Introductory Remarks to Symposium 11

The 4Rs in animal-based neuroscience research: Refinement, Reduction, Replacement, Responsibility

Roman Stilling and Stefan Treue, Münster and Göttingen

This symposium focusses on key aspects of how to strive for the highest quality of science and animal welfare when using animals in neuroscience research in order to maximize epistemic benefit. It aims at scientists who work with animals and want to address their responsibility by learning about cutting-edge aspects of issues of high relevance for biomedical research.

For responsible and ethically justifiable animal research a number of criteria need to be met. This includes compliance with the 3Rs principle (replace, reduce, refine), a useful framework for the efforts made to combine high-quality science with the best possible animal welfare. However, the moral obligation to increase animal welfare in experiments and to promote best practice, as well as a culture of care for the animals goes far beyond this. This has led to the proposal to expand the 3Rs by a 4th 'R': responsibility, to highlight the critical role that scientists play in ensuring the highest standards in their experiments.

This symposium outlines means to ensuring best-practice in animal research:

Every scientist planning an experiment involving animals must carefully check for animal-free alternative scientific approaches. Given the quick developments of some of these methods it is paramount to stay up-to-date on their abilities and limitations.

Recent studies reveal that a substantial number of biomedical studies suffer from a range of issues that seriously limits their scientific value. How can we overcome issues like biases in data acquisition and analysis, deficiencies in the statistical assessment (including underpowering animal studies)?

Statistical approaches, such as meta-analyses, pooling data across similar studies to enhance the reliability of findings, offer an opportunity to enhance scientific output, both in quality and quantity, without a corresponding increase in animal research.

Publicly funded research is under the obligation to communicate transparently about the use of taxpayers' funds. What are efforts and methods to increase pro-active communication about animal research at the international, national and regional level and which experiences have been made with this approach?

Symposium 11

Thursday, March 21, 2019
11:30 - 13:30, Lecture Hall 103

Chairs: *Roman Stilling and Stefan Treue, Münster and Göttingen*

11:30 **Opening Remarks**

11:35 Michael Heide, Dresden
BRAIN ORGANOIDS AS IDEAL REPLACEMENTS OF ANIMAL MODELS IN NEUROSCIENCE? - CHANCES AND LIMITATIONS OF A BRAIN IN A DISH (S11-1)

12:00 Ulrich Dirnagel, Berlin
NAVIGATING ETHICS AND EVIDENCE IN PRE-CLINICAL NEUROSCIENCE RESEARCH (S11-2)

12:25 Malcolm Macleod, Edinburgh, Scotland
THE REPRODUCIBILITY OPPORTUNITY (S11-3)

12:50 Stefan Treue and Roman Stilling, Göttingen and Münster
RESPONSIBILITY INCLUDES COMMUNICATION AND TRANSPARENCY ABOUT ANIMAL RESEARCH (S11-4)

13:15 **Discussion/Concluding Remarks**