Genes in concert | a toxicogenomics hymn towards disease prevention
Toxicological research
A world full of potential hazards
Toxicological research

Human studies: the Praegustator
Toxicological research

Animal studies as an alternative for humans
Toxicological research

Cell cultures as alternative to animals as alternative for humans
Toxicogenomics

A revolution initiated by the human genome project
DNA → RNA → Proteins → Metabolites → Toxicant → Elimination
High-throughput techniques

Human gene expression microarrays
Dioxin → Metabolic enzymes
BaP → Cytosol

Diagram showing the interaction of Dioxin and BaP with metabolic enzymes.
Gene expression profiles: 
a barcode for potential toxicity
Genes in concert

How to interpret gene expression profiles
Human population studies
Lymphoid leukaemia in children
exposure → biomarkers of exposure → intermediate biomarkers → disease
Chronic lymphocytic leukemia
methylation ➔ DNA ➔ RNA ➔ Proteins ➔ Metabolites

miRNA ➔ RNAs

protein degradation ➔ Metabolites
Smoking as proof-of-principle
Genetic polymorphisms
Prediction
Prediction
Prediction: the national hymn
Environmental Health studies
Multidisciplinary research

Science Day 2016
May 17th, 2016
Maastricht - The Netherlands
CHRONIC DISEASE PREVENTION

Prevent readmission  Help patients
System change  nutrition education
Integrate change  live well
Treating whole person  personal responsibility
Community structure for healthy lifestyle  I care
Prevent readmission  prevent readmission
Self Advocacy  personal responsibility
Upstream  nutrition education
Empowering  change lifestyles

health equity  healthy lifestyles
mobilize change lives

ILLNESS  HEALTH
supports the
International Agency for Research on Cancer

World Health Organization’s
classification of processed meat as “carcinogenic to humans.”
Dagblad De Limburger / Limburgs Dagblad.

Dinsdag, 08 december 2015

Groene thee in de Salami!
Onderzoekers van de Universiteit Maastricht (UM) en collega’s in Europa hebben drie jaar gewerkt aan ‘veilige’ worst, ham en andere vleeswaren zónder extra risico’s op darmkanker. Hoogleraar Theo de Kok van de UM geeft een kijkje in de keuken.
PHYTOME
Phytochemicals to reduce nitrite in meat products

![Box plots showing ATNC µmol/L for different meat treatments](image)
A GUIDE TO FOOD SYNERGY

How 2 foods paired together can increase nutritional benefits
Keep calm and acknowledge all musicians in the orchestra