CZ.1.07/2.3.00/20.0148 NANOLABSYS
Mezinárodní spolupráce v oblasti „*in vivo*“ zobrazovacích technik
Laboratoř Metalomiky a Nanotechnologií

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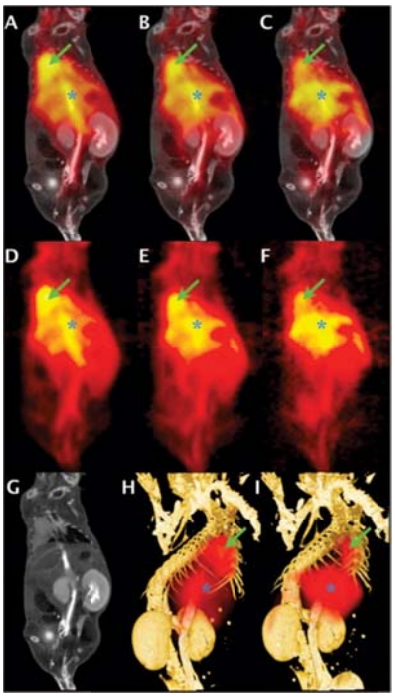
# PŘÍPRAVA VHODNÝCH NANOČÁSTIC VYUŽITELNÝCH V ZOBRAZOVACÍCH TECHNIKÁCH PET

***Doc. RNDr. Pavel Kopel, Ph.D.***

**Abstrakt**

Nanoparticles have an advantage for molecular imaging in that many functionalities can be added to the surface and interior of the particle. This brief review focuses on the design of nanomaterials that take advantage of PET. An evolutionary approach is presented, leading to the optimization of the nanoparticle composition and structure to achieve controlled in vivo circulation and tissue-selective targeting. Organic and inorganic nanostructures are included. Nanoprobes for PET of angiogenesis and cancer are highlighted.




Synthesis and in vivo characterization of an 18F modified trimodal nanoparticle (18F-CLIO). This particle consists of cross-linked dextran held together in core-shell formation by a superparamagnetic iron oxide core and functionalized with the radionuclide 18F in high yield via "click" chemistry. The particle can be detected with positron emission tomography, fluorescence molecular tomography, and magnetic resonance imaging. The presence of 18F dramatically lowers the detection threshold of the nanoparticles, while the facile conjugation chemistry provides a simple platform for rapid and efficient nanoparticle labeling.

**pátek 15. 11. 2013, od 12:00 h**

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