



## Seminář/Seminar PRO22\_4582

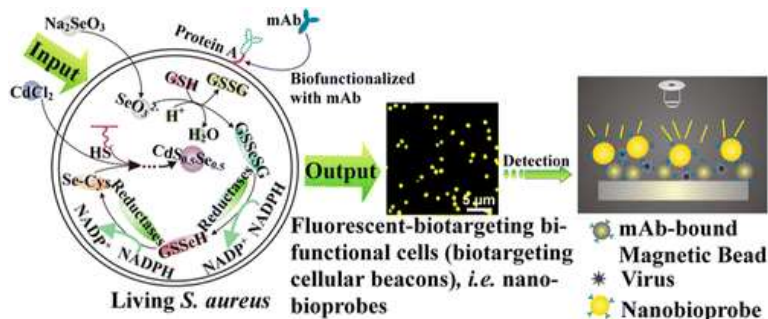
Vás zve na seminář:

### Uniform Fluorescent Nanobioprobes for Pathogen Detection

**Ing. Soňa Křížková, Ph.D.**

#### Abstrakt

Manipulating biochemical reactions in living cells to synthesize nanomaterials is an attractive strategy to realize their synthesis that cannot take place in nature. Yeast cells have been skillfully utilized to produce desired nanoparticles through spatiotemporal coupling of intracellular nonrelated biochemical reaction pathways for formation of fluorescent CdSe quantum dots. Here, we have successfully transformed *Staphylococcus aureus* cells into cellular beacons (fluorescing cells), all of which are highly fluorescent and photostable with perfect uniformity. Importantly, on the basis of such cells, we efficiently fabricated fluorescent nanobioprobes by a specific interaction between the protein A expressed on the *S. aureus* surface and the Fc fragment



domain of antibodies, avoiding the use of other common methods for cell surface modifications, such as molecular covalent connection or more difficult genetic and metabolic engineering. Coupled with immunomagnetic beads, the resulting fluorescent-biotargeting bifunctional cells, *i.e.*, biotargeting cellular beacons, can be employed as nanobioprobes for detection of viruses, bacteria, and tumor cells. With this method, H9N2 AIV can be detected specifically with a limit of 8.94 ng/mL (based on protein content). Furthermore, diverse probes for detection of different pathogens or for other biomedical applications can be easily obtained by simply changing the antibody conjugated to the cell surface

DOI: 10.1021/nn501174g

**29. 05. 2015, 15:00 h**

Department of Chemistry and Biochemistry and Central European Institut of Technology in Brno, room D06, contact: [kizek@sci.muni.cz](mailto:kizek@sci.muni.cz)

