



Universiteit
Leiden
The Netherlands

Virus-host metabolic interactions: using metabolomics to probe oxidative stress, inflammation and systemic immunity

Schoeman, J.C.

Citation

Schoeman, J. C. (2016, December 20). *Virus-host metabolic interactions: using metabolomics to probe oxidative stress, inflammation and systemic immunity*. Retrieved from <https://hdl.handle.net/1887/45223>

Version: Not Applicable (or Unknown)

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/45223>

Note: To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The handle <http://hdl.handle.net/1887/45223> holds various files of this Leiden University dissertation

Author: Schoeman, Johannes Cornelius

Title: Virus-host metabolic interactions: using metabolomics to probe oxidative stress, inflammation and systemic immunity

Issue Date: 2016-12-20

Propositions

1. Metabolomics is a powerful tool to elucidate viral-host interactions on the metabolic level in different model systems. (Chapter 4, 5 & 6)
2. Different biological sample types present with different analytical challenges each requiring optimised experimental design, sample preparation and quantification strategies. (Chapter 2 & 3)
3. Metabolic dysregulation in infants *in utero* exposed to a combination of antiretroviral therapy (cART) and HIV present a similar dysregulated metabolic profile as virally suppressed HIV positive patients receiving cART. (Chapter 7)
4. The acute and chronic nature of a viral infection is related to its induced pathogenic mechanisms during infection. The less pathogenic the virus the more likely it is to evade the immune response hindering its clearance and establishing a chronic infection. (Chapter 4, 5, 6 & 8)
5. “Serum metabolomics is increasingly being used for biomarker discovery and to gain mechanistic insight into diseases and treatments”. (James & Parkinson, *Curr Opin Clin Nutr Metab Care*. 2015, 18:478-483) However, the usefulness of metabolomics for mechanistic insights into disease states are dependent on solid/good biological questions, experimental design and sampling of the relevant biological compartment.
6. “One of the beauties in the metabolism field is that there is so much gold going back 50 years. ... A lot of experiments were done. It’s incredible. Most fields don’t get that.” (Doug Green, *Cell*. 2016, 165:1561-1562). Through integrating what is known together with innovate analytical approaches, the field of metabolism is on the cusp of changing how we investigate, target and treat disease.
7. “Although much is known about the metabolic configuration of immune cells, the effect of systemic metabolism on immune cell function and metabolic status has not been systematically explored.” (Norata *et al.*, *Immunity*. 2015, 43:421-434). Using an immunometabolism approach in investigating diseases on the cellular and systemic metabolic level integrated with immunological studies, could lead to more robust and holistic disease phenotyping.
8. “One of the most extraordinary aspects of the game of Go is that it has been proven that in order to win, you must live, but you must also allow the other player to live. Players who are too greedy will lose: it is a subtle game of equilibrium, where you have to get ahead without crushing the other player”. (Muriel Barbery, *the Elegance of the Hedgehog*). This is not only true for the game of Go, but also in day to day life and more emphatically the cultivation of a civilization.
9. Having a positive attitude in life is like having a valid lottery ticket, potentially everything is “better” tomorrow.
10. “Though a tree grows so high the falling leaves return to the root”. (Maylay Proverb)