NOTOX

Predicting long-term toxic effects using computer models based on systems characterization of organotypic cultures

SEVENTH FRAMEWORK PROGRAMME

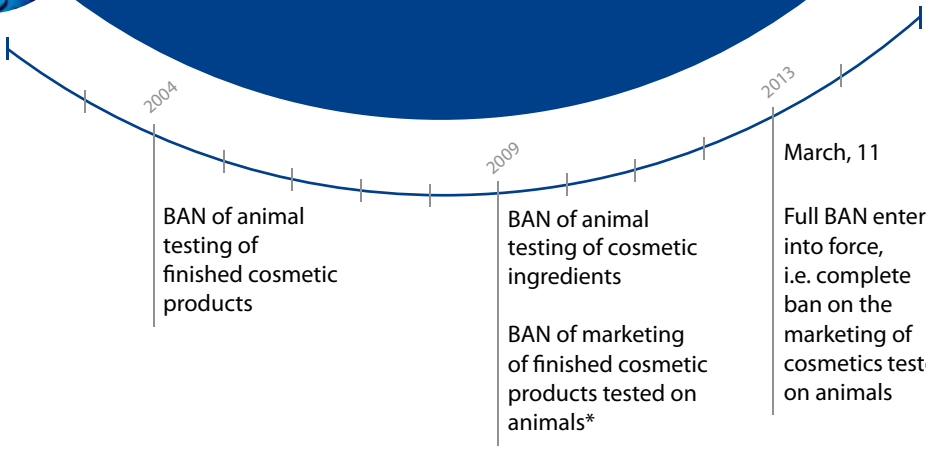
Cosmetics Europe
The personal care association

Background

Cosmetic and hygiene products such as make-up, soap or toothpaste are an integral part of our life. Billions of people around the world use them every day. Before being launched on the European market new products need to pass a thorough safety assessment to ensure their ingredients have no detrimental effects on human health. Until recently animals were used for such purposes. However, putting animal testing to an end has long been on the agenda of the European Commission, which has banned animal testing and marketing of finished cosmetic products tested on animals in a stepwise manner as indicated below.

With the full ban on animal testing for cosmetics in the EU, the need for alternative methods for safety assessment of cosmetic and hygiene products is more pressing than ever. The European project NOTOX contributes to this endeavour by developing and validating predictive alternative biological systems combined with computational models characterizing long-term toxicity responses.

NOTOX is a collaborative research project co-funded by the European Commission and the European trade association Cosmetics Europe. It started on 1 January 2011 and will run for five years.



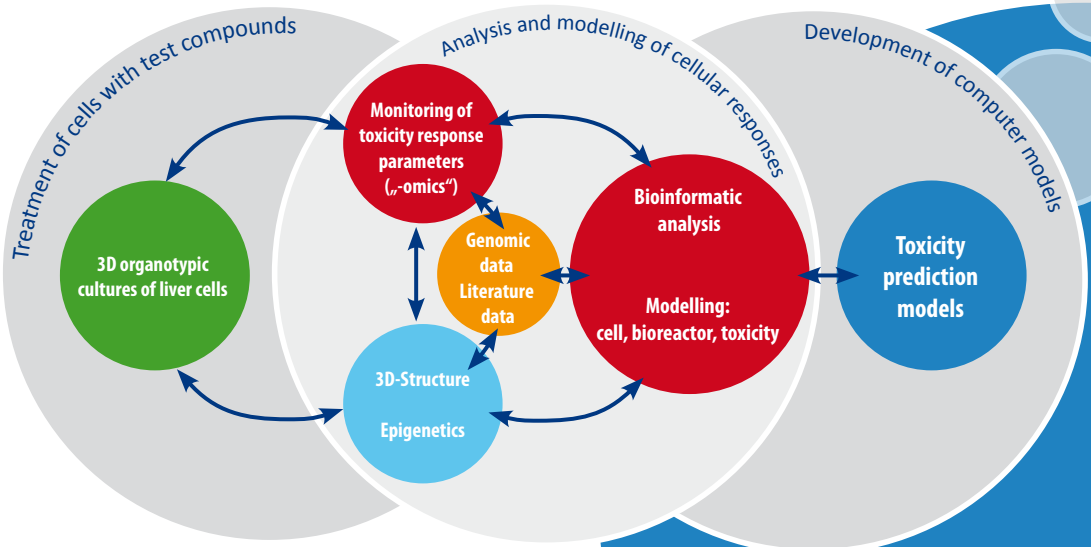
* testing still allowed for complex human health effects (e.g. repeated-dose toxicity, allergies and cancer)

Goal and Scientific approach

Product testing methods for human health must be absolutely reliable. The development of alternative, non-animal testing methods, especially when it comes to predicting long-term toxic effects, represents a major scientific challenge. In order to achieve this complex and ambitious task, NOTOX brings together leading experts from the field of life sciences and computational disciplines.

The goal of NOTOX is to provide tools for long-term toxicity prediction. Based on a system-wide analysis of organotypic cultures focusing on human liver cells, the NOTOX team will develop computational models that closely mimic the processes which actually take place in human tissues when exposed to toxic substances. This will help predict possible long-term toxic effects on the human body.

The project implements the following approach:



More information
www.notox-sb.eu

Innovation

The most important innovative aspects of NOTOX at a glance:

» Establish a new systems biology platform for long-term toxicity prediction with closely linked experimental and computational technologies comprising physiological and structural data.

» Apply human 3D organotypic cell cultures resembling human tissues and organs for long-term toxicity assessment.

» Study and model toxicity pathways by integrating data from "-omics" technologies such as epigenomics, transcriptomics, proteomics, metabolomics and fluxomics.

» Determine adverse effects of test compounds on biological structures using light and electron microscopy and tomography methods.

» Create large-scale computational models comprising toxicity pathways and pathways of adverse outcome.

NOTOX as part of SEURAT-1

CLUSTER SEURAT-1:

To advance research in the field of alternative testing methods for long-term systemic toxicity, the European Commission and the European trade association Cosmetics Europe have jointly launched in January 2011 the Research Initiative SEURAT-1 (Safety Evaluation Ultimately Replacing Animal Testing). This initiative with six research projects as building blocks persues the common strategy "towards the replacement of current repeated dose systemic toxicity testing in human safety assessment". One of the SEURAT-1 research projects is NOTOX.

SEURAT-1

Consortium

The NOTOX consortium combines the complementary expertise of internationally renowned research teams, including academic research laboratories and four small and medium-sized enterprises (SMEs).

- Universität des Saarlandes, Germany
  Prof. Elmar Heinzle, Dr. Fozia Noor, Prof. Jörn Walter
- Centre National de la Recherche Scientifique (CNRS) , France
  Prof. Alain van Dorsselaer
- Stichting Het Nederlands Kanker Instituut – Antoni Van Leeuwenhoek Ziekenhuis, The Netherlands
  Prof. Peter J. Peters
- Karolinska Institutet, Sweden
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- Insilico Biotechnology AG, Germany
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- Weizmann Institute of Science , Israel
  Dr. Amos Tanay
- Cambridge Cell Networks Ltd., United Kingdom
  Dr. Gordana Apic
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