Sensing transport: label-free in vitro assays as an atTRACTive alternative for solute carrier transporter drug discovery

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Stellingen behorende bij het proefschrift

SENSING TRANSPORT – Label-free *in vitro* assays as an atTRACTive alternative for solute carrier transporter drug discovery

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1. Label-free assays aid in the translation of *in vitro* data towards *in vivo* outcomes, which will lead to the advancement of effective therapeutics in an earlier stage of drug development. (*this thesis*)

2. International collaborations and consortia, such as RESOLUTE, substantiate the expected relevance of transporters in physiology and disease and contribute to the overall progress of putting forward SLCs as potential drug targets. (*this thesis*)

3. The TRACT assay has the potential to be utilized as a high-throughput screening platform for SLCs and is a viable alternative to conventional uptake assays. (*this thesis*)

4. Since impedance measurements can be used to detect different forms of cellular behavior, it is expected that versatile platforms such as xCELLigence will be implemented more often in biochemical studies. (*this thesis*)

5. The xCELLigence is able to 'sense' the presence of a ligand by using cells that express a receptor that is specific to this ligand. There are many SLCs that can be 'linked' to a receptor *via* its substrate(s), which provides ample opportunities for label-free assay development. (*this thesis*)

6. Sufficient numbers of molecules of a protein must be present in a cell or tissue in order for this protein to be functionally and physiologically relevant. The number of molecules that is required for any task is dependent on the nature of this task. (based on *Zhou, Y. & Danbolt, N. Frontiers in Endocrinology. 2013; 4, 165*)

7. The large family of SLCs offers the rare potential of an underexplored gene family with high disease relevance and small-molecule druggability. Hence, this important protein family deserves the attention of drug researchers and should be neglected no longer. (based on *César-Razquin, A. et al. Cell. 2015; 162(3), 478–487*)

8. Label-free assays will likely replace label-based methods employed in screening and mode of action campaigns. (based on *Halai, R. & Cooper, M. Expert Opinion on Drug Discovery. 2012; 7(2), 123–131*)

9. Due to the saturable nature of the uptake of adrenergic amines, the concentration of the amines at the receptors is not a linear function of the external concentration. This non-linear relationship is responsible for changes in slopes and rightward shifts of dose-response curves. (based on *Langer, S. & Trendelenburg, U. The Journal of Pharmacology and Experimental Therapeutics. 1969; 167(1), 117–142*)

10. Translating raw data to a meaningful graph is easy – translating a meaningful graph to the general public is the hard part. Yet it is a scientist's duty to combine these tasks.

11. You cannot fail doing scientific research; you merely find out many ways that won't work. (adapted from *Thomas Alva Edison*)

12. If music is organized sound, then science is organized knowledge.