

An end to severe animal experiments

Dr. med. vet. MLaw Julika Fitzi-Rathgen, Head of specialist unit animal experiments, Swiss Animal Protection SAP

Despite a slight decline in the number of animals used for experiments to around 600,000 in recent years, there is still a lot of work to do in terms of replacing and reducing animal experiments, particularly with regard to animal experiments that inflict moderate to severe pain and distress, and of course also in terms of refining and improving the planned experiments.

There are (still) four major areas to work on in the field of animal experiments:

- The number of animals used in experiments and the distress caused are consistently high, particularly in the moderate to high severity categories (SG2, SG3).
- Basic research involving animal experiments is booming, despite shortcomings in terms of scientific rigour, insufficient validity of results and a lack of transferability to humans.
- There is much less consideration of animal welfare in laboratory animal husbandry than there is for pets and wild animals.
- Investment in 3R research and implementation has been insufficient for more than 30 (!) years.

In terms of animal protection, we therefore call for the following:

- ⇒ Ban experiments involving moderate or severe distress for laboratory animals
- ⇒ Implement improvements to laboratory animal husbandry
- ⇒ Ensure better support and more funding for the 3Rs
- ⇒ Move away from animal experiments towards human-based research that is free from animal testing

Why a ban on animal experiments that cause severe distress?

In the last 12 years (2009–2019), an average of 650,000 animals were used in animal experiments every year. Of these, well over half (around 400,000 animals) were used in experiments that cause little or no stress, approximately 150,000 in experiments that cause moderate distress, and 15,000 animals were used in experiments causing severe distress in severity grade 3, or SG3.

The experiments that are routinely approved and hardly ever rejected here in Switzerland may only be approved and conducted in exceptional cases within the EU.¹ This highlights one of the biggest loopholes in the otherwise rigorous Swiss Animal Welfare Act.

Severity grade 3 experiments are routinely approved in Switzerland – applications are hardly ever rejected

From 2008 up to and including 2019, 51,363 animal experiment applications were submitted and assessed by the cantonal animal experimentation committees. Over this 12-year period, only 203 applications were rejected by the cantonal authorities, which equates to a rejection rate of 0.4%. In 2019, 934 new applications were assessed and approved by the 13 active animal experimentation committees, while 3,265 projects that had already been approved in previous years were continued. Surprisingly, around 500 authorisations remain unused every year, which is a waste of significant resources (time, effort, personnel costs, state funds).

Animal experiments are approved/rejected in 20 cantons; some have joint animal experimentation committees with other cantons. In total, there are 13 active committees.² Ninety per cent of the applications are assessed and approved by six cantonal animal experimentation committees (Basel-Stadt, Zurich, Bern, Geneva, Vaud, Ticino).

¹ EU Directive on the protection of animals used for scientific purposes, 2010/63/EU
<https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32010L0063:EN:HTML>.

² There are currently 13 active animal experimentation committees in Switzerland - AG/BL/BS, BE/LU/NW/OW/SO/SZ/UR, FR, GE, GL/GR, JU, SG, TG, TI, VD/NE, VS, ZG, ZH/AI/AR/SH.

No upper limit on animal suffering and distress in severity grade 3

Severity grade 3 means procedures and actions performed on animals for experimental purposes that cause medium to long-term moderate pain or severe pain, medium to long-term moderate harm or severe harm, long-term severe fear or a severe impairment of general well-being. This stress is already almost unbearable for the animals. But the lack of an upper limit on animal suffering in severity grade 3 is particularly problematic: animals that are already experiencing the most severe distress (and are therefore classified in SG3) can feasibly be subjected to even greater stress during the experiment, e.g. through further experiment-related harms or constraints related to husbandry (e.g. individual housing, changed group composition, hierarchical disputes, minor changes in husbandry), or through harm from genetic modification, due to previous interventions and/or negative experiences, psychological distress and manipulation, cumulative interventions (recovery times vary widely between animals), or through stress caused by handling, for example.

The classification into four severity grades (0-3) makes no sense in science or animal welfare terms if there is no upper limit on the highest severity grade, which effectively cancels out the severity grade classification. The 'humane endpoints' do little to mitigate this issue. To release the animals in good time before the humane endpoints are reached would require every single animal to be monitored 24/7, which is not guaranteed in any Swiss testing laboratory. Instead, it can be assumed that SG3 laboratory animals are often subjected to excessive harm and die in pain.

Poor science at animals' expense

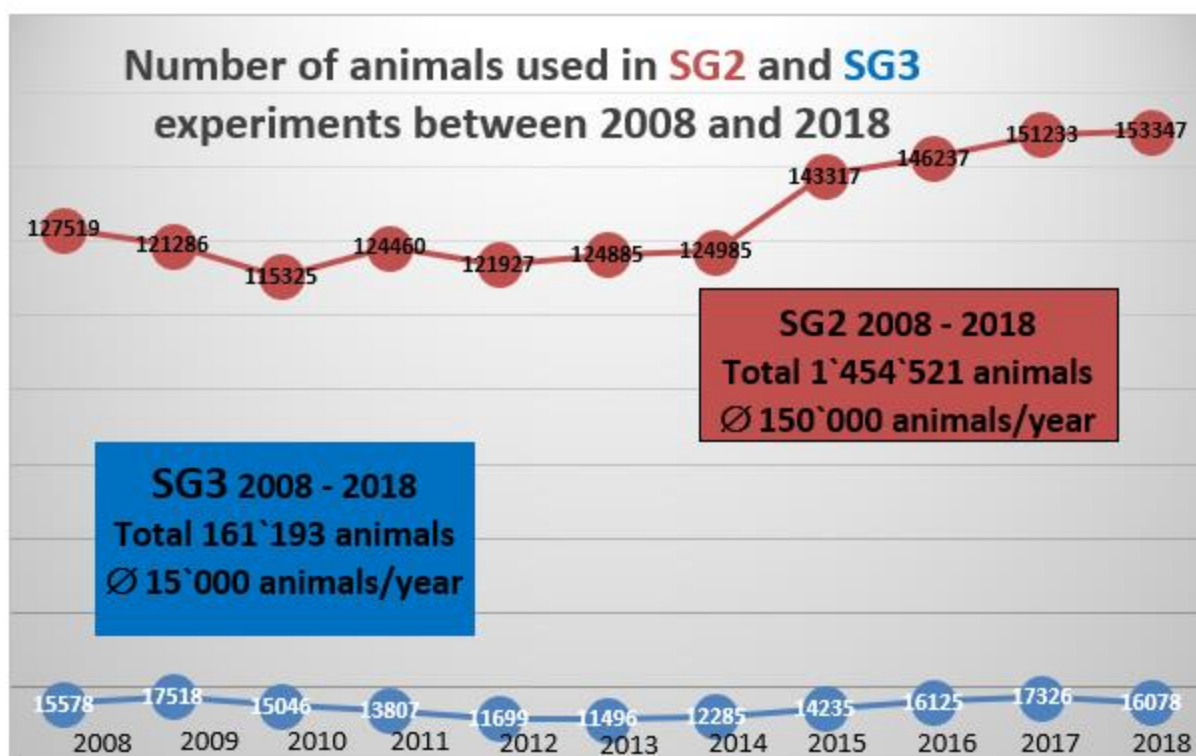
The findings from trials that inflict the most severe physical and mental distress on animals are highly questionable, even scientifically speaking, because it has been proven that distress and constraint can distort the results, which also severely limits the statistical validity of the experiments and their transferability to humans. The lack of findings and/or inadequate or distorted findings do not justify the severe distress inflicted on the animals, which ultimately shows that the harm-benefit assessment does not work and that the animal experiment should not be authorised or conducted in the first place.³ We currently have a serious implementation problem with experiments being authorised that are based on harm-benefit assessments that are not carried out with the necessary care. In addition, poor science at animals' (and taxpayers') expense is neither ethically nor scientifically justifiable.

No reduction in animal numbers in severity grades 2 and 3

From 2008 up to and including 2018, a steady average of 15,000 animals a year, and over 160,000 in total, were subjected to the most severe distress in animal experiments. These were primarily laboratory rodents, but also primates, dogs, cats, pigs, sheep, birds, fish and other animal species. It has long been scientifically proven that animals can feel pain and suffer just as humans do. They also – like humans – have specific needs and get sick and/or change their behaviour when these needs are permanently not met. Animals are not resistant to stress and harm, neither are they numb to pain, and yet we arbitrarily expect them to put up with the most severe distress and torment, psychologically manipulate them and do things to them that we would not ask of each other: we separate them from their young, tear them away from their social groups and accustomed environment, and house them alone and isolated from their conspecifics in sterile and cramped cages that are not suited to their needs and without sufficient stimulation. We let them go hungry and thirsty, mess with their circadian rhythms and hormones, interfere with their genes, and inflict human diseases on them, which they would otherwise never contract. We cut off their limbs, break their bones, paralyse and infect them and then watch their painful and often hopeless recoveries and assess the results. And these results are frequently nowhere near as relevant to us humans and to our health as the science community would have us believe.

³ Art. 19 para. 4 AniWA, harm-benefit assessment, weighing of interests for proposed animal experiments, Swiss Academy of Sciences: [https://naturwissenschaften.ch/uuid/i/1e7a8454-80f3-5662-a002-f2f9963398d5-Güterabwägung bei Tierversuchen – eine Wegleitung](https://naturwissenschaften.ch/uuid/i/1e7a8454-80f3-5662-a002-f2f9963398d5-Güterabwägung%20bei%20Tierversuchen%20-%20eine%20Wegleitung).

Even experiments in severity grade 2 are extremely distressing and painful for the animals. And here, too, there have been no positive changes in animal numbers – on the contrary: they have been steadily rising since 2014.



Source: FSVO statistics on animal experiments

Lack of scientific rigour in Swiss research

In addition, two studies conducted in 2016 found that many Swiss animal experiments lack scientific rigour and scientifically valid results.⁴ Similar studies in other countries draw the same conclusions.⁵ The lack of scientific rigour in animal experiments and studies call into question the validity of the results and the knowledge gained from the research. On the one hand, there is no demonstrable benefit to our health, and on the other, the basis on which authorisation is granted is lacking (criteria for harm-benefit analysis and indispensable need are not met).⁶

Animal experiments lack effectiveness

A further complication is the lack of effectiveness of animal experiments. The US food & Drug Administration (FDA) concluded from a series of evaluations and critical reports it conducted that the effectiveness of animal experiments on the development of medicines and therapies is at most 10%. In other words, 90% of all animal experiments bring no recognisable benefits and the animals suffer for nothing.

According to more recent estimates, only 5% of discoveries from basic research in a given decade result in a clinical benefit for humans, even if they are hailed as “pioneering”, “highly relevant” and “ground-breaking”.

The transgenic mouse model, which has been frequently used in animal experiments in the last ten years to identify and test substances to treat inflammatory diseases and sepsis in humans was promising in animal trials, but failed to prove effective for seriously ill patients in

⁴ Evaluation of scientific rigour in animal research in Switzerland, Reichlin, Vogt, Würbel 2016.

⁵ For example: Macleod M. 2015, Pound P. 2014, van der Worp 2010, Kilkenny C. 2009, Knight A. 2007, T. Lindl 2005.

⁶ Harm-benefit analysis Art. 19 AniWA, indispensable minimum Art. 17 AniWA and Art. 137 AniWO.

any of the 150 clinical trials involving the most promising tested substances.⁷

Ten years after the market launch, the US Food & Drug Administration (FDA) withdrew the licence for a drug to treat sepsis in humans, which the pharmaceutical company *Eli Lilly* then had to withdraw from the market. The only licensed drug at the time proved effective in pre-clinical trials but failed to successfully treat sick patients. The pharma company still made more than a billion dollars from this 'ineffective' drug in the decade it remained on the market.⁸

Research findings on Alzheimer's disease and strokes are further prime examples of the innumerable pointless animal experiments that have been conducted for decades. Currently no effective drug has been developed for Alzheimer's on the basis of animal experiments. Although 172 different genetically-modified mouse and rat models have been used in Alzheimer's research and over 300 therapeutic models have been classified as successful in animals, the most promising developments usually fail when applied to humans and have to be withdrawn from the market due to ineffectiveness or severe side effects. The failure rate currently lies at 99.6%. A study highlighted that of over 400 clinical trials on Alzheimer's therapies in humans, only 0.4% ultimately resulted in a clinical improvement in patients.⁹

A very similar picture emerges in the centuries-old research into strokes: for over 150 years, strokes have been induced in animals for experimental purposes (usually by blocking an artery in the brain in animal models involving mice, rats, cats, dogs, pigs, sheep, goats, monkeys and fish). The experiments and interventions are often very painful and distressing and frequently result in death.¹⁰ To date, only one therapy has been approved for use in humans. But this treatment only helps patients suffering from ischemic strokes and only within 4.5 hours of the stroke. The drug thus only "benefits" 5% of stroke patients.¹¹ This is despite more than 4,000 publications on trials involving these types of experiments with animal models, in which between 700 and 1,000 drugs and treatment methods have been tested, many of which successfully.¹²

Animal experiments do not justify the severe distress

Against this backdrop, animal experiments involving moderate to severe distress and constraint are neither ethically nor scientifically justifiable.

And this is particularly true with regard to the boom in animal experiments in basic research that has been going on for some years (see chart below).¹³ The increasing use of animals at universities and higher education institutions should therefore be viewed critically because the majority of animals used in basic research are not used for the development of specific new drugs or therapies that will benefit humans and animals, but instead the experiments are often more about gaining insights for further research. However, as described, these insights are often distorted and of poor quality and the experiments frequently run for many years without any concrete benefit (that can be applied in practice), which is why we believe that locking laboratory animals in cramped and unnatural cages and boxes their whole lives, conducting experiments on them that inflict moderate to severe distress and sacrificing them for a potential scientific insight is not justified.

⁷ Genomic responses in mouse models poorly mimic human inflammatory diseases, Junhee Seok et al, Jan. 2013, <https://www.pnas.org/content/pnas/110/9/3507.full.pdf>.

⁸ Drug for Severe Sepsis Is Withdrawn From Market, Fails to reduce Mortality, Mike Mitka et al, JAMA. 2011, <https://jamanetwork.com/journals/jama/article-abstract/1672928>.

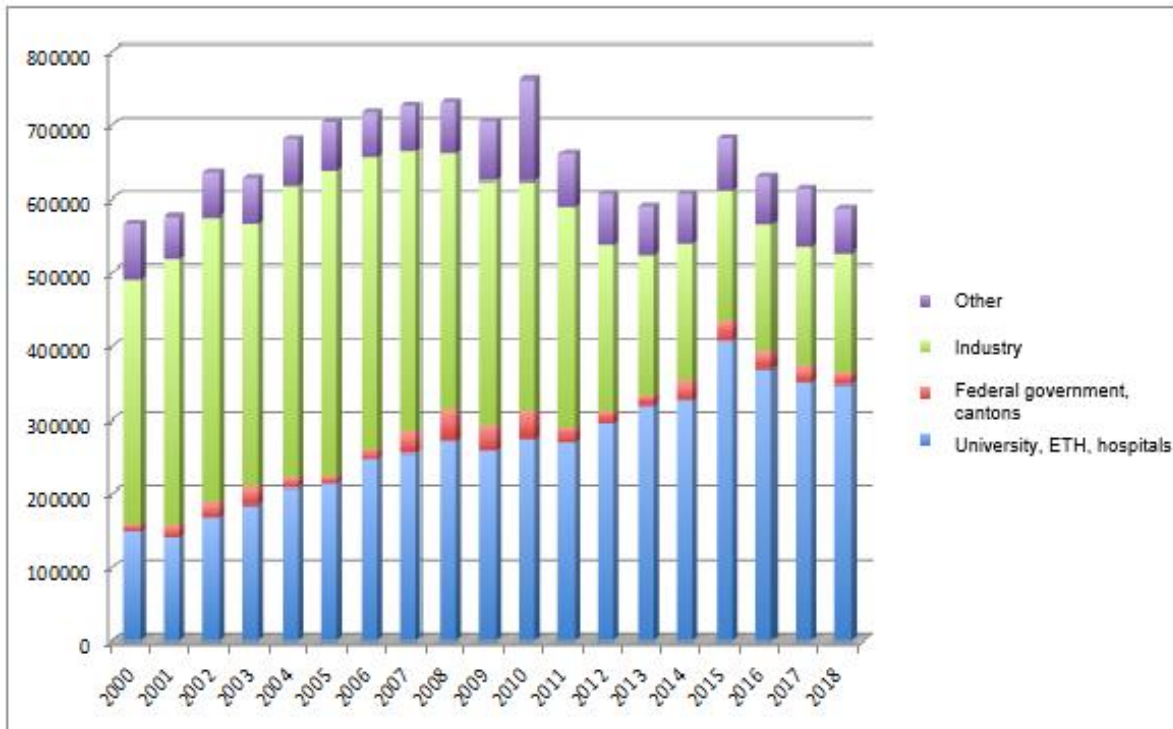
⁹ Cummings et al, Alzheimer's disease drug-development pipeline: few candidates, frequent failures. *Alzheimer's Research & Therapy*, 2014; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4095696/>.

¹⁰ Howells et al, Different strokes for different folks: the rich diversity of animal models of focal cerebral ischemia. *Journal of Cerebral Blood Flow & Metabolism*, 2010, wonach Eingriffe zur Schlaganfall-Forschung für viele Tiere (40- 85% nach 24-72 Std.) tödlich enden; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2949237/>.

¹¹ Canazza et al, Experimental models of brain ischemia: a review of techniques, magnetic resonance imaging, and investigational cell-based therapies. *Frontiers in Neurology*, 2014; <https://www.frontiersin.org/articles/10.3389/fneur.2014.00019/full>.

¹² Macleod et al, Pooling of Animal Experimental Data Reveals Influence of Study Design and Publication Bias. *Stroke*, 2004; <https://www.ncbi.nlm.nih.gov/pubmed/15060322> und Greek et al, Systematic Reviews of Animal Models: Methodology versus Epistemology. *Int J Med Sci*, 2013; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3558708/>.

¹³ Data excerpt SFVO animal experiment statistics, <https://www.tv-statistik.ch/de/erweiterte-statistik/>, 9.8.2019.



Source: SFVO statistics on animal experiments

Composition of cantonal animal experimentation committees is unbalanced

The unbalanced composition of cantonal animal experimentation committees means that animal welfare protection cannot be properly defended in terms of possible rejections of applications or divergent views and assessments. This is primarily due to the unbalanced composition of committees (the 1-2 animal welfare representatives are usually in the minority). From the perspective of animal welfare, a balanced member composition is important for the assessment of applications and the work of the committees. Committees must have an equal number of members representing the research community and representing animal welfare, although it must be possible for the latter to actually be appointed by animal welfare organisations. Committees should also include representatives of ethical concerns. It would probably also be advantageous to appoint some laypersons to the committees who would represent public opinion and would not be skewed by professional bias.

The current predominance of research interests is not compatible with the Federal Constitution, as both freedom of research/research promotion and animal welfare are constitutional interests and are in principle equally-important constitutional provisions. Consequently, research per se should not be accorded greater importance than the protection of animal welfare.

In addition, all cantonal committees should offer a minority the possibility to appeal as it must always be possible to request a legal review of a decision by the authorising authority. At present in Switzerland, only the Zurich animal experimentation committee offers an opportunity to appeal decisions.

Huge costs of animal experiments – borne by the animals (and taxpayers)

It is especially alarming – particularly given the critical stance of the public towards animal experimentation –,¹⁴ that animal experiments are financed on a massive scale at universities with our taxes.

In 2019, more than twice as many animals were born in laboratory animal facilities (1,046,877) or imported (252,203) than were actually used in animal experiments (572,069 animals). Precisely 1,300,080 animals were kept in laboratory animal facilities in 2019, of which 1,219,514 were laboratory rodents (mice, guinea pigs, gerbils, hamsters and rats), more than 70% of which had been genetically modified.

In the 142 approved laboratory animal facilities, more than 1 million animals were bred and more than 250,000 imported in 2019. Mice are the most common laboratory animal, making up 90% of all animals registered in laboratory animal facilities in 2019, of which 2/3 were genetically modified. But: 'only' 20% of the genetically-manipulated mice are actually used in animal experiments, although genetic manipulation is a complex and costly procedure that involves a great deal of animal suffering. The animals are not used because they do not meet the necessary criteria for the planned animal experiments: it may be that they are the wrong sex, or they do not have the requisite genetic characteristics.¹⁵ These 'excess animals' are usually killed. And this level of excess is normal every year.

In 2019, laboratory rodent husbandry alone cost CHF 1 billion, the majority of which is funded by the taxpayer (including all costs: staff, care, equipment etc.). One mouse costs a flat rate of CHF 4 per day. This does not include the costs of procuring the animals and of the approval process for animal experiments (animal welfare officers, animal experimentation committees, authorising authorities, IT system).¹⁶

To summarise, well over 1 million animals were bred and kept in laboratory animal facilities in Switzerland in 2019, but 'only' a third were used in animal experiments. This incurs huge costs for questionable benefit that are borne by animals (and the taxpayer). It is no secret that the majority of the funds are paid by tax payers every year – although few are likely to know or realise this or even agree to it.

Constant stress in laboratory animal husbandry – laboratory animals are less well protected

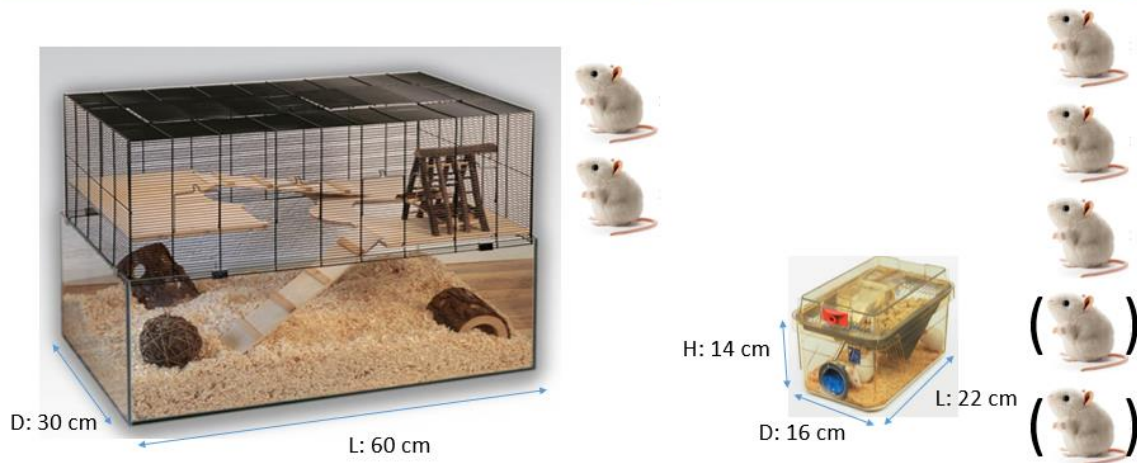
Laboratory animals are kept in captivity their whole lives and are much less well protected in Switzerland than pets and wild animals. Husbandry – in particular for laboratory rodents – is in no way species appropriate. They have much less space, minimal shelter, nothing to climb on (apart from the metal-barred lid of the cage) and have to make do with pellets to gnaw at. They do not receive a varied diet and are largely deprived of stimulation. This form of husbandry, which is not at all appropriate, is extremely physically and psychologically distressing for most animals. It is contrary to the guidelines set out as a minimum requirement for acceptable pet keeping on the basis of scientific findings. The inadequate husbandry conditions are accepted for the sake of experiments and are not sufficiently taken into account in harm-benefit analyses.

¹⁴ Survey on animal experiments, DemoSCOPE, 2017, http://www.tierschutz.com/media/071217/pdf/06_befragung_tiersversuche_demoSCOPE.pdf, Interpharma survey on acceptance of animal experiments conducted by gfs 2014, https://www.interpharma.ch/sites/default/files/gfs_bern_tiersversuche_2014_wik_final.pdf.

¹⁵ Source: <https://www.tv-statistik.ch/de/versuchstierhaltungen/>, 9.8.2019.

¹⁶ By analogy with the cost assessment for husbandry of mice and rats by the Deutsche Forschungsgemeinschaft DFG (calculation excluding cost of procurement, personnel, material and equipment costs for cage facilities, medical care, monitoring of hygiene standards, ongoing expenses for building and maintenance etc. and estimation based on Swiss conditions, https://www.dfg.de/formulare/55_03/55_03_de.pdf, consulted on 7.8.2019, and according to personal information from a Swiss laboratory animal facility, 2019.

Minimum cage dimensions for pets versus standard laboratory animals



Minimum requirements for pets versus standard laboratory animals

Pets:

Gnawing material: live branches, softwoods

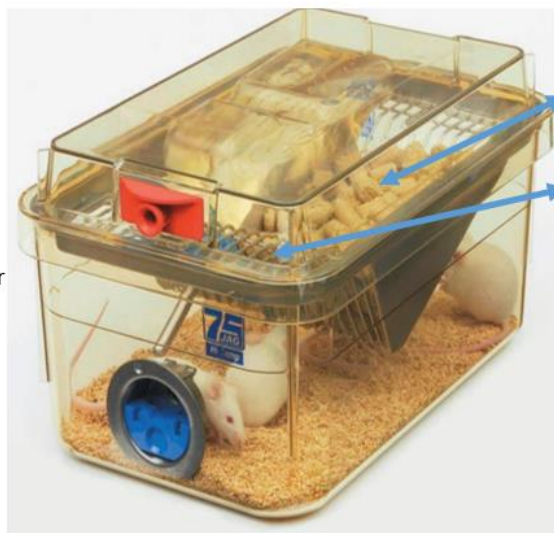
Opportunities for climbing: branches, ladders, ropes

Shelter: small house/box for all animals

Nesting material: hay, straw...

Feed: hay, straw (coarsely-structured), grains

Husbandry: min. 2 animals



Laboratory animals:

→ Feed: pellets or cubes

→ Barred lid

→ Nothing prescribed

→ Usually some pulp

→ Nothing prescribed

→ Animals can be housed alone

3R (replace, reduce, refine) – the way forward

There are only a few countries in Europe that have not yet established a 3R centre. Some countries even have several institutions supporting the promotion, development and use of alternative methods and the 3R principles (replace, reduce, refine). Many transnational and internationally-networked 3R organizations and platforms are already active. And yet the number of animal experiments and laboratory animals have remained high or even increased.¹⁷ Worldwide, well over 100 million animals are used annually for animal experiments – and as we all know, most of these animals will not make it out of the laboratory alive. This number is rising, partly because basic research with genetically modified animals is booming and because animal experiments are still the 'gold standard' for many researchers. The expectations of 3R competence centres are therefore high. They are also responsible for demonstrating greater transparency, e.g. in the implementation of the 3R principles, the

¹⁷ In 2018, a total of 586,643 animals were used for animal experimentation in Switzerland. In Germany, there was a year-on-year increase of 50,000 animals in 2017 to 2.8 million in total, despite an authorisation requirement and alternative methods. And in Austria, too, the numbers have been steadily rising since 2013, with a 15% increase to just under 240,000 animals in 2016.

reduction and replacement of animal experiments. To date, for example, it is almost impossible to find out how many animals have been saved by projects based on the 3R principles that have been implemented to date, or how many fewer animals suffer in terms of husbandry, handling and testing. Every year, numerous animal-free, highly innovative, alternative and replacement methods are developed and presented worldwide. We therefore want to point out the huge potential of better, more accurate, quicker and more economical research with less animal suffering.¹⁸

In Berlin, for example, there is a whole research centre dedicated to animal-free research with the development of human research models, including for basic research. The German federal government and the state of Berlin have approved funding of EUR 34 million for this joint undertaking by the Freie Universität and TU Berlin. Together they are showing they have the courage to innovate.¹⁹

Strengthening Switzerland as a location for research

For many years, Swiss Animal Protection SAP has been calling for equal support of 3R research and development to match the subsidisation of animal experiments, which cost the taxpayer several hundred million francs a year. The ideal system would be a cost-neutral – or even better – cost-cutting change of direction with a redistribution of funds and research projects so that gradually fewer projects involving distressing animal experiments are approved and more projects using animal-free alternatives are promoted. The Swiss National Science Foundation SNSF as the most important state research promotion body must accept its responsibility here and not shy away from the modern, innovative developments and research trends by not or only minimally supporting 3R research. But this has long required a rethink, away from animal experimentation and towards innovation and a paradigm shift to alternatives and replacement methods, instead of the one-sided distribution of research funding to projects involving animal experimentation that we have seen up to now.

While the new 3RCC is better placed financially than the former 3R Research Foundation, it cannot single-handedly turn a country with a conservative research mentality into an innovative research location.

Demands of Swiss Animal Protection SAP for a switch to alternative methods – away from animal experiments that cause distress

- The financial incentives from policymakers and authorities have so far been unilaterally on animal experimentation projects. This is why much more investment is needed in the 3Rs in future, particularly in replacement methods, and this should at least match the financial support given to animal experiments.

To this end, the following should be considered:

- better and more efficient involvement of the SNSF in the promotion of 3R research,
 - developing and establishing additional 3R promotion bodies,
 - ensuring greater subsidisation of the 3RCC by the federal government and industry,
 - setting up human-based research centres for more statistical validity, efficiency and transferability to humans.
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- Regular updating of the severity degree classification system:
 - Severity degree 3 animal experiments should no longer be eligible for approval.
 - The upper limit of severity degree 2 animal experiments should serve as the criteria for classification in severity degree 3.
 - Constraints of laboratory animal husbandry, such as individual housing (even if only temporary), changed housing conditions and group composition, a lack of environmental

¹⁸ Conferences on animal testing of Swiss Animal Protection SAP, <http://www.tierschutz.com/tierversuche/tagungen/index.html>.

¹⁹ The Simulated Man, <https://www.tagesspiegel.de/themen/technische-universitaet-berlin/neuer-campus-an-der-seestrasse-der-simulierte-mensch/23923946.html> and 12th SAP conference on animal testing, 20.6.2019, http://www.tierschutz.com/tierversuche/tagungen/pdf/tagung2019_referate.pdf, p.12.

enrichment or refinement, stress caused by gene manipulation, negative experiences, psychological distress and manipulations and stress from (invasive) interventions for subsequent experiments should be cumulatively taken into account in the severity degree classification.

- The federal government should regularly update the severity degree criteria on which the level of distress is classified and set refined, less distressing methods as standards, as well as replacement methods and methods to reduce the number of animals used. To this end, evaluations and validations should be sought as soon as possible.
- The minimum cage dimensions and husbandry conditions for laboratory animals should be brought into line with those for pets and wild animals. There is no obvious or justifiable reason why the same species are subjected to different husbandry conditions. This is incomprehensible, particularly in view of the severe distress, lifelong captivity and severe exploitation of laboratory animals.
- It must be guaranteed that the harm-benefit analysis for animal experiments is carried out with due care, and a balanced composition of cantonal animal experimentation committees with opportunities for appeal are essential to this:
 - The federal government, which has overall control of animal experimentation, and the cantons as the approval authority, must guarantee a thorough harm-benefit analysis is carried out when assessing and approving animal experiments.
To do this, the membership composition of animal experimentation committees must be balanced, which is not currently the case. Certain experimental designs can be expected to cause such severe suffering to animals that the weighing up of ethical concerns will always fall in favour of the animals. If it is not possible to find less harmful and more ethically acceptable test arrangements by changing the research hypothesis, it will be necessary to refrain from carrying out the experiment and to forego the expected gain in knowledge.²⁰
 - To ensure this process is respected, research per se should not be prioritised over the protection of animal welfare. The two enjoy equal protection in the Swiss Federal Constitution.
 - The composition of all cantonal animal experimentation committees should be balanced,
 - and a minority should also be allowed a right of appeal as it must always be possible to request a legal review of a decision by the authorising authority in the Swiss legal system.

²⁰ SAMS guidelines, 2010, <http://www.akademien-schweiz.ch/en/index/Portrait/Kommissionen-AG/Kommission-fuer-Tierversuchsethik.html>