

European Journal of Histochemistry
a Journal of Functional Cytology

ISSN 1121-760X
Volume 64/ Supplement 1
2020

**Proceedings of the
29th National Conference
of the Italian Group for the Study
of Neuromorphology
“Gruppo Italiano per lo Studio
della Neuromorfologia” G.I.S.N.**

In Memoriam of Prof. Glauco Ambrosi

November 15-16, 2019

*Bari University “Aldo Moro”, School of Medicine
Bari, Italy*

ejh

under the auspices of
the University of Pavia, Italy



MAIN LECTURE

EFFECTS OF ENDOCRINE DISRUPTORS ON NEURAL CIRCUITS AND BEHAVIOUR

G.C. Panzica, B. Bonaldo, A. Farinetti, M. Marraudino, G. Ponti, S. Gotti

Dept. Neuroscience, University of Torino, and Neuroscience Institute Cavalieri Ottolenghi (NICO), Orbassano (Italy)

A large number of molecules of synthetic or even natural origin (*endocrine disruptors* or *endocrine disrupting chemicals*, EDCs) are able to bind hormone receptors thus potentially interfering with endocrine functions. In particular, EDCs may disrupt the development of the endocrine system with permanent effects. At first, studies on EDCs involved almost exclusively toxicological aspects, whereas the neuroendocrine and behavioural implications were less investigated.

During the last twenty years, cerebral effects of EDCs were investigated highlighting some important points:

- several behaviours and neural circuits related to their control are more sensitive endpoints than others applied in toxicological studies;
- neuropeptides and enzymes are major targets for the action of EDCs in the vertebrate brain, in particular, kisspeptin in rodents, vasotocin and vasopressin in birds and mammals, the hypothalamic NPY and POMC systems in rodents, as well as the enzyme aromatase in fish, or the enzyme NO-synthase in rodents appear the most sensitive to low levels of EDCs during early development;
- alterations of these circuits may induce profound effects on sexual behaviour, puberty, reproductive physiology. In addition, a large number of studies elucidated EDCs action on metabolic disorders and on neural circuits involved in the control of metabolism;
- the EDCs effects are generally through multiple receptors and their mechanisms of action needs to be more thoroughly explored.

A strong concern for human health has been raised by governments and the population, so an endless debate is underway for the regulation of these substances at the level of the European Commission and the European Parliament, but no definite rules have yet been promulgated.