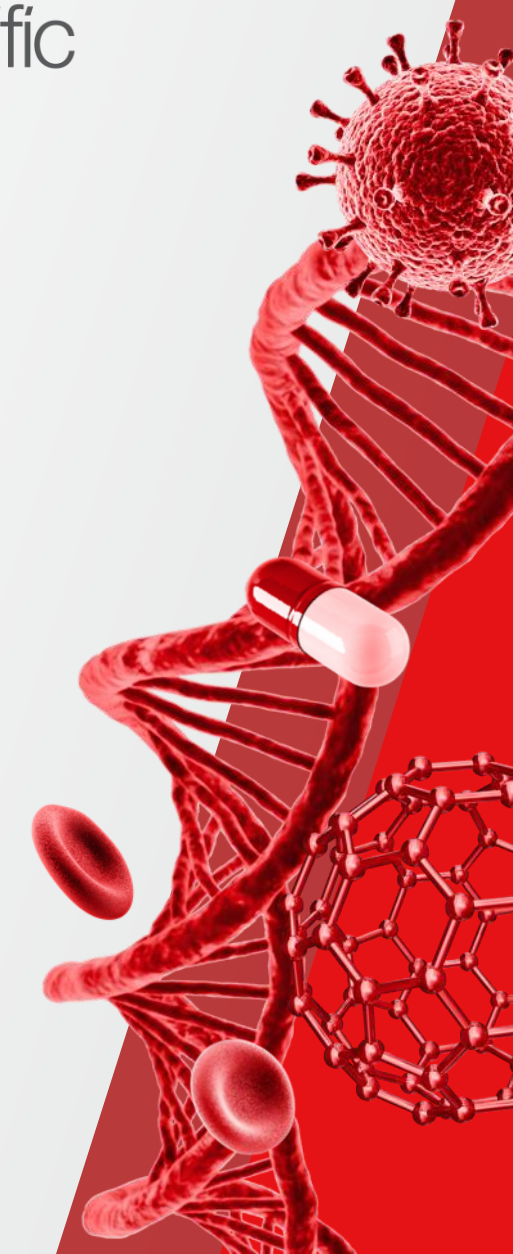
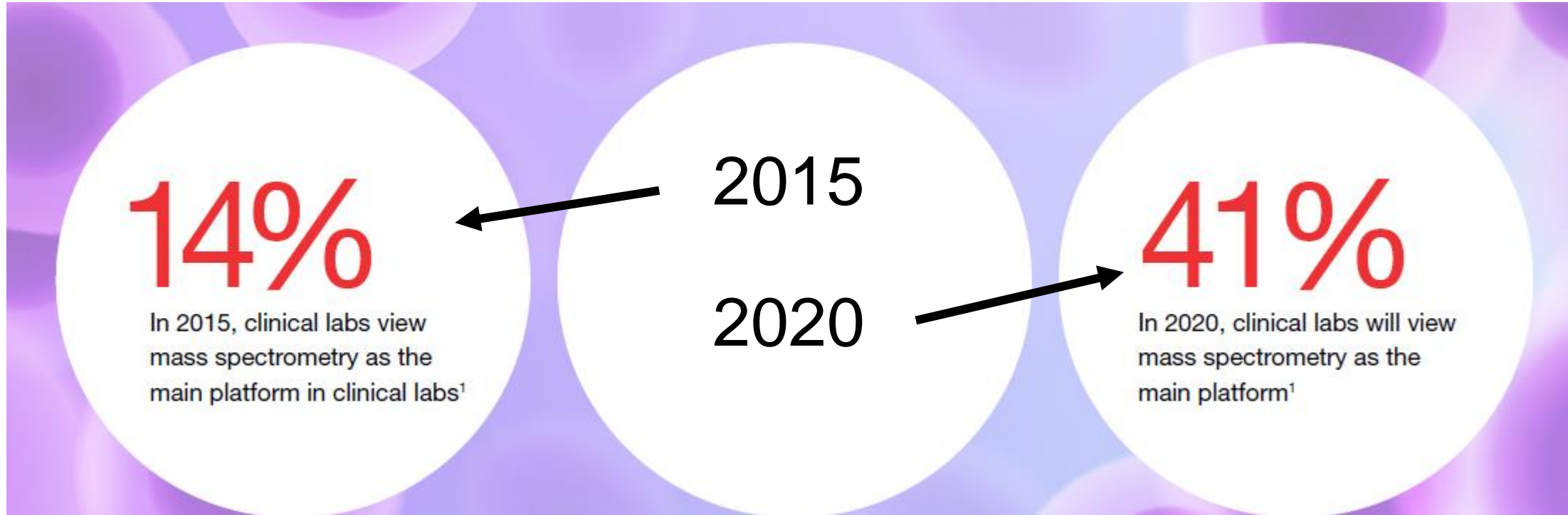


Orbitální pasti v klinické analýze

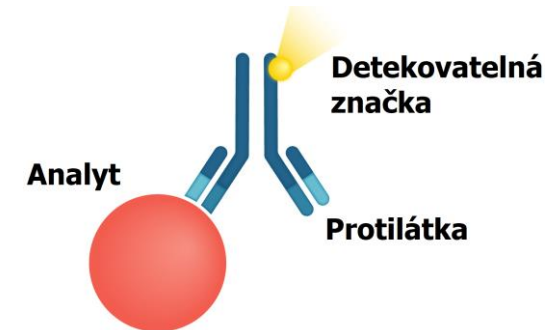
Lukáš Plaček

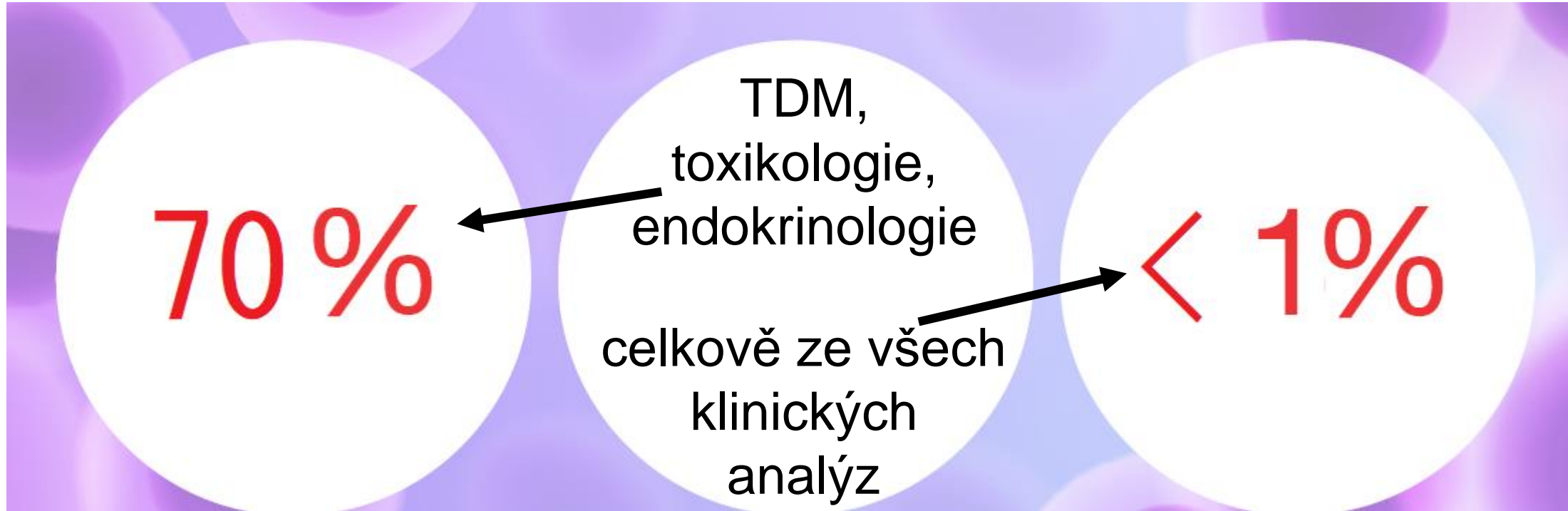
 The world leader in serving science





American Association for Clinical Chemistry (AACC)



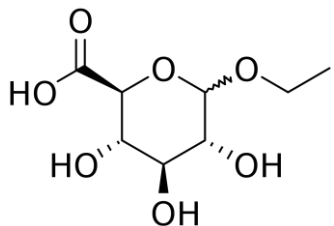
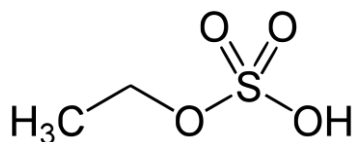


? Zkušený analytik
? Instrumentální úroveň

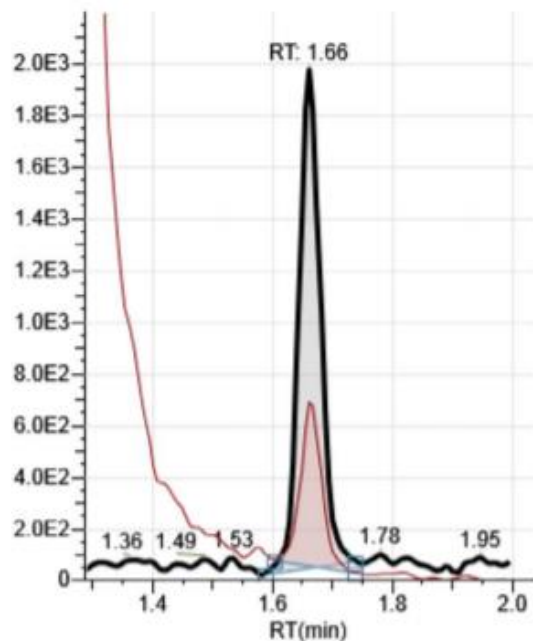
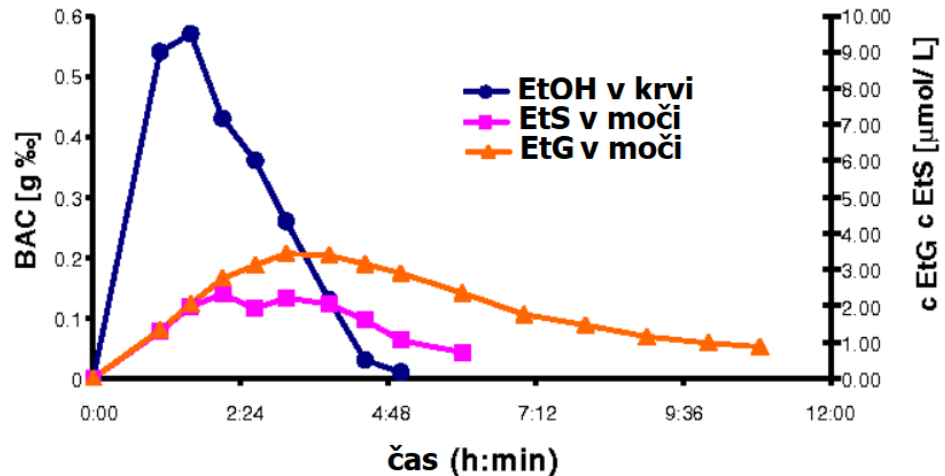
Clin Biochem Rev. 2011, 32(1), 5–31

Clin. Biochem. 2020, 82, 2-11

Ethyl glukuronid/sulfát



Polarity	Precursor (m/z)	Product (m/z)
Negative	125.062	79.817

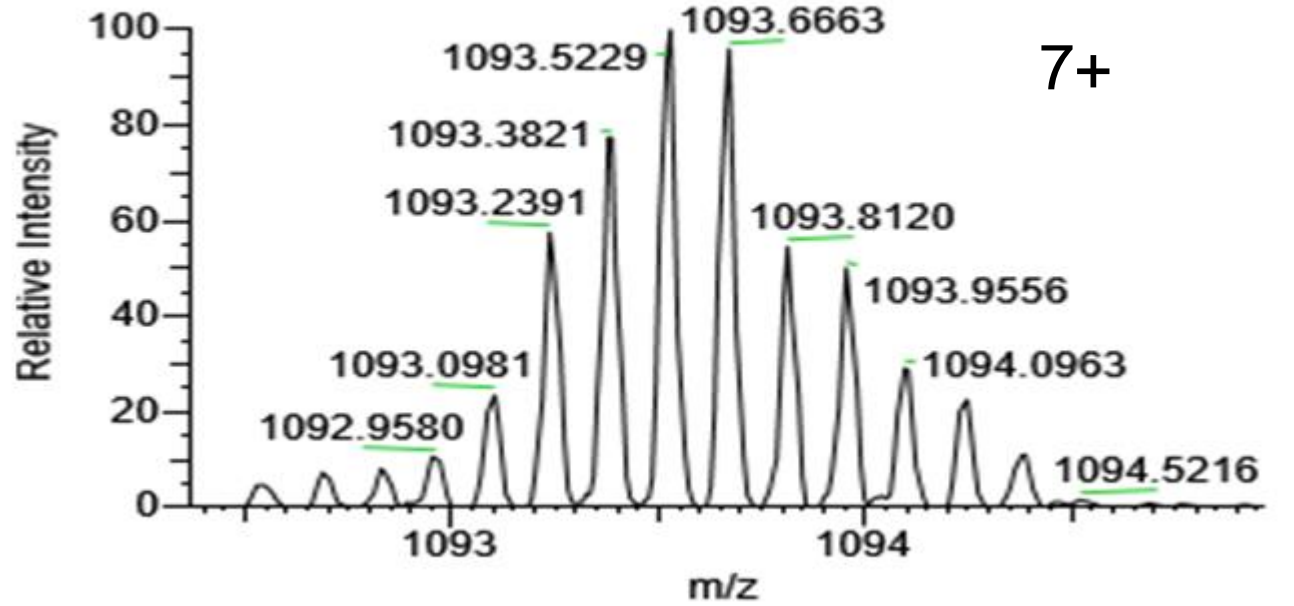


PrimeScreen

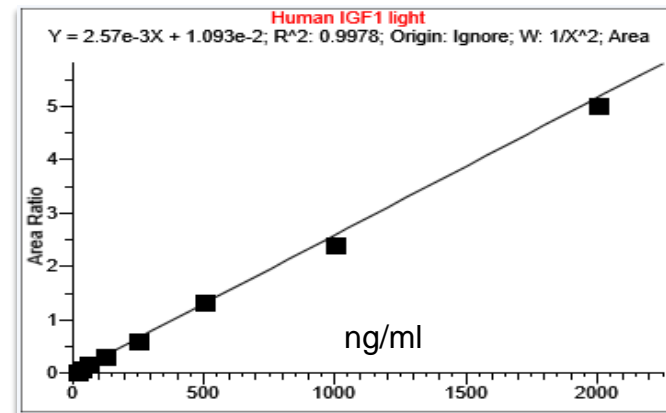




Protein MW=7649
(70 AA)



7+



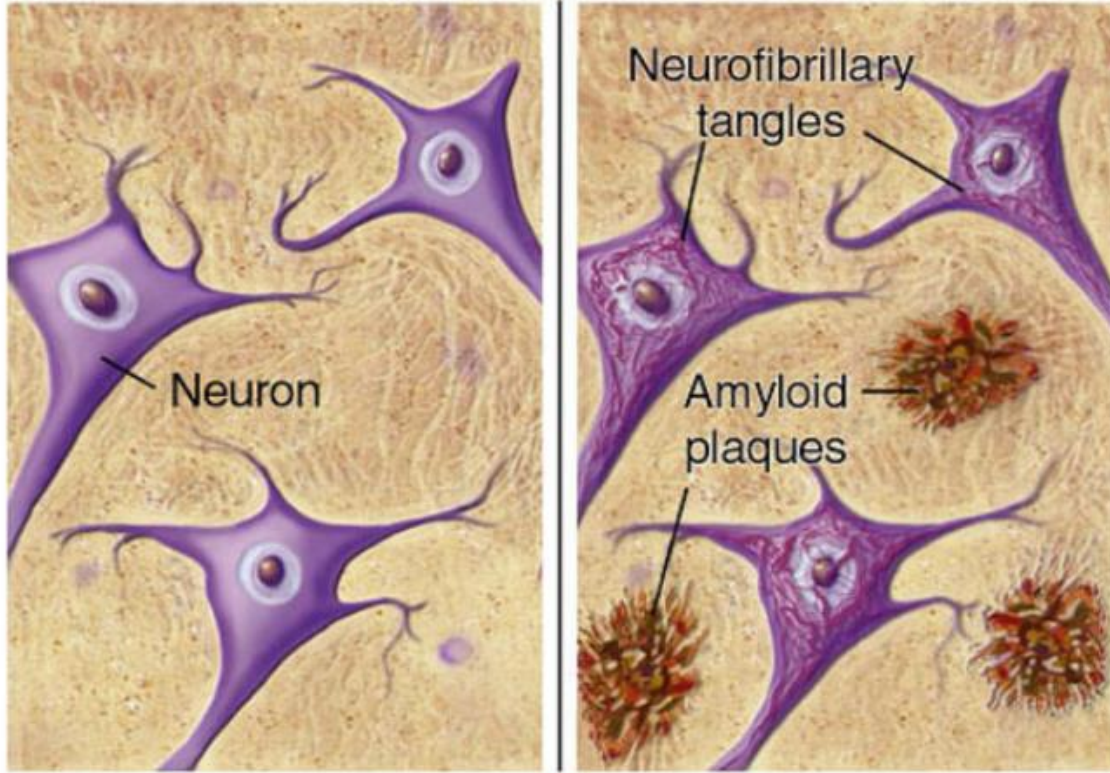
poster Thermo Fisher Scientific, PO65783



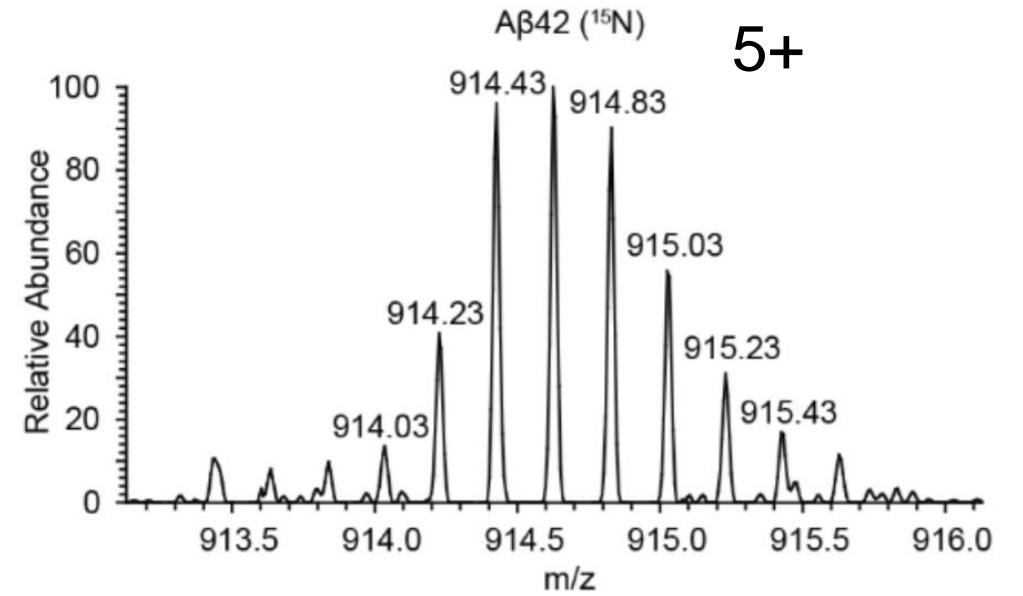
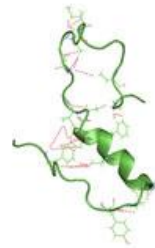
Amyloid beta

Normal

Alzheimer's



Protein MW=4513
(42 AA)



J. Proteome Res. 2021, 20, 8, 4106–4112



immunoassay



hmotnostní spektrometrie



LC-MS Medical Devices (MD) pro In Vitro Diagnostiku (IVD)

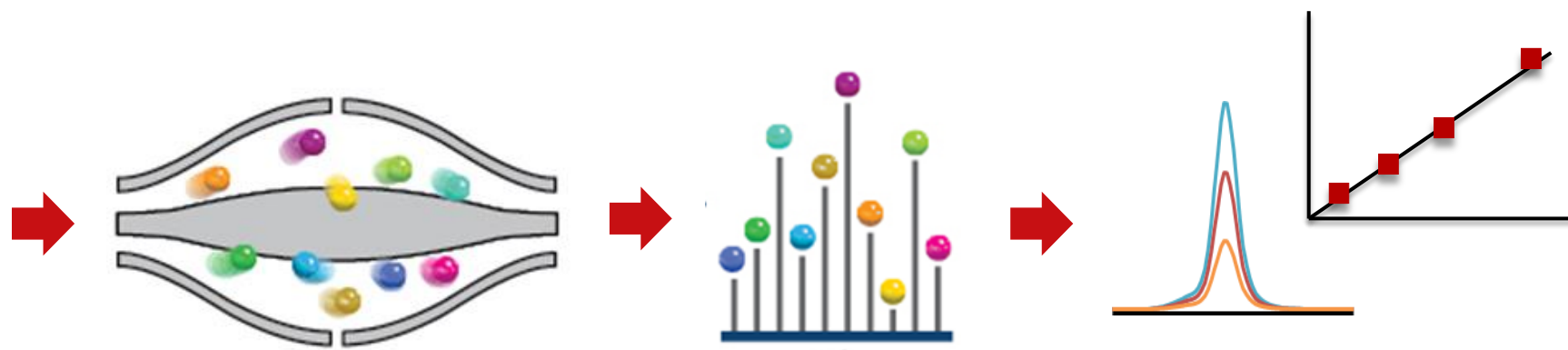


Thermo Scientific™ Cascadion™ SM Clinical Analyzer



-omics

METABOLOMIKA
PROTEOMIKA
LIPIDOMIKA



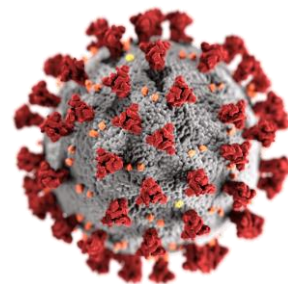
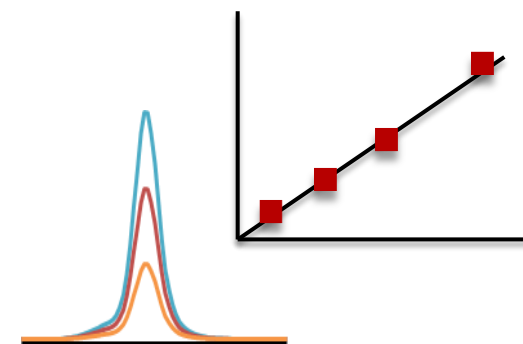
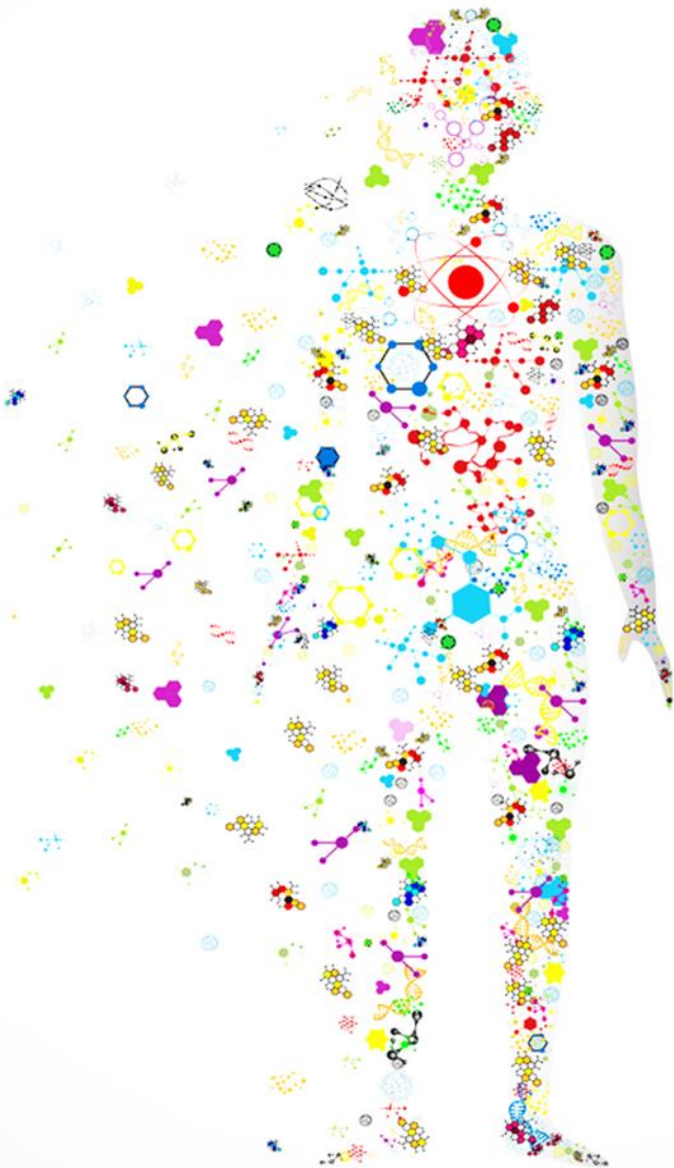
počet analytů

počet vzorků



-omics

METABOLOMIKA
PROTEOMIKA
LIPIDOMIKA

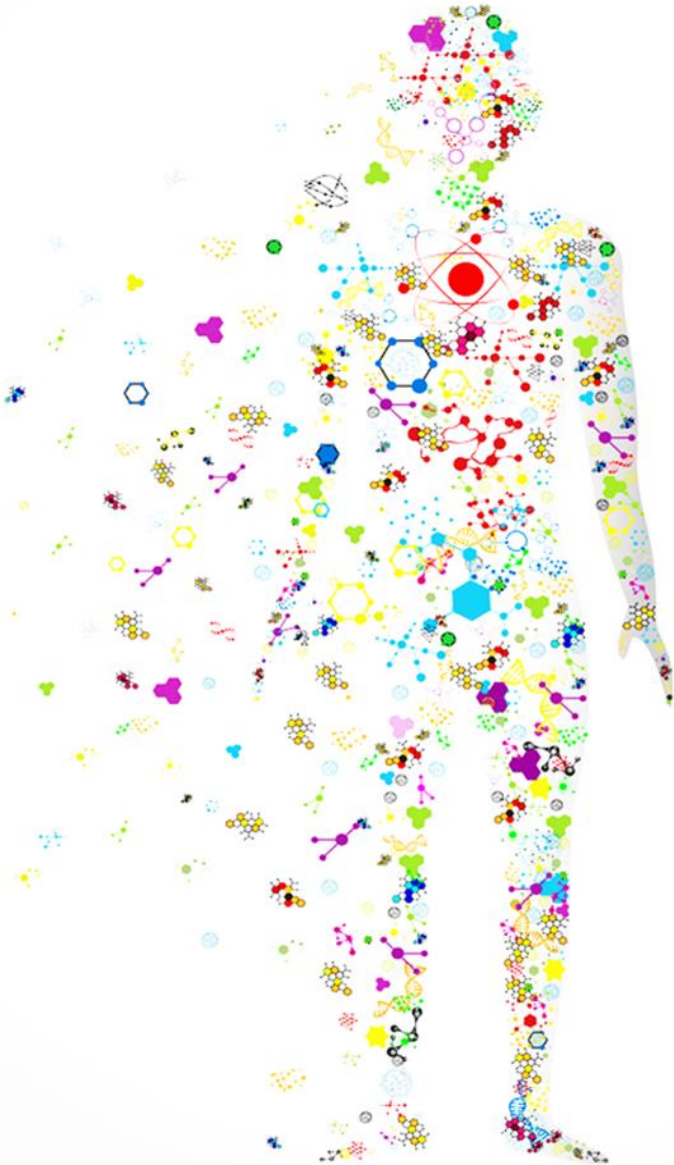


AYNVTQAFGR, MW=1125

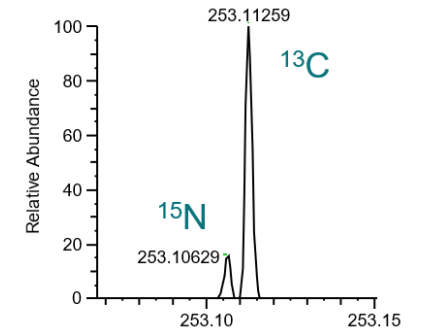
		RT-PCR	
n = 88		positive	negative
LC-MS	positive	40	0
LC-MS	negative	8	40

EBioMedicine 2021, 69, 103465
<https://doi.org/10.1101/2021.06.02.21258097>

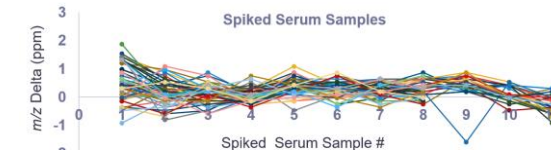




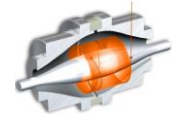
- vysoké rozlišení



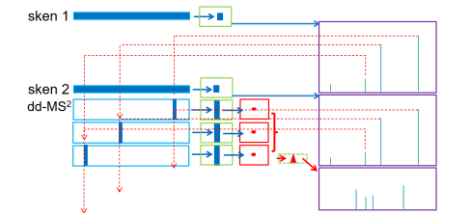
- dlouhodobá stabilita m/z



- rychlé přepínání polarit

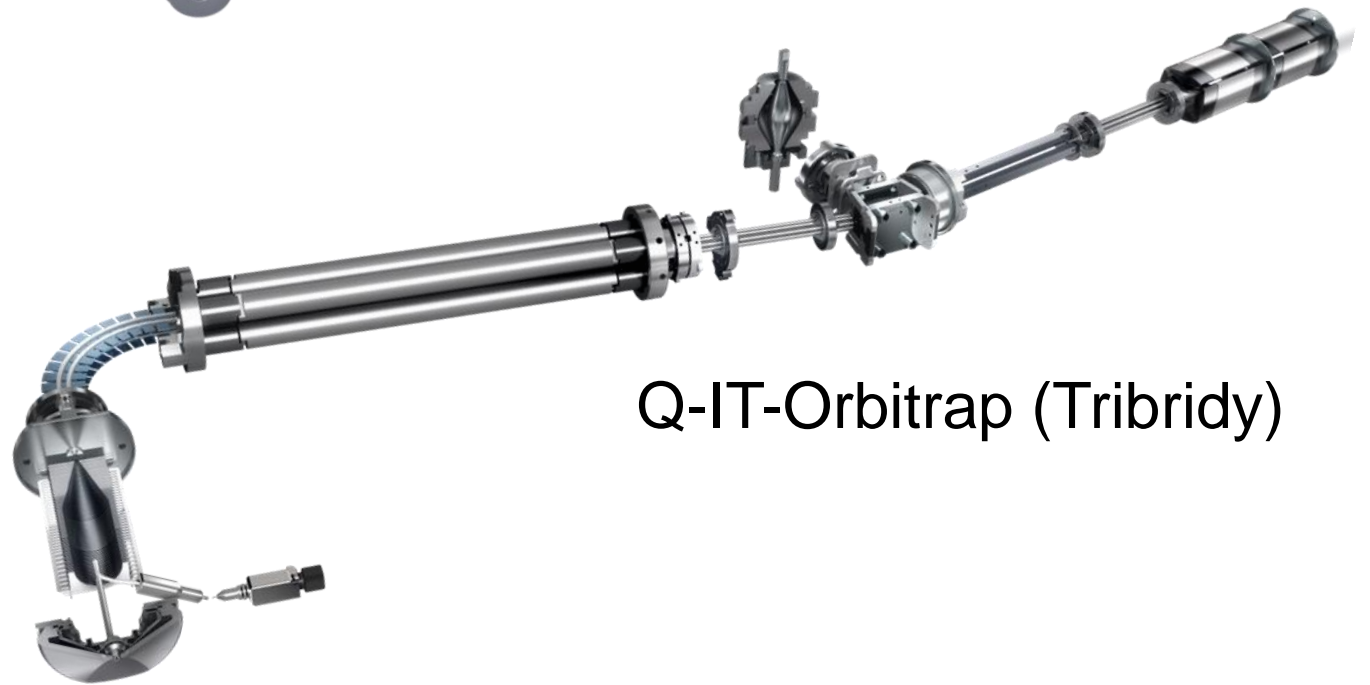


- kombinace akvizičních módů





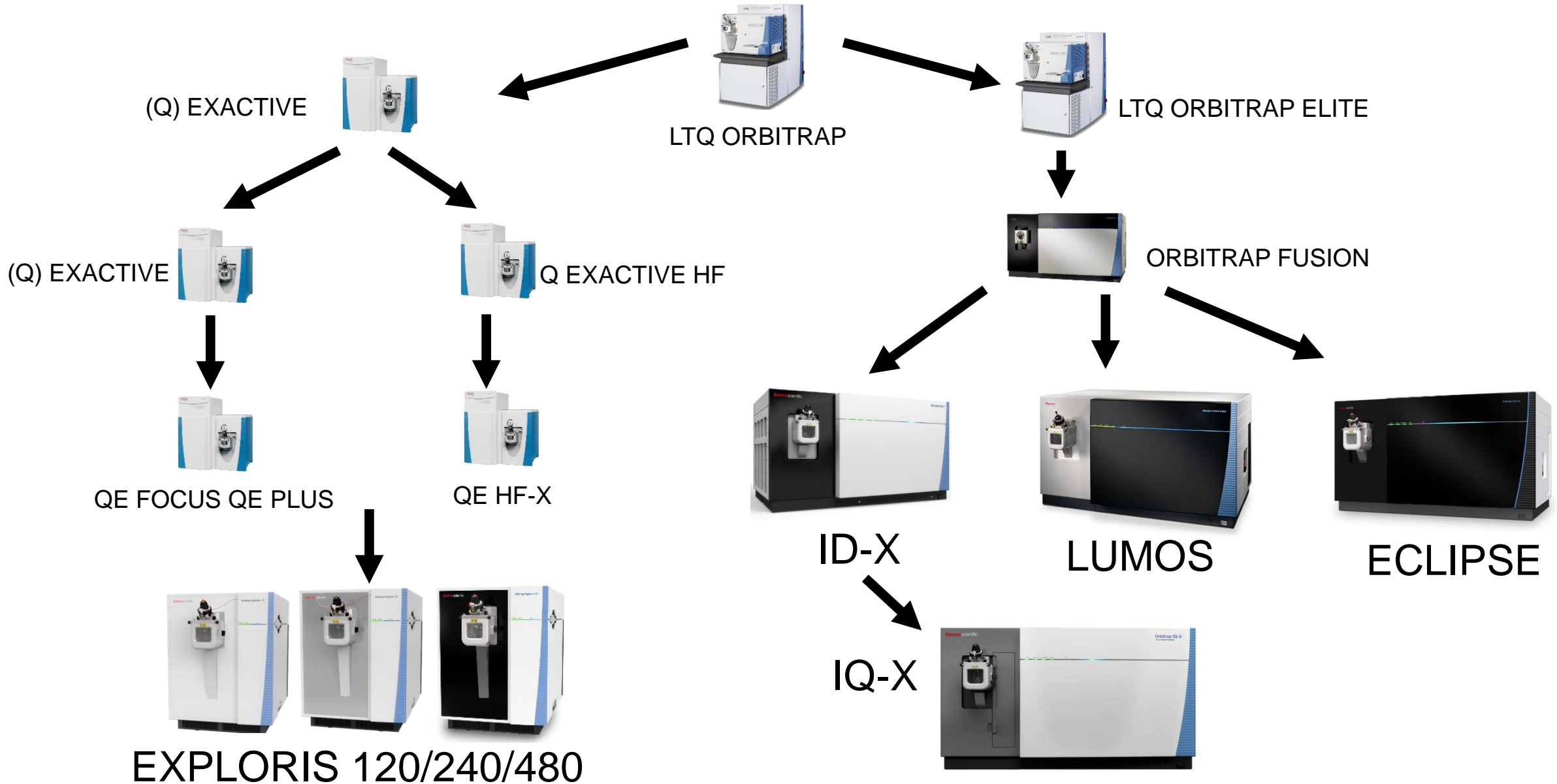
Q-Orbitrap (Explorisy)



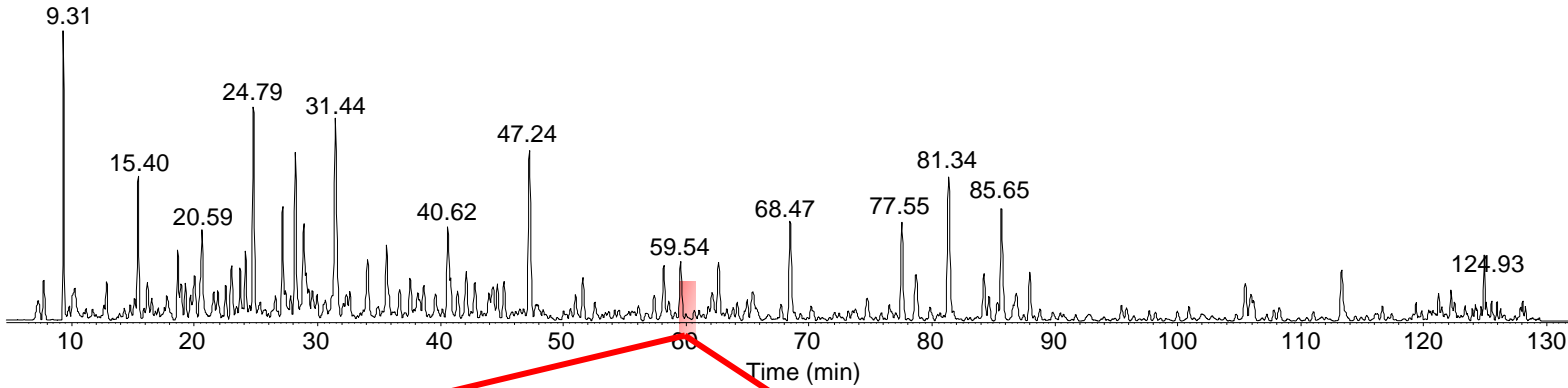
Q-IT-Orbitrap (Tribridy)



Genealogie



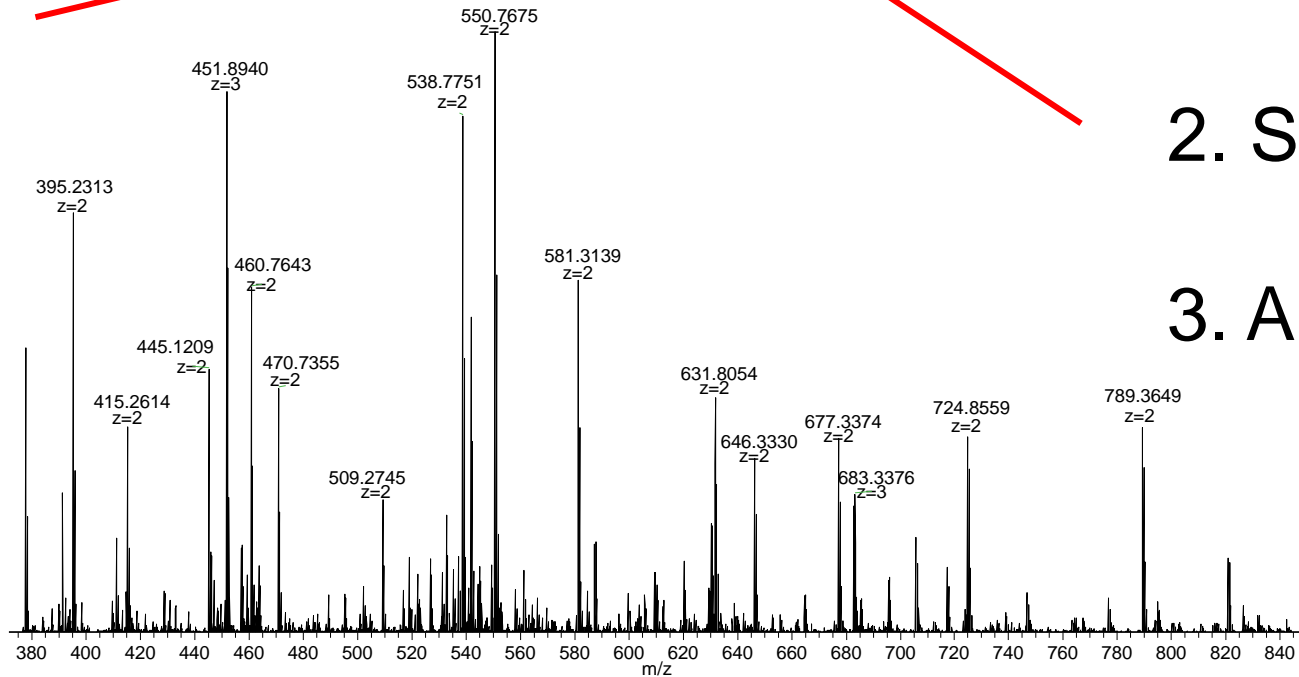
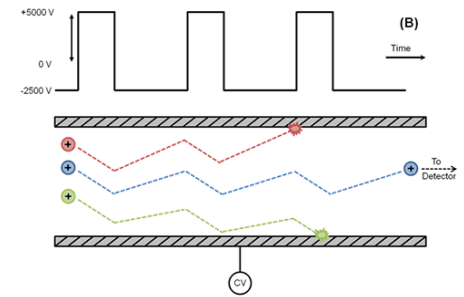
Důležité „periferie“



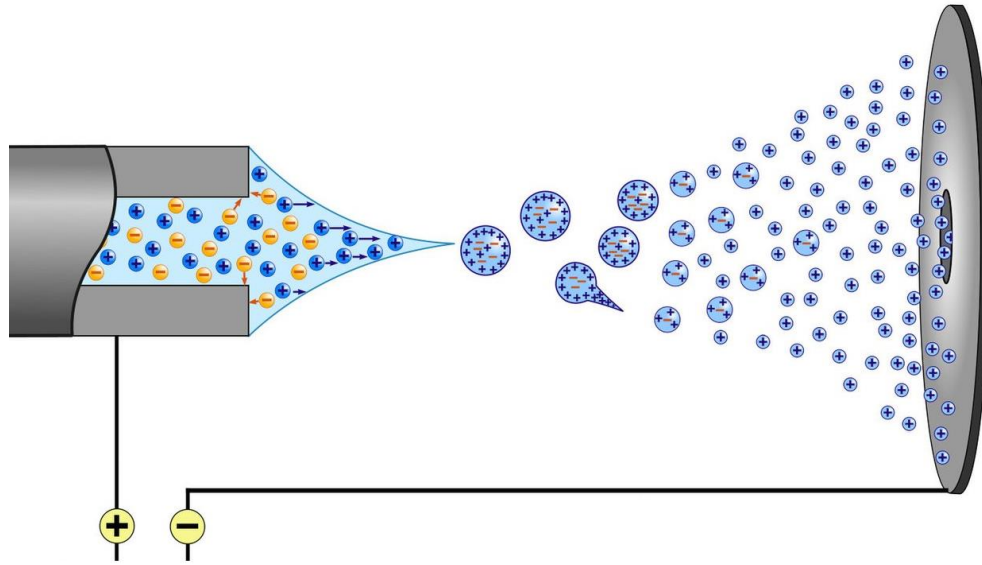
1. Příprava vzorku

2. Separační technika

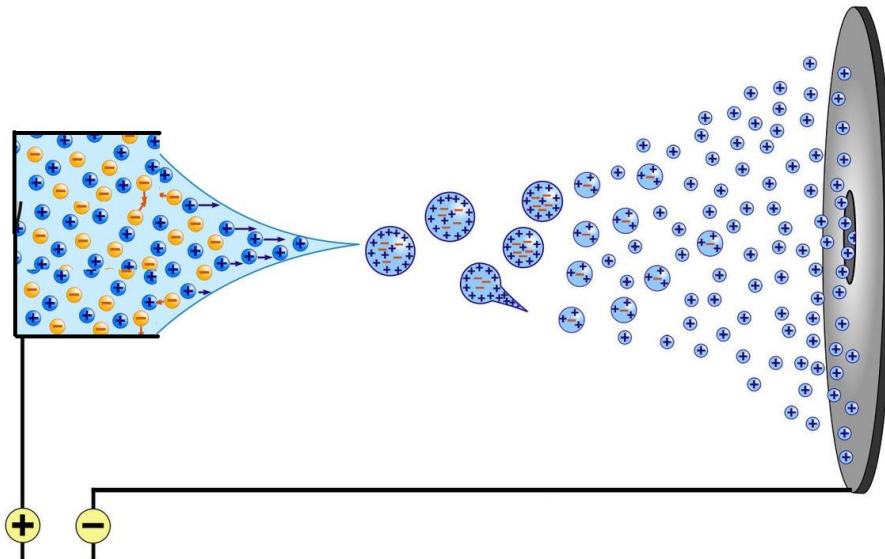
3. Akvizice a zpracování



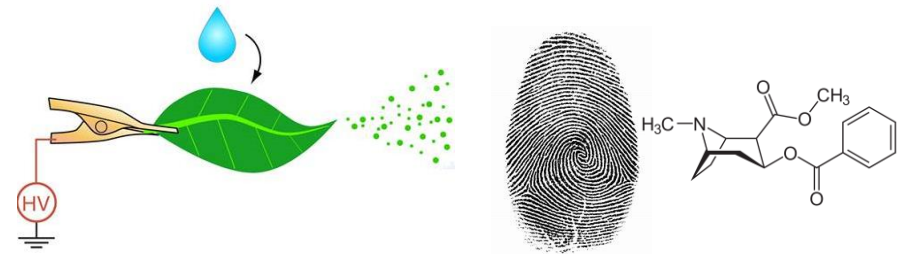
1. Příprava vzorku; paper spray



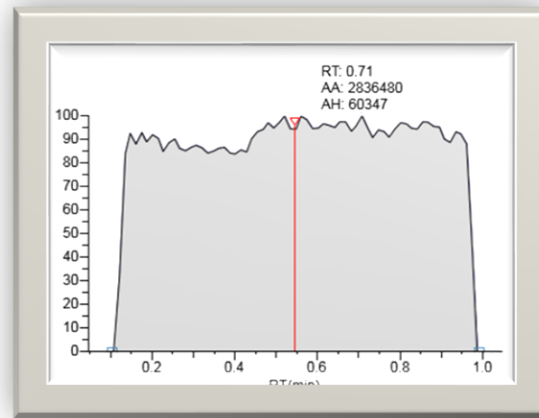
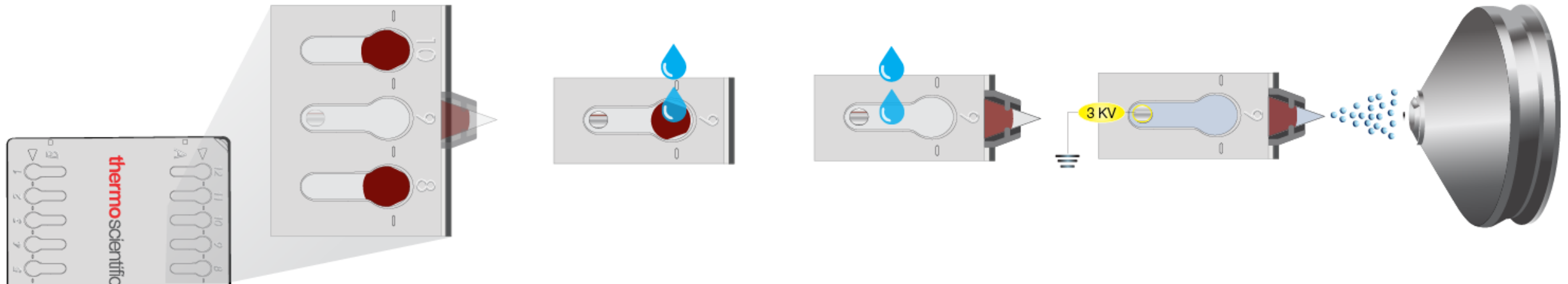
ElectroSpray



PaperSpray



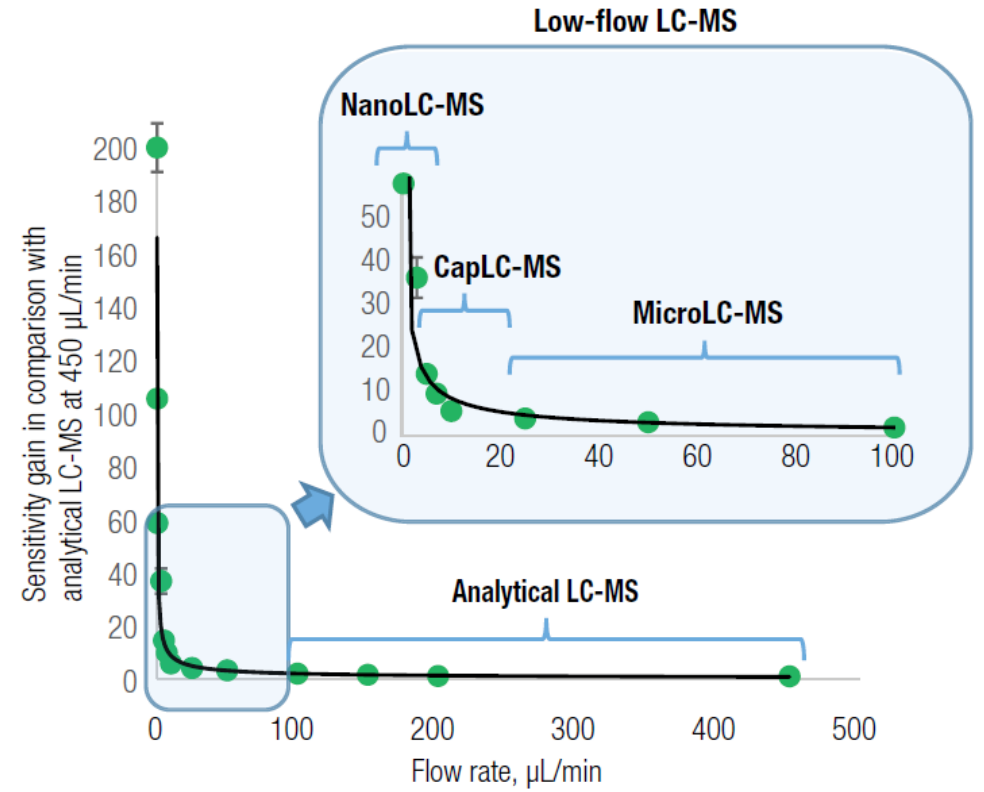
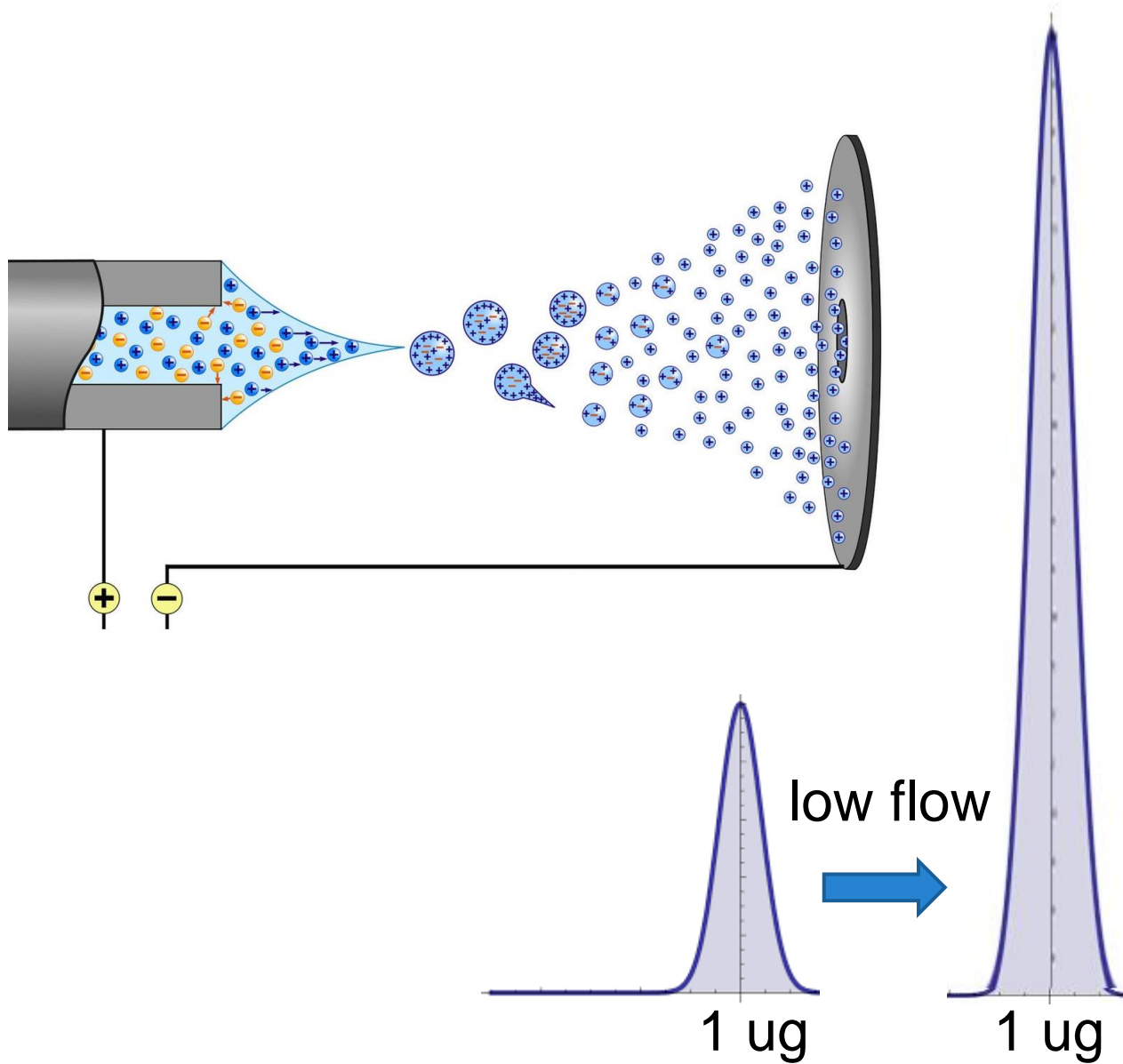
1. Příprava vzorku; paper spray



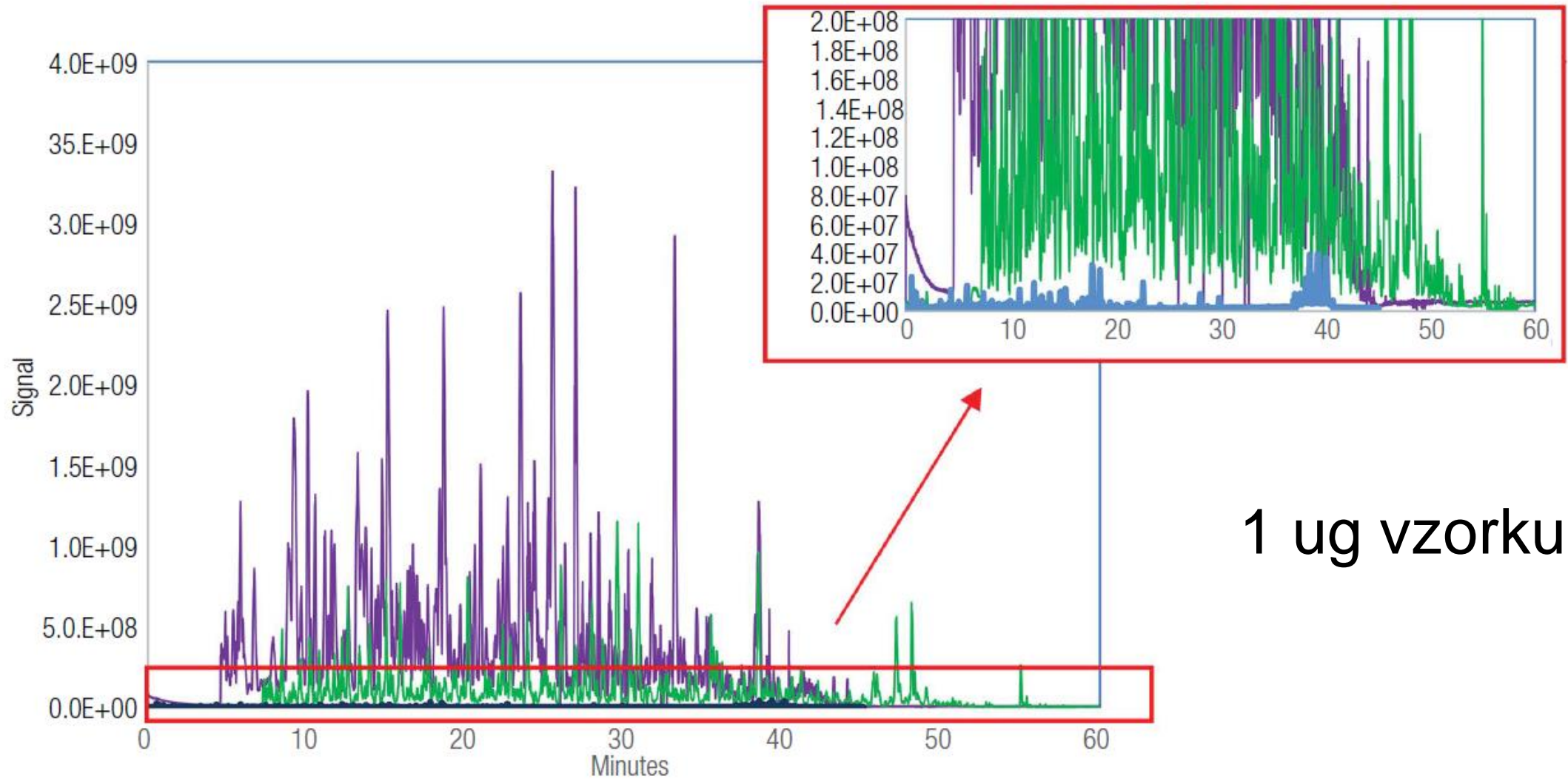
VeriSpray



2. Separáčn technika; HPLC vs. nanoHPLC



2. Separační technika; HPLC vs. nanoHPLC



1 ug vzorku



2. Separáčn technika; HPLC vs. nanoHPLC



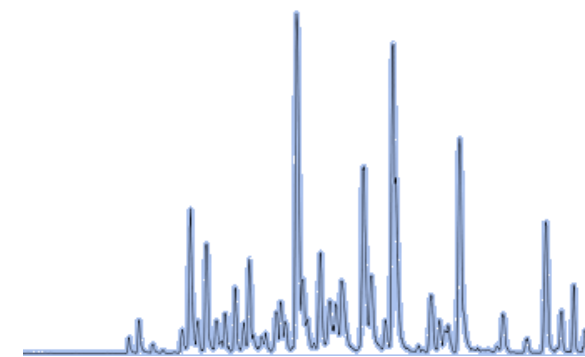
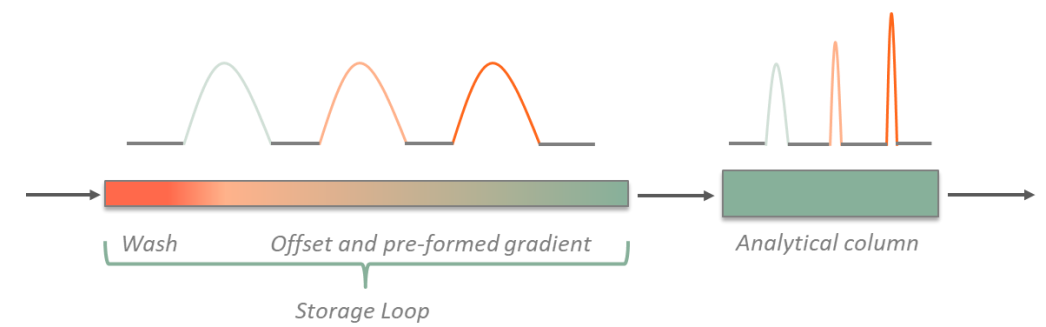
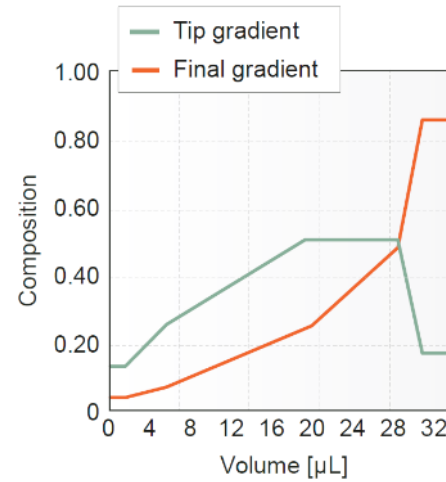
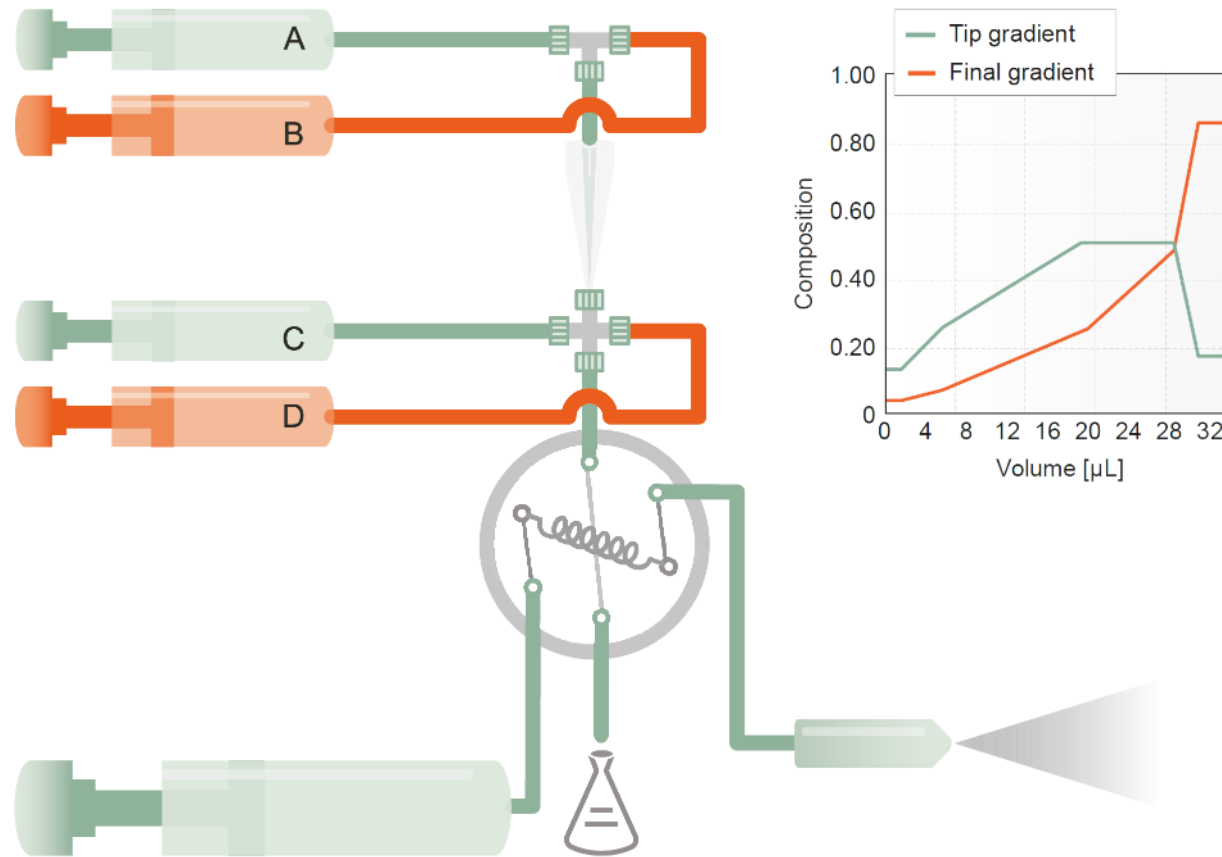
Ultimate 3000 nano



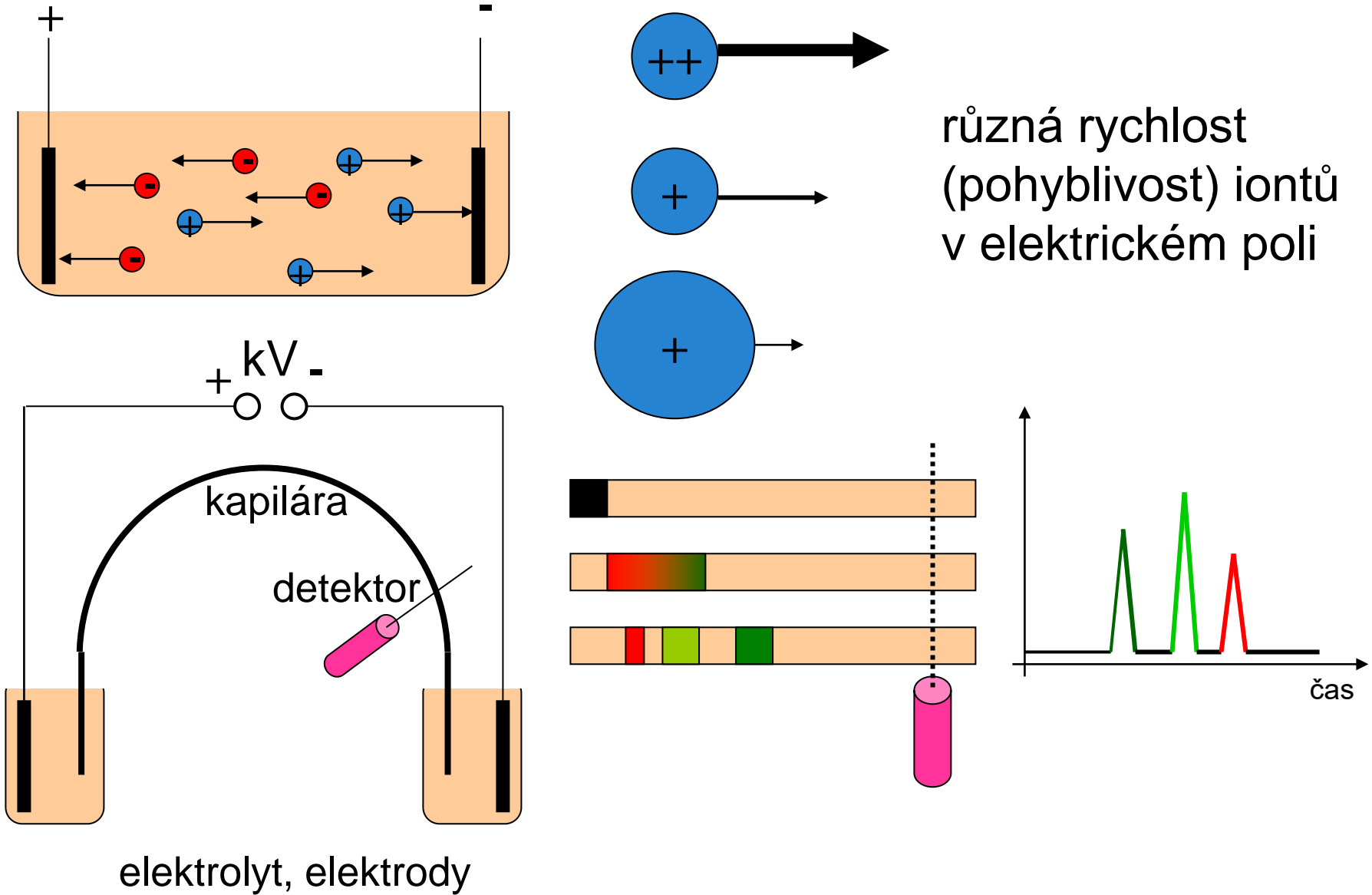
Evosep One +



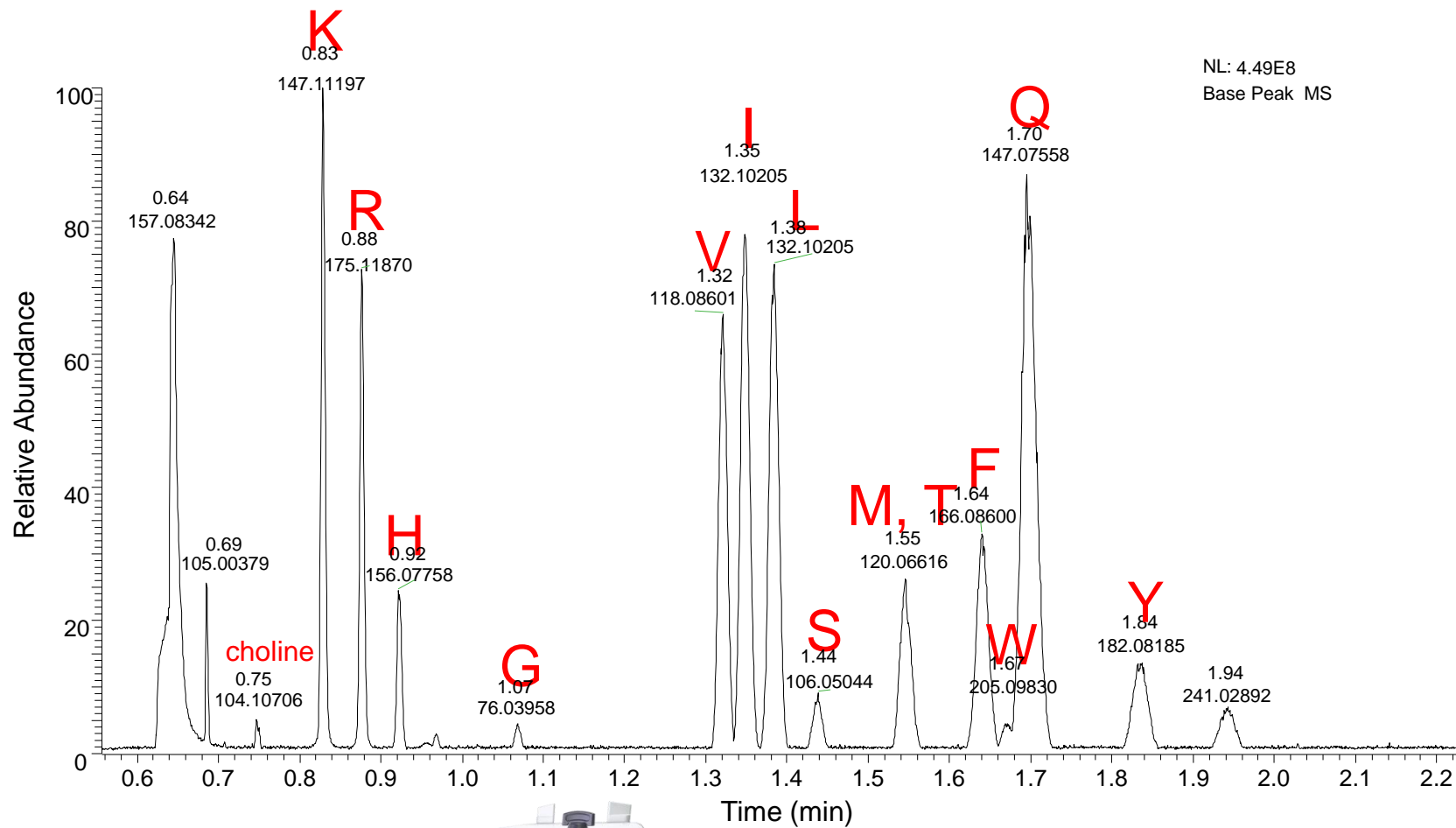
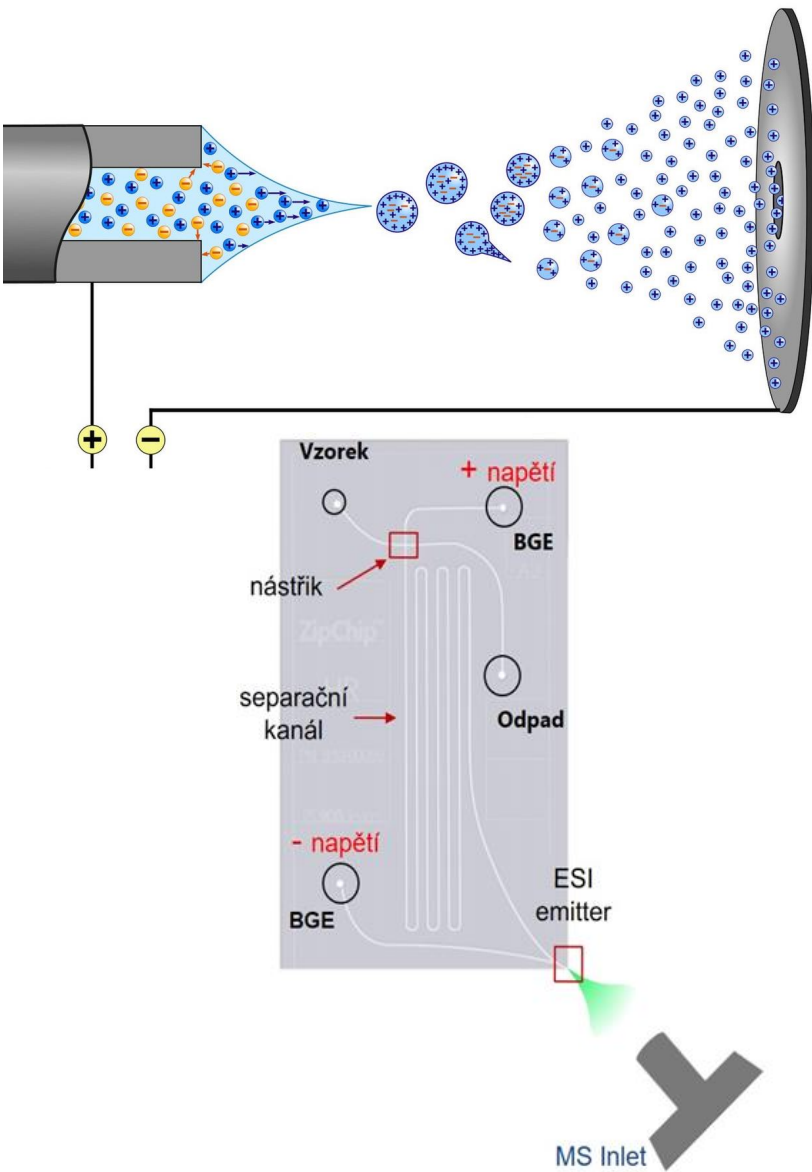
2. Separační technika; HPLC vs. nanoHPLC



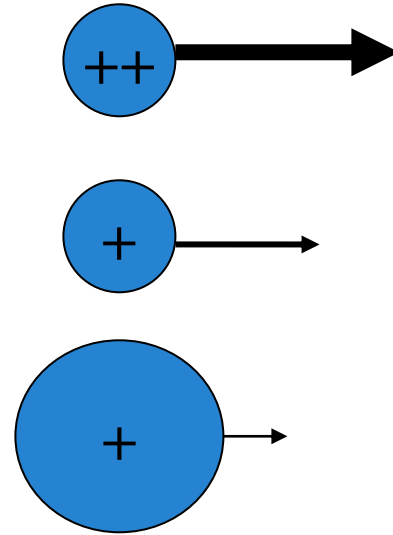
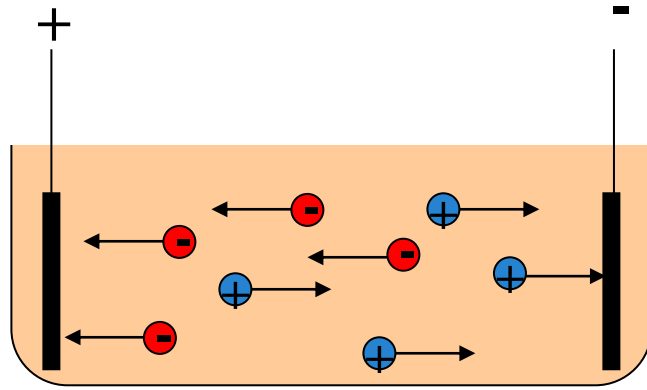
2. Separační technika; CE



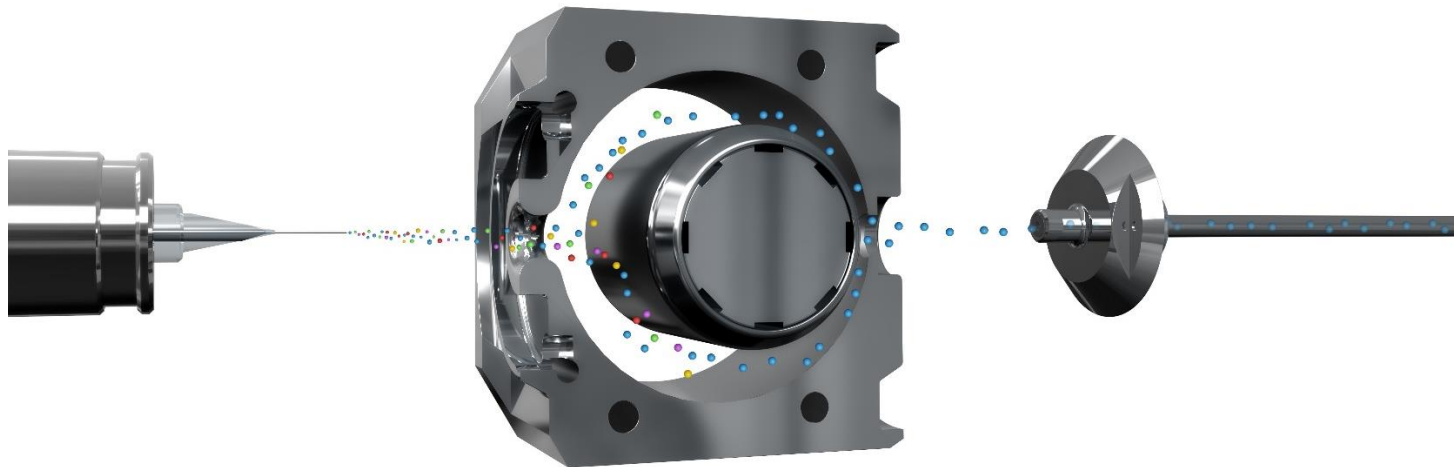
2. Separační technika; CE



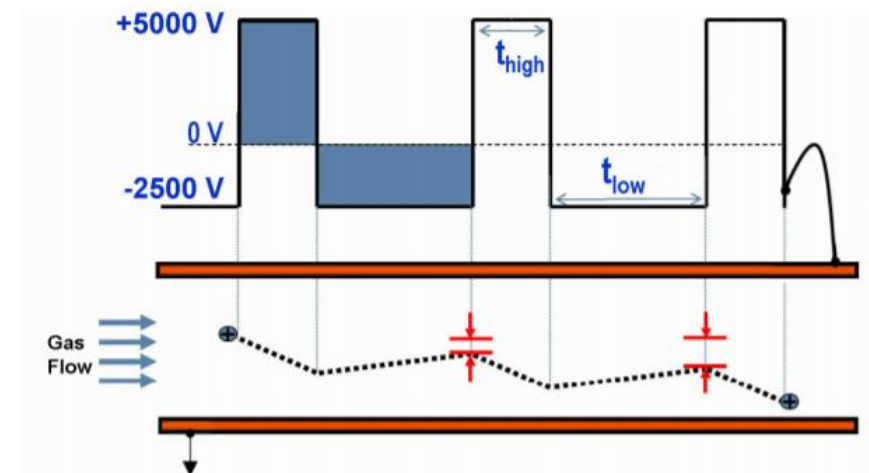
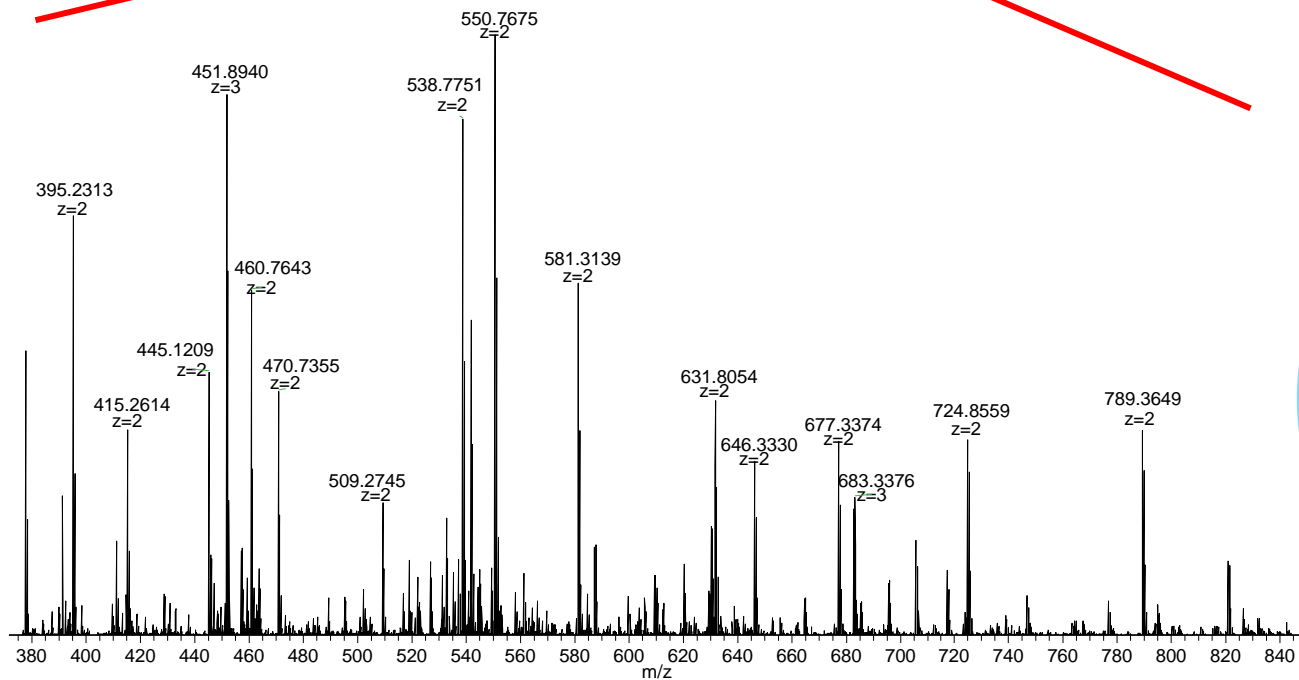
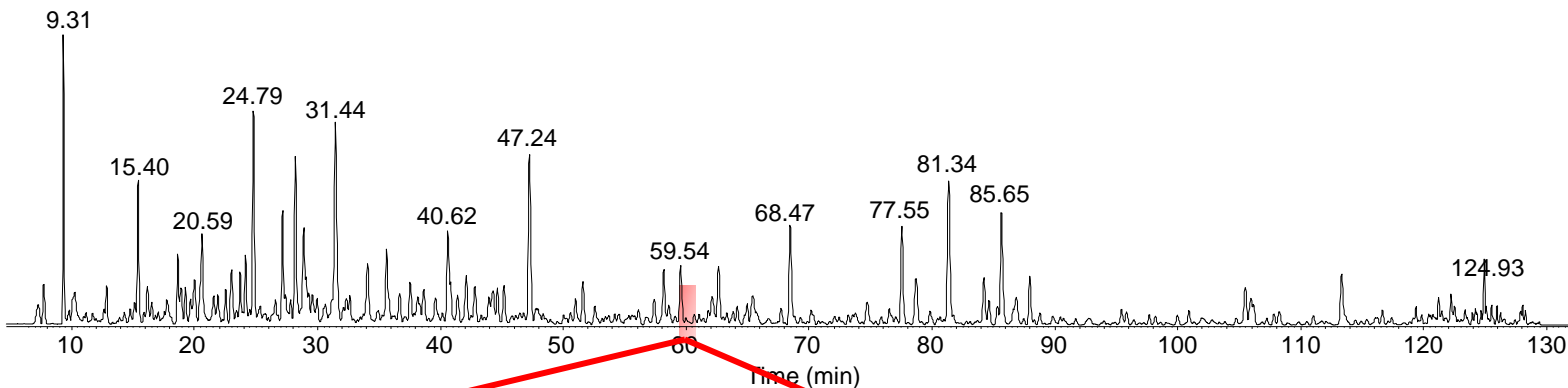
2. Separační technika; FAIMS



různá rychlost
(pohyblivost) iontů
v elektrickém poli



2. Separáčn technika; FAIMS



FAIMS

No FAIMS

30 677

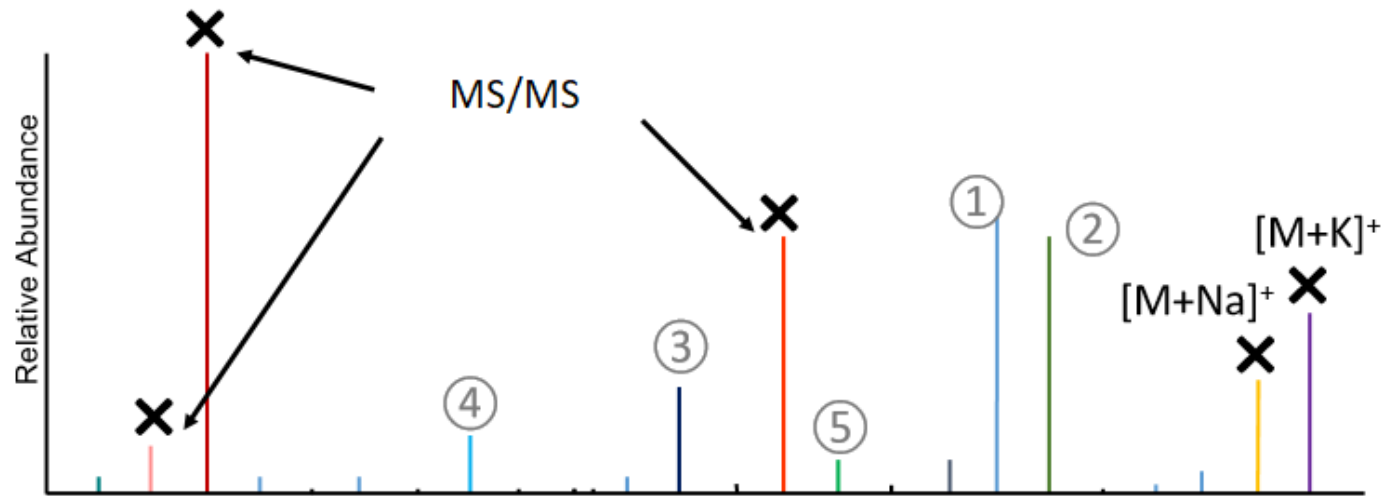
77 773

7 300

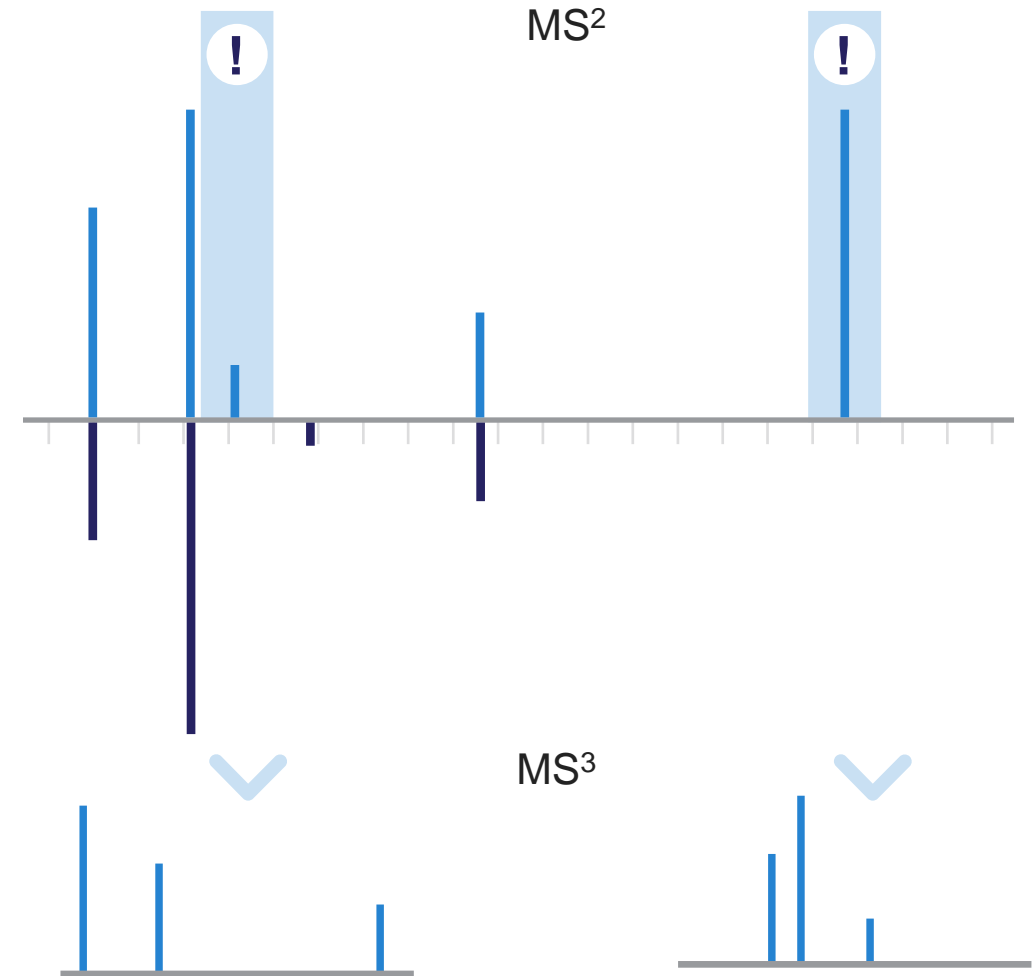


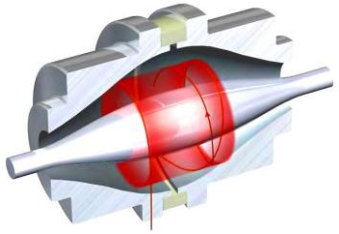
3. Akviziční nástroje a zpracování

AcquireX



Met-IQ





potenciál k masivní expanzi LC-(HR)MS do klinických analýz



> 1%

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