Laboratory for Reproductive Endocrinology and Signaling

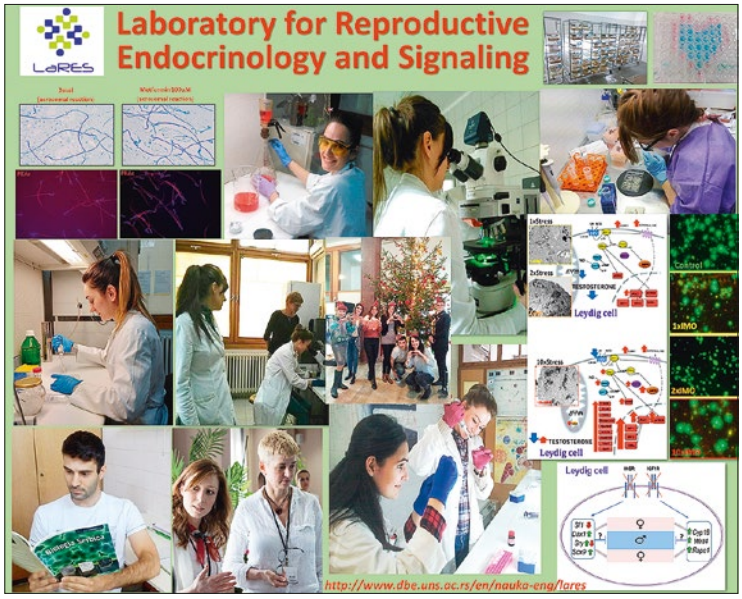
Signal-transduction pathways, Steroidogenic cells, Spermatozoa, Mitochondrial dynamic, Psychophysical stress

LaRES investigates molecular events and signaling pathways involved in the regulation of functions, mainly of the cells of reproductive axis, but also other cells of organism with altered homeostasis of testosterone or other hormones. The aim of the research is to reveal the mechanisms in the basis of infertility, post traumatic stress disorder (PTSD), insulin resistance, polycystic ovary syndrome (PCOS), metabolic syndrome (MetS).

Current research directions/topics:

- The role of signaling from insulin and IGF1 receptors in the regulation of mitochondrial dynamics and the function of steroidogenic cells of testes, ovaries, adrenal glands, placenta;
- Mitochondrial biogenesis as mechanism of spermatozoa adaptation during the condition of changed testosterone homeostasis (stress/PTSD, disrupted biological clock, aging, treatment with Viagra®, treatment with Metformin®, insulin resistance, MetS);
- Markers of mitochondrial dynamic as indicators of the energetic and functional status of energy-producing, energy-consuming and energy-storing cells, during normal and disturbed homeostasis of organism.

The results have a significant translational aspect and application in biomedicine.



SELECTED PROJECTS

Title: *"Molecular mechanisms and signal transduction pathways involved in regulation of steroidogenesis and adaptation of Leydig cells on disturbed homeostasis".*
Type: Basic research project.
Duration: 01.01.2011.-31.12.2019.
Contact person:
Prof. Dr Tatjana Kostic.

Title: *"Are the reproductive hormones link between stress, metabolic syndrome and aging?"*
Type: Basic research project.
Duration: 01.06.2014.-31.12.2019.
Contact person:
Prof. Dr Silvana Andric

Title: *"The CNG channels in Leydig cell - identification, characterization and functional coupling to testosterone production".*
Type: Basic research project.
Duration: 01.01.2015.-31.12.2020.
Contact person:
Prof. Dr Silvana Andric

SELECTED EQUIPMENT

- Accredited animal facility (*Wistar* rats and mice with conditional knock-out) enabling design of in vivo models that simulate the situation/cases in the clinical practice and investigation of the effects of different factors on activity of animals.
- Equipment for detection of willing activity of laboratory rats at given time intervals.
- Equipment for *in vitro* experiment with tissue cultures as well as primary and immortalized cell lines from mice, rats and humans.
- Equipment for molecular investigation of the expression of the genes, as well as proteins interactions and functions within the cells.

COLLABORATIONS

- National Institute of Child Health and Human Disease; National Institutes of Health (Bethesda, Maryland, USA)
- Laboratory of Cellular and Molecular Neuroendocrinology, Institute of Physiology, Academy of Sciences of the Czech Republic
- Department of Genetic Medicine and Development, Faculty of Medicine, University of Geneva, Switzerland

CONTACT PERSON

Dr Silvana Andrić, Full Professor; silvana.andric@dbe.uns.ac.rs; +381-63-748-4403**;** www.dbe.uns.ac.rs/en/nauka-eng/lares