



ture, a new *in vitro* tool promoted by Biopredic, was developed over the last 5 years. The cells became a popular model for cytochrome P450 (CYP) induction studies (to study drug-drug interactions, a regulatory requirement) and were included recently in an OECD draft test guideline after being validated in a multicenter laboratory study coordinated by EURL EC-VAM. The established CYP induction application of the cells, together with new applications related to predicting cholestatic side effects, and the more industrial/biotechnological aspects around the scale up of the production of the cells were covered. Dr Chesné gave the perspective of a small biotechnology company dealing with the aspects of patenting, production and application of an *in vitro* system.

3 Conclusion

The first training on alternative methods was successful and received a very positive feedback amongst the participants. With such scientific events on 3Rs in Tunisia we hope on the one hand to initiate within the participants an innovative way

of thinking about care and use of laboratory animals and a changing attitude towards animal testing as well as to develop an interest and spread education about animal welfare and alternatives in all the Tunisian scientific community. On the other hand, in a close future, we hope to offer the possibility to all participants and maybe the whole Tunisian scientific community to use some of the validated alternative methods that will be established in Tunisia or to give them all the information available and educational support to set up a validated alternative method by themselves.

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Workshop report

No alternatives? Animal experimentation and the future of research

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Owing to the rapid scientific developments the scientific landscape around alternatives to animals in research and testing has received noticeably increased attention from the manifold stakeholders interested in human-relevant methodologies and humane approaches in recent years. Now, the new interest of politics in the field of alternatives also endorses its societal and economic significance. In many countries, e.g. UK, USA, China and Brazil, annual allocations of governmental funds for research on non-animal approaches have been substantially increased, and now also in Germany the interest of politics in this field has awakened.

On October 2, 2015 the Green Party (*Bündnis90/Die Grünen*), which received 8.4% of the vote in the last par-

liamentary elections in Germany, invited experts to discuss the possibilities, hurdles and possible measures to facilitate competitive research in the field of alternatives. Under the headline “No alternatives? Animal experimentation and the future of research” a technical discussion was moderated by Nicole Maisch, spokesperson for animal welfare policy, and Kai Gehring, spokesperson for research policy of the Green parliamentary group at the parliamentary building Paul-Löbe-Haus in Berlin.

Participants of this panel discussion, held in front of 80 politicians and stakeholders, were Prof. Ellen Fritsche, Leibniz Institute of Environmental Medicine and Head of CERST, Dr. Reyk Horland, Head of Business Development at TissUse

Inc., Dr. Joachim Coenen, representing the Association of Research-Based Pharmaceutical Companies and Merck KGaA, Roman Kolar (MSc), Deputy Head of the Animal Welfare Academy of the German Animal Welfare Federation, Prof. Gilbert Schönfelder, Head of the German Centre for Documentation and Evaluation of Alternatives to Animal Experiments – ZEBET (which is part of the new German centre for the protection of experimental animals (Bf3R)), Dr. Mardas Daneshian, academic staff of the University of Konstanz and managing director of the Center for Alternatives to Animal Testing-Europe (CAAT-Europe) and Prof. Gerhard Heldmaier, Chairman of the Senate Commission on Animal Research of the German Research Foundation (DFG).

The panel discussion was organized in two segments, the first panel focused on animal testing methods and techniques in teaching, research and development and the second panel aimed at approaches and political tools required to facilitate substantial research in the field of alternatives in Germany.

During the first panel discussion the development of relevant non-animal approaches in the last three decades was discussed and their promising potentials were pointed out. Recent conceptual and technical advances, i.e., the adverse outcome pathway concept (AOP), the Tox21c concept, 3D cell culturing techniques, organoid and organ engineering approaches, high-content approaches (omics) and microphysiological systems (human/organ(s)-on-a-chip), show that the field of alternatives to animal testing is poised on the verge of being recognized as the new biomedical era.

In the second discussion, the moderators engaged the panellists to discuss the hurdles for the development of alternatives in Germany and also the incentives that would be necessary to overcome these hurdles from different points of view. Some of the questions were: How can one assess the development of non-animal research in Germany quantitatively and qualitatively? How can one evaluate the scientific significance of non-animal methods in comparison to animal experiments? What is needed to replace animals in research and testing where they are thought not be dispensable in the medium term? How can one counter the increasing animal use in fundamental research in Germany? What are the obstacles hampering approval and recognition of non-animal research methods?

Against the background of the efforts of other countries in this field and the efforts of the European policy, i.e., phasing out animal testing for cosmetic products and ingredients and engaging the use of non-animal methods for chemical testing within the REACH legislation for instance, it became clear that the hurdles in Germany that hamper the creation of a sustainable research landscape in the field of alternatives to animals lie in the structure of scientific funding. The strictly bottom-up oriented funding structure of the DFG and the German Federal Ministry of Education and Research (BMBF) does not yet foresee any special programs for this field. As the research support given to projects in the field of alternatives in Germany has not increased significantly in the last decade despite additional funds being available, the obstacle seems to lie in the evaluation procedure for research proposals dealing with non-animal approaches. Here the representatives of the funding and evaluation institutions stated that the non-animal research projects proposed to them seldom managed to meet the requirement of sufficient creativity. During the subsequent lively discussion the paradox of this statement was revealed by the panellists and audience, as only a sustainably financed scientific field can produce creative ideas. The following discussion with the audience engendered the demand for optimization of German funding practices to better recognize, consider, support and maintain novel scientific fields and developments.

The atmosphere of the well-moderated discussion left room for hope that German scientists may be enabled to develop further creative ideas and concepts at the stage of the new era of human-relevant non-animal biomedical and safety sciences in the foreseeable future.

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