VI Simpozijum Srpskog udruženja za proteomiku (SePA)
"Razvoj i primena novih metoda proteomike"

Rektorat Univerziteta u Kragujevcu
2. jun 2023. godine

Book of abstracts

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13:00 **Prof. dr Marija Stanić** - dekan PMF Kragujevac, **Prof. dr Nevena Đukić**, PMF- Kragujevac, otvaranje VI SePA simpozijuma.

13:10 **Dr Lidija Izrael – Živković**, "Proteome changes of the model bacteria *Pseudomonas aeruginosa* san ai exposed to nanoceria", Institut za hemiju, Medicinski fakultet, Univerzitet u Beogradu, Višegradska 26, Beograd, Srbija

13:30 **Dr Ana Medić**, "Flexibility of carbon catabolic pathways in *Pseudomonas aeruginosa* san ai during the biodegradation of toxic organic compounds- a multiomics approach", Institut za hemiju, Medicinski fakultet, Univerzitet u Beogradu, Višegradska 26, Beograd, Srbija

13:50 **Dr Katarina Smiljanić**, "Alterations in proteomic profiles of lung epithelial cell line BEAS 2B upon treatments with electronic cigarettes liquids and pure nicotine", Univerzitet u Beogradu – Hemijski fakultet, Studentski trg 12-16, Beograd, Srbija

14:10 **Dr Nataša Avramović**, "Application of NMR spectroscopy in metabolomics", Institut za hemiju, Medicinski fakultet, Univerzitet u Beogradu, Višegradska 26, Beograd, Srbija

14:30 **Dr Romana Masnikosa**, "Plasma profile of inflammatory mediators in NHL patients", Institut za nuklearne nauke „Vinča", Laboratorija za fizičku hemiju, Mike Petrovića Alasa 12-14 11351 Vinča, Beograd, Srbija

14:50 Pauza: Poster sekcija

15:10 **Dr Marko Živanović**, "Scaffolds for *in vivo* wound healing", Institut za informacione tehnologije Kragujevac, Jovana Cvijića bb, 34000 Kragujevac.

15:30 **Dr Milan Mladenović**, "Computational Approaches in Modulating the Estrogen Receptor α; Signaling: A Pathway for Breast Cancer Cure Discovery?", Univerzitet u Kragujevcu, Prirodno – Matematički fakultet, Institut za Hemiju, Radoja Domanovića 12, Kragujevac, Srbija

15:50 **Dr Milena Milutinović**, „The impact of natural products on the expression of apoptosis and biotransformation-related genes and proteins in immortalized carcinoma cell lines" Univerzitet u Kragujevcu, Prirodno – Matematički fakultet, Institut za Biologiju i Ekologiju, Radoja Domanovića 12, Kragujevac, Srbija

16:10 **Dr Maja Krstić Ristivojević,**"Identification of isoforms of shellfish tropomyosin" Univerzitet u Beogradu – Hemijski fakultet, Studentski trg 12-16, Beograd, Srbija

16:30 **Dr Nikola Gligorijević,** "Biocorona formation of hen proteins onto the surface of polystyrene and polyethylene terephthalate", Univerzitet u Beogradu – Hemijski fakultet, Studentski trg 12-16, Beograd, Srbija

16:50 **Dr Dragana Filipović**, "Chronic fluoxetine treatment of socially isolated rats modulates prefrontal cortex proteome", Institut za nuklearne nauke „Vinča", Laboratorija za molekularnu biologiju i endokrinologiju, Mike Petrovića Alasa 12-14 11351 Vinča, Beograd, Srbija

17:10 Analysis doo

17:30 Diskusija i zatvaranje skupa

18:00 Godišnja skupština društva

Chronic fluoxetine treatment of socially isolated rats modulates prefrontal cortex proteome

Dragana Filipović[1]*, Christoph W. Turck[2]

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Exposure to chronic social isolation (CSIS) and dysfunction of serotonin neurotransmission have been implicated in the etiology of major depressive disorder (MDD). Fluoxetine (Flx) has been widely used to treat MDD, however, its molecular mechanisms of action are not yet defined. Hence, we carried out a comparative label-free proteomic approach to identify sub-proteome changes in the prefrontal cortex (PFC) cytosol, non-synaptic mitochondrial (NSM), and synaptosomal-enriched fractions of adult male Wistar rats following chronic social isolation (CSIS) (6 weeks), a rat model of depression, and/or following Flx treatment in CSIS and control rats (15 mg/mL/day) (lasting 3 weeks of 6-weeks CSIS) using liquid chromatography coupled to tandem mass spectrometry. Our aim was to identify the changes in protein levels that enable the identification of (possible) biochemical pathways and processes of importance for the development of depressive-like behavior and the efficacy of Flx treatments. Behavior was assessed with sucrose preference and forced swim tests. In controls, Flx downregulated the proteins involved in endocytosis and vesicle-mediated transport, while predominantly upregulating proteins involved in the microtubule cytoskeleton, intracellular calcium homeostasis, an enzyme linking the glycolytic pathway to the citric acid cycle in NSM, and exocytosis. CSIS affected the PFC proteome by downregulating the proteins involved in proteasome pathway, glutathione antioxidative system, synaptic vesicle cycle, and endocytosis while upregulating the protein levels of enzymes participating in oxidative phosphorylation 1,2. CSIS compromised mitochondrial membrane integrity, as assessed by cytochrome c levels in the cytosol. Effective Flx treatment in CSIS rats resulted in increased synaptic vesicle dynamic, plasticity, and mitochondrial functionality and a suppression of CSIS-induced impairment of these processes [1,2]. Our data provide the basis for establishing a marker panel for CSIS-induced depression and effective Flx treatment and highlight the role of NSM and synaptosomal proteins involved in various biochemical pathways as novel investigative protein targets.

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1. Filipović D, et al. Chronic Fluoxetine Treatment of Socially Isolated Rats Modulates Prefrontal Cortex Proteome. Neuroscience 2022; 501:52-71.
2. Filipović D, et al. Chronic fluoxetine treatment in socially-isolated rats modulates the prefrontal cortex synaptoproteome. J Proteomics. 2023; 282:104925.

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