

Peptide Profiling after *in vitro* Digestion: A Fingerprint of Selected Dairy Products

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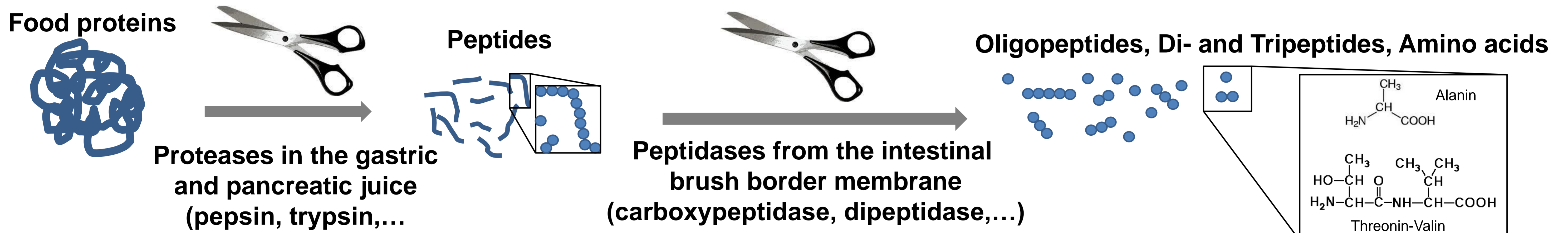
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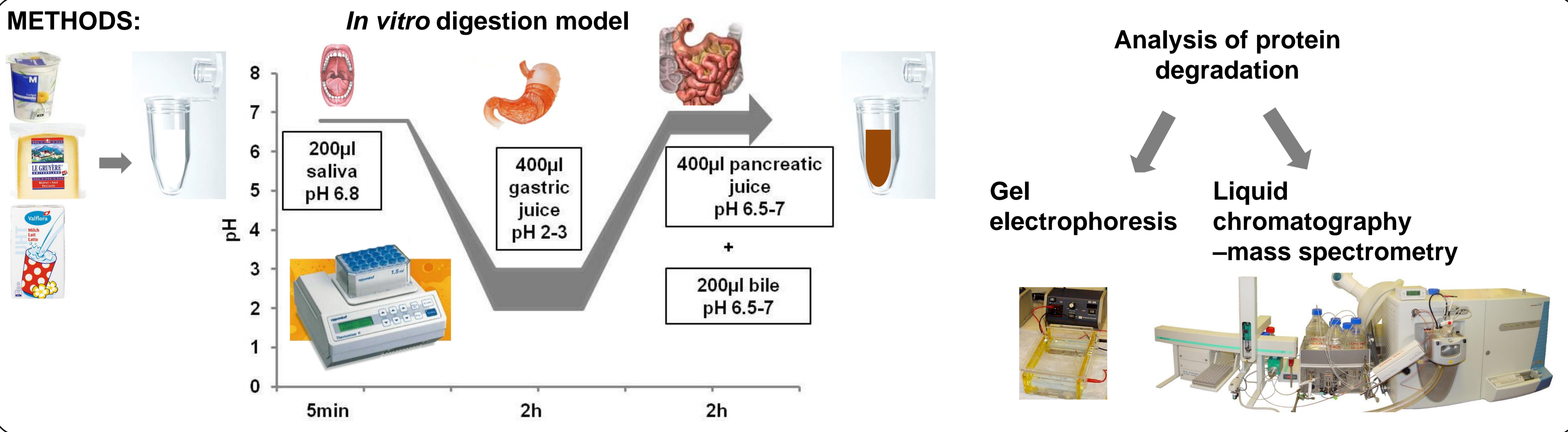


INTRODUCTION: Milk can be transformed by technological or microbial treatments into different dairy products with specific nutrient composition and biological activity. We developed an *in vitro* digestion (IVD) system that was validated for its ability to degrade the macronutrients of dairy products comparable to physiological ranges. Different dairy products were assessed for the presence of bioactive peptides after the gastric phase and after full digestion.

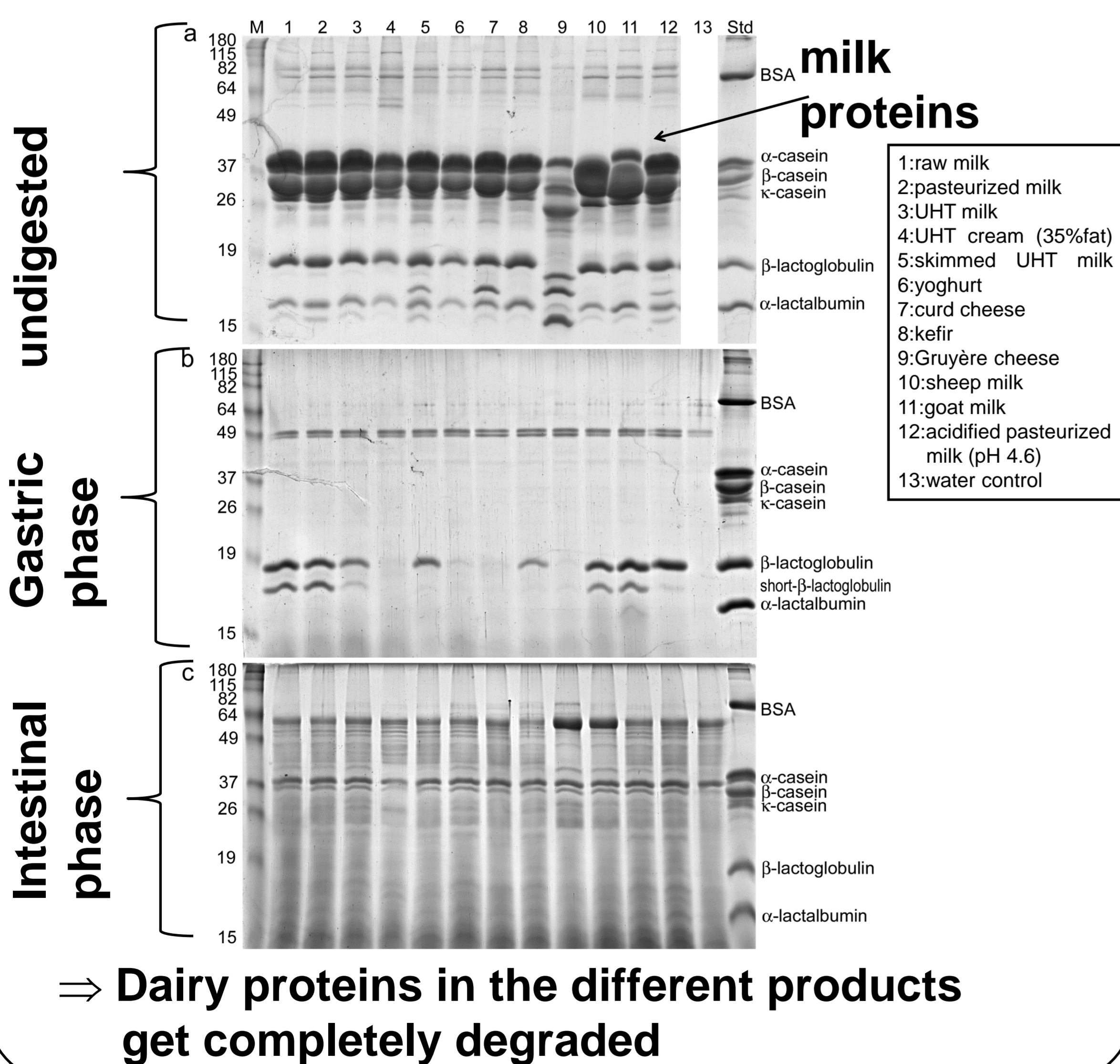
What is happening during protein digestion?



METHODS:

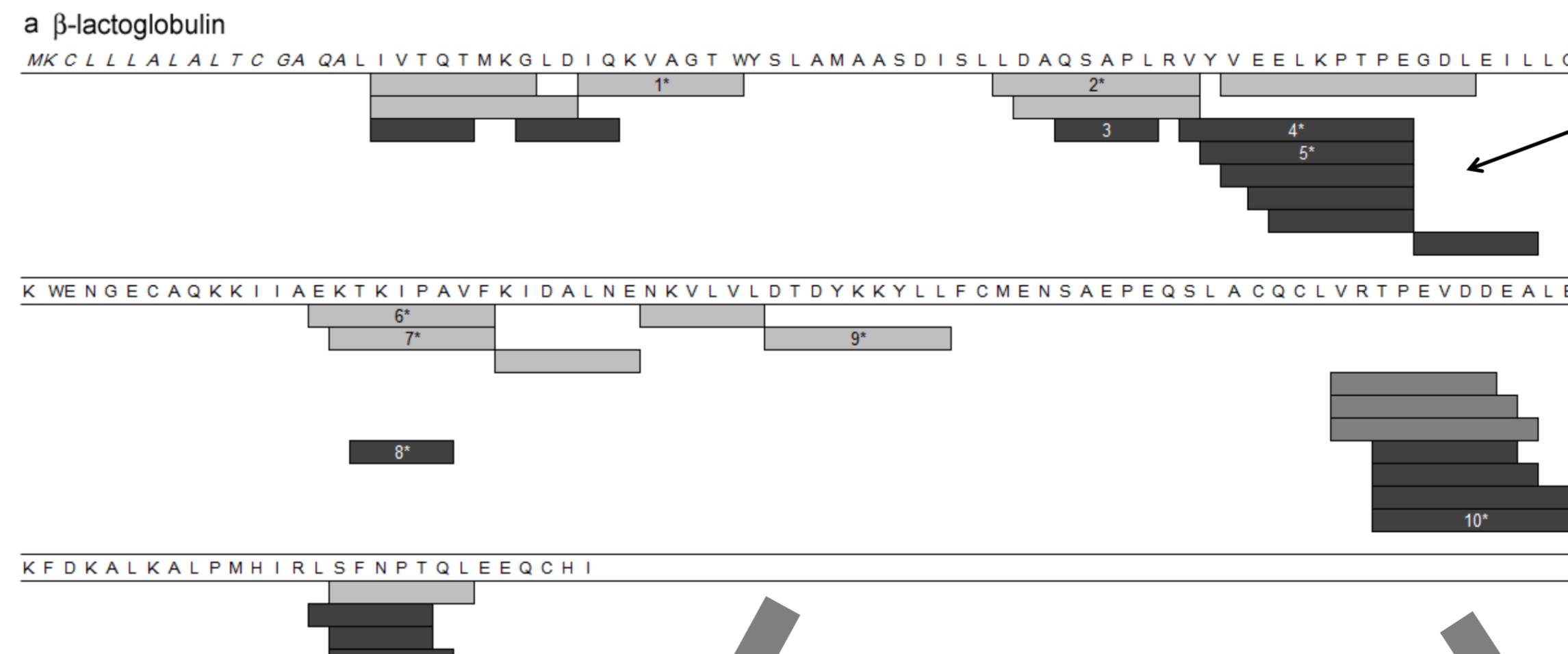


RESULTS: Monitoring of protein degradation with gelelectrophoresis



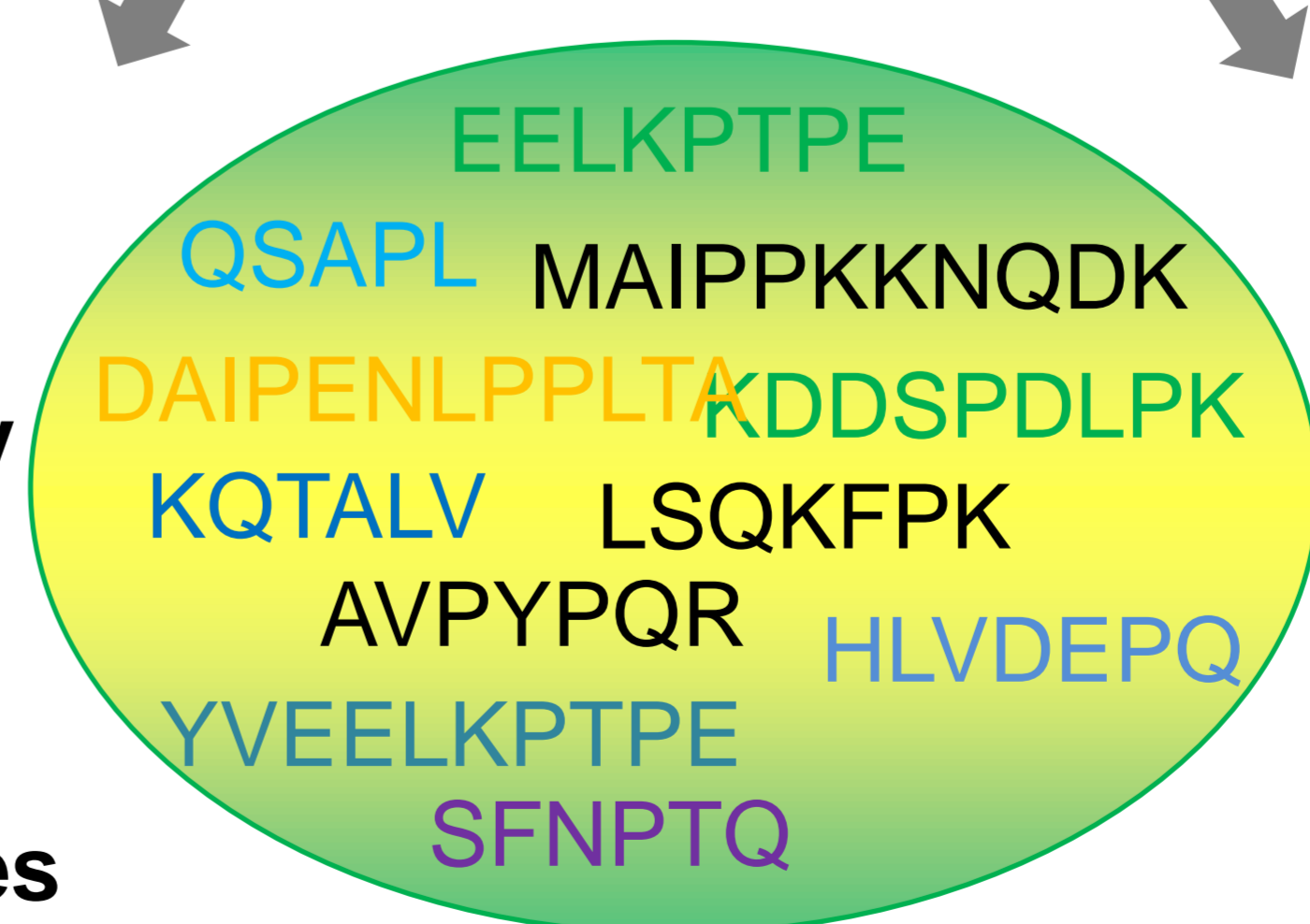
Peptide analysis with liquid chromatography-mass spectrometry

Sequence of the dairy protein
e.g. beta-lactoglobulin



Detected peptides
(grey: after gastric phase,
dark grey: after full digestion)

- Bioactive peptides**
- Antihypertensive
 - Immunomodulatory
 - Antimicrobial
 - Antithrombotic
 - Mineral binding
 - Opioid Milk Peptides



Peptide epitope sequences for cow's milk allergy



CONCLUSION:

Our *in vitro* digestion model enables a comparison of the digestion processes of different products, including the influence of the technological treatment. LCMS analysis allowed the differentiation of the products in regard to their content of bioactive peptides.

OUTLOOK:

In the future the transport of IVD products through intestinal CaCo-2 cells will be studied to assess the bioavailability of the detected peptides using a metabolomic approach.

