Dear readers,

the virtual 11th World Congress on Alternatives and Animal Use in the Life Sciences is just a month away. Although almost all upcoming events are still virtual, it is now time to think about what scientific conferences will be like when we return to a new post-pandemic normal. Will we go back to the way things were with fully in-person events that present excellent networking opportunities but create substantial carbon footprints and exclude scientists who cannot spare the funding to attend? Will we return to inviting scientists to speak exclusively at our institute and discuss future collaborations face to face? Or will we continue with virtual options that invite in a large audience of whose attention we are uncertain but who can participate without spending time and money on travel? Already last year, the Microphysiological Systems World Summit executive committee took the decision to organize a hybrid event for May/June 2022. It will be interesting to compare attendees' choices and experiences at this event and follow how our conference and meeting culture develops in the future. Please consult the ALTEX website to learn about upcoming 3Rs-related events.

The new OECD guideline on Defined Approaches on Skin Sensitisation and the recent decision of the European Pharmacopoeia to completely replace the rabbit pyrogen test are major breakthroughs for our field. Are we perhaps finally on the brink of a scientific revolution in toxicology? Thomas Hartung and Aristides Tsatsakis provide Food for Thought … on this question and relate developments in our field over the last years to Thomas S. Kuhn's concept of the structure of scientific revolutions.

Daniel Meyer and colleagues establish a highly sensitive method to detect unknown genotoxic substances in food contact materials by coupling high-performance thin-layer chromatography (HPTLC) with an *in vitro* planar genotoxicity bioassay. Staying in the food safety sector, Fenja Klevenhusen et al. review methods to assess whether undesirable substances such as pesticides can be transferred from animal feed to animal-derived food by *in vitro*, *ex vivo* and *in silico* methods. They suggest that relevant models, which were originally developed for other purposes, are available and can be combined to assess the relevant tissues and processes without animal experiments.

Medical devices include a wide range of products made from different materials for internal and external use. Lada Svobodová and colleagues evaluate whether *in vitro* methods, which already are accepted for sensitization testing of chemical compounds, can be combined for the testing of medical devices without using animals by comparing respective *in vitro* with *in vivo* results. Potency testing of tick-borne encephalitis vaccine without the use of animals is the goal of Aurora Signorazzi et al. They find that human peripheral blood mononuclear cells (PBMCs) are a suitable model to confirm the quality of vaccine batches based on measuring the induction of interferon-stimulated genes.

Human induced pluripotent stem cells (hiPSCs) can be easily differentiated into a variety of cell types, which opens the door to a plethora of exciting opportunities in biomedical research. To confirm their pluripotency or prove it has been lost after differentiation, it must be determined whether they can form all three germ layers. Instead of injecting the cells to grow teratomas in mice, Josefin Weber et al. show that they can be grown on the chorioallantoic membrane of hen's eggs, and the three germ layers can be identified based on specific marker expression, all in a far shorter time frame than the animal experiment.

Although some forms of epilepsy can be controlled with drugs, pharmacoresistant epilepsy is a major clinical issue that cannot be fully modeled in animals. Gareth Morris and colleagues discuss the limitations of current animal models but also of iPSCs and computational models. They propose that live brain slices from epileptic patients undergoing voluntary surgical interventions are the best option to help us elucidate the underlying mechanisms and develop treatments.

To determine whether absorption of pesticides by the human skin can be predicted based on *in vitro* skin instead of animal data, David Allen et al. analyze datasets for 30 formulations in which absorption was assessed using three methods: rat *in vivo*, rat *in vitro* as well as human *in vitro* assays. They find that the *in vitro* data in human or rat skin produces a similar or higher value than either the *in vivo* data alone or the combination of the data, and therefore *in vitro* data from either species could be safely used to replace the animal experiment.

With all the activity and progress in the alternatives field, it seems surprising that the survey done by Johan Lindsjö and colleagues reveals that members of animal welfare bodies in Sweden, whose task it is to support the 3Rs, were neither overly convinced of the scientific value and potential of the 3Rs nor very committed to promoting them by advising applicants on opportunities to employ them. Similarly, Miriam Zemanova et al. report that the use of animals for educational purposes in Europe is commonly justified in non-technical summaries by general claims that whole animals are necessary to achieve learning objectives and/or that suitable alternatives are not available. However, the authors were able to identify examples of available alternatives for each procedure on animals named in the non-technical summaries.

We welcome RISK-HUNT*3R*, a new major Horizon 2020 project that is starting up a Corner in ALTEX in this issue to keep you informed of its activities. Three meeting reports complete this summer issue of ALTEX.

Looking forward with you to WC11,

Sonja von Aulock
Editor-in-chief