



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Elektrochemická a spektroskopická analýza chřipkového proteinu

Školitel :

Marie Konečná

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Reg.č.projektu: CZ.1.07/2.4.00/31.0023

Název projektu: Partnerská síť centra excelentního bionanotechnologického výzkumu



Sequences of Pandemic-Causing Viruses Isolated and Detected by Paramagnetic Particles Coupled with Microfluidic System and **Electrochemical** Detector

Flow Injection **Electrochemical** Analysis of Complexes of Influenza Proteins with CdS, PbS and CuS Quantum Dots

Development of a Magnetic **Electrochemical** Bar Code Array for Point Mutation Detection in the H5N1 Neuraminidase Gene

Quantum Dots for **Electrochemical** Labelling of Neuraminidase Genes of H5N1, H1N1 and H3N2 Influenza

Paramagnetic Particles Isolation of Influenza Oligonucleotide Labelled with CdS QDs

Using of Paramagnetic Microparticles and Quantum Dots for Isolation and **Electrochemical** Detection of Influenza Viruses' Specific Nucleic Acids

Electrochemical Sensors and Biosensors for Influenza Detection

Paramagnetic particles coupled with an automated flow injection analysis as a tool for influenza viral protein detection

Easy to use and rapid isolation and detection of a viral nucleic acid by using paramagnetic microparticles and carbon nanotubes-based screen-printed electrodes

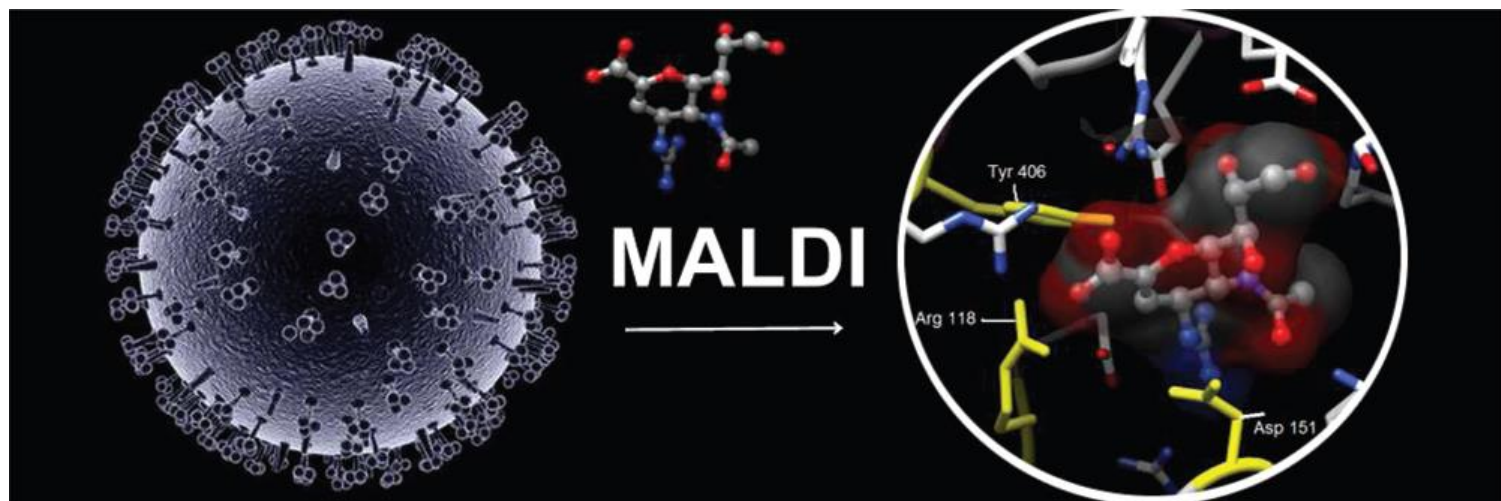
Mass spectrometry

The influenza virus, vaccine and antiviral drugs that target the virus can be characterized by different genetic and proteomic approaches. One of the most important and advantageous is mass spectrometry (MS), especially high resolution mass spectrometry or mass mapping. ..

Anti-Viral Inhibitor Binding to Influenza Neuramininidase by MALDI Mass Spectrometry

Kavya Swaminathan and Kevin M. Downard*

School of Molecular Bioscience University of Sydney, Sydney, NSW 2006, Australia

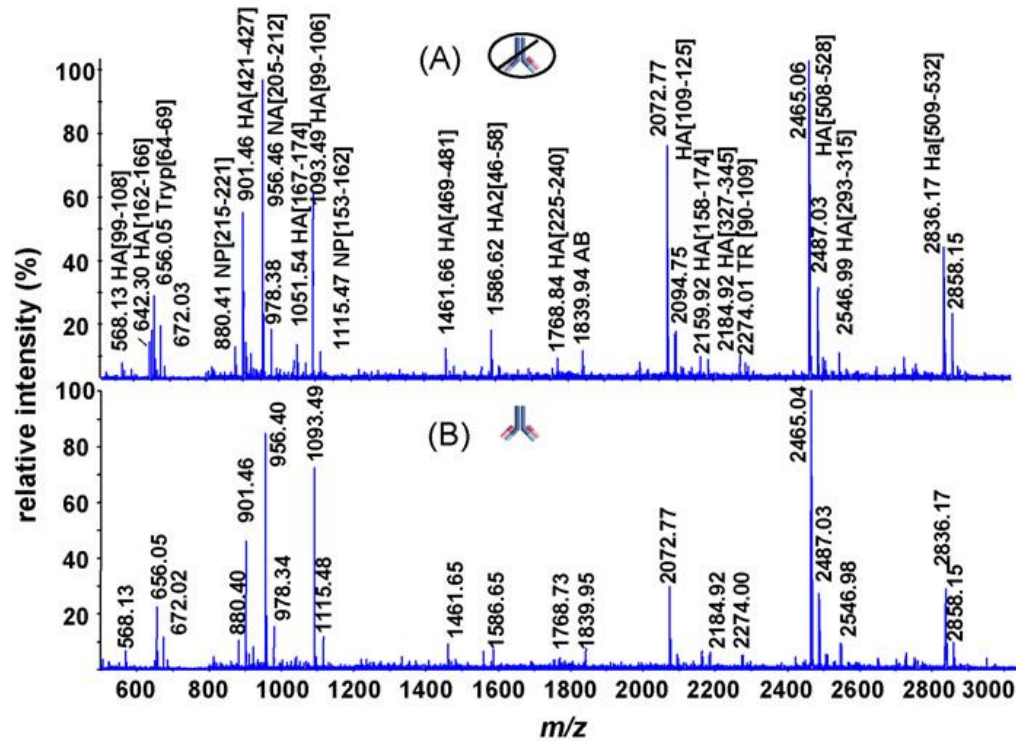


Antigenic characterisation of H3N2 subtypes of the influenza virus by mass spectrometry

Bethny Morrissey, Margaret Streamer, Kevin M. Downard*

School of Molecular & Microbial Biosciences, The University of Sydney, Australia

JOURNAL OF VIROLOGICAL METHODS Volume: 145 Issue: 2 Pages: 106-114 Published: NOV 2007



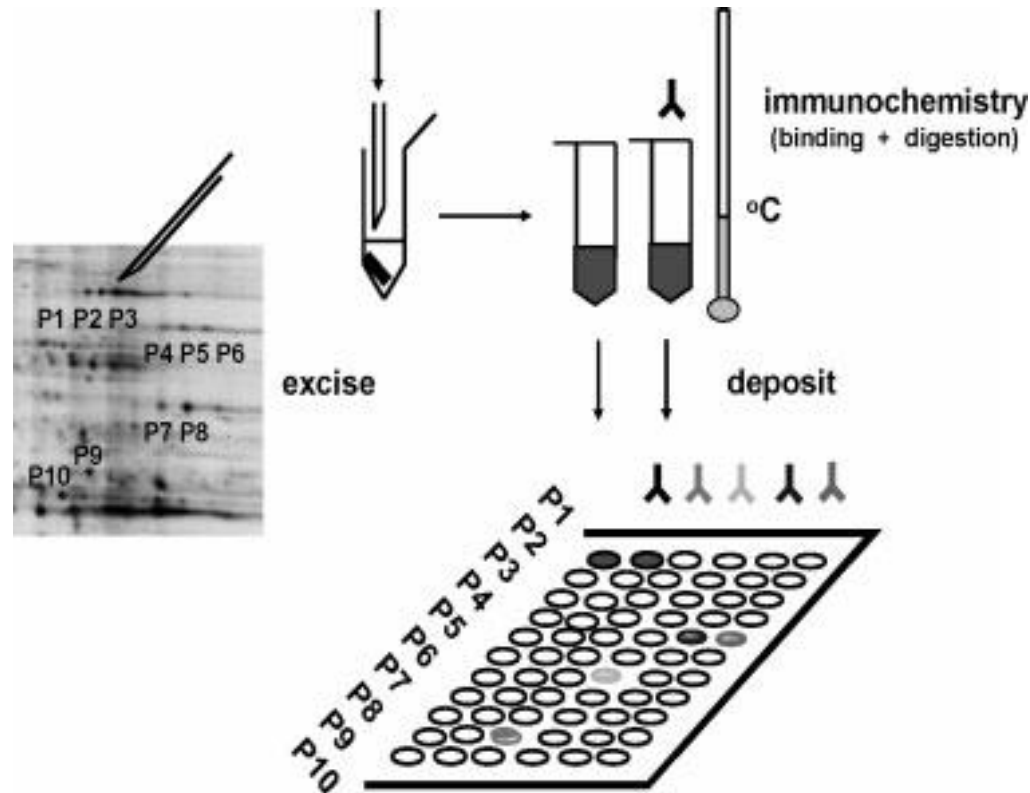
MALDI mass spectra of gel-recovered hemagglutinin after tryptic digestion of the Panama2007/99 type A strain (A) without antibody and (B) after 24 h incubation with monoclonal antibody raised to a H3N2 serotype.

A proteomics approach to survey the antigenicity of the influenza virus by mass spectrometry

Bethny Morrissey and Kevin M. Downard

School of Molecular and Microbial Biosciences, The University of Sydney, Sydney, Australia

PROTEOMICS Volume: 6 Issue: 7 Pages: 2034-2041 Published: APR 2006



Schematic representation of the MALDI array in which two spots (shaded) on the target represent untreated and antibody-treated samples of a gel-resolved protein (P) in order to determine the antigenicity of the component antigen. Additional lanes of the MALDI target can be used to assess the interaction of protein antigens with other antibodies where the other shaded spots denote a located epitope.

Spektroskopie laserem buzeného plazmatu LIBS

(Laser-Induced Breakdown Spectroscopy)

Cooperation : MENDELU + MU + BUT

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- 1. **Mapping of lead, magnesium and copper accumulation in plant tissues by laser-induced breakdown spectroscopy and laser-ablation inductively coupled plasma mass spectrometry**

Times Cited: 50
(from All Databases)

By: Kaiser, J.; Galiova, M.; Novotny, K.; et al.
Conference: 4th Euro Mediterranean Symposium on Laser Induced Breakdown Spectroscopy Location: Paris, FRANCE
Date: SEP 11-13, 2007
SPECTROCHIMICA ACTA PART B-ATOMIC SPECTROSCOPY Volume: 64 Issue: 1 Pages: 67-73 Published: JAN 2009

Full Text View Abstract

- 2. **Investigation of heavy-metal accumulation in selected plant samples using laser induced breakdown spectroscopy and laser ablation inductively coupled plasma mass spectrometry**

Times Cited: 36
(from All Databases)

By: Galiova, M.; Kaiser, J.; Novotny, K.; et al.
APPLIED PHYSICS A-MATERIALS SCIENCE & PROCESSING Volume: 93 Issue: 4 Pages: 917-922 Published: DEC 2008

Full Text View Abstract

- 3. **Trace elemental analysis by laser-induced breakdown spectroscopy-Biological applications**

Times Cited: 5
(from All Databases)

By: Kaiser, Jozef; Novotny, Karel; Martin, Madhavi Z.; et al.
SURFACE SCIENCE REPORTS Volume: 67 Issue: 11-12 Pages: 233-243 Published: DEC 10 2012

Full Text View Abstract

IF 15.33

- 4. **AN UTILIZING OF LASER INDUCED BREAKDOWN SPECTROSCOPY FOR METAL IONS DETECTION**

Times Cited: 1
(from All Databases)

By: Krystofova, Olga; Babula, Petr; Kaiser, Josef; et al.
LISTY CUKROVARNICKE A REPARSKE Volume: 126 Issue: 11 Pages: 402-402 Published: NOV 2010

View Abstract

- 5. **Utilization of Laser-Assisted Analytical Methods for Monitoring of Lead and Nutrition Elements Distribution in Fresh and Dried Capsicum annuum L. Leaves**

Times Cited: 12
(from All Databases)

By: Galiova, Michaela; Kaiser, Jozef; Novotny, Karel; et al.
MICROSCOPY RESEARCH AND TECHNIQUE Volume: 74 Issue: 9 Pages: 845-852 Published: SEP 2011

Full Text View Abstract

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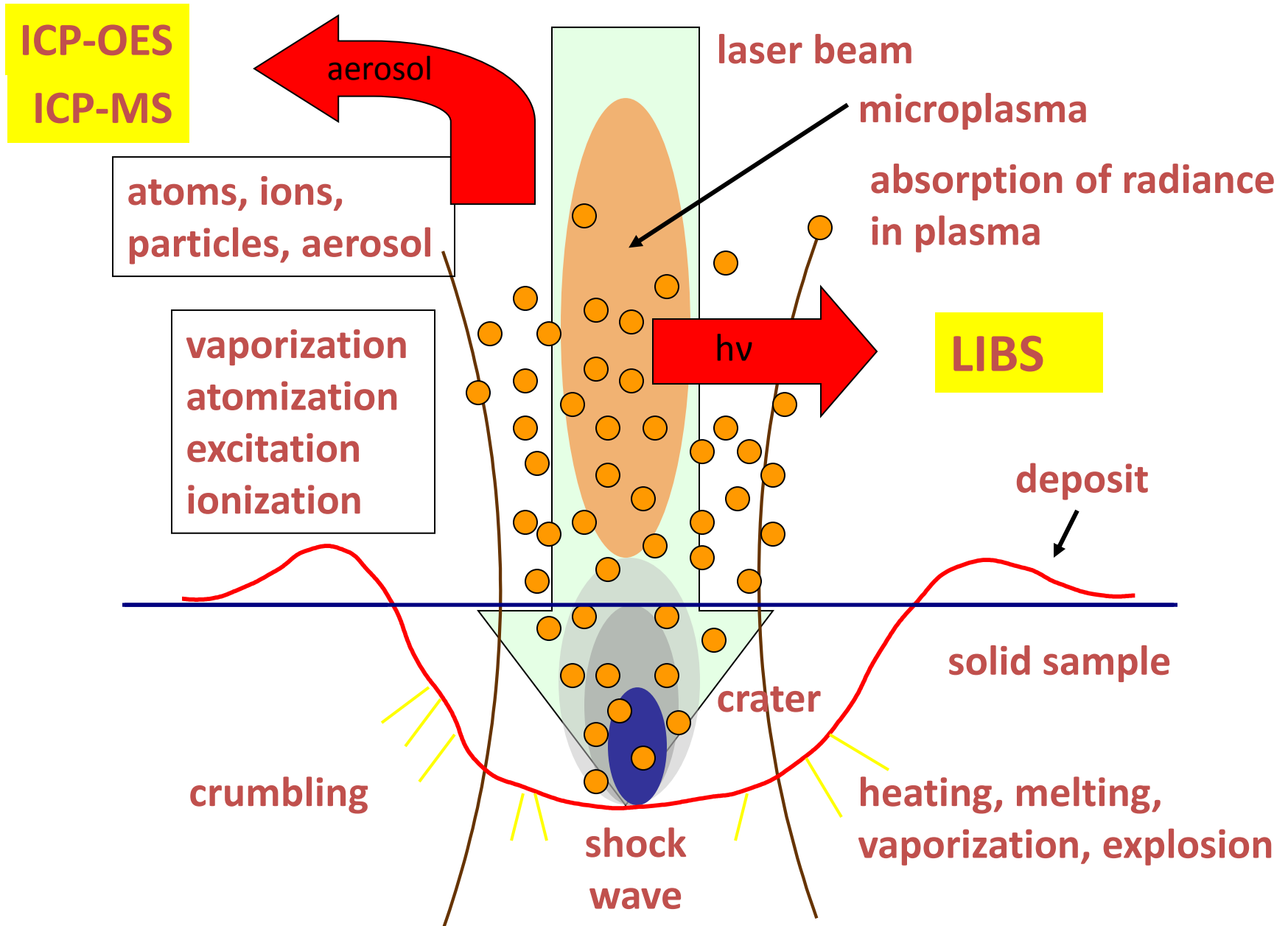
(Laser-Induced Breakdown Spectroscopy)

High energy laser pulse - sample interaction:

three steps in dependence on laser energy

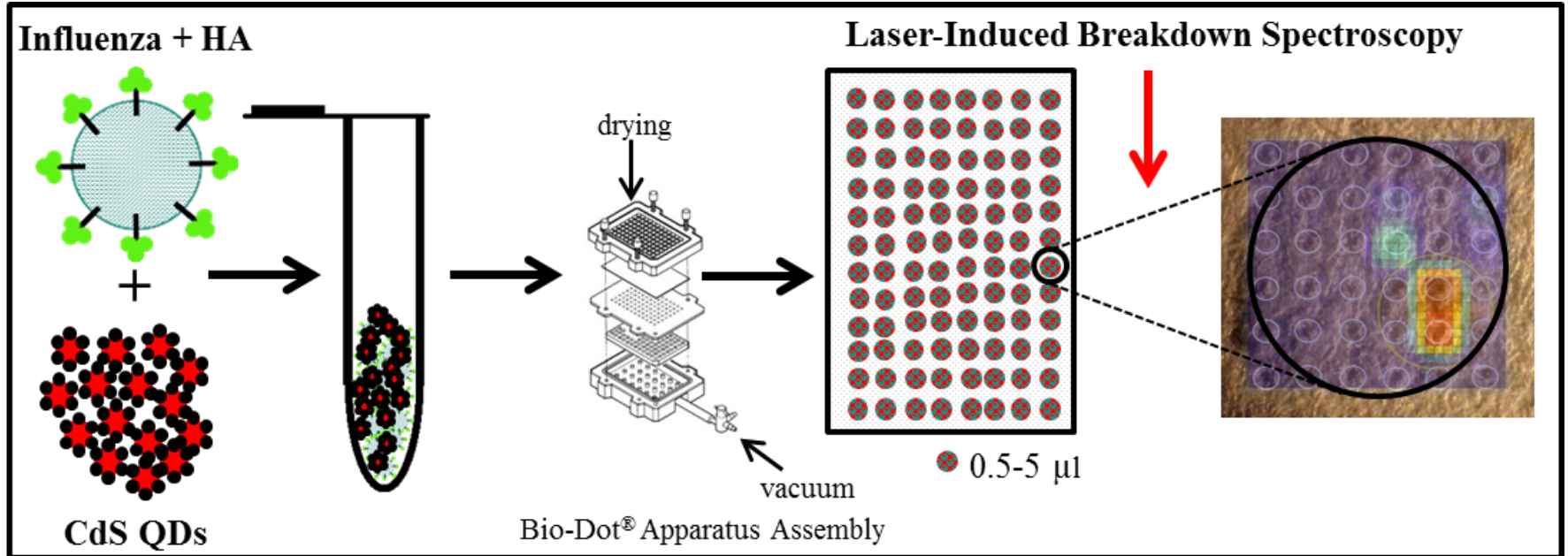
- damage threshold – **surface modification**
(observable in an optical microscope)
- ablation threshold – **material removal**
(LA-ICP-OES/MS signal starts to occur)
- plasma threshold – **optical breakdown of the vapour phase**
(plasma ignition - LIBS signal)

Laser beam - solid sample interaction



Spatially resolved determination of CdS quantum dots and its complexes with influenza hemagglutinin by Laser-Induced Breakdown Spectroscopy

Marie Konecna^{1,2}, Karel Novotny³, Sona Krizkova^{1,2}, Iva Blazkova², Pavel Kopel^{1,2}, Jozef Kaiser^{1,4}, Vojtech Adam^{1,2} and Rene Kizek^{1,2*}



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Dr. K. Novotný

Prof. J. Kaiser

Pavel K., Ivuška B., Soňa K.,

Prof. R. Kizek





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Thank you for your attention!

Reg.č.projektu: CZ.1.07/2.4.00/31.0023

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