Quantitative image based analysis of endocrine disruptor effects on mitochondria morphology-function in prostate cancer cells.
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Endocrine disrupting compounds, a global health concern

A wide range of substances, both natural and man-made, are thought to cause endocrine disruption, including pharmaceuticals, dioxin and dioxin-like compounds, polychlorinated biphenyls, DDT and other pesticides, and plasticizers such as bisphenol A. EDCs may be found in many everyday products: plastic bottles, metal food cans, detergents, flame retardants, food, toys, cosmetics, and pesticides.

Which mechanisms of action?

- Mimic or partially mimic hormones like estrogen or androgens and thyroid hormones.
- Bind to a receptor within a cell and block the action of the endogenous hormones. The normal signal fails to occur and the body does not properly respond.
- Interfere or block the synthesis of natural hormones or their receptors for example, by altering their metabolism in the liver.

Major challenge of the field

The list of potential EDCs comprises a large and growing number of individual compounds or mixtures and their metabolic and environmental derivatives. These compounds have diverse chemical structure and may not appear to share any structural similarity. Thus, there is an urgent need for multiparametric, robust, and high throughput cell-based assay that can investigate the complex mechanisms underlying the adverse effects of known EDCs and identify new compounds with endocrine-disrupting potential.

Mitochondria: a cell sensor...

Mitochondria play a major role in cancer cell metabolism and recent data demonstrate that they are implicated in cancer progression. Our hypothesis is that ED may promote cancer cell aggressiveness through modifications of cancer cell metabolism.

Quantitative image based analysis of mitochondrial morphology-function in prostate cancer cells

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Results obtained using this quantitative image based analysis on androgen insensitive prostate cancer cell line (DU145). The left panel show the results for the mitochondrial membrane potential (MitoTracker™ Red). The right panel shows the result for the superoxide anion production (MitoSox™). The graph baseline represent control values arbitrarily set to 0. Thus, the data represent the deviation of the fluorescence intensity/cell as compared to the control.

Don’t hesitate to contact us for collaboration!
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