

JOINT PROJECTS

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The Good, the Bad and the Complex

Food and Biotechnology

A series of activities have been designed and developed for secondary school laboratories and classrooms. The aim of the project is to improve students conceptual understanding and investigative laboratory skills by framing these activities in an inquiry-based, structured problem-solving approach in the context of food and microbes.

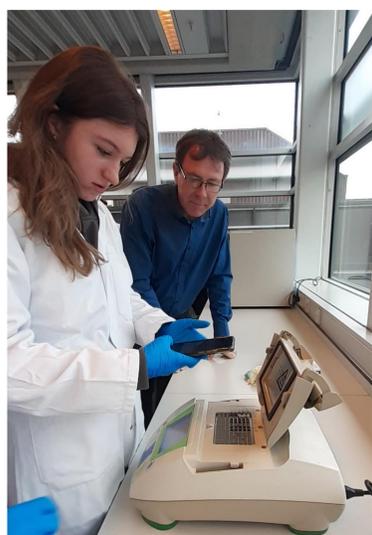
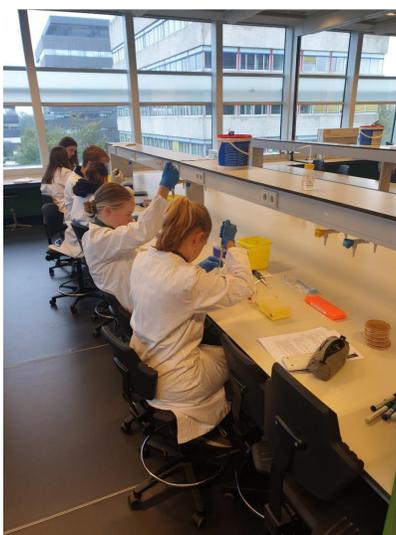
Part 1 – The Good – Lactic Acid Bacteria

Investigation of ‘probiotic’ lactic acid bacteria in fermented food.



Part 2: The Bad – Shiga Toxin-producing *E.coli* (STEC)

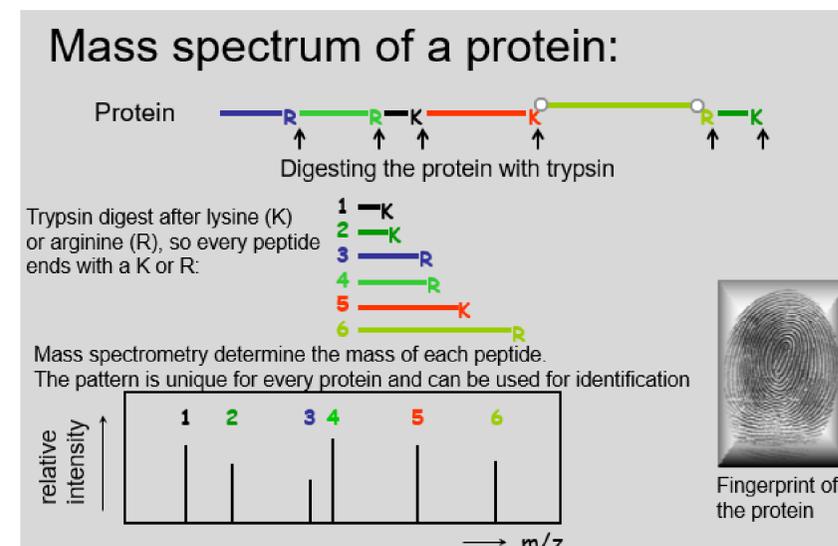
Lab activity with PCR-based diagnostics for the detection of Shiga toxin-producing *E.coli* (STEC) strains.



Part 3: The Complex – Shiga Toxin proteins

3D -visualization of Shiga Toxin proteins (PyMOL).

Detecting Shiga Toxins from STEC using mass spectrometry data of a trypsin-digest of the protein.



Future development of the project

Investigation of the survival of ‘probiotic’ strains in gut models.

Epidemiology of an *E. coli* outbreak – a case study/role play.

LabXchange – pre- and post laboratory activities.

Acknowledgment

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AMGEN Biotech Experience
Scientific Discovery for the Classroom



Conclusion: We have developed a series of inquiry-based activities for students to learn some of the important concepts and techniques of food biotechnology.