Dynamics and regulation of the oxidative stress response upon chemical exposure

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Stellingen

Behorende bij het proefschrift

Dynamics and regulation of the oxidative stress response upon chemical exposure

1. Fluorescently labeled reporter cell lines in combination with high throughput live cell confocal microscopy and microRNA mimics allow the discovery of all microRNAs that modulate activation of stress response pathways. *This thesis.*
2. High throughput HepG2 Nrf2 pathway reporter cell line data in combination with transcriptomics data from HepG2 cells and PHH, provides valuable mechanistic information on mode-of-action of structurally similar chemicals for application in biological read across. *This thesis.*
3. MicroRNAs can be used both as dynamic biomarkers of exposure or disease and for therapeutic approaches. *This thesis*.
4. Fundamental understanding of the cellular responses to repeating dosing scenarios provides valuable information concerning the dynamics of a stress response pathway. *This thesis.*
5. Since the antioxidant versus pro-oxidant behavior of phenolic compounds would determine their overall effects regarding oxidative stress, this duality must be carefully explored to properly design efficient strategies against oxidative stress. *Based on Castañeda-Arriaga et al., 2018, Journal of Physical Chemistry.*
6. Advancement in isolation and measurement techniques are key for the future success of microRNA based biomarkers. *Based on Cai et al., 2021, Nature Communications.*
7. More sophisticated cell models are required to be able to perform long-term repeated exposure scenario's. *Based on Hatherell et al., 2020, Toxicological Sciences.*
8. Adding a "tissue specific" microRNA like miR-122 to a biomarker panel increases the specificity of that panel for liver injury. *Based on Llewellyn et al., 2021, Toxicological Sciences.*
9. As all biological processes are logical, the fact that a process seems illogical implies that one does not grasp the complete picture.
10. MicroRNAs fulfil the same role as co-promoters: they fine-tune the process.
11. In both repeated exposure experiments and doing a PhD-study, the length of the recovery phase has a major impact on the outcome.