

poziva Vas na predavanje

Dr. sc. Marijana Rukčević

## Direct Identification of Viral Epitopes Presented by MHC Class I Molecules of Human Primary HIV-Infected Cells using Mass Spectrometry

Persistent infections with viruses such as human immunodeficiency virus (HIV), cytomegalovirus (CMV) or human papillomavirus (HPV) can lead to serious illnesses or cancer development. There are no effective therapies available to permanently eliminate these infections and cure caused diseases. With advances in understanding viral biology and biology of immune responses, one could design therapies by which the immune system is manipulated in order to eradicate the virus or the virus-induced diseases. One potential approach is direct identification of viral antigen-derived epitopes, which are endogenously processed and efficiently presented at the surface of infected or diseased cells for immune recognition. Therefore, we established an unbiased Mass Spectrometry (MS)-based approach to identify MHC-bound peptides eluted directly from the surface of live infected cells. Identified HIV peptides were derived from expected and distinctive areas of primarily most abundantly expressed, HIV-1 Gag and Pol proteins and were of characteristic and atypical length compared to reference MHC class I HIV-1 epitopes. Most importantly, 75% previously unreported HIV-1 epitopes were found efficiently presented by HLA molecules and exhibited substantial immunoreactivity in HIV-1 infected donors thus, revealing novel T cell responses. Such identification of yet unknown viral epitopes that could trigger most potent immune responses may guide the design of novel immunogens eliciting immune responses relevant to the recognition of infected cells at the population level.

**Marijana Rucevic** is a Ph.D. scientist with over 10 years of academic and industry experience in protein biochemistry, immunology, biomedical mass spectrometry (MS) and clinical analysis. She has strong expertise in diseases protein and peptide biomarkers discovery and characterization using state-of-the-art immuno-biochemical approaches. Marijana has successfully initiated several international collaborations, presented her work at many international conferences and published her own and collaborative work in recognized journals such as: Shock, Proteomics, Journal Immunology and Nature immunology among others.

In 2007 Marijana obtained her PhD in molecular biotechnology from the University of Biotechnology, Zagreb and Brown University, Providence RI, USA. After her PhD, Marijana has worked as a research investigator in Pliva Pharmaceutical Industries Ltd. Zagreb, Croatia on biogeneric drugs development. In 2010 Marijana took position at COBRE Center for Cancer Research Development at Rhode Island Hospital in Providence to work on cutting edge MS technologies and models for disease biomarkers discovery. In 2012 Marijana joined the Ragon Institute of MGH, MIT and Harvard as a research scientist where she is currently conducting research at the Department of medicine. The Institute's main mission is harnessing the immune system to prevent and cure HIV and other human diseases. Specifically, Marijana has established MS-based epitope discovery approach and identified potentially novel HIV epitopes that exhibited substantial immunoreactivity in HIV infected persons that should provide a strong base for vaccine immunotherapy design.

Ponedjeljak, 4. srpnja 2016. u 19 sati

Velika dvorana Matice hrvatske, Strossmayerov trg 4, Zagreb