

Laboratory of Biochemistry and Molecular Biology

oxidative stress, antioxidative defense system, insects, structural biology, molecular docking

Research in the laboratory of biochemistry and molecular biology focuses on two main themes: 1) the molecular basis of antioxidant protection mechanisms and redox homeostasis in a variety of organisms and 2) the study of protein-ligand interactions using structural biology and biophysical methods. The laboratory has been investigating the molecular basis of cellular response to various stress factors in economically important insects (e.g. *Ostrinia nubilalis*, *Apis mellifera*), such as low temperature, heavy metals and other pollutants. Of particular interest are molecular mechanisms of insect cold hardiness and dormancy, such as metabolic changes and the role of protein structural disorder in these processes. The laboratory is also developing a database on gene and protein expression in animal dormancies. Another focus of our group is the use of structural and biophysical methods for identification of bioactive compounds for treatment of hormone-dependent cancers, as well as protein-ligand interactions important in redox homeostasis, cell signaling and biomedicine. Research in the laboratory is conducted through collaborations with researchers in Serbia and around the world.



COLLABORATIONS

- British Antarctic Survey, Cambridge, United Kingdom Melody Clark, Roger M. Worland
- Research Centre for Natural Sciences, Hungarian Academy of Sciences, Budapest, Hungary
- Institute of Organic Chemistry and Biochemistry, CAS, Praha, Czech Republic, Laboratory of Structural Biology



SELECTED PROJECTS

Title: *Molecular mechanisms of redox signaling in homeostasis, adaptation and pathology*

Type: Fundamental research project financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia

Duration: 2011-

Contact person: Dr Duško Blagojević

Title: *Synthesis, characterization and biological activities of steroidal derivatives and their molecular aggregates*

Type: Fundamental research project financed by the Ministry of Education, Science and Technological Development of the Republic of Serbia

Duration: 2011-

Contact person: Dr Marija Sakač

Title: *Supplementation of honey bee diet with selected physiologically active substances: effects on antioxidative and immune systems*

Type: Research project financed by the Provincial Secretariat for Higher Education and Scientific Research, Autonomous Province of Vojvodina, Republic of Serbia

Duration: 2018-2019

Contact person: Dr Jelena Purać

SELECTED EQUIPMENT

- Equipment for electrophoresis and Western blotting
- Gas chromatography mass spectrometry (GC-MS)
- PCR thermocycler
- UV/VIS spectrophotometer

CONTACT PERSON

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