



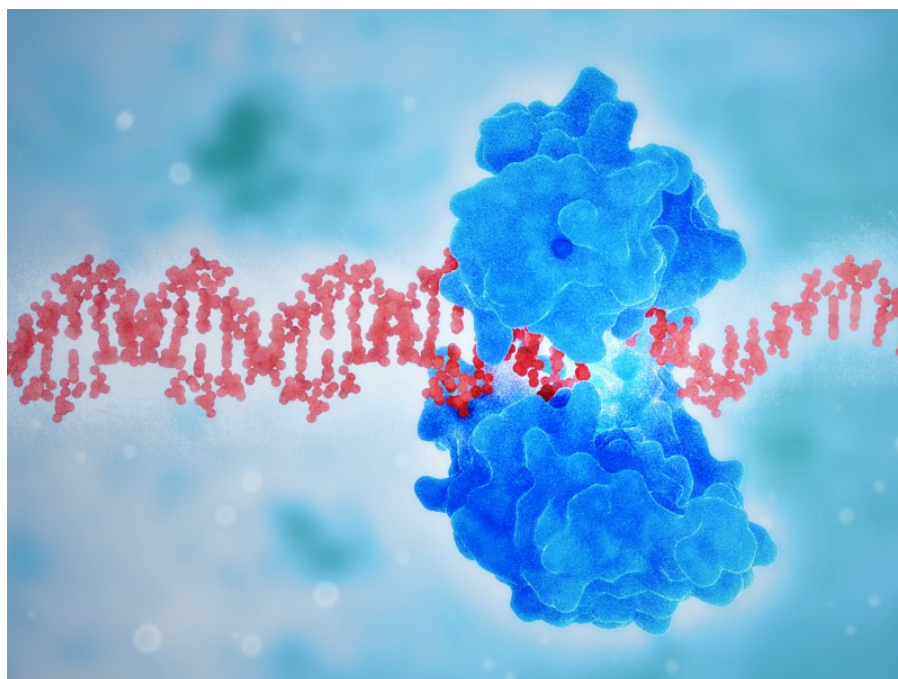
Vás zve na seminář na téma:

## PLATINOVÉ NANOČÁSTICE A JEJICH INTERAKCE S DNA-POLYMERÁZOU

Ing. Kristýna Šmerková

### Anotace/Annotation

Platinum nanoparticles (PtNPs) in liposomes were prepared and studied by UV/VIS spectroscopic techniques. Antimicrobial activity of PtNPs and PtNPs encapsulated in liposomes on bacteria *Staphylococcus aureus* was also tested. The study succeeded in demonstrating that liposome is suitable for the transport of platinum nanoparticles and can be used for their antimicrobial activity as potential drugs in treatment of resistant bacterial strains. It was found that liposome facilitates transport of nanoparticles through cell and increases so antimicrobial properties of nanotransporter. PtNPs have recently shown potential as therapeutic agents in cancer and oxidative stress treatments because of the resultant DNA damage. PtNPs of sizes, < 20, < 100 and > 100 nm, were found to cause DNA strand breaks in human colon carcinoma cells (HT29) in a concentration- and time-dependent manner and a distinct size dependency. STEM



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imaging demonstrated that PtNPs were taken up into HT29 cells in their particulate and aggregated form, but appears not to translocate into the nucleus or interact with mitochondria. The observations suggest that DNA strand breaks mediated by PtNPs are caused by Pt ions forming during the incubation of cells with these nanoparticles. Ischemic stroke is a major, urgent neurologic disorder in which reactive oxygen species (ROS) are deeply involved in the detrimental effects. PtNPs are a novel and strong scavenger of such ROS. The clinical and neuroprotective effects of PtNPs in mouse ischemic brain were examined. Treatment with PtNPs significantly improved the motor function and greatly reduced the infarct volume, especially in the cerebral cortex. A strong reduction of superoxide anion production by PtNPs could account for remarkable neurobehavioral and neuroprotective effects on ischemic stroke

## Program

10:00 – 10:30 - Charakterizace platinových nanočástic fyzikálně-chemickými metodami (Šmerková)

10:30 – 11:00 - Molekulárně-biologické metody a techniky vhodné pro studium interakcí nanočástic s katalytickými proteiny (Šmerková)

11:00 – 11:30 - Studium interakcí platinových nanočástic s DNA-polymerázou (Šmerková)

**pátek 06. 09. 2013, začátek v 10:00 h**

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