

**RAFA 2019****Highlights!**

Michele Suman

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THE MISSION in 2015, 2017...

*Present Rafa Congress Highlights...*



146 lectures, 24 sessions, 500 posters,...

THE MISSION IN 2015, 2017...

Present Rafa Congress Highlights **in 10 minutes...**





THE MISSION in 2019...

Present Rafa Congress Highlights **in 15 minutes... (2019!)**





TALKING ABOUT OTHER «RAFA MISSIONS»...

EVALUATE AND SELECT MORE THAN 500 POSTERS FOR AWARDS...



146 lectures, 24 sessions, 500 posters,...



# RAFA POSTER COMMITTEE TEAM!

019

hts!





# Googling...Rafa 2019 main concepts



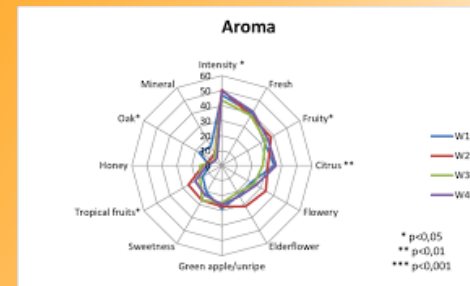
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342.000.000



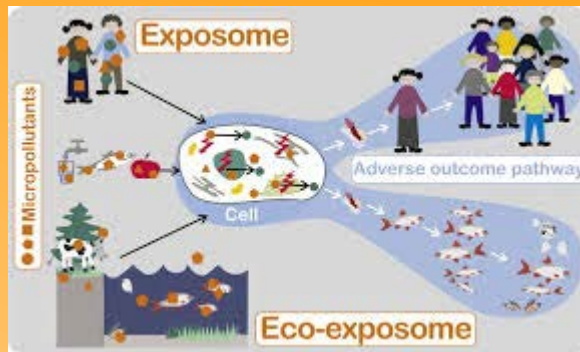
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2.320.000



223.000.000



714.000



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927.000.000



2.400.000.000



933.000.000





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2.750.000.000



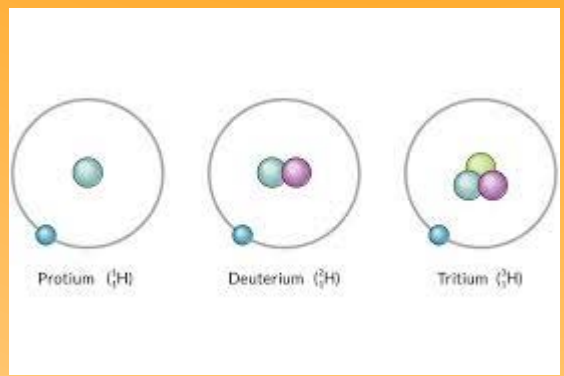
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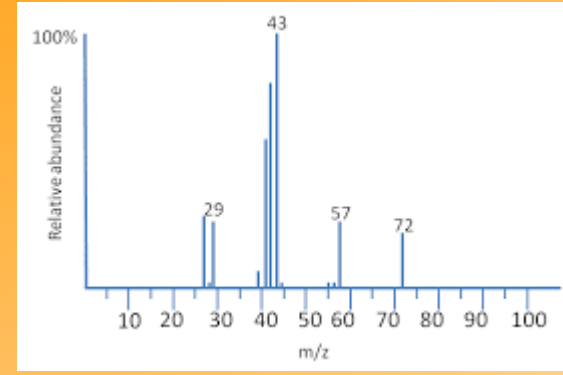
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11.200.000

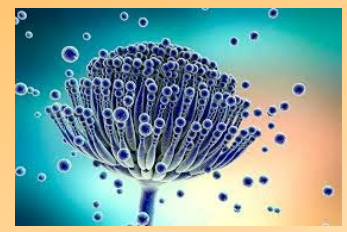


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Googling...



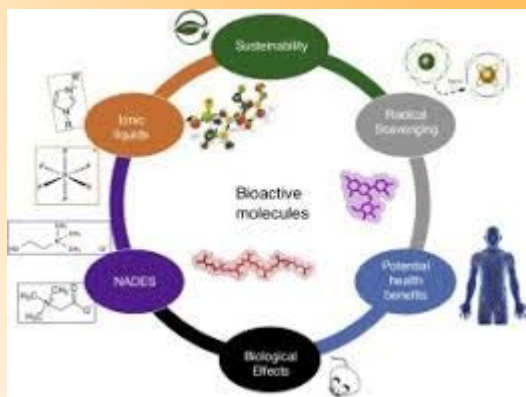
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17.500.000

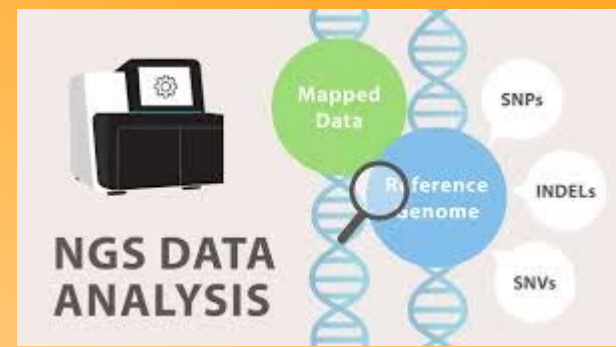
**Googling...**



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95.000.000



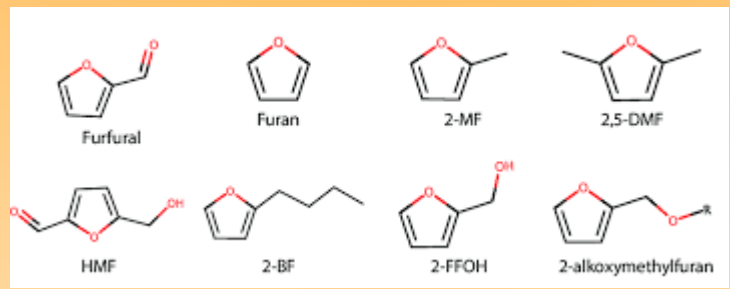
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1.170.000

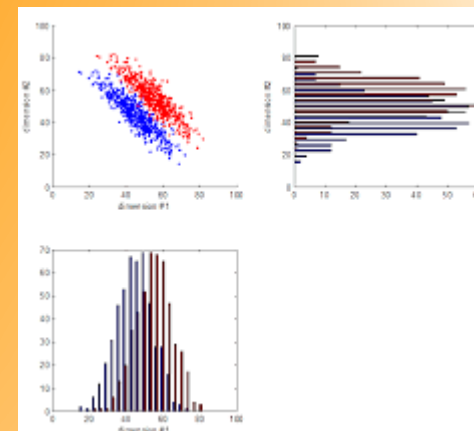




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21.000.000



299.000.000



942.000.000



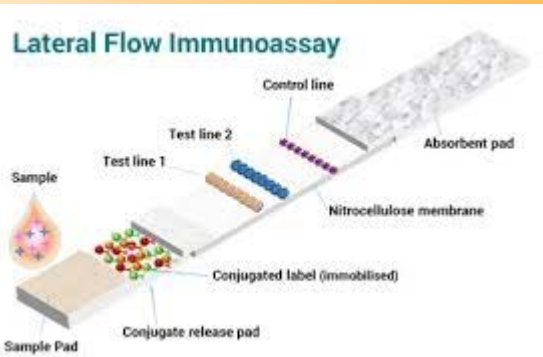
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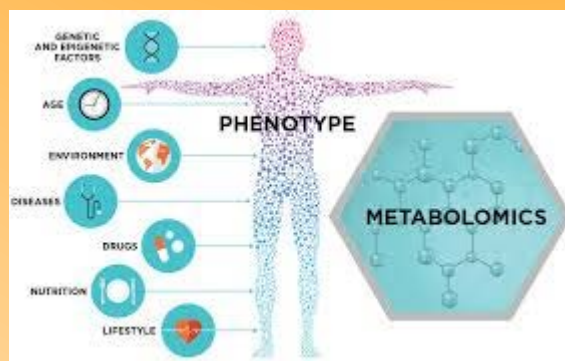
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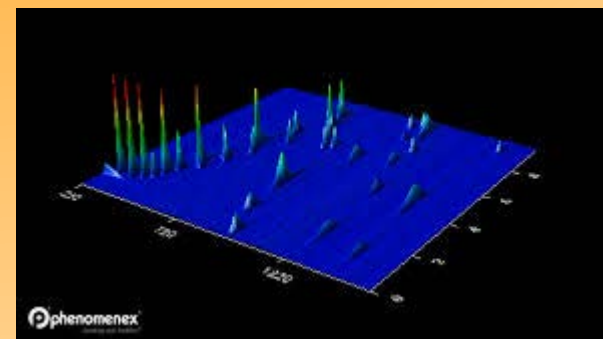
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134.000.000



4.320.000



132.000



237.000.000

Googling...

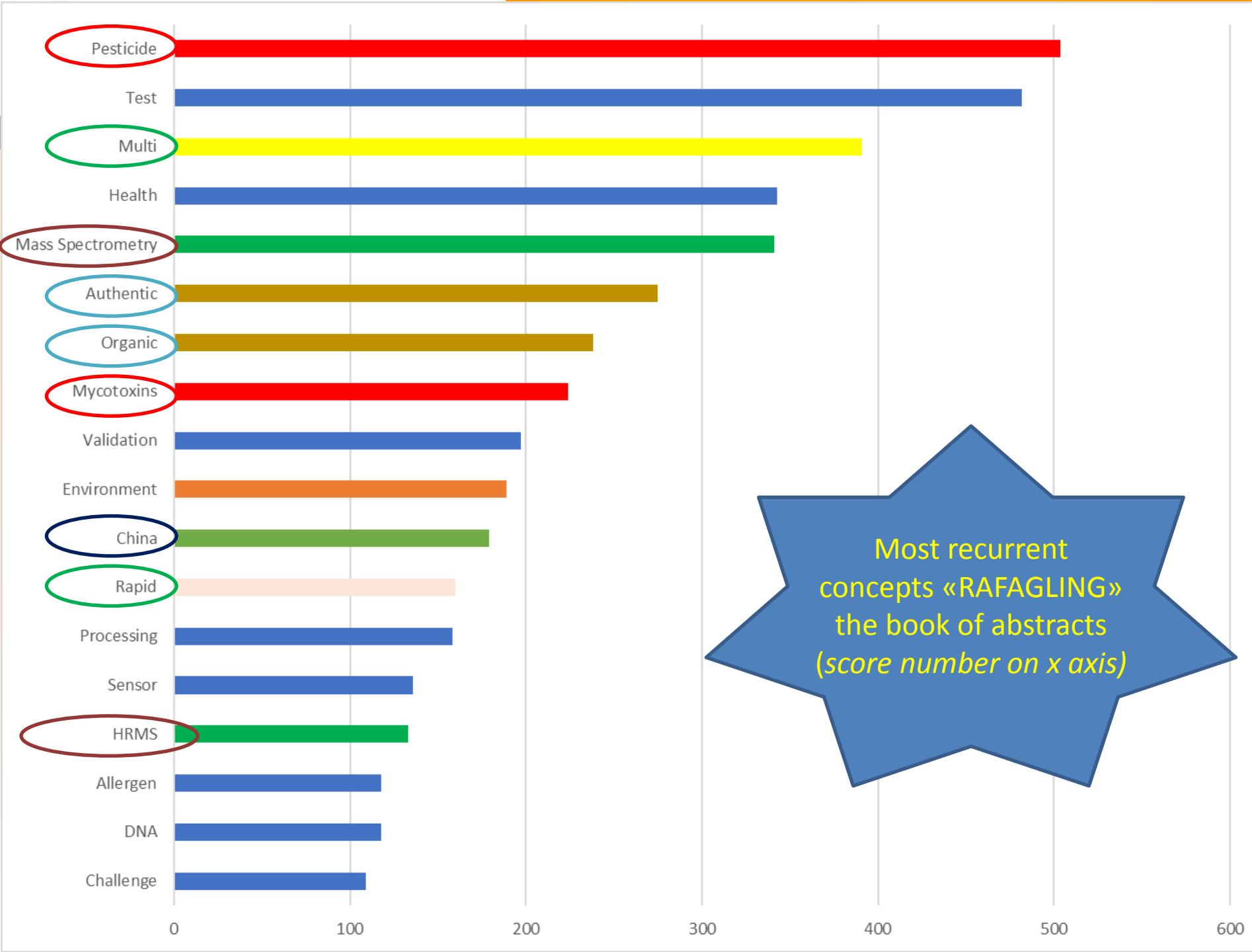


# CONTENT

Rafa2019 Book of Abstracts  
(763 pages!)

RAFAgling...

9<sup>th</sup> International Symposium on  
RECENT ADVANCES IN FOOD ANALYSIS  
Prague, Czech Republic, November 5-8, 2019



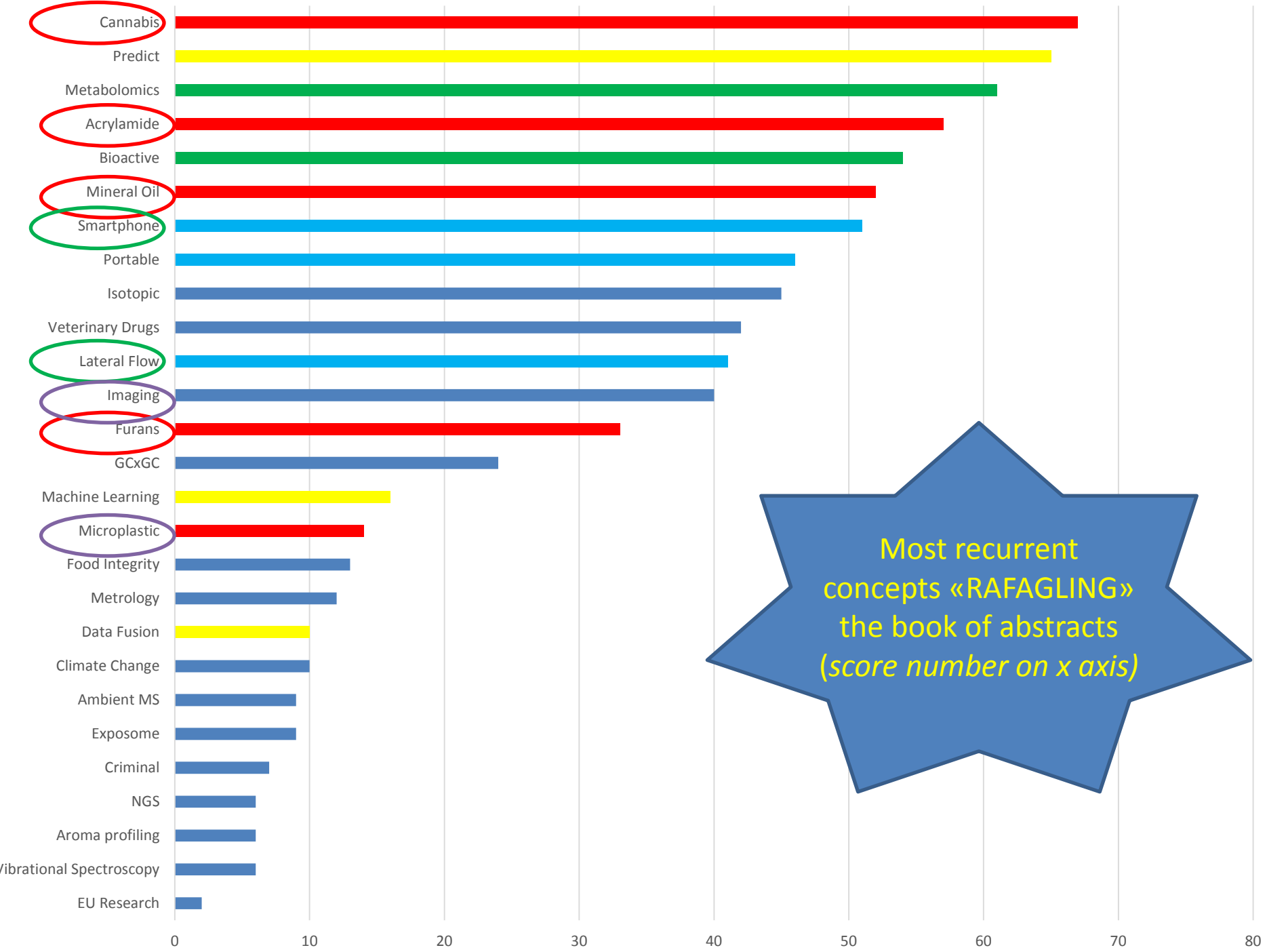


**CONTENT**  
Rafa2019 Book of Abstracts  
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Michele Suman



Most recurrent concepts «RAFAGLING» the book of abstracts (score number on x axis)



SCREENING OF...  
PRODUCTION AND FOOD SUPPLEMENTS  
Petra Peukertova, Jana Hajslova, Marie Fenclova, Frantisek Beneš

P8 FATS AND OILS AS A NOVEL FOOD  
Ljiljana Vujačić, Gordana Novic, Stanislava Todorović, Daniela Srdanović

**Q: OMICS INCLUDING FOODOMICS**

Q1 POTENTIAL OF METABOLOMICS IN CHEMICAL RISK ANALYSIS  
CHARACTERISATION  
Marie Coulange, Aurore Fourcot, Agnès Fournier, Luca Narduzzi, Guido

Q2 HAZARDOMICS: APPLICATION OF METABOLOMICS APPROACHES TO  
POLYCHLORINATED BIPHENYLS  
Maykel Hernández-Mesa, Bruno Le Bizec, Gaud Dervilly

RAW HAZELNUT VOLATILES: CHALLENGES IN DEFINING QUALITY  
COMPREHENSIVE TWO-DIMENSIONAL GAS CHROMATOGRAPHY  
Federico Stilo, Elena Gabetti, Nicola Spigolon, Giuseppe C...

RAFA is..learning/  
launching  
new concepts!



# Metabolites - Root



## Mycotoxins localization by MS Imaging

DAG 44:5 [ $C_{45}H_{78}O_5 + K$ ]  
 $m/z$  687.1744 oligosaccharide[M+ K]<sup>+</sup> Mass accuracy= 0.11ppm

$m/z$  744.4212 [ $C_{37}H_{62}O_8 + K$ ]  
 $m/z$  737.5481 DAG 44:5 [M + K]<sup>+</sup>

## Spatially Resolved Multiomics

Casparian strip reinforcement

Pixel=97x116 (DON), 110x120 (ZEN), 127x112 (CTR)  
Pixel size=7 µm

RAFA is...promoting new roots...ops...routes!





RAFA

is...shocking  
us with  
unexpected  
numbers!

## Types of Ambient Mass Spectrometry

- 118 techniques described in the literature (list may not be comprehensive!)
- 23 commercially available (at the time this was compiled)

ADI	APTDCI	DCBI	DSA	FIA	LAESI	LEMS	MAII	PALDI	RoPPI	TDAMS
AERO-FAPA	APTDI	DCI	EADESI	FIDI	LA-FAPA	LESA	MALDESI	PAMLDI	SACI	TM-DESI
AFADESI	ASAP	DEFFI	EAPCI	FS	LA-ICP	LIAD	MA-REIMS	Paper Spray	SAII	TSI
AFAI	BADCI	DEMI	EASI	GC-ESI	LAMIC	LIAD-ESI	MESI	PASIT	SAWN	UA-ESI
AIRLAB	Blade Spray	DESI	EESI	HALDI	LA-REIMS	LMJ-ESI	MFGDP	PAUSI	SESI	UASI
APGDI	CALDI	DeSSI	ELDI	HAPGDI	LAVESI	LMJ-SSP	MIPDI	PCSI	SPAMS	V-EASI
APLDI	CF-EDESI	DICE	ESA-Py	HEPI	LD-APCI	LPTD	nano-DESI	PESI	SPA-nanoESI	zv-APCI
APLI	DAPCI	DIP-APCI	ESTASI	IRLADESI	LD-APPI	LS-APGD	ND-EESI	PTC-ESI	SPESI	zv-PSI
AP-MALDI	DAPPI	DIP-CI	FAPA	IRLAMICI	LDESI	LSI	OSSI	RADIO	SSI	
APPeI	DART	DIP-EI	FDESI	JEDI	LDSPI	LSII	PADI	RASTIR	SSP	
	DBDI	DPESI	FD-ESI	LADESI	LDTD	LTP	Paint Spray	REIMS	SwiFerr	



# Current gaps in analytical methods

## **Sampling and sample preparation methods:**

- variety of matrices (water, soil, air, sediment, food....)
- lack of harmonization/standardization

## **Detection/characterisation methods for microplastics:**

- inadequate or questionable reliability
- lack harmonization and standardization for acceptance and inter-comparability

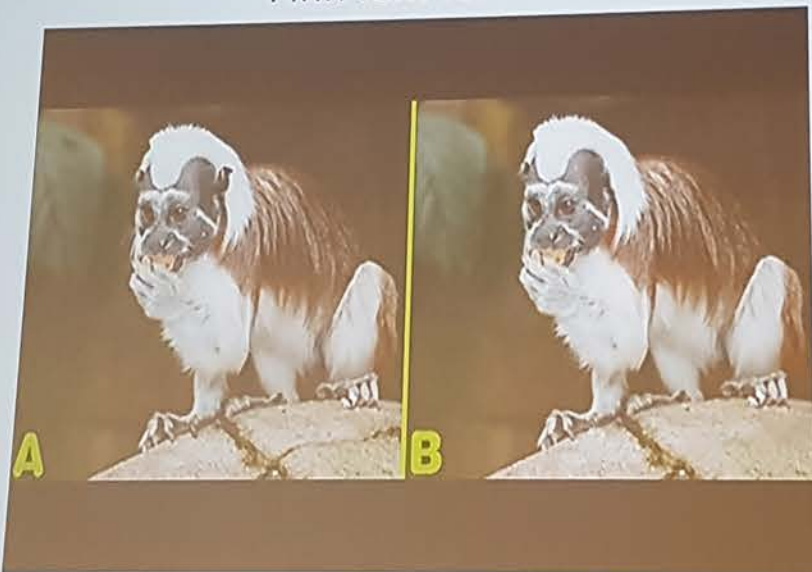
## **Analytical methods for nanoplastics:**

- not available or very immature stage of development

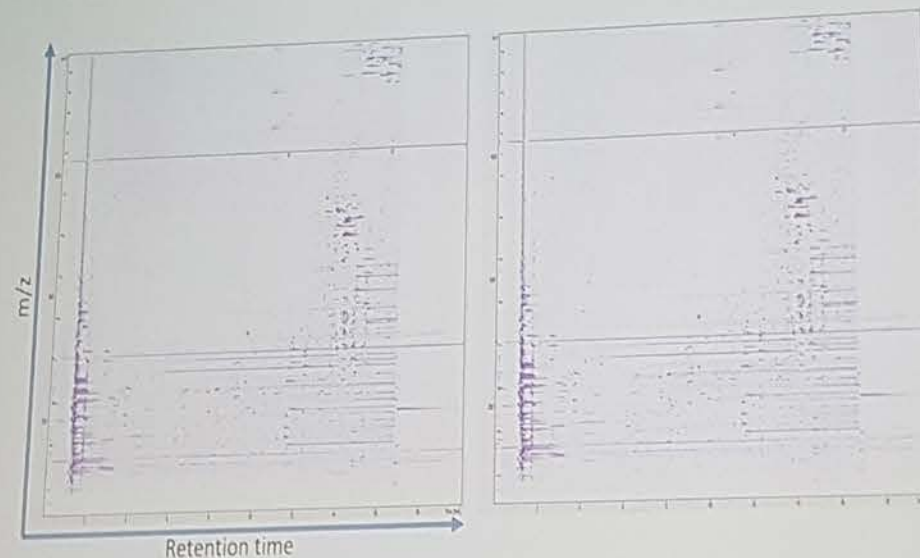
**RAFA is...  
challenging  
us with  
gaps!**



Finn fem fel



Raw data from TOF/Orbitrap



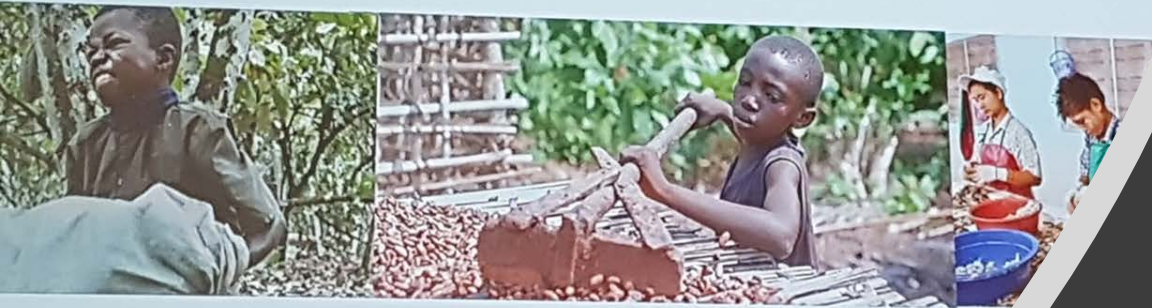
Suspected sample

Reference sample

RAFA is...having fun with food science!



**IGFS** THE INSTITUTE FOR GLOBAL FOOD SECURITY



[www.qub.ac.uk/igfs](http://www.qub.ac.uk/igfs)

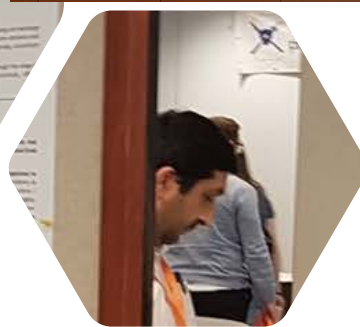
**RAFA**  
is...reflecting on  
our  
responsibilities...





**RAFA is...discovering new technologies...**





**RAFA**  
is...creating &  
reinforcing  
friendships and  
collaborations!





A couple of «Appetizer slides»



**Diet** is probably the most important **determinant of human exposure to emerging chemicals** such as organophosphate flame retardants over pesticides and their metabolites to mycotoxins.

**Innovative technologies to identify and capture foreign materials** in/on produce are on the go

How to design and build a system for **automated food contaminants analysis: work in progress**

Widen the field of screening tools **pushing in development of portable and smart ready to use devices**

**Need for customized, harmonized and validated methods** for each food matrix and “**allergen related problem**” as well as need to have at disposal **certified reference materials** for all allergens in current legislation.



A couple of «Appetizer slides»



**Suspect and non-target screening methods** play a key role **to identify biomarkers**. The field still poses a number of challenges: analytics as such, ensuring comparability of data and linking internal exposure to external exposure

From the large number of natural toxins, it is **only a dietary exposure to aflatoxins and pyrrolizidine alkaloids that poses potential chronic risks** for the average European adult consumer

**Untargeted LC-MS based <sup>13</sup>C labelling** approach has provided a **full mass balance of deoxynivalenol** and its degradation products formed during industrial **bakery processing**

**Multi-omics approaches** are a **crucial tool to decipher plant-pathogen interactions** as exemplified e.g. by the change of the lipidom (to reinforce biological membranes) after infection with mycotoxin producing fungi

**Ion mobility spectrometry** as a tool to support and **diagnose taste panel studies**.

**High Resolution Mass Spectrometry** becoming a tool for **risk based food monitoring**



LEARNING





...and if you need  
a bit of magic...





...ok...another type of magic...



UNIVERSITY OF CHEMISTRY AND TECHNOLOGY, PRAGUE  
Faculty of Food and Biochemical Technology  
Department of Food Analysis and Nutrition

# CURRENT CHALLENGES IN THE ANALYSIS OF CANNABIS AND PRODUCTS THEREOF

J. Hajslova, F. Benes, M. Fenclova, P. Peukertova




Recent Advances in Good Analysis,  
Prague, November 5-8



STATEMENT:

RAFA IS MAGIC!





STATEMENT CONFIRMED ALREADY  
WHEN YOU REACH PRAGUE BY PLANE  
RAFA IS MAGIC!



9<sup>th</sup> International Symposium on  
**RECENT ADVANCES IN FOOD ANALYSIS**  
November 5-8, 2019

CLARION Congress Hotel Prague, Czech Republic



...AND WHEN YOU REACH THE STAIRS...

**RAFA IS MAGIC!**



...AND WHEN YOU SEE THE  
INCREDIBLE FULL ROOM...  
RAFA IS MAGIC!






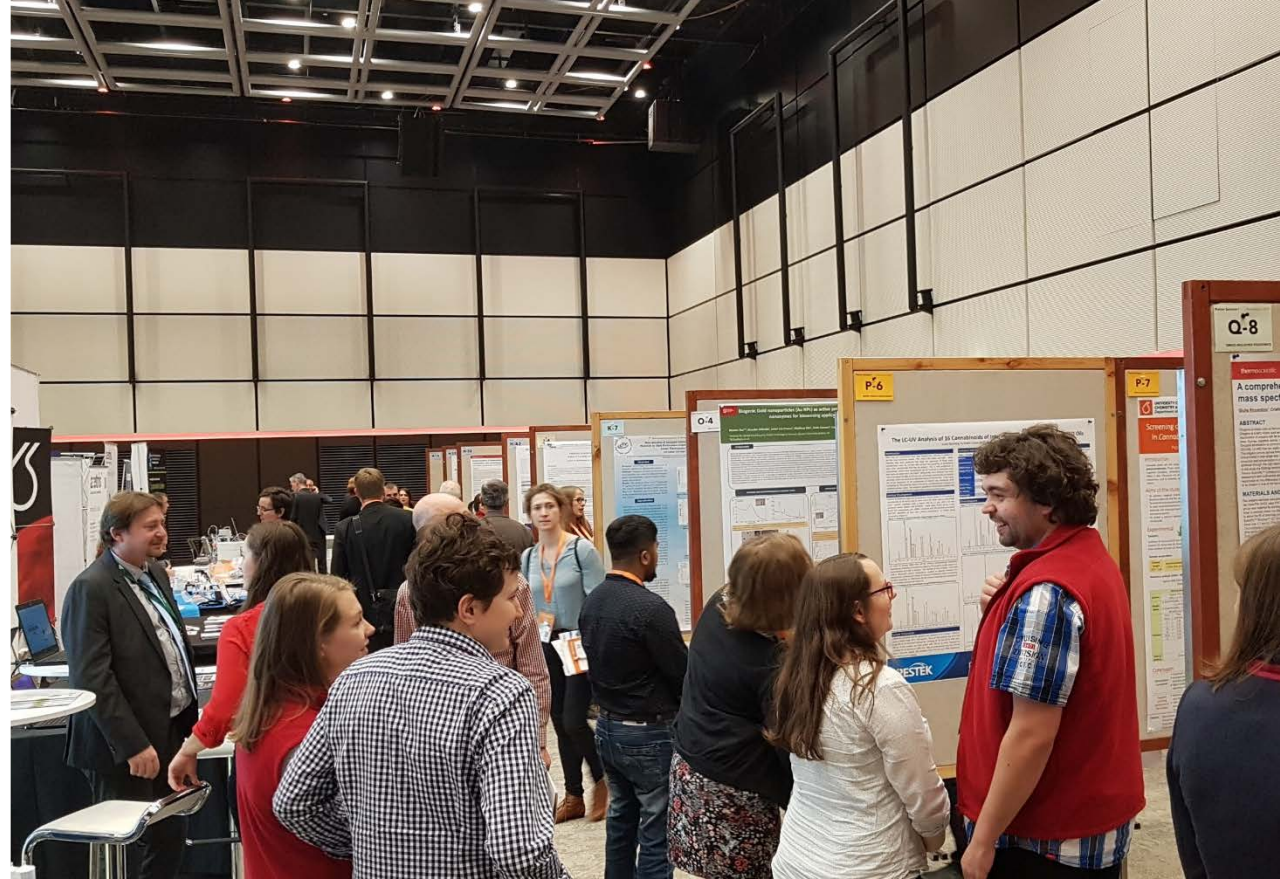


**...AND DURING THE  
NETWORKING...  
RAFA IS MAGIC!**





**...AND THANKS TO  
OUR “ANGELS”  
BEHIND THE SCENE...  
RAFA IS MAGIC!**



*...because this is RAFA...*





*...and this is RAFA...*



*...and this is RAFA...*



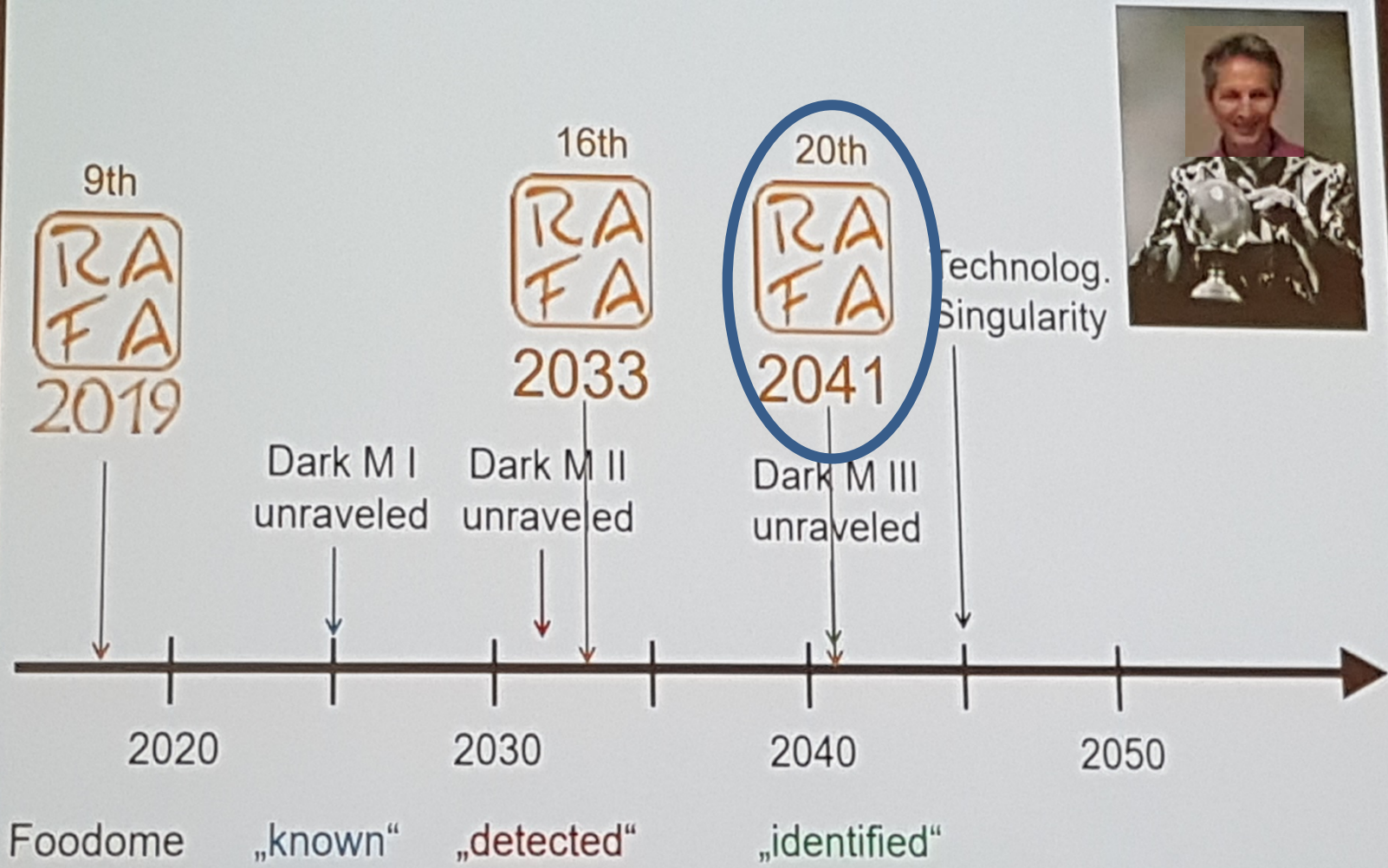




*...and this is RAFA...*



# Outcome of the Prediction







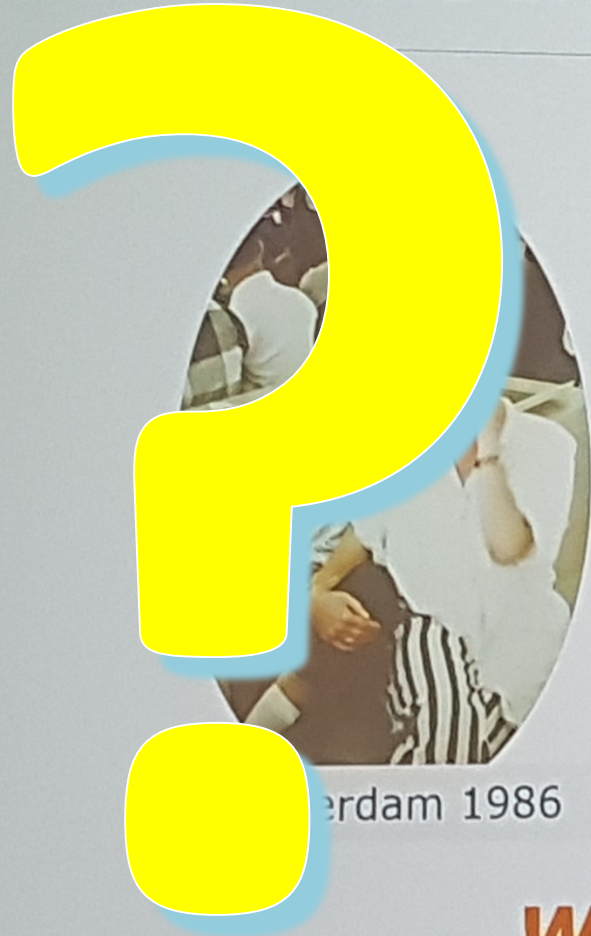
Scientific Committee



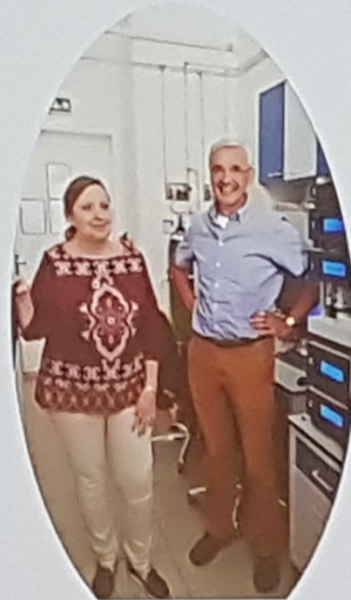
We believe in collaboration!



Symposium chairs



Amsterdam 1986



Prague 2016



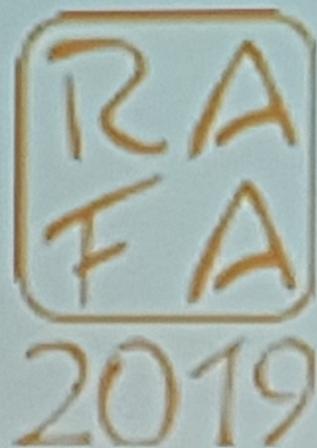
RAFA2019







Cooperation  
Open Source  
Harmonisation



Networking  
Open minds  
Harmony

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**Recent Advances  
Food Analysis**

**Remain Authentic  
Family Always**

**RAFA (2021 & Beyond..)**

Take  
Care!  
😊