

ALTEX

ALTERNATIVES TO ANIMAL EXPERIMENTATION

Food for thought ...

Thomas Luechtefeld
and Thomas Hartung

**Computational
approaches to chemical
hazard assessment**

t⁴ Workshop Report

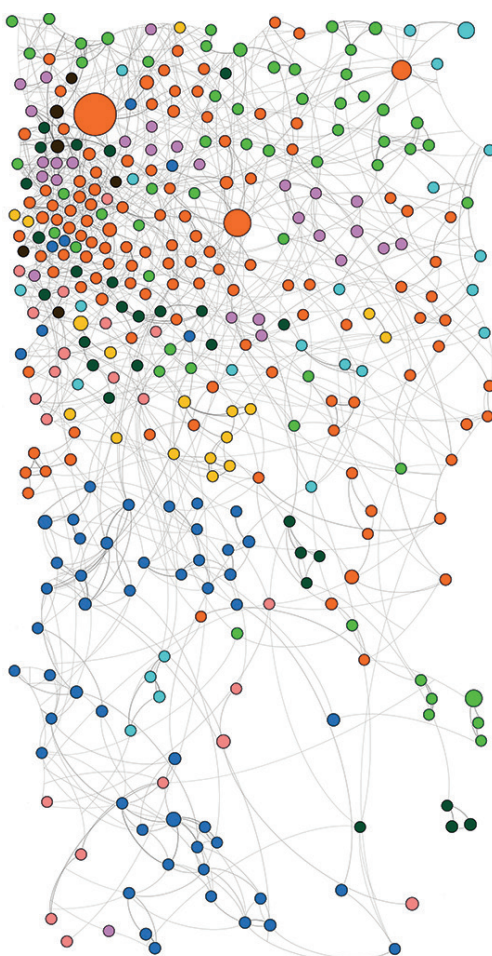
Dayna Kerecman Myers,
Alan M. Goldberg,
Albrecht Poth et al.

**From *in vivo* to
in vitro:**

**The medical
device testing
paradigm shift**

Review Article

Ans Punt,
Ad A. C. M. Peijnenburg,
Ron L. A. P. Hoogenboom
and Hans Bouwmeester
**Non-animal approaches
for toxicokinetics in
risk evaluations of food
chemicals**



Research Article

Henrik Johansson, Robin Gradin,
Andy Forreryd et al.

**Evaluation of the GARD
assay in a blind
Cosmetics Europe study**

Research Article

Maria Leontaridou,
Daniel Urbisch,
Susanne N. Kolle et al.

**The borderline range
of toxicological methods:
Quantification and
implications for
evaluating precision**

Research Article

Kathrin S. Zeller, Andy Forreryd,
Tim Lindberg et al.

**The GARD platform for
potency assessment of skin
sensitizing chemicals**

Short communication

Letter
Calendar
Corners
News



**Dear readers,**

The Tenth Congress on Alternatives and Animal Use in the Life Sciences brought together several hundreds of stakeholders to report on and learn about progress and developments in the 3Rs field. Seattle greeted participants with fantastic weather and added a solar eclipse as a special bonus. The “3Rs in Action” presented an attractive program shared over the nine Congress Themes covering the 3Rs in academia, translation, refinement, animal welfare, ethics, innovative models for safety and efficacy, sustainability, systems biology and big data, as well as lessons learned and global cooperation. The Abstract book, with 700 summaries of the oral and poster presentations, is available at <http://www.altex.ch/altex-proceedings/wc-10-seattle>. The organizers chose not to print the abstract book in order to reduce the conference’s environmental footprint; instead, it was included in a mobile app, which was appreciated and used widely by the participants. The ALTEX Prize 2017 was awarded for a t⁴ workshop report on microphysiological systems by Uwe Marx and colleagues in a ceremony during the congress (see the News). The preparations for the next World Congress, which will take place in Maastricht, The Netherlands, on August 23-27, 2020, have already begun.

In this issue, Tom Luechtefeld and Thomas Hartung give you Food for thought ... on the opportunities and challenges of computational toxicology. Mushrooming databases of toxicological data beg the creation of models that will predict whether untested chemicals are toxic; however, much consideration and scrutiny is required to build models that will predict toxic effects of new structures with high accuracy and reliability while avoiding a multitude of potential pitfalls.

While much progress has been made in replacing animal tests for the safety assessment of chemicals used for different purposes, these tests mostly have not been adapted to the safety assessment of medical devices, such as catheters, gloves and plasters. The t⁴ workshop report by Myers et al. explores the potential of *in vitro* tests to replace tests on animals performed to assure the safety of the multitude of medical devices and makes recommendations on how to speed up the process.

Food chemicals is a further field that has not adopted some of the methodology now commonly used in the safety assessment of ingredients of medicines or pesticides. Comparisons have shown that *in vitro* models using human cells can better predict the adsorption, distribution, metabolism and excretion of chemicals in humans than measurements in animals. However, Punt et al. find that safety assessments of food chemicals still rely heavily on animal experiments for prediction of these properties and call for more research into improving and validating quantitative alternative methods for kinetics, as these would both reduce animal use and increase the relevance of the safety assessments for humans.

Four articles in this issue of ALTEX deal with alternative methods to assess the potential of chemicals to cause allergic contact dermatitis, i.e., skin sensitization. The GARD assay identifies skin sensitizers by their ability to turn a signature group of genes on or off, respectively, in a human cell line modeling the activation of dendritic cells in the skin. Here, Johansson and colleagues demonstrate that the test can identify known sensitizers within a large group of blinded chemicals, i.e., chemicals supplied by a third party labeled only with a code to ensure an impartial assessment. Zeller et al. expand the same assay to investigate how well it can differentiate between strong and weak skin sensitizers. Leontaridou et al. deal with the problem that outcomes of the various skin sensitization tests are not neat “yes” or “no” answers but ranges of values through which a cut-off line is drawn to differentiate positive from negative results. They argue that an additional result category termed “borderline” would be useful for values that lie too close to the cut-off line to make a certain call. Such “borderline” results could help to determine the outcome when results from multiple tests are merged into a final prediction. Belot and colleagues remind us that *in vitro* tests often still involve the use of fetal calf serum or other products of animal origin. They adapt the KeratinoSens™ assay for skin sensitization, which is accepted as an OECD test, to a fully animal-product-free method and verify that this adapted method produces the same results as the original method, meaning that it is compliant with the OECD test guideline.

In the News, the University of Utrecht announces that the FCS-free platform is now online and Norecopa introduces PREPARE, planning guidelines for animal experiments that complement the ARRIVE guidelines on reporting on animal experiments.

The ALTEX website is currently being updated with new features and an online manuscript submission and handling system due to go online in early 2018. We hope the new website will enhance your submission and reading experience and welcome your feedback.

Thank you for your support as readers, authors, members and sponsors of ALTEX in 2017.

Sonja von Aulock
and the ALTEX Editorial Team: Franz P. Gruber,
Thomas Hartung, Hans Peter Hoesli, Michael M. Hughes,
Goran Krummenacher, Petra Mayr, Carolin Rauter
and Joanne Zurlo
with Mardas Daneshian and the Board of ALTEX Edition

ALTEX

ALTERNATIVES TO ANIMAL EXPERIMENTATION

Vol. 34 (Issue 4/2017)

<http://www.altex-edition.org>
<http://altweb.jhsph.edu>

Official organ of

ASCCT – American Society for Cellular and Computational Toxicology, Fairfax, VA, USA

CAAT – Center for Alternatives to Animal Testing, Johns Hopkins University, Baltimore, MD, USA

CAAT-Europe – University of Konstanz, Konstanz, Germany

Doerenkamp-Zbinden Chairs in Germany and USA

ecopa – European consensus-platform for alternatives, Brussels, Belgium

EUSAAT – European Society for Alternatives to Animal Testing, Vienna, Austria

t4 – transatlantic think tank for toxicology, Baltimore, USA, Konstanz, Germany

ALTEX is indexed in PubMed, Current Contents®, SciSearch®, ISI Document Solution®, DOAJ and Embase.

Issued by

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Address

Society ALTEX Edition, Weinmannngasse 86
 8700 Kuesnacht ZH, Switzerland
 Phone: +41 44 380 0830, Fax: +41 44 380 0832
 e-mail: editor@altex.ch

ALTEX Edition Editorial Office USA

Joanne Zurlo (North American Editor)
 Thomas Hartung
 Michael M. Hughes

Address

Johns Hopkins University Baltimore
 615 N Wolfe Street
 W7032 Baltimore, MD 21020, USA
 Phone: +1 443 287 2515, Fax: +1 410 614 2871
 e-mail: jjzurlo@jhsph.edu

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Layout

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Print

Prospektus Nyomda, Veszprém, Hungary

Publisher

Springer Spektrum | Springer-Verlag GmbH
 Tiergartenstraße 17
 69121 Heidelberg, Germany
<http://www.springer.com>

Circulation: 500

Issues: 4 per annum

Distribution

ALTEX, Weinmannngasse 86
 8700 Kuesnacht ZH, Switzerland
 Phone: +41 44 380 0830
 Fax: +41 44 380 0832
 e-mail: subs@altex.ch

Subscription rates 2018

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Cover Picture

Force layout graph of co-authorship of publications matching the “QSAR” PubMed query. Authors are nodes and edges are drawn between those who have co-authored a publication. Excerpt of Fig. 2 from Luechtefeld and Hartung, 459-478.

Aims and Scope

ALTEX is devoted to the open access publication of scholarly articles on alternatives to the use of animals for scientific purposes according to the 3R concept of Russell and Burch: Replace, Reduce and Refine. Articles describing experiments involving the use of animals for scientific purposes must attest that experiments were performed according to the ethical standards set in the instructions to authors and must be described in detail in accordance with the ARRIVE or GSPC guidelines.

ALTEX publishes research articles, short communications, reviews, as well as comments, corners, news and meeting reports.

Manuscripts submitted to ALTEX are evaluated by two expert reviewers. The evaluation takes into account the scientific merit of a manuscript and its contribution to animal welfare and the 3R principle.

ALTEX Proceedings publishes Abstract Books and Proceedings of scientific conferences. TIERethik is a German-language journal devoted to the bioethics of the relationship between animals and humans.

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