



## Goal of the research

- ❖ Polyhydroxyalkanoates are promising circular polymers
- ❖ Helpful nanocomposites
- ❖ Active packaging materials
- ❖ Safe use of nanocomposites



## Goal of the research



- ❖ In parallel with studying Ag NP migration from biodegradable PHAs, we aim to follow up the EU legislation regarding:
  - ❖ Biobased and biodegradable packaging materials
  - ❖ Food contact materials (FCM) and active packaging

## Dynamic EU regulation



- ❖ Nov '22 → proposal new Packaging and Packaging Waste Regulation.
- ❖ Bioplastics can be part of a sustainable future ☺
- ❖ Other use if they don't affect the recyclability of other waste streams, nor the quality of compost.



## Dynamic EU regulation



- ❖ Rules on FCM will be modernized to ensure food safety, while taking account of the latest science and technology, and supporting innovation and sustainability by promoting safe reusable and recyclable solutions.
  - Framework Regulation EC 1935/2004 → new proposal in Q2 2023
- ❖ Leave room for safe active packaging innovations?!
  - Regulation EC 450/2009



## Conclusion & Outlook

- ❖ The PHA value-chain from design through manufacture, value enhancement and disposal should be strategic, considering safety and legislation.
  - Two PHAs are on the Union List (EC 2019/37) but authorisation for nanomaterials must be assessed on a case-by-case basis.
- ❖ Our research will focus on elucidating Ag<sup>+</sup>/Ag NP leaching mechanisms from PHAs in consumer as well as specific EoL scenarios to estimate the safety and application potential of bio-nanocomposites as active packaging material.

