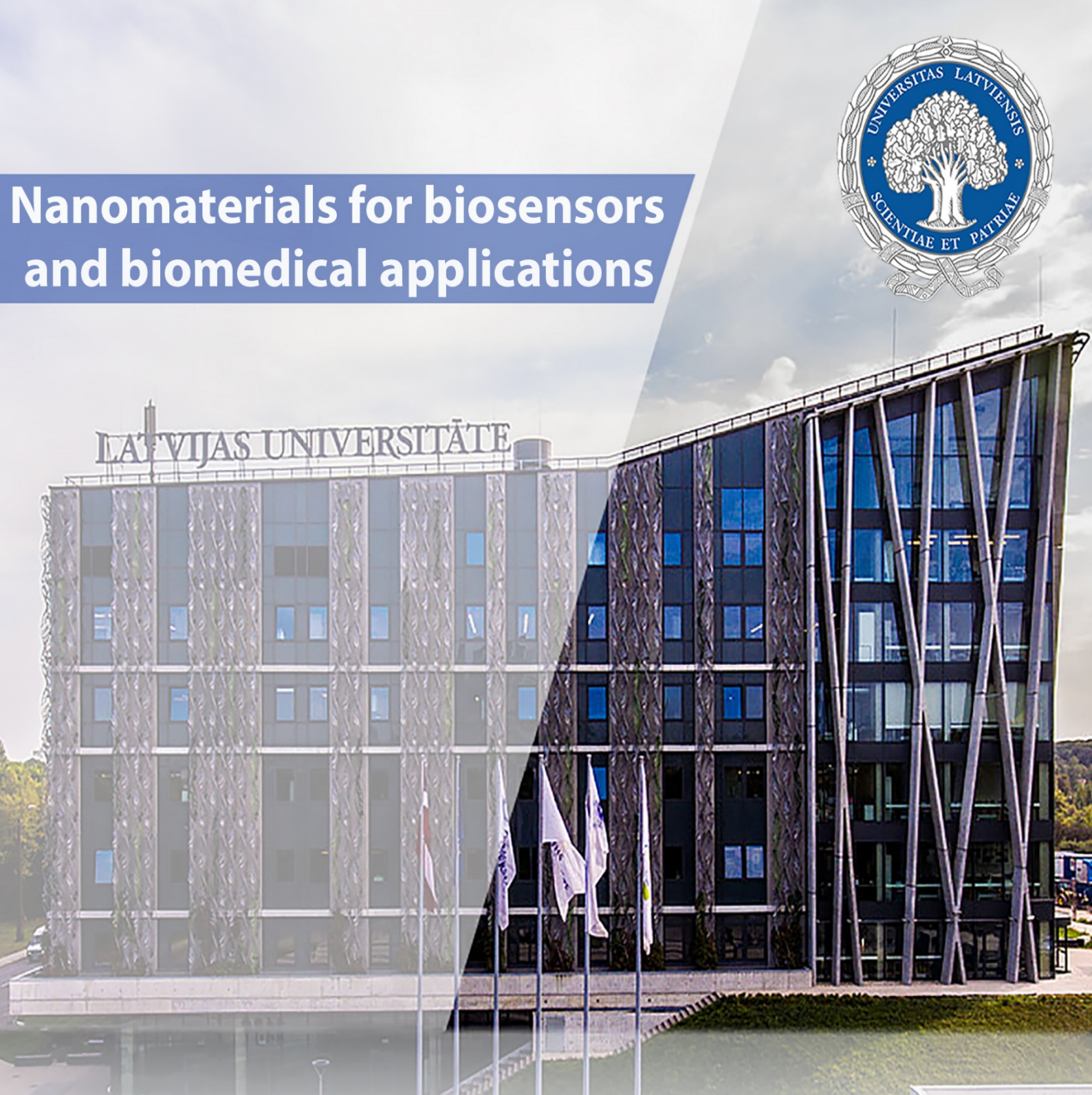
Nanomaterials for biosensors and biomedical applications



Book of Abstracts

International Conference

July 2-4, Jurmala, Latvia

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NANOMATERIALS FOR BIOSENSOR AND BIOMEDICAL APPLICATIONS

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P #2

Liposomal Nanoparticles for Pediatric Leukemia Therapy

Andrii Loboda
Sumy State University, Ukraine

Introduction. Two main forms of acute leukemia – acute lymphoblastic leukemia (ALL) and acute myeloid leukemia (AML) occupies approximately 30% among of the pediatric malignancies. Average incidence of leukemia's in Ukraine in 2016 is 3.77 per 100 000 child population (in Sumy region – 2.87). Based on the results of the last event-free *survival* analysis of ALL children (n = 763) who were treated at the centers of the Ukrainian Cooperative Group according to the protocols ALL IC BFM 2002 and ALL IC BFM 2009, the overall recovery rate was 71%.

Aim. Overview the novel therapeutic strategies for pediatric patients with leukemia to reducing long-term negative impact of therapy, decrease frequency of refractive to current therapy cases and increase overall recovery rate to 80% for patients with ALL.

Results. Selective delivery of anti-cancer agents to cancer cells without harming the healthy cells is a major goal of novel nanoparticle-based pediatric leukemia therapy. Some studies are show that lipoprotein receptors (especially the HDL receptor) are highly active on the surface of malignant leukemic cells, that's why may be used as conduits for the delivery of anti-cancer agents [1]. Liposomal vincristine sulfate was the first nanoformulation to get approval by the FDA to treat Ph+ ALL in adults [2]. Children tolerate 2.25 mg/m^2/dose of weekly liposomal vincristine sulfate with evidence for clinical activity without dose-limiting neurotoxicity [3]. Liposomal doxorubicin and pegylated (polyethylene glycol coated) liposome-encapsulated doxorubicin has an impressive safety profile, particularly regarding acute cardiac toxicity, in childhood leukemia [4]. Pegylated formula of L-asparaginase decreases immunogenicity, increases circulating half-life and can be used in patients with hypersensitive to un-pegylated products [5].

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