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Monkey, Mouse or Zebrafish?

Ethical and Scientific Considerations in Choosing Model Organisms for Animal Experiments

1 July 2021, 13.15 – 18.00

Online – Join by Zoom

Organized by the Ethics Committee for Animal Experimentation (ECAE)
of the Swiss Academies of Arts and Sciences

Over 80% of animals used in research are mice and rats. How do researchers justify the choice of animals for their research? Does the chosen species always provide the greatest epistemic benefit – or the least harm for that benefit? Researchers may also choose animals that they are familiar with, that are commonly used by their peers, or that cost the least.

Furthermore, the Swiss Animal Welfare Act stipulates that “experiments on animals higher on the evolutionary scale may only be carried out if the purpose of the experiment cannot be achieved in animal species that are lower on the evolutionary scale”. From this an implicit moral hierarchy has emerged with primates at the top, followed by dogs and cats, other larger mammals, rodents, and – at the bottom – fish. Although this hierarchy is biased by subjective human preferences (relatedness, familiarity, attractiveness) rather than based on biological evidence, researchers may shy away from using animals ‘higher on the evolutionary scale’ out of moral concerns, higher bureaucratic burden or fear of harassment by militant activists.

The aim of this symposium is to identify scientific and ethical problems in the choice of model organisms for animal experiments and raise awareness among scientists and regulators for these problems, using research on Alzheimer’s Disease as a case study. The symposium should help researchers and regulators in asking the right questions when choosing and evaluating model organisms.

Organisation: Ethics Committee for Animal Experimentation (ECAE)

Organisation Committee: Alessandra Bergadano, Matthias Eggel, Birgit Ledermann, Michael Schmid, Michaela Thallmair, Hanno Würbel, Sibylle Ackermann

Inscription

Please register via this link:

<https://unibe-ch.zoom.us/j/99248272010?pwd=cUNDZmtBOUdIM0VuZVN5TW81MDEyQT09>

The number of virtual places is limited to 300.

Accreditation as ½ day of continuing education for personnel performing animal experiments by the Swiss Association of Cantonal Veterinarians (VSKT) requested

Program

- 13.15 **Introduction**
Prof. Hanno Würbel, President ECAE, University of Bern, Switzerland
- 13.30 **Review of animal models in translational research on neurodegenerative diseases**
Prof. Mathias Jucker, University of Tübingen, Germany
- 14.15 **Four researchers provide insight**
- Why did they choose these animals?
 - How do they use these animals?
 - What key findings were obtained with these animals?
 - What unexpected obstacles did they encounter?
 - How do they assess harms against benefits?
- Clinical research**
Prof. Jean Francois Demonet, HUG, Geneva, Switzerland
State of clinical research and expectations towards preclinical research
- Mouse research**
Dr. Laure Verret, University of Toulouse, France
- Zebrafish research**
Dr. Caghan Kizil, DZNE Dresden, Germany
- Primate research**
Prof. em. Eric Rouiller, University of Fribourg, Switzerland
- 15.30 **Moral status and hierarchy among animals - ethical considerations**
Dr. Samuel Camenzind, ECNH, Messerli-Institute, Vienna, Austria
- 15.50 **Coffee break**
- 16.20 **Podium and Plenary discussion**
Mathias Jucker, Jean Francois Demonet, Laure Verret,
Caghan Kizil, Eric Rouiller, Samuel Camenzind
Moderation: Dr. Michaela Thallmair, University of Zurich, Switzerland
- 17.30 **Wrap-up**
Prof. Hanno Würbel, President ECAE, University of Bern, Switzerland
- 17.45 **End of the symposium**

Speakers

Dr. Samuel Camenzind

Samuel Camenzind received a PhD in Philosophy from the University of Veterinary Medicine Vienna in 2019. His doctoral thesis explores the moral category of instrumentalization within the human-animal relationship. He studied in Zurich, Vienna and New York. After earning his Master's Degree in German language and literature, philosophy and social studies at the University of Zurich, he received his teacher's training for secondary schools in German language and Philosophy in 2011. Focusing on Applied Ethics in his studies his diploma thesis dealt with utilitarian grounds for ethical vegetarianism. 2012 he started to work at the Messerli Research Institute (MFI) as research scholar and spent 2016 one semester at the Department of Philosophy at the New York University (NYU). Since 2019 he has been a senior scientist at the Unit of Ethics and Human-Animal Studies at the MFI.

Prof. Jean Francois Demonet

JF Demonet is MD and Neurologist (1987) at Toulouse University; training in Neuropsychology at Montreal University and in brain imaging in R. Frackowiak's lab in London UK with a long collaboration since then; PhD in Cognitive Neurosciences in 1994. He founded with B. Dubois, B. Laurent and B. Michel the GRECO, a French-speaking non-profit association aiming to unify the clinical practices and testing procedures in clinical neuropsychology (<http://www.site-greco.net/>). Currently, he is Director of the Leenaards Memory Centre and Professor (full) of Neurology, University Hospital (CHUV) and is heading the "CU ROMENS", a federative structure between the 2 University-based Memory centres at CHUV (Lausanne) and the Geneva University Hospital.

Prof. Dr. Mathias Jucker

Mathias Jucker is Professor of Cell Biology of Neurological Diseases and a director at the Hertie Institute for Clinical Brain Research at the University of Tübingen. He is also a group leader at the German Center for Neurodegenerative Diseases (DZNE). Jucker earned his Ph.D. at the Swiss Federal Institute of Technology in Zürich. He was then a postdoc and research scientist at the National Institute on Aging in Baltimore, USA. He returned to Switzerland as an assistant professor (START fellow) at the University of Basel and in 2003 was called to his current position in Tübingen. The focus of his research is on the cellular and molecular mechanisms of brain aging and age-related neurodegenerative diseases. Noteworthy are his efforts to translate fundamental and preclinical research into clinical studies and his commitment to the Dominantly Inherited Alzheimer Network (DIAN). He has received several honors and prizes, including the Hamburg Science Award for Dementia Research (2013), the MetLife Award for Medical Research in Alzheimer's Disease in New York (2014), and the International Prize for Translational Neuroscience of the Gertrud Reemtsma Foundation, Max-Planck-Gesellschaft, (2020).

Dr. Caghan Kizil

Caghan Kizil is a neuroscientist and geneticist, who is leading a tenured W2 Helmholtz research group in German Center for Neurodegenerative Diseases (DZNE) within Helmholtz Association and is a Visiting Associate Professor in Columbia University Irving Medical Center, NY, USA. His research culminates interdisciplinary approaches harboring genetics, neuroscience, cell biology, neuroimmunology, biotechnology and drug development. His team focuses on learning from Zebrafish how to enable the adult brain to better cope with neurodegenerative diseases and regenerate. He introduced adult zebrafish as a model for amyloid toxicity, and developed single cell sequencing strategies for addressing neural stem cell plasticity. He developed 3D hydrogel-based culture systems as new investigative platforms, which also aim to reduce the animal experimentation in research.

Prof. Eric Rouiller

Eric M. Rouiller is a biologist by training (University of Lausanne, Switzerland, 1976)). He completed his Ph.D. thesis in 1980 at the Faculty of Medicine of the University of Lausanne in neuroscience/neurophysiology (hearing system), followed by a post-doc at Harvard Medical School (USA, 1981-1983) in the same field. Since 1989, at the University of Freiburg (Faculty of Sciences and Medicine), he has been successively Prof. FNS Fellow (START grant 1989-1996), then Associate Professor (1996-2003), and finally Ordinary (Full) Professor (2003-2019) and holder of the Chair of Neurophysiology. His neuroscience research focused on the mechanisms underlying the control of voluntary movements in non-human primates, as well as deficits and functional recovery due to various pathologies of the motor system (cortical injury, spinal cord injury, Parkinson's disease, etc). Different therapeutic approaches were tested on the model of the non-human primate. Another research theme was the auditory system. Eric M. Rouiller is the author of about than 150 peer-reviewed articles published in neuroscience journals. Prof. Eric M. Rouiller retired from his Professor position in September 2019.

Dr. Michaela Thallmair

Michaela Thallmair studied Biology at the Ludwig-Maximilians-University Munich and did her PhD in Neuroscience at the ETH Zurich. Since 2019 she holds a Master in Laboratory Animal Science (RWTH Aachen). Michaela Thallmair has been the Animal Welfare Officer of the UZH since December 2012. She is presently the Chair of the Swiss Animal Welfare Officer Network and in the steering committee of the thematic group «Animals used for Scientific Purposes» of LERU (League of European Research Universities). Since 2018 she is a member of the Ethics Committee for Animal Experimentation (ECAE) of the Swiss Academies of Art and Science.

Dr. Laure Verret

Laure Verret studied Cellular Biology with a major in Physiology and Neuroscience at the University of Toulouse. She obtained a PhD at the University of Lyon, during which she studied the neuronal networks involved in REM sleep in the rat. She was appointed Associate Professor of Neuroscience at the University of Toulouse, and nominated Junior member at the Institut Universitaire de France in 2016. Her research aims at identifying the neural mechanisms underlying cognitive deficits in various mouse models of Alzheimer's disease. Her work has shown the crucial role of some inhibitory neurons in mouse models of the pathology, as well as in AD patients. These neurons coordinate brain activity, making them key actors for the proper functioning of cognitive functions. Today, her research aims at determining the functional changes of these neurons that may cause memory impairment in AD mice, and establishing new strategies to restore memory function.

Prof. Hanno Würbel

Hanno Würbel studied Biology at the University of Bern and obtained a PhD at the ETH in Zürich. In 2002 he was appointed Professor of Animal Welfare and Ethology at the University of Giessen (Germany), and since 2011 he holds the chair of Animal Welfare at the University of Bern. His research on experience-dependent plasticity of brain and behaviour is aimed at better understanding the welfare of captive animals and improving the scientific validity and reproducibility of animal research. Some of his findings were implemented in the Swiss authorization procedure for animal experiments. Besides academic research and teaching, he serves on various committees to promote ethically responsible and scientifically valid research, including the Ethics Committee for Animal Experimentation (ECAE) of the Swiss Academies of Art and Science, the executive board of the Swiss 3R Competence Centre (3RCC) and the strategic board of the Swiss Reproducibility Network (SwissRN).