was important and we discussed how we could move on with our projects, by, e.g. focusing on analyzing data, literature research, or planning new experiments. Together with my team, I also took on almost over-night the woes and joys of online teaching my immunology lab course. Beyond my own work, I noted the ever-increasing literature on COVID-19, wrote my own contribution to this research [1], and discovered interesting webinars and immunology podcasts. I even participated after work in surveys regarding home-office effects or entered philosophical discussions with an economist and philosopher about triage and their ideas about mandatory certificates of immune status. This is something I take away – as scientists we need to communicate and contribute in a world where many people do not understand properly what we are doing and how we do it, how we come to conclusions, and how the immune system works. The enormous run for the newly announced grant-money for COVID-19 research highlighted for me again that we have a crazy and unhealthy science system, where grant money is often the main or even the only source of funding for research groups. The possibility of missing out on even the chance for applying and competing for grant money, due to the lock-downs and the need to balance care-duties with the hard brain-work of grant application, was a high stress factor for scientists at all career stages. Again, equity for men and women is needed more than ever. Beginning in May, lock-downs were eased, shops and restaurants opened again with restrictions, and it becomes increasingly more important to communicate what dangers may still lie ahead, and what might be done to avoid a second wave. Restarting work and teaching in the lab was well-greeted, even though we all wear masks. In addition, we will eventually also need to understand how this lock-down has affected us mentally as working scientists and people.

1 Esser, C. et al., *Arch. Toxicol.* 2020. **94**: 2547–2548.

Note: all URLs were last accessed October 28, 2020.

Danka Grcevic, Croatia An earthquake on top of the lock-down

The first cases of COVID-19/SARS-CoV-2 appeared in Croatia at the end of February, and universities introduced various measures, such as postponing PhD program courses, quarantine for foreign students, cancelation of scientific meeting, etc. With the increasing number of detected cases, in mid-March, other teaching and scientific activities stopped abruptly, simultaneously with the closure of schools, day care centers, shops, restaurants, sport centers, etc. It turned our lives upside-down; we had no time to prepare

for full-time work from home, and everything that used to be our daily routine suddenly disappeared. For me, as a professor at the School of Medicine University of Zagreb, teaching had to continue and it required many efforts from teaching personnel, IT staff and faculty administration. We did not even have time to adjust to such unenviable circumstances when a strong earthquake struck Zagreb in late March, causing serious damage to the city center including the century-old campus of our School of Medicine. We lost most of our office spaces, teaching rooms and labs, and the only undamaged building has been the Croatian Institute for Brain Research that was built within the campus around 30 years ago. Families coped differently with the situation, depending on a number of factors, including demands for working from home, number and age of children, distribution of family obligations between members, presence of chronic diseases within the family, threat of existential problems, personal response to the distress and uncertainty of the situation [1,2]. In spite of impaired capabilities, we have managed by now to reestablish teaching activities and some of the lab work. Although to a limited extent, many research groups successfully continued to function in a combination of online and bench work. At the end of August, with the worsening of the pandemic situation in Croatia and a severely ruined campus, the situation does not look great, but most people are determined to do their best to make things work.

1 **Civljak, R. et al.**, *J. Glob. Health* 2020. **10**: 010349

2 **Marko, C. et al.**, *Brain Behav. Immun.* 2020. **87**: 82–83.

Sylvia Knapp, Austria

High number of female experts

Austria, like most countries in Europe, entered a gradual but swift lock-down mid-March, after the dramatic rise of Covid-19 cases in neighboring Italy forced us to recognize the seriousness of this pandemic. Some skiing resorts in Austria turned out to be very powerful incubators and infection clusters that fueled the rapid spread of SARS-CoV-2 throughout Europe. In fact, health officials in Iceland first raised alerts and warnings, as most Covid-19 patients there could be traced back to skiing trips in Tyrol, before the local tourism industry “surrendered” and skiing areas were placed under quarantine. The rest of Austria wound down substantially, as restaurants, shops and finally schools closed, and people were asked to only leave home for essential shopping or work.

In academia, the lock-down in March made us adjust quite a bit, lab members were sent to work from home, experiments were wrapped up and new ones postponed. While we could continue at a much-reduced level and finish important work for ongoing revisions, we strictly coordinated the presence of as few people as possible in the lab. Although this situation certainly caused a delay for most projects, I still consider us very privileged because none of us lost their jobs, and we all had plenty of data, unfinished concepts and grants we could work on from home. All meetings continued via video tools, which I at first found unexpectedly exhausting, missing all nonverbal communication possibilities and the subliminal atmosphere when sitting in the same room. Now, six months later, I appreciate the focus and straightforwardness that come with video tools, which we will continue for some time.

An interesting phenomenon I recognized was the type of experts we could witness in media and TV. Many very knowledgeable experts in virology, immunology, infectious diseases, epidemiology and vaccination managed to explain complex aspects in a very professional and clear manner. It was very reassuring to witness a high number of female experts, who importantly contributed to the general understanding of this pandemic, and the significance of science and research. As time moved on, busybodies, claiming to be experts, appeared in the public space. They succeeded in spreading wrong facts, biased interpretations of data, or populist conclusions, even claiming it is possible to have a vaccine in no time. This was not helpful.

Maria Montoya, Spain

Women snowed under with additional work

On March 14, 2020, an official lock-down act entered into force in Spain, which included the following measures: social distancing, the closure of schools and universities, banning of mass gatherings and public events and the suspension of all non-essential economic activities (BOE-A-2020-3692). Even walking or jogging in the park was forbidden, and people required a pass to leave home for shopping or running essential errands. The effects of this confinement in Spain were therefore likely to be more severe than in other countries. The Spanish lock-down lasted for around three months, depending on the area of the country. By July, coinciding with summer season and vacations, people returned to a so-called “new normality” with some restrictions in gathering and recommendations on social distance, hygiene and use of face masks.

During the lock-down, The Gender Unit in the Ministry of Science and Innovation published a report about gender and science in COVID times in Spain (see here). Unfortunately, this report is in Spanish only, but one sentence in the conclusion sticks out “The global health, economic and social crisis as a consequence of SARS-CoV-2 is not neutral in terms of sex/gender.” Indeed, the report highlighted several important points that we can use for future learning. First, the medical results showed that men are more severely affected by COVID-19 than women, indicating the importance of segregating data not only for the disease but also when testing any treatment or vaccine. Second, there are gender imbalanced medical professionals, like nurses, who have been more exposed to virus transmission. Lastly, the impact on the young generation of female scientists is still to be studied, but it will not be small. It was also interesting to see how male or female scientists approached this extreme lock-down situation. It became more apparent that a proportion of households with one or two scientists did not have an equal distribution of household

chores [1]. This unbalanced division increased the stress on women in a delicate situation. As a result, women did not engage as much in applying for COVID-19 related project funding.

Another important issue is publishing; there is the general idea that “male scientists had more time for publishing” (see article here), which fits with my own perceptions as well. My male colleagues had a productive time during the lock-down, whereas my female colleagues were snowed under, not only with job-related but also home-related work. Personally, as a staff scientist at the Consejo Superior de Investigaciones Científicas (CSIC), the largest research organization in Spain, my research group suffered a redirection to work in SARS-CoV-2/COVID as our research focusses on viral immunology. Ongoing projects were deprioritized, and we embarked on contributing to this pandemic as much as possible. We were allowed to work with a special permit as we were working in COVID-related projects.

All this pressure has meant to me personally that I was caught up entirely in work and work-related issues, such as outreach activities in the press, radio, webinars or TV, throughout this entire period and this is still ongoing. Fortunately, I belong to the lucky few women with great support from my inner circle.

We are now in the so-called “new normality” entering a second wave of virus transmission in Spain. It would be very wise to learn from the first wave, as SARS-CoV-2 is here to stay with us for a long period. We cannot afford to use only 50% of our scientific potential to contribute to ending the pandemic. We had better swim all together than sink in the pandemic ocean.

1 Staniscuaski, F. et al., *Science* 2020. **368**: 724.

Note: all URLs were last accessed October 28, 2020.

Francesca Di Rosa, Italy

Only a third of women have a room of their own at home to work in

The North of Italy was the first area in Europe where patients were diagnosed with COVID-19 in February 2020, although the SARS-CoV-2 virus was likely circulating in these regions already at the end of January. At the beginning of March, the Italian government took unprecedented measures to limit the COVID-19 epidemic all over the country. People were forced to stay at home, all shops, restaurants, schools, churches were closed. Lock-down measures affected all jobs, except for a few listed by the government (for example essential jobs necessary for feeding the population and treating patients). Lessons at universities were suspended and most research institutes closed. Lock-down was successful in drastically reducing virus spread, and it was slowly released in May-June. As in the first week of September 2020, the country is not back to normal life yet. The number of SARS-CoV-2 infected persons is rising in most Italian regions, and the ongoing re-opening of schools and universities requires careful scrutiny.

From February to May 2020, Italian immunologists working as clinicians in university hospitals, and in other medical centers did their best to cope with an unprecedented challenge, working tirelessly and generously in highly stressful conditions. For the immunologists working in research, it was a time for supporting the clinicians whenever possible, for example converting their activities to diagnostic testing. They also postponed other projects, and dedicated energies to the understanding of anti-SARS-CoV-2 immune response. During the approximate 10 weeks of the drastic lock-down, many immunologists performed work from home. It was not easy to reconcile domestic and work activities, in particular for those living with persons in need of care, such as parents living with young children. The mutual help among non-cohabitant members of the family and friends collapsed. Almost four months after the end of the lock-down, life is still heavily influenced by safety measures to contain/prevent the contagion, especially important for old people who are at high risk of developing severe COVID-19 if infected. Scientific research activities are not yet what they were before. In many cases, space in the lab, or in shared offices, is not enough to safely accommodate everybody, thus people take rotations to go to work. Some diversities emerged on top of pre-existing issues, as discussed below.

Italy makes it particularly challenging for women to reconcile work and family life. The birth rate in the country is very low, for a variety of reasons [1], for example that there are not enough public kindergartens, and the private ones are expensive. This is especially a problem for researchers that are generally not well paid. Grandparents often offer their help to take care of children, during the time that kids are not at school and young parents are working in the lab, in those families where the logistics allows it. There is also a very pronounced North/South gap in job opportunities in Italy, including jobs in scientific research. This gap has become more conspicuous in the last decade or so. Resources are concentrated in big research centers with shared facilities that are more abundant in the North. Consequently, many scientists working in Northern Italy are not originally from there and are thus less likely to get help in raising their children from grandparents or other members of the family. In this context of limited welfare and geographic disparities, the COVID-19 pandemic seemed to have deepened the gap between male and female immunologists.

1 Dalla Zuanna, G., *Genus* 2004. **60**: 39–70.

Tamara Saksida, Serbia

Helping each other and fighting conspiracy theories

Serbia entered lock-down in mid-March when a nationwide state of emergency was declared. After the initial shock of not leaving the apartment during curfew hours, people organized to help elderly citizens (over 65 years, which could not leave the house at

all, those who had no family support) in grocery shopping. A female scientist created this action and coordinated it via a Facebook page. Scientists used their knowledge in 3D printing to manufacture face shields that protect from droplet transmission. In addition, women who had sewing knowledge fabricated and distributed face masks, without charge. These empathic actions impressed me during these difficult times.

As everywhere, lab work abruptly stopped and work was transferred on-line. Scientists were engaged in qPCR testing facilities for SARS-CoV-2 detection in the country. As the engagement meant physical distancing from scientists' home and family, these teams mainly were comprised of scientists who did not have children at home or elderly relatives, of whom they had to take care of.

The 'other pandemic' of sharing and discussing conspiracy theories on social networks, which is currently spreading in the world, took its toll in Serbia as well. Therefore, many of us spent some time in reassuring people of the benefits of vaccination or helping to explain how the virus emerged naturally and that it was not fabricated in the lab as insinuated by many conspiracy theories. I believe that the contribution of each scientist, besides the important experimental work, should be in informing friends of different knowledge backgrounds in these important matters.

Dovile Stravinskiene, Lithuania

Child-care and household work reduce opportunities for women scientists

Lithuania entered the lock-down at the same time as other European countries: in the middle of March the government declared a strict quarantine in the territory of the Republic of Lithuania, although only few cases of COVID-19 had been diagnosed. Movement across the borders and within the country was constrained, work was organized remotely, and cultural, leisure, entertainment and sports activities were prohibited. The process of education and childcare in all educational institutions stopped and were organized remotely. The education and childcare restriction affected me the most, because I am a mother of a three-year-old boy and a teaching assistant and researcher at Vilnius University. All experiments at the laboratory had to end, leading to a loss of progress in the ongoing projects. Meanwhile, lectures had to be transferred to virtual platforms and conducted as online meetings. In my personal experience, the biggest challenge was to participate in online meetings with students and co-workers, prepare lectures, and reply to a huge number of letters and at the same time, take care of a toddler. The hardest was to teach him to be quiet while my husband and I were both on conference calls at the same time. Much of the work had to be done after working hours late in the evening. As a young female scientist, I feel that my opportunities to participate in ongoing calls to receive funding were reduced, as I had to spend more time doing housework and taking care of a child. However, I was pleased about the work done by the administration of Vilnius University and their efforts to facilitate a difficult period both for students and for the academic personal, by providing detailed instructions, suitable online platforms, and overall support. Our family was also very lucky to avoid loss of income during the quarantine, as well as none of our relatives being infected with the SARS-CoV-2.