



PINK - Intimate partner violence disrupts the brain-heart axis in women

The WHO defines Intimate Partner Violence (IPV) as any behavior within an intimate relationship that causes physical, psychological, or sexual harm to those in that relationship. IPV claims millions of victims worldwide, and women are by far most deeply affected. IPV poses unique challenges: it often goes undetected outside of the family unit and remains hard to treat due to its complex interpersonal nature. This evidence calls for better prevention, early screening, and interventions. Deepening our grasp of the deep wounds inflicted by IPV to the woman's heart and brain would help in achieving these unmet milestones. Multiple threads knit together estrogens and brain-derived neurotrophic factor (BDNF), a neurotrophin that, via the TrkB receptor, governs brain and heart well-being. Estrogen replacement increases BDNF expression in brain regions of ovariectomized mice, and the deletion of *bdnf* in the forebrain induces anxiety/depression in female mice. Here, I will test whether perpetuated IPV alters estrogen levels in premenopausal subjects, impairing BDNF/TrkB signaling, triggering cerebral/cardiac dysfunction, and interrupting the information flow between heart and brain. To test that, and the benefits eventually afforded by selective TrkB stimulation, or social enrichment (that boosts BDNF in the hippocampus), I built a mouse model of IPV morphed from the resident-intruder test: a highly aggressive male and a socially-defeated female. Strengthened by a cadre of collaborators expert in Neuroscience, Endocrinology, Cardiology, and Epidemiology, I seek to shed a mechanistic light on the brain/cardiac “wounds” inflicted by IPV on women, proposing some unprecedented remedies to prevent the transition from early alterations to overt heart, or brain disorders, or both. A better mechanistic understanding of the impact of IPV on women may help to maximize screening, intervention and prevention of IPV at the individual, interpersonal, and societal level.

UNIPD Supervisor: Marco Dal Maschio

MSCA Fellow: Jacopo Agrimi

Department: Department of Biomedical Sciences

Coordinator: Università degli Studi di Padova (Italy)

Total EU Contribution: Euro 171.473,28

Call ID: H2020-MSCA-IF-2020

Project Duration in months: 24

Start Date: 01/01/2022

End Date: 29/02/2024

Find out more: <https://cordis.europa.eu/project/id/101031073>