Alternatives to animal experiments: pooling regional research

Individualised pain therapy for laboratory mice and a reduction in animal experiments for _testing the inhalation toxicity of nano-materials_ (see column on the right) – the BfR's initial work results in the Berlin-Brandenburg cooperative project BB3R will contribute to these topics in the future. The network of universities and federal institutes performs research on avoiding animal experiments (replacement) or reducing their scope (reduction) and on decreasing the suffering of laboratory animals (refinement). As one of six project partners, the BfR is involved in the refinement and replacement research fields. The German Federal Ministry of Education and Research is supporting the project, abbreviated to BB3R, for four years until the spring of 2018; it is designed as a platform for scientific communication and includes a graduate education programme.

More information:
www.bfr.bund.de/en > Research
www.bb3r.de/en

Testing the inhalation toxicity of nanomaterials

Inhalation is considered the most significant path of entry for nanomaterials. In the context of BB3R research, the BfR is reproducing this type of exposure using _in vitro_ aspiration epithelium models at their interface to the air. This approach to testing inhalation toxicity helps to reduce the number and scope of animal experiments.
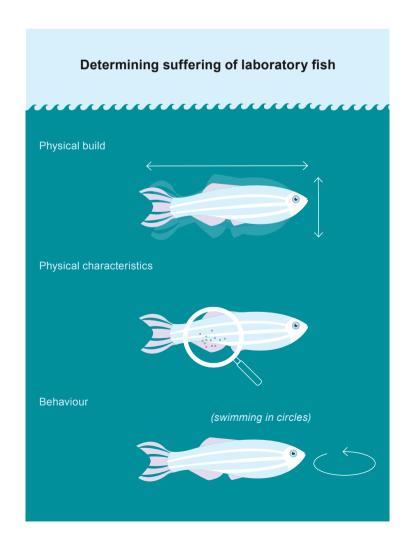

Test setup: three tubes conduct a test aerosol with airborne nanomaterials to epithelial cells.

Determining suffering of laboratory fish

The question of whether laboratory fish feel pain or suffer can be answered based on specific criteria. Together with external experts and representatives of approval authorities, the "National Committee for the Protection of Animals Used for Scientific Purposes" at the BfR coordinated the preliminary work on this topic. The criteria, defined for the first time, evaluate anomalies in the physical build and behaviour of the animals, for example. In this way, pain and suffering can be treated and alleviated in a targeted manner. Because the criteria clearly address the question of the animals' distress, they also aid decision making for authorities responsible for approving the breeding of genetically modified animals that could experience pain or suffering. After mice and rats, fish (particularly ze-brafish) represent the third most frequently used laboratory animal type. The number of laboratory fish has increased steadily over the past few years.

More information:
Bert et al. 2016. Considerations for a European animal welfare standard to evaluate adverse phenotypes in teleost fish. EMBO J. 35: 11, 1151–1154.
Recommendations of the National Committee TierSchG Nr. 001/2015

Determining suffering of laboratory fish

Physical build

Physical characteristics

Behaviour

(swimming in circles)