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MEETING ABSTRACTS

TOWARDS THE HIGH-THROUGHPUT ASSESSMENT OF THYROID HORMONE SYSTEM DISRUPTORS

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The thyroid hormone regulation is a vital and complex process for proper organism function that involves multiple organs across species. A disruption of the thyroid hormone system (THS) by endocrine disruptors (EDs) can be linked with adverse effects such as developmental and autoimmune disorders. However, THS has been rather neglected, even though EDs have been gaining attention recently. Currently, the H2020 ERGO project aims to develop a battery of high-throughput *in vitro* bioassays based on molecular initiating events (MIEs) in the adverse outcome pathway network connected to THS disruption (tAOP) to narrow the knowledge gap.

The thyroid hormone (TH) activity may be disrupted on several levels including synthesis, transport, metabolism, and receptor (trans)activation. To evaluate the suitability of various *in vitro* models for studying different endpoints, these have been characterized regarding the expression of the set of genes corresponding to MIEs in tAOP. Moreover, we developed a set of *in vitro* transfected HEK-293T cell lines overexpressing genes of major interest, i.e., deiodinases type 1-3 (DIO1-3), natrium-iodide symporter (SLC5A5; NIS) and thyroid peroxidase (TPO). Next to this, we adopted and optimized bioassays for thyroxine/transthyretin (T4/TTR) displacement, aryl hydrocarbon receptor (AhR), and thyroid receptor (TR) activation and characterized the potential of selected human exposure-relevant compounds to disrupt prioritized MIEs.

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Keywords: thyroid hormone system; endocrine disruption; in vitro bioassay; high throughput