

## BME-Budapest University of Technology and Economics



Budapest University of Technology and Economics

**Aron Nemeth, PhD**  
**Assistant professor**

**<http://www.bme.hu/>**



# Structure of BME in term of Biotechnology

- One of the research Univ.
- One of the largest and oldest
- Leader in Technical Edu.+R&D&I-

**BME**

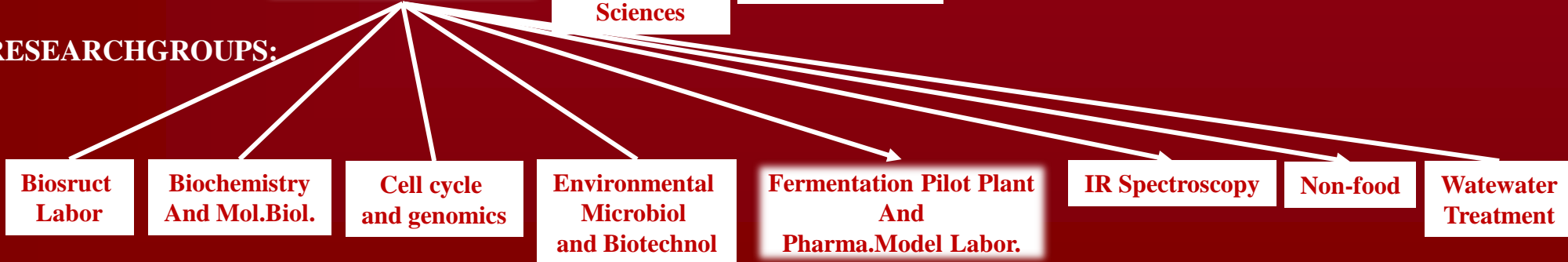
## FACULTIES:



## DEPARTMENTS:



## RESEARCH GROUPS:





# Structure of BME in term of Biotechnology

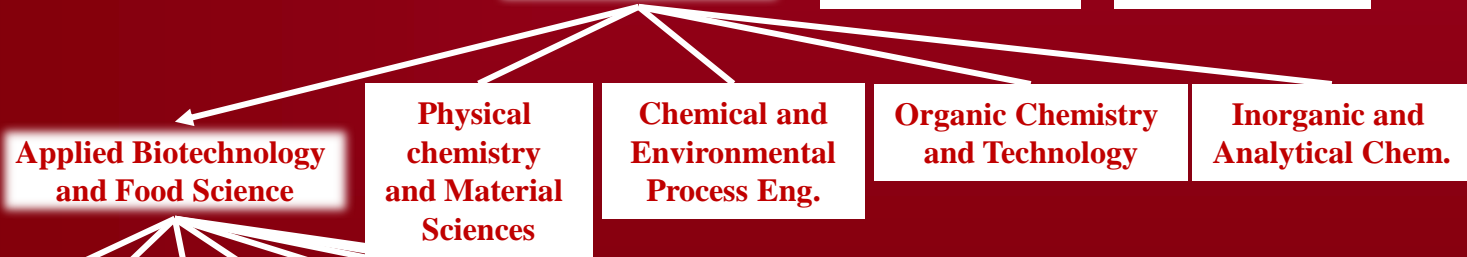
- one of the oldest Faculties
- strong connection with Pharma Co's
- reconstruction of almost every area
- 3 main education lines: Chem. Bio. Env.
- Basic, Applied Industr. Researches

**BME**

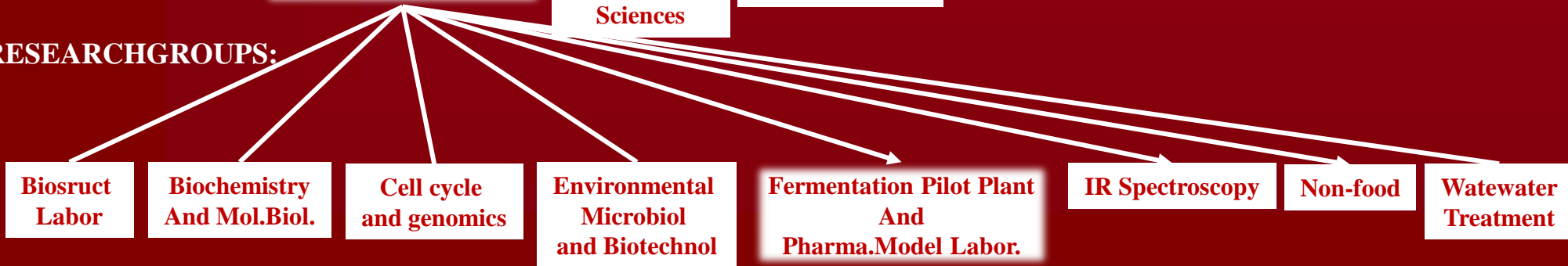
## FACULTIES:



## DEPARTMENTS:



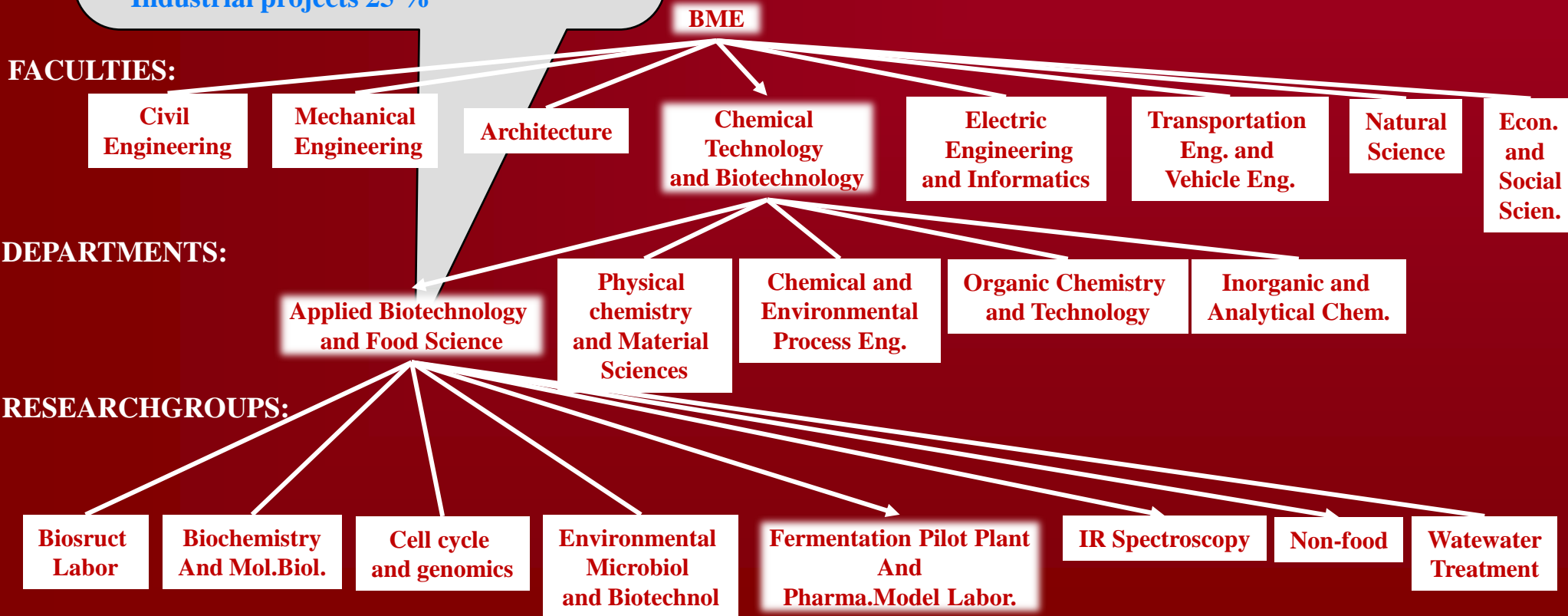
## RESEARCH GROUPS:



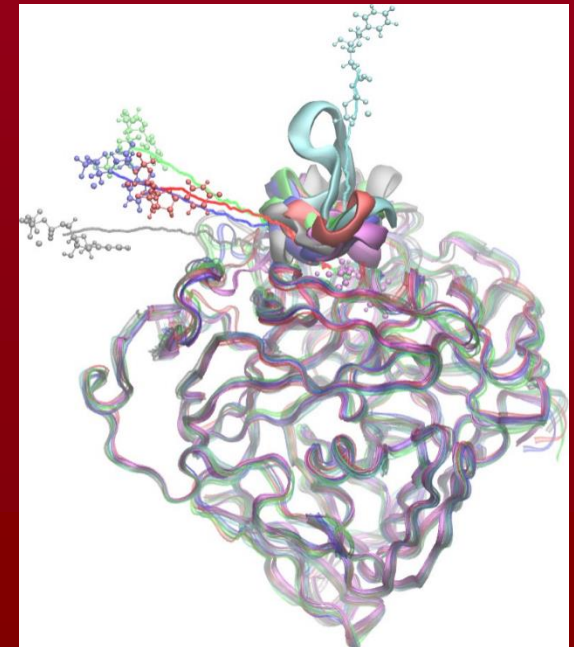
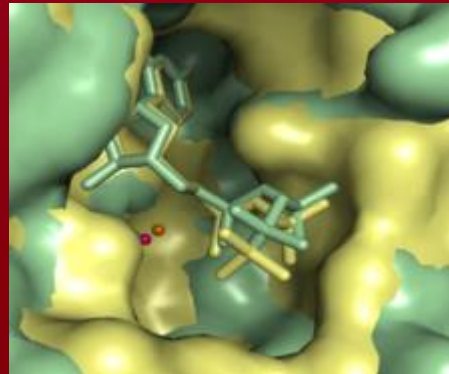


# Structure of BME in term of Biotechnology

- Responsible for all Biotech R&D&I and education
- Born from 2 prev. Dep. In 2007
- Income ratio:
  - Government budget 30%,
  - National and International projects 45%,
  - Industrial projects 25 %



- **Founded: 2011**
- **Supported: NKTH Baross program**
- **Structure discoverey of**  
**Small and large molecules by X-ray diffraction**
- **Main research: *M. tuberculosis* dUTP-ase**



# PHARMA MODEL LABOR (PML)

**Main field of interest: Mammalian cell cultures and recombinant protein purification in laboratory scale, modelling future biopharmaceutical technologies.**

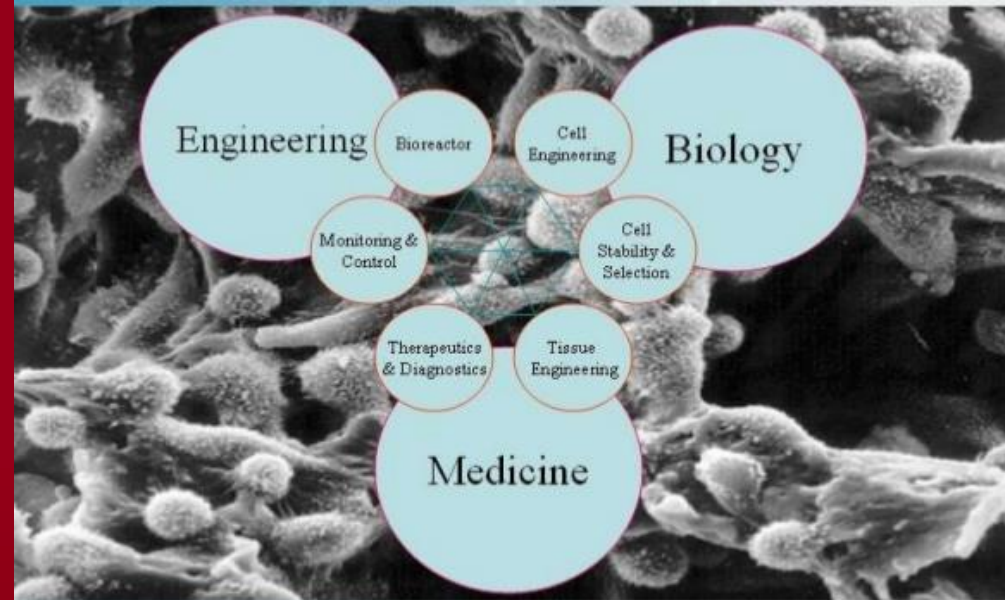
PML is a new (2014!) laboratory with future aspirations of:

-Realization and optimization of **continues cell cultures** fitted to continuous downstream processing and continuous drug product preparation.

- Investigation of **mitochondrial activity in mammalian cell** cultures to increase production capacities of mammalian host cells.

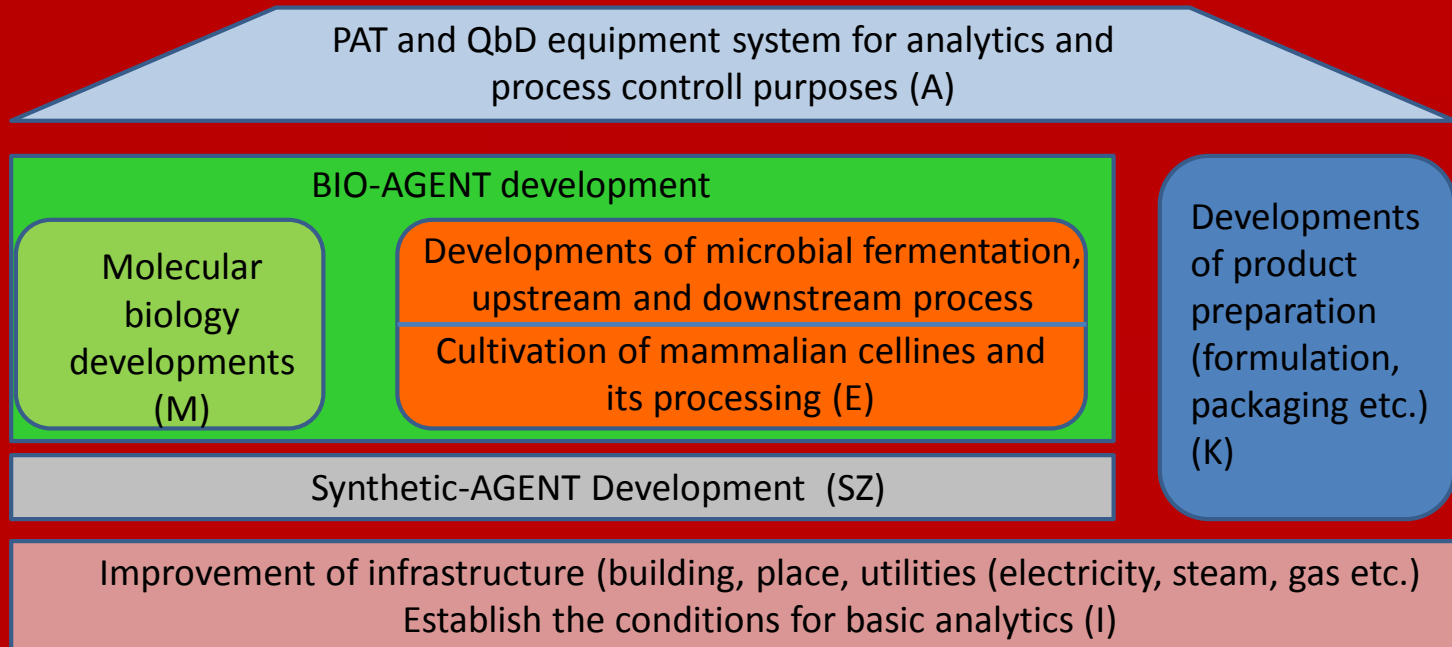
-Investigation of bioengineering tools to influence **glycosylation patterns of Mabs.**

- Application of **Raman spectroscopy as a PAT** tool in the on-line regulation of CPPs in mammalian fed batch and perfusion cell cultures.



<http://www.slideshare.net/kiranbirje52/basic-of-mammalian-cell-culture>

## Structure of Pharmatech Model Labor (PML)



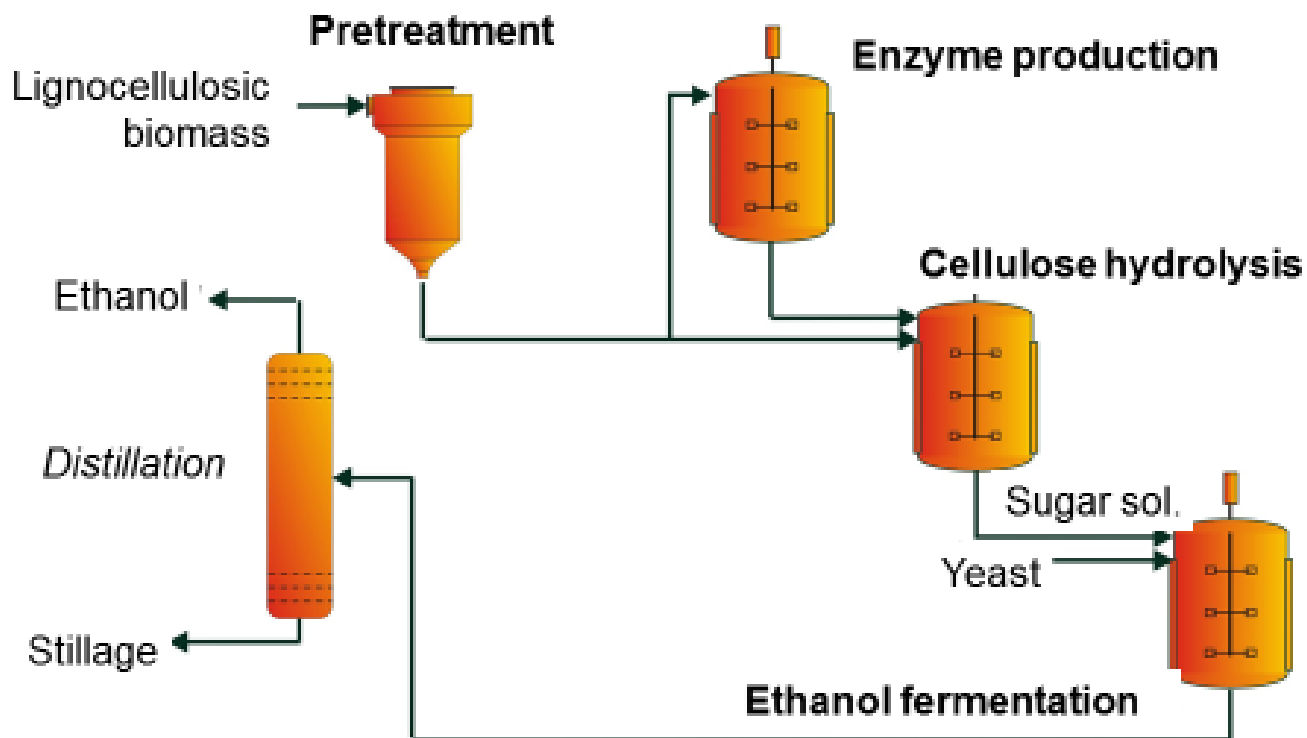
# Non-food researches

<http://ch.bme.hu/kutatas/reszletek/kutatocsoport/11/>

1st EuCheMS Congress on Green and Sustainable Chemistry



## Lignocellulosic ethanol production - Enzymatic way



October 13-15, 2013 – Budapest, Hungary

4

**The longest  
history in  
EU supports  
(FP5 FP6 FP7)**

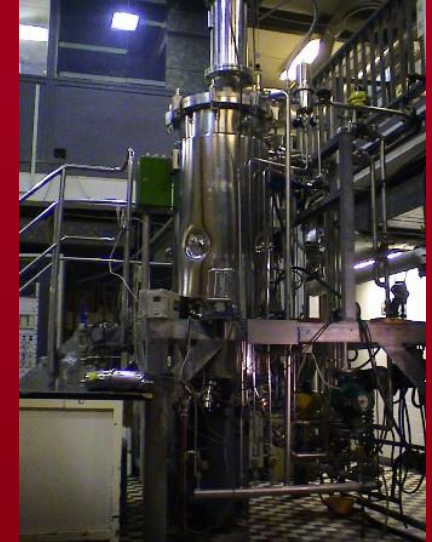




# Fermentation Pilot Plant (F-Labor)

<http://f-labor.mkt.bme.hu>

<http://ch.bme.hu/kutatas/reszletek/kutatocsoport/12/>



**Microbiology + Upstream (+downstream)  
Technology Development and Tech transfer  
Main research area:**

**Red Biotech: Vaccines, antibiotics, pre/probiotics**

**White Biotech: Lactic acid, 1,3-propanediol, Itaconic acid**

**Green Biotech: Plant protection, growth promoting agents**

A  
L  
G  
A  
E  
+



# Fermentation Pilot Plant (F-Labor)

<http://f-labor.mkt.bme.hu>

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## Studying entomopathogen microorganism for application in bioinsecticides and plant protective agents

Proposal

- Last effective chemicals were withdrawn
- New agents Needed against:
- Ticks



-Corn root worm

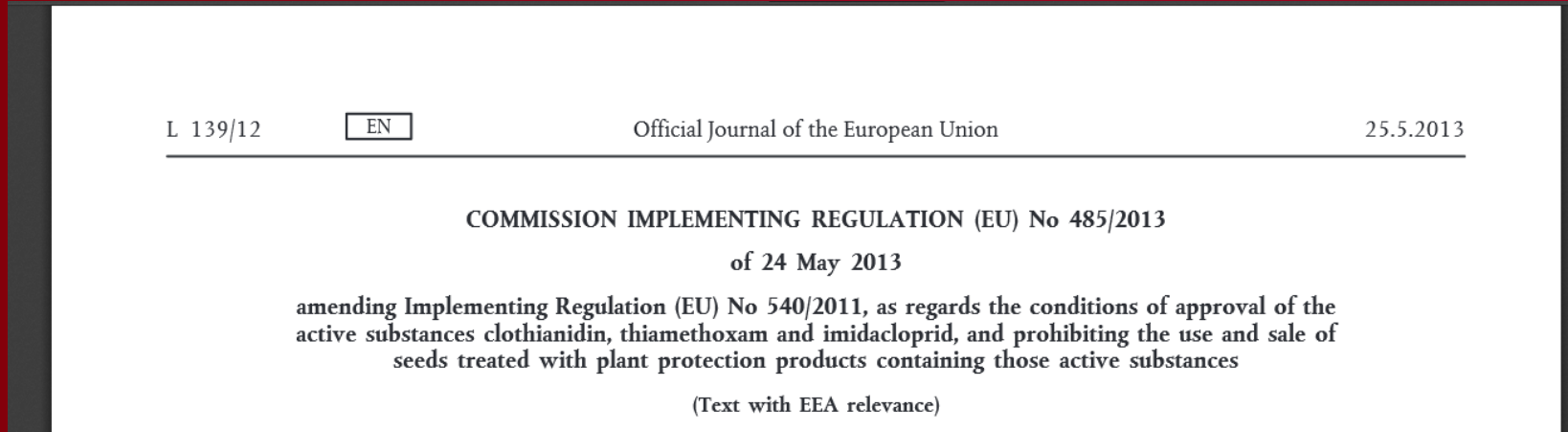


Entomopathogens: kill pests naturally (*M.anisopliae*, *B.bassiana*, *B.thuringiensis* etc.) = Biocontrol

- wide literature but still lot of question at EU climate
- Selectivity and adaptability
- Existing production: in third world...
- We want to answer these questions and elaborate



a specific fermentative production suitable against different pests



# NIR and FT-IR spectroscopy group

<http://ch.bme.hu/kutatas/reszletek/kutatocsoport/25/>

- Supporting any biotechnological researches and production (Food-, Pharma-, Oil- and related industries )
- Apply Non-Destructive examination for medicines and API, detecting of falsification/adulteration etc.
- Monitoring online/offline fermentations, bioconversions, reactions (like: lactic acid fermentation, algae fermentation, mammalian cell cultivation etc.)
- NIR, FT-IR microscopy, imaging





# THANK YOU FOR YOUR KIND ATTENTION!



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**Budapest University of Technology and Economics**

**Faculty of Chemical Technology and Biotechnology**

**Department of Applied Biotechnology and Food Science**

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