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**PhD in Pharmaceutical Sciences
2016-2017**

INVITATION to the Public defence of

Gamze ATES

To obtain the academic degree of '**DOCTOR IN PHARMACEUTICAL SCIENCES**'

**Gene expression analysis in human cells as cornerstone of
an integrated testing strategy in genetic toxicology.**

Friday 20 January 2017

Auditorium **Piet Brouwer**, 18u30
Faculty of Medicine and Pharmacy, Laarbeeklaan 103, 1090 Brussel

How to reach the campus Jette:
<http://www.vub.ac.be/english/infoabout/campuses>

Summary of the dissertation

Genotoxicity is a key endpoint in the hazard assessment of any chemical as damage to the genetic material might lead to detrimental effects on human health. To assess the potential of chemicals to induce genotoxicity many *in vitro* and *in vivo* tests have been developed. Regulatory bodies worldwide recommend, in a first tier, to apply a battery of *in vitro* tests to cover the most important genotoxicity endpoints. If needed, this is followed up by *in vivo* genotoxicity studies. By the introduction of an animal testing and marketing ban in the European cosmetic sector, *in vitro* tests - backed-up by *in chimico* and *in silico* data - had to become the sole predictor of possible genotoxic properties of cosmetic compounds. Yet over the years discrepancies were noticed between the *in vitro* and *in vivo* genotoxicity results. The multitude of positive results found in the *in vitro* tests could often not be confirmed *in vivo*.

In this dissertation we present the development of a qPCR-array, based on an 84-gene fingerprint subtracted from gene expression analyses on microarrays. This allows to identify genotoxic compounds based on mechanistic information. Furthermore, we investigated how this qPCR array and other non-animal-based strategies can be integrated in a testing strategy to improve the overall genotoxicity hazard assessment.

Curriculum Vitae

Gamze Ates was born on the 20th of January 1988 in Heusden-Zolder, Belgium. She completed secondary school, orientation science-mathematics, in 2006 after which she started her academic career at the Vrije Universiteit Brussel (VUB). In 2011 she obtained her degree as pharmacist and master in drug development with high distinction. She joined the research group of *In vitro* Toxicology and Dermato-cosmetology at the Faculty of Medicine and Pharmacy of the VUB to investigate genotoxic compounds by means of gene expression analysis in human cells. This work was done in collaboration with the Belgian Scientific Institute of Public Health (WIV-ISP) and under the joint promotership of Prof. Vera Rogiers (VUB) and Dr. Tatyana Doktorova (WIV-ISP). The results obtained during her doctoral research work were presented at several national and international scientific conferences and she was twice awarded with the prize for best oral presentation. Gamze has also been involved in several other projects and her work has resulted in 13 scientific publications in international peer-reviewed journals, of which 7 as first author.

As academic staff member of the VUB, Gamze was involved in several committees for improving the education of pharmacists and international mobilization of pharmacy students. She has supervised the master thesis work of both VUB and international students and was a teaching assistant of bachelor and master students in pharmaceutical sciences.

Since 2015, Gamze is also secretary of the Educational Board of pharmaceutical sciences.