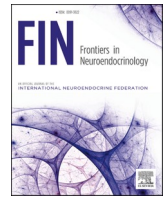




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Editorial

Editorial- State of the art on steroids and the nervous system: In memory of Giancarlo

This Special Issue of Frontiers in Neuroendocrinology includes a collection of reviews based on lectures delivered in February 2023 at a virtual symposium entitled “State of the art on steroids and the nervous system: in memory of Giancarlo”. Professor Giancarlo Panzica (Fig. 1) was one of the organizers of the International Meeting on Steroids and Nervous System, which has been held every 2 years since 2001, and represents an important event for the research community working in this field. Sadly, in July 2022, our friend Giancarlo passed away after a long battle against cancer. With his death, the congress and the entire neuroendocrinological community lost a champion of neuroendocrinology and an excellent scientist. Therefore, we organized this symposium in his honour, and we dedicate this Special Issue to his memory.

The Special Issue includes five reviews on topics that were close to Giancarlo's research. In particular, Jacques Balthazart discussed the plasticity in the songbird brain depending on sex steroids, taking into consideration the perineuronal nets surrounding mostly inhibitory parvalbumin-positive neurons in three telencephalic song control nuclei and neurogenesis in the HVC.



Fig. 1. Giancarlo Panzica in 2019 in Napoli, Italy. Photo taken by Stefano Gotti.

Luis Miguel Garcia-Segura and collaborators discussed the effects of neuroestradiol (i.e., estradiol directly synthesized in the nervous system) on neurodevelopmental processes, such as neurogenesis, neuroblast migration, neuritogenesis, and synaptogenesis. Interestingly, neuroestradiol regulates some of these processes in both sexes, even if in a different way. The implications of sex chromosomes, X-linked genes, epigenetic regulation, and temporal factors in the sex-specific actions of neuroestradiol are also discussed. The role of neurosteroids and neurosteroidogenesis has also been discussed in the review by Monique Vallée. In particular, focusing attention on the first steroid molecules synthesized from cholesterol (i.e., the pregnenolone), and the interaction with new membrane steroid targets, such as the cannabinoid type 1 receptor (i.e., a G-protein coupled receptor), is discussed.

The spinal cord is also a target of neurosteroids and this topic is explored by Mensah-Nyagan and collaborators. Indeed, as reported by Mensah-Nyagan and collaborators, neurosteroidogenesis occurring in the spinal cord plays an important role in the modulation of peripheral nerve injury-induced chronic or neuropathic pain. As highlighted by the authors, future investigations aimed at developing therapeutic strategies should integrate in a gender- or sex-dependent manner the regulatory effects exerted by spinal cord neurosteroidogenesis. In the last review by Silvia Giatti and collaborators, two new clinical conditions, post-finasteride syndrome (PFS) and post-SSRI sexual dysfunction (PSSD), are discussed. Interestingly, it has been demonstrated that even if these two conditions are apparently distant, they share alterations in similar parameters, such as neuroactive steroid levels, neurotransmitter levels, and gut-microbiota populations, and these parameters are interconnected with each other, suggesting similar etiopathogenetic mechanisms.

In conclusion, the reviews collected in this Special Issue confirm once more the important physiopathological roles exerted by steroids in the nervous system and their interesting perspectives as diagnostic markers and therapeutic agents.

In addition, it once again confirms how this community, also thanks to the work of Giancarlo, has grown gradually, over the years, under the common interest in steroid research. Indeed, this community is alive and becoming increasingly a close-knit group of researchers and friends. We miss Giancarlo very much, and in its memory we sincerely hope to continue to carry, by our steroid meeting, this community forward into the future.

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