

sults indicate that cerulean injections may be acutely painful to mice and that a low level of pain is due to inflammation of the pancreas. **Anne Zintzsch** from the University of Giessen in Germany described the challenges researchers face in consistent severity classification. Although consistent severity assessment and classification of procedures are essential for the ethical review process and are an indispensable part of planning, refining and evaluating animal experiments, the classification is still insufficiently harmonized within EU countries, and experts often evaluate animal procedures very differently. She has produced an overview of classifications of experimental techniques and procedures and of severity classification of genetically altered animals<sup>7</sup> that can help compare animal statistics from different countries.

The 3RCC also recognized the presentations of two young researchers at its 3Rs Day. **André dos Santos Rocha** from the University of Geneva won the 3RCC Poster Award for his presentation on a refined rabbit model in respiratory medicine,

while **Victoria Schreiner** from the University of Basel received the 3RCC Oral Award for her presentation on the sustained release formulation of a painkiller used in mice. 3RCC Director **Chantra Eskes** closed the event with a short presentation on the center's main activities, which included the setting up of a successful funding program, the development of an education strategy at bachelor level, the organization of a conference dedicated to the 3Rs, and communication measures that help promote the implementation of the 3Rs principle among researchers. The Federation of Swiss Cantonal Veterinary Officers (VSKT) accredited the Swiss 3Rs Day as one day of continuing education for study directors and experimenters. The 2<sup>nd</sup> Swiss 3Rs Day is scheduled to take place on September 3, 2020.

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<sup>7</sup> <https://norecopa.no/severity>

## Meeting Report

# One Year Charité 3<sup>R</sup> – Results and Perspectives

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One year after its official inauguration, Charité 3<sup>R1</sup> held its first scientific symposium on December 17, 2019. Over 120 participants gathered in the full auditorium to hear about the mission and goals of the center that was founded by *Charité Universitätsmedizin Berlin* in 2018. The symposium also functioned as the “onboarding” of the new Scientific Advisory Board (SAB), which convened for its first working meeting the following day.

The Charité dean **Axel Pries** opened the scientific program of the symposium. He offered his perspective on how Charité as one of the largest university hospitals in Europe could contribute to higher quality of animal experiments and better translation by initiating a 3R center. **Stefan Hippenstiel**, the speaker of Charité 3<sup>R</sup>, explained how this vision was put into practice during the last year. He presented examples ranging from communication and outreach, training the new generation of scientists, and funding projects leading to the development of alternative methods that can generate excellent research. He empha-

sized in particular the number of projects that have been funded to generate tools that either reduce or completely replace animal experiments, or improve the living conditions of animals. In this respect, all 3Rs are equally supported by the center.

The next talks dealt with achievements of the 3Rs and 3R centers. **Tom Bengtsen**, head of the secretariat of the Danish 3R Center and SAB member of Charité 3<sup>R</sup>, focused on the communication of the numbers of animals used in experiments to local authorities and other interested parties. He explained the benefit of a transparent and active communication strategy that starts at the level of primary education. **Peter Kunzmann**, who joins the Charité 3<sup>R</sup> SAB as professor of animal ethics at the Institute for Animal Hygiene, Animal Welfare and Farm Animal Ethology at the University of Veterinary Medicine Hannover, presented the ethical perspective on whether animal experimentation is justified. Referring to the European Directive 2010/63/EU<sup>2</sup>, the Nuffield Council on Bioethics Annual Report of 2005<sup>3</sup> and other

<sup>1</sup> [www.charite3r.charite.de](http://www.charite3r.charite.de)

<sup>2</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010L0063&from=DE>

<sup>3</sup> <https://www.nuffieldbioethics.org/assets/pdfs/NCOB-2005-Annual-Report.pdf>



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sources, he explained the relevance of the 3Rs in the context of the harm-benefit ratio and why replacement in this context plays a different role to reduction and refinement.

The second session of the symposium focused on the development of novel alternative technologies and their corresponding challenges. **Arti Ahluwalia**, director of the Research Center “E. Piaggio” and Centro 3R in Italy and member of the Charité 3<sup>R</sup> SAB, presented the challenges of generating organoids in the lab, the parameters that define organoids from a bioengineering point of view, and discussed the challenges of transferability of those principle laws to other organs. **Andreas Kurtz**, group leader at the Center for Regenerative Diseases at Charité presented progress in generating a microfluidic chip to model human acute kidney injury *in vitro*. His project is one of 13 projects funded by Charité 3<sup>R</sup> within the “Adding 3R Value” call. The concept of this call is to encourage projects already funded by third party organizations to include a 3R aspect that is co-financed by Charité 3<sup>R</sup>.

How does CRISPR/CAS technology contribute to the 3Rs? **Werner Müller**, emeritus at the University of Manchester and member of the Charité 3<sup>R</sup> SAB presented the benefits of this method in generating transgenic animals with higher precision than before and without the need for complicated breeding. In this respect, there is a clear contribution to the reduction of the numbers of animals used. However, the ease of generating new mouse lines counterstrikes the aim to reduce the number of animal experiments.

The third session of the symposium focused on refinement and aspects of animal welfare. **Pauline Jirkof**, 3R coordinator at the University of Zurich and member of the Charité 3<sup>R</sup> SAB presented refinement methods that can be used to evaluate the pain of lab rodents and how pain can be better managed by improving experimental conditions. Untreated pain may affect scientific results and increase their variability. **Thomas Kammertöns**, immunologist at Charité, presented the progress of his team in analyzing the burden of immunodeficient and immunocompetent mice. In his project, corticosterone levels were analyzed as indicators for stress assessment. The project was funded by Charité 3<sup>R</sup> within the “Refinement” call. The last talk was held by **Kristina Ullmann**, animal welfare officer at Charité and member of the board of speakers of the Charité 3<sup>R</sup>, who presented another Charité 3<sup>R</sup> funded refinement project focusing on social enrichment of the housing conditions of mice.

The Charité 3<sup>R</sup> scientific symposium will be organized annually from now on with the aim to present the yearly achievements of the center through the funded research projects and to act as a forum where scientists exchange views on alternative methods, challenges and successes.

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