**Ethical Emergency Planning in Animal Research Facilities:**

**Lessons from the Pandemic**

**Abstract:**

In this article, we discuss the ethics of research suspensions in animal research facilities and the consequent (mis)treatment of laboratory animals during emergencies. Through a case study from Switzerland during the COVID-19 pandemic, we articulate ethical principles and moral considerations that ought to guide the treatment and care of laboratory animals within animal research facilities during emergencies. They include a principle of preparedness, the importance of recognizing animal laboratory personnel as essential workers and conducting a Harm-Benefit Analysis in the case of an emergency, assigning responsibilities in a clear way, and providing psychological support in the aftermath of an emergency. More generally, we suggest that the pandemic should be taken as a learning opportunity for critically re-evaluating and improving emergency planning within animal research institutions worldwide, in view of mitigating risks to both human and animal well-being in future emergencies.

**Keywords**: animal research ethics, emergency planning, animal research laboratories

1. **Introduction**

The COVID-19 pandemic created major challenges worldwide. Within a very short time span in early 2020, governments were forced to decide on measures to safeguard their citizens’ health. These measures had far-reaching consequences for the day-to-day functioning of society in nearly all the world’s countries: social distancing and quarantine measures were implemented; many shops, businesses and institutions were closed; working from home became mandatory in many places.

The initial response to the pandemic also significantly affected animal research institutions. To comply with public health directives following the outbreak of the coronavirus in mid-March 2020, many research facilities worldwide mandated the immediate suspension of animal research. In some places, research was immediately halted; in others, ongoing research was wrapped up, but no new experiments were initiated. To be sure, the rationale behind this research suspension was laudable: to protect the health and welfare of ordinary citizens, animal laboratory personnel, and laboratory animals.[[1]](#footnote-1) After all, commuting to work and meeting co-workers in the workplace posed risks of infection to staff and to other citizens – especially given the scarcity of personal protective equipment (PPE) at that time. Therefore, in many countries, animal laboratory personnel were advised to stay away from their workplace.

This suspension of animal research in many countries hampered scientific progress, preventing scientists from finalizing critical experiments required for publications, grant applications, or PhD theses. Moreover, the research freeze and the attendant staff shortage proved deleterious to countless laboratory animals. Fearing that without anyone to attend to them, the laboratory animals might die of thirst or starvation – a scenario to be avoided at all costs – numerous laboratories decided to kill their research animals as a preventive measure. Surplus breeding animals, along with animals from discontinued experiments, were pre-emptively killed in countries such as Canada (Popple, 2022), India (Harikrishnan et al. 2023), South Africa (Chipangura et al. 2021) and the United States (Grimm 2020a, Grimm 2020b, Parry 2020).

In this article, we identify and discuss ethical issues arising from the research suspension during the COVID-19 pandemic. First, we set the stage with the specifics of Switzerland's response, detailing the actions implemented. We then use the crisis in animal research facilities in Switzerland during the pandemic as an instructive case study for prompting the reassessment and improvement of emergency planning in animal research facilities globally.

Second, we present the ethical rationale for adequately planning for emergencies in animal research laboratories. Bringing laboratory animals into existence along with their consequent dependence on humans for their welfare and survival, we argue, create strong relational duties of assistance – not only in normal times, but also when disaster strikes. These duties include planning for emergencies in ways that give due moral weight to animals’ fates.[[2]](#footnote-2)

Third, we outline the key ethical principles and moral considerations that should, in our view, guide emergency planning in practice. For example, we show that *preparedness* for all kinds of emergencies should be recognized as an ethical imperative for all institutions that breed and conduct research with animals. Adequate preparedness likely improves emergency responses, from preventing certain disasters and accidents from arising in the first place, to mitigating their effect and impact once they do occur (Bullock et al., 2021; Herstein et al., 2021). Thus, ensuring that research facilities are well prepared, with detailed emergency plans, will hopefully better safeguard the lives and well-being of both humans and laboratory animals during future emergencies.

Furthermore, we argue that animal caregivers and animal researchers should be regarded as *essential workers* during emergencies like the COVID-19 pandemic. Essential workers support the critical functioning of society and ensure access to basic services, such as healthcare, food, water and energy supply and waste treatment (Eurofound, 2023). They are usually not allowed to abstain from work merely due to a risk to their own health; rather, the risk level for humans would need to be *proportionate* to what would be at stake for the animals concerned. Moreover, we claim that the killing of laboratory animals in emergency situations is morally problematic and should, whenever possible, be allowed only after an ethical evaluation has been conducted (for example, as a comprehensive harm-benefit analysis). We also suggest establishing ethics committees to provide ethical guidance in emergencies and providing animal laboratory personnel with psychological support in the aftermath of an emergency.

We conclude with an appeal to animal research institutions worldwide to use the COVID-19 pandemic as a learning opportunity to retrospectively assess their emergency plans. Were the protocols detailed enough to provide a useful basis for decision-making? Was their staff appropriately trained? Were the key responsibilities clearly assigned? Such a re-evaluation promises to benefit not only research animals, but also animal caregivers. The reason is that adequate preparation, sufficient available resources and knowledge about how to handle challenging situations are among the key factors for preventing and managing moral distress and compassion fatigue in workers (Brune et al., 2024; Gustavsson et al., 2020). In turn, compassion fatigue and moral distress in emergency situations could potentially be reduced if more reliable emergency protocols and ethical triage procedures are put in place.

1. **The Impact of the COVID-19 Pandemic on Swiss Animal Research Facilities**

In this section, we will examine the situation in Switzerland during the COVID-19 pandemic. This case study promises to be informative, in several respects. First, *some* Swiss animal research facilities were likely not as prepared for emergencies as they ideally could and should have been.[[3]](#footnote-3) Indeed, in some institutions, existing emergency plans were insufficiently detailed to cope with an unexpected, global pandemic; in other cases, the plans were likely not consulted, for example due to top-down decision-making by the facilities’ heads or by the government. Second, the killing of laboratory animals in Switzerland subsequently led to the establishment of a working group that investigated how the situation of laboratory animals during emergencies could be improved more generally. This working group has since issued recommendations for emergency planning and shared them amongst Swiss animal research institutions. Third, since the authors of this article were actively involved in these working groups and are relatively well-acquainted with the Swiss situation, we can provide a first-hand account of procedures and recommendations that may be useful for animal research institutions in other countries. We believe that the Swiss case can serve as a valuable learning opportunity for other countries when similar situations arise.

What happened in Switzerland during the first wave of the pandemic? Because of the “Ordinance on Measures to Combat the Coronavirus (COVID-19)” issued by the Swiss Federal Council (2020), most higher education institutions imposed an obligation to work from home whenever possible, along with the immediate suspension of research activities (SwissUniversities 2020a). These measures also affected Swiss animal research facilities. They refrained from initiating any new experiments (with the exception of studies related to SARS-COV-2), ceased importing research animals, reduced breeding to the indispensable minimum, and many even discontinued ongoing experiments (SwissUniversities 2020b). As a consequence, laboratory animals were killed in some research facilities.

In response to these developments, the Ethics Committee for Animal Experimentation ECAE of the Swiss Academies of Medical and Natural Sciences issued a public statement in December 2020 (Ethics Commission for Animal Experimentation 2020). It noted that according to the Swiss Animal Experimentation Ordinance, an ‘emergency concept’ (i.e., protocol) is a prerequisite for the licensing and approval of laboratory animal facilities in Switzerland.[[4]](#footnote-4) The ECAE pointedly asked whether these mandatory emergency plans in Swiss animal research institutions were sufficiently detailed to guide decision-making during emergencies and inquired whether these plans were actually consulted when decisions about research suspensions were taken. Furthermore, the ECAE questioned whether key responsibilities were clearly assigned and distributed, noting that there were likely enough staff members available to ensure the welfare of laboratory animals and thus the continuation of the animal experiments for a longer period of time, which would have prevented the killing of some animals, at least in some facilities. The Commission therefore urged animal research facilities to establish and implement detailed emergency plans for the future, and called for an investigation into how many laboratory animals were culled due to the research suspension during the first wave of the pandemic.[[5]](#footnote-5)

As per the ECAE’s position paper, in the aftermath of the COVID-19 pandemic, a working group of five persons with different backgrounds was established to investigate how the situation of laboratory animals during emergencies could generally be improved in Switzerland. The working group consisted of animal facility managers from two Swiss universities, the National Coordinator from the Swiss Animal Facility Network SAFN, an ethicist, and an animal welfare protector. The working group met several times, in person, from late 2021 to mid-2023, to collaborate on ethical emergency planning for animal research facilities. The aim was to write guiding documents that would enable Swiss animal research facilities to refine and improve their existing emergency plans, notably from an ethical perspective. A workshop was organized mid-way through the writing phase, during which representatives of different institutions (such as a hospital, a high-security facility, a pharmaceutical company, and a laboratory that had experienced a major natural catastrophe) explained how they prepare for and would deal with emergencies in practice. Topics discussed included the types of emergencies that Swiss research laboratories may face, mitigation strategies, the importance of clearly assigned responsibilities and up-to-date contact details for those in charge during emergencies, and flowcharts outlining how to act in the case of an emergency. In turn, the findings from this workshop were added to the documents. These ethical recommendations for emergency planning in animal research facilities were disseminated amongst Swiss animal research institutions in January 2024, with the goal of better preparing them for future crises. In the following, we first articulate the ethical rationale for detailed emergency planning; in a second step, we outline key ethical considerations that should guide emergency planning in practice in our view.

1. **The Ethical Importance of Emergency Planning**

Laboratory animals as such are brought into existence by humans for scientific purposes. They are used to generate knowledge about fundamental biological processes, with the aim of safeguarding the lives and promoting health and welfare of humans, animals and the environment (Directive 2010/63/EU of the European Parliament and of the Council on the protection of animals used for scientific purposes, 2010). Most research legislation worldwide posit that these animals count ethically for their own sake – albeit less than humans.[[6]](#footnote-6) Thus, it is commonly accepted that laboratory animals enjoy a *moral status* or *moral standing* in their own right and consequently deserve moral consideration. Thus, a key assumption underlying animal research is that laboratory animals matter for their own sakes – that their moral value is not solely instrumental. Accordingly, most countries have research codes and guidelines in place to govern animal research from legal and ethical perspectives (see, for example, (Directive 2010/63/EU of the European Parliament and of the Council on the protection of animals used for scientific purposes, 2010; Animal Welfare Act, 2005; Animal Welfare Act, 1966). Their purpose is to reduce the suffering of research animals by limiting what can be done to and with animals before, during and after research, an example being the widely accepted application of the 3Rs Principle (Replace, Reduce, Refine) of Russell and Burch (Russel and Burch 1959). Until the goal of absolute replacement (i.e., phasing out all harmful animal research) is reached, institutions and laboratory personnel have obligations to care for and safeguard laboratory animals’ welfare (Russow, 2002)– including in emergencies. What, in practice, do animal facilities thus owe animals under their care in emergencies?

Laboratory animals are completely dependent on animal laboratory personnel for their welfare and survival. For example, they depend on laboratory staff to feed them and to clean their cages. This extreme *external dependence* of sentient animals upon humans generates strong relational duties of assistance (Palmer 2011). This means that research institutions have certain *positive duties* with regard to the life and welfare of laboratory animals: given that laboratory personnel are responsible for the very existence and specific living conditions of laboratory animals, the former have a legal and moral duty to appropriately take care of the latter. Just as with dependent humans, this care must still be ensured as much as possible in an emergency. In other words, the animals must not be simply abandoned if a disaster strikes (Irvine 2009).

Given the moral status of laboratory animals and their dependence on human care for their welfare and survival, we claim that emergency *preparedness* is an ethical imperative for all animal research facilities. Conversely, without sufficient preparedness, decisions during emergencies tend to be taken on an *ad hoc* basis, raising the risks of failing to give animal their due and of neglecting their interests. Just as we expect hospitals (for humans) to be prepared for problems such as fires, earthquakes or electricity outages (Campbell, 2019; Ceferino et al., 2020; Herstein et al., 2021; Sahebi et al., 2021; Zarka et al., 2021), so can and should we expect animal research facilities to be ready for such eventualities so as to protect the sentient animals within their walls. Therefore, research laboratory staff must be proactively trained for various types of emergencies, learning the measures needed to mitigate the impact of any given crisis. Naturally, this preparation ought to happen when there are sufficient time and resources to plan out and assign the staff’s respective responsibilities, and to train them accordingly. This kind of preparation should obviate the need for *ad hoc* decision-making, which may be hampered by time constraints, pressure, or unclear responsibilities, thereby reducing the risks to personnel and laboratory animals’ care and wellbeing.

Importantly, preparedness is not only a *moral* but also *legal* requirement in many countries. Switzerland and many other countries have put in place laws (FSVO Ordinance on animal husbandry, article 28), guidelines (Office of laboratory animal welfare 2002, National Health and Medical Research Council NHMRC 2013, Canadian Council on animal care), and regulations for accreditation (e.g. Association for Assessment and Accreditation of Laboratory Animal Care International) which require detailed plans and coping strategies for animal research facilities in the event of an emergency. Ideally, such plans ought to specify what to do at which moment of an emergency, by assigning specific responsibilities to staff and detailing emergency operating procedures (such as line of communication).

Many countries have experienced severe disasters in the past – as the US has with hurricanes, for example (Dalton 2005, Guterman 2005). However, Swiss and many other European research laboratories had never faced an emergency situation of this magnitude. In our view, the measures which were actually taken in the aftermath of the pandemic in Switzerland demonstrate that not all research institutions were adequately prepared. For many Swiss institutions, at least, the COVID-19 pandemic was the first real test of the adequacy of their emergency plans. Therefore, the COVID-19 pandemic can be used as a learning opportunity by animal research institutions to re-evaluate their emergency plans: what went well, and what could be improved?

1. **Ethical Considerations for Animal Research Facilities’ Emergency Planning**

In the following, we list various principles, ethical considerations, and recommendations that we deem relevant to ethical emergency planning. This list is neither final nor comprehensive; other moral issues may need to be considered, depending on the specific institution. We focus here on measures we deem crucial or often overlooked.

* 1. **Animal Laboratory Personnel as Essential Workers**

Given laboratory animals’ dependence on humans, laboratory personnel responsible for the lives and welfare of laboratory animals should be considered *essential workers* in times of crisis – similar to other indispensable professions, such as food producers, healthcare professionals, and zookeepers – who were morally and legally allowed, even required, to continue working during the COVID-19 pandemic to provide essential services.

Animal laboratory personnel have a *pro tanto* duty to tend to the welfare and lives of animals under their purview, even in times of crisis. These duties obtain until either a staff shortage significantly jeopardises animal welfare or until the risks to the human caretakers are considered unacceptable. While institutions in some countries, as the US, already recognize that laboratory animal personnel count as essential personnel (see, for example, Grimm 2020a; University of Michigan 2019), this view is likely not yet practically implemented in all animal research laboratories worldwide (or, for that matter, in breeding facilities). During the first wave of the COVID-19 pandemic, research was suspended in many places, and research animals were killed. Even if it was assumed that there was a significant threat to the health of the staff of animal research facilities or that a potential staff shortage was to be anticipated, this did not *eo* *ipso* revoke the moral obligation to ensure the laboratory animals’ welfare. The duty to fairly consider their fates remained.

Death can be considered the ultimate harm for animals, as it deprives them of all opportunities to have future experiences (Regan 2004). As such, the killing of laboratory animals ought, in our view, always to be understood as *ultima ratio* (last resort) and ideally only take place after a comprehensive harm-benefit analysis (see below). Thus, the killing of laboratory animals, even in an emergency, requires an ethical justification.

This view holds even if one assumes a hierarchical understanding of laboratory animals’ moral status – i.e., the view that humans’ interests are more important than animals’ similar interests. Yet the situation often presents itself differently in practice. The risks and burdens of the relationship between humans and research animals are often one-sidedly distributed – to the animals’ disadvantage. Indeed, humans’ duties of assistance towards animals are often understood as duties which can be revoked as soon as there is a certain risk or danger to humans. To illustrate this point, consider the mass culling of over 17 million minks in Denmark during the pandemic. It was discovered that minks are susceptible to SARS-COV-2 and thus could *potentially* spread the virus to humans. Consequently, millions of minks destined for the fur industry were culled (Lesté-Lasserre, 2020).

From an ethical perspective, opting out of the positive relational duties to care for the welfare of dependent animals is justified only if the risks and dangers to humans *significantly outweigh* the animals’ interests. The stronger the relational duties owed to animals, the higher the risk to human health and life must be to justify revoking the latter’s positive duties of assistance to the former. Strong relational duties – as in the case of laboratory animals – thus call for a re-evaluation and redistribution of risks and burdens in the case of laboratory animals, beyond the *status* *quo*.

* 1. **The Importance of a Harm-Benefit Analysis**

Given the legal and moral obligation to protect and care for laboratory animals, any measure affecting their life and welfare requires a harm-benefit analysis. This is already a requirement in most countries conducting animal research and should also, if possible, apply in emergency situations. Hence, to adequately balance human safety and animal welfare in the face of possible harms, a risk assessment that weighs the interests of all those affected by a decision is recommended. Note that it is *prima facie* ethically unjustified to compromise and sacrifice animal health and life for trivial human purposes (e.g., a minor risk to human health); rather, the risks in question must be weighed against each other *proportionally*. Such a harm-benefit analysis is especially important when animals’ lives are at stake. As outlined before, laboratory animals should only be killed in emergencies as *ultima ratio,* after all possible alternatives have been exhausted. When laboratory animals are killed prematurely (i.e., before the end of an experiment), the harm they endured beforehand turns out to have been completely in vain. Therefore, the killing of laboratory animals in emergency situations requires an ethical justification, especially in the case of animals who have already experienced harm during scientific studies.

The harm-benefit analysis should determine whether a suggested measure (e.g., a research suspension and the killing of research animals) is ethically permissible during an emergency. For any given measure during an emergency, the anticipated benefits (e.g., a diminished risk of human infection) must be balanced against all anticipated harms (e.g., suffering and death of animals, lost research benefits and potential economic costs). A measure or action is permissible if and only if the anticipated benefits clearly outweigh the anticipated harm – as generally required by harm-benefit analyses in animal research (Eggel & Grimm, 2018) Moreover, the harm-benefit analysis is case-dependent – i.e., it must be conducted on a case-to-case basis for any given emergency, if time permits. The outcome of the harm-benefit analysis will depend on the specific measure, the strength of the interests at stake, and the type of emergency.

To conduct such harm-benefit analyses, we strongly encourage institutions hosting laboratory animals to set up an *ethics advisory group* that can be consulted in the case of an emergency. This group can consist of members with various forms of relevant expertise, such as animal welfare officers, animal facility managers, animal caretakers, ethicists, researchers, veterinarians, crisis managers, and senior managers. In the case of an emergency, this group should – whenever possible – be consulted to discuss whether an envisaged decision would adequately balance humans’ and animals’ interests. Admittedly, this consultation process may not always be possible when emergencies arrive very suddenly, such as fires or earthquakes. Nevertheless, in situations that do not require an immediate response and are not extremely time-sensitive, such an advisory group may provide valuable insights and suggestions to facilitate the harm-benefit analysis.

* 1. **Clearly Assigned Responsibilities**

A further lesson from the pandemic is that the responsibilities of animal research laboratory personnel must be clearly assigned, ideally in advance. Every staff member should know what they are responsible for and what they should do in the case of an emergency, and what the correct lines of communication and action procedures are. To organize this, responsible authorities must be designated at the institutional level (e.g., task forces), who either have decision-making power in the event of an emergency or can at least perform advisory functions vis-à-vis those making the final decisions (in the case of top-down decisions).

Relatedly, the heads of research institutions such as universities must be cognizant that their decisions – typically aimed at humans (staff, students, etc.) – may also affect the sentient animals they host in their buildings. This requirement may seem trivial at first sight, yet can easily be overlooked. For example, during the COVID-19 pandemic, many governments and institutions (such as universities) ordered researchers to work from home. This was no sweat for scholars in the humanities or law, but created headaches for researchers working with animals on a daily basis. That is, before imposing such a general rule, the heads of research institutions should consider what it might imply for animal researchers, animal caretakers, and, most importantly, the animals themselves. Therefore, it is of crucial importance that senior management as well as the professionals in charge of emergency planning and responses in general within institutions be aware that they host animals, and of which species; this knowledge must then inform decisions that potentially affect those animals.

* 1. **The Content of Emergency Plans**

What should a sound emergency plan look like in practice? First, it must be tailored to the particular institution. This means that it must be adapted to the specific risks an institution faces, notably due to its surroundings, the nature of its research, and the animal species it hosts. Furthermore, the emergency plan must be *sufficiently detailed* to provide guidance for various emergency scenarios, such as power outages, long-term electricity and gas shortages, fire, earthquakes, and, of course, epidemics and pandemics. The plan must also contain suitable indicators, including predefined threat situations and escalation levels (e.g., proportion of staff shortages, danger level for animals and staff), and explicitly defined measures (e.g., the division of staff into independent teams, recruitment and training of additional staff, relocation of the animals). In our experience, all these considerations and specifications are required to adequately fulfil the moral duty of ensuring the welfare of laboratory animals dependent on human care in the event of an emergency.

In addition, a sound plan must involve measures to *mitigate* the likelihood of a disaster occurring in the first place, *prepare* for an emergency, to outline emergency *responses*, and to specify a *recovery* and *evaluation* phase after an emergency has been mitigated and controlled (see, for example, Roble et al. 2010, Dupepe et al. 2018, Petervarv and Pullium 2019, Special Issue Disaster Planning and Management 2010, Durkee 2013). *Mitigation* refers to actions that prevent or reduce emergency risks, for example by analyzing the types of emergencies the research institution may face, and by taking actions to mitigate these risks whenever possible. *Preparation* means that necessary materials are sufficiently stockpiled, that staff is well trained (including cross-training, so group members can take up different tasks during personnel shortage), that a clear communication line is in place, and that possible emergencies are proactively considered when designing new buildings (e.g., generators, fire doors, and potential relocation areas) (Bullock et al., 2021; Herstein et al., 2021). The emergency *response* specifies what to do in practice during a given incident. During the *recovery* *phase*, the institution transitions back to the level before the incident (e.g., returning animals to their cages, repairing equipment, stocking back up on resources (Dupepe et al., 2018)). After an emergency has occurred, institutions should assess during the *evaluation phase* whether their emergency planning was adequate, or whether there are improvements to be made (Dupepe et al., 2018).

Also, we recommend establishing medical triage guidelines and ethical decision trees, which may specify the order in which animal patients are treated and stipulate what level of severity ethically justifies the killing of injured laboratory animals. The medical triage guideline helps to identify those animals who most urgently need immediate medical assistance. In turn, an ethical decision-tree can guide ethically sound decision-making, helping institutions determine the relevant steps during an emergency. It does so by listing questions in a specific order, such as: Can the building be safely entered? If so, are animals present in their enclosure? If so, are they injured? If so, can they be treated? If so, is a relocation necessary? How can the animal’s welfare be maintained? The answers to these specific questions determine the steps to be taken next.

In our view, there are two guiding ethical principles that should be respected during an emergency. First, the number of saved *individual* human and animal lives should be maximized, rather than groups. It is *prima facie* unjustified to prioritize the saving of certain groups of laboratory animals in specific experiments, for example due to the mere economic or societal importance of a given experiment. That is, it is ethically unjustified to prioritize animals with, for example, rare genotypes, if other animals are at higher risk of suffering during an incident. Accordingly, the relevant triage criterion is not participation in a specific animal study, but rather individual animal welfare. Second, those in charge should strive to minimize harm – for both humans and animals. Thus, during emergencies, harm in the form of pain and suffering must be mitigated as much as possible.

In practice, this means that the first response to take in an emergency is to ensure the safety of employees and, if applicable, of people living in the surrounding communities (e.g., in the event of a fire or earthquake). Indeed, only if humans are themselves safe can they take care of animals. As in the case of first responders, animal laboratory personnel must ensure their own safety before assisting others. In a second step, animals’ health, welfare, and lives should be protected. Measures should be taken to ensure animals’ safety, to provide adequate care, and to reduce the risks of harm. Third, measures should be taken to protect environmental health, for example in the case of a toxic spill (a point that is particularly relevant to biosafety laboratories (Lin et al., 2020; Weng et al., 2024)). Last, steps should be taken to ensure business continuity – i.e., to ensure that critical and unique animal resources (such as strains, data, and tissues) are preserved so that research operations can resume following the emergency.

Animal research facilities can look to the emergency protocols of critical facilities like hospitals for guidance. While some customization is necessary, hospital plans serve as a good starting-point to ensure comprehensive coverage of critical elements. Importantly, the emergency plans for animal research facilities need to be practiced regularly: regular drills should ensure that each staff member knows what their assigned role is. Some researchers recommend practical decision-making training, to heighten familiarity with individual tasks (Pullium et al. 2014).

**4.5 Psychological Support**

Preparedness not only helps ensure that laboratory animals are given their due in the case of an emergency, but also promises to benefit humans, or at least to lessen the harms they endure. Staff members who have to kill laboratory animals on a regular basis report that they endure significant moral distress and compassion fatigue (Newsome et al. 2019). This was also the case during the COVID-19 pandemic: animal caretakers reported that the sudden killing of hundreds of research animals per day was emotionally, physically and morally exhausting (Thurston et al. 2021, King and Zohny 2022). Inflicting such high distress on laboratory staff is morally problematic and should be avoided whenever possible. Again, several considerations tilt towards investing efforts towards better emergency planning. First, the lower the number of animals killed, the lower the toll will likely be on the caretakers’ morale. The number of animals killed, in many cases, is a function of how well an institution was prepared and of what kinds of risk the animal laboratory personnel is willing to accept to continue their work. Second, the better prepared an institution is and the more adequate its emergency response, the more the institution can explain and justify the necessity of killing laboratory as *ultima ratio* to the executing personnel; in turn, this may lower moral distress and compassion fatigue to the extent that the personnel understand the unavoidable necessity of culling the animals in the specific situation. That is, institutions should actively and adequately explain why certain measures are taken to further reduce at least some moral injury. Finally, it may be advisable to provide staff members with the opportunity to consult psychological professionals following an emergency, to support and maintain their psychological well-being by coming to terms with what happened (Dupepe et al., 2018; Paul et al., 2023).

1. **Conclusion and Outlook**

In this article, we have argued that positive duties of assistance are owed to laboratory animals not only in ‘normal’ times, but also during emergencies. On the grounds that sentient animals have moral standing and matter for their own sakes and given their extreme external dependency on human care for their welfare and survival, we have argued that animal research institutions are under the moral obligation to thoroughly prepare for emergencies which could result in harm or even death to laboratory animals. This obligation requires the fair consideration and treatment of laboratory animal in emergency situations; even when there is little time for deliberation, expedient yet sound decision-making strategies can and should be employed (for example, following pre-established triage criteria and an ethical decision-tree).

In a word, we have argued that *preparedness* for all kinds of disasters is an ethical imperative for animal research institutions. Adequately preparing for various types of emergencies should ensure that laboratory animals are always given due consideration and care: the staff’s responsibilities and accountability must be clear, and laboratory animals’ fate must not be forgotten or overlooked. The case example of Switzerland during the COVID-19 pandemic made it clear that preparation and planning for an emergency must take place *beforehand*, when there are adequate time and resources. Once a crisis has already struck and decisions have to be made *ad hoc*, on short notice and under time pressure, or when the necessary materials are scarce, laboratory animals are put at a heightened risk of being unjustifiably neglected.

In this vein, we suggested, animal research institutions should take the COVID-19 pandemic as a learning opportunity to reassess their existing emergency plans, so as to better prepare themselves for future emergencies. In particular, personnel at animal research facilities should ask themselves whether emergency plans were duly followed during the first wave of the pandemic, whether they were detailed enough to protect laboratory animals and staff during this unexpected emergency situation, and whether the decision-making responsibilities were clearly assigned. Subsequently, personnel at animal research and breeding facilities should – as it was the case in Switzerland – use this opportunity to deliberate on how future emergencies can be prevented and further mitigated. As we have recommended, this could include implementing measures to reduce animals’ risk of suffering and death, stockpiling indispensable supplies, and drafting more detailed emergency protocols to increase the safety of animal caregivers and laboratory animals.

Of course, the arguments presented here hold not only for animal research institutions, but also for other institutions responsible for the care of dependent animals, such as animal shelters, veterinary hospitals and practices, and zoos. Now that the COVID-19 pandemic is under control, all these institutions must meet their moral obligation to reassess their emergency plans so as to better prepare for all kinds of emergencies that might strike in the future – not only for their own sakes, but also for the sakes of all the animals under their care.

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1. We use ‘animal laboratory personnel’ as an umbrella term for different staff members working and caring for laboratory animals, such as laboratory managers, animal welfare officers, researchers, veterinarians, and animal caregivers. By ‘laboratory animals’, we refer to all animals living in laboratories. By ‘research animals’, we mean animals who are actively used in animal research; ‘breeding animals’ are those used for breeding purposes. [↑](#footnote-ref-1)
2. In what follows, we use ‘emergency’ as an umbrella term to refer to all kinds of events which unexpectedly and negatively impact animal research facilities – such as disasters, accidents, natural catastrophes, and crises. Furthermore, we use the terms ‘emergency plan’ and ‘emergency concepts’ for all plans and protocols that cover the procedure in the event of an emergency, crisis, hazards or disaster. [↑](#footnote-ref-2)
3. As is demonstrated by the re-evaluation of emergency plans in the aftermath of the pandemic in Switzerland. Note that we focus here on public research institutions in Switzerland. Importantly, though, there were considerable differences amongst various Swiss animal research institutions, and we cannot make a general statement for all of them, as they are operated, organized, and led differently encountering different challenges. Furthermore, we cannot comment on the pharmaceutical industry in Switzerland, except to say that it seemed to us like this industry was better prepared for unexpected events than some public institutions. [↑](#footnote-ref-3)
4. However, the Ordinance does not specify how detailed this emergency protocol should be in practice. [↑](#footnote-ref-4)
5. One may object to this presentation of the first wave of the COVID-19 pandemic. After all, much was unknown about SARS-COV-2 in March and early April 2020. Animal laboratory workers may have themselves been members of at-risk groups, may have been living with people who were particularly susceptible to the virus, or may have been scared of the novel risk and uncertainty. However, from the authors’ perspective, we would like to emphasize that animal laboratory personnel are used to working in sterile environments. In most cases, they likely had the necessary knowledge, skills, and training to protect themselves from the virus. Furthermore, solutions could have been found for personnel who were afraid of a SARS-COV-2 infection (because of their own health or that of their loved ones). For example, those who were members of an at-risk group could have stayed home, while smaller teams could have continued with the research and caregiving activities. Such measures and steps could have reduced the number of animals killed. Admittedly, there was a lack of PPE, which made working in laboratories more challenging. It has to be noted, though, that animal research laboratories should be sufficiently prepared for emergencies and should thus stock up sufficient protective materiel in anticipation of emergencies. [↑](#footnote-ref-5)
6. This means that animal research guidelines commonly presuppose a hierarchical view of moral status: animals matter, but humans matter more; see, for example, (Animal Welfare Act, 1966; Directive 2010/63/EU of the European Parliament and of the Council on the protection of animals used for scientific purposes, 2010). However, this view has been challenged by many animal ethicists, arguing that we should grant sentient animals fundamental rights, or apply the principle of equal moral consideration to their case (see, for example, Francione 2000, Regan 2004, Cochrane 2007, Martin 2022). In turn, this would imply that most, if not all, harmful animal research that does not benefit animals themselves must be abolished. Under such assumptions, most emergency planning for animal research would become obsolete. Be that as it may, we premise our argument on the reality that animal research is a common practice in most countries worldwide and will continue for the foreseeable future. Therefore, in our view, it requires ethical guidance in the case of emergencies. [↑](#footnote-ref-6)