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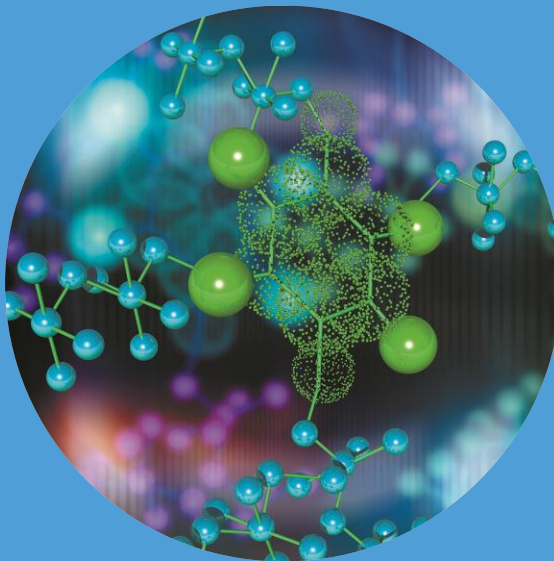
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What applications of nanotechnologies in food will impact global trade?

IATRC 2013 Symposium

Frans Kampers

Seville — June 3, 2013

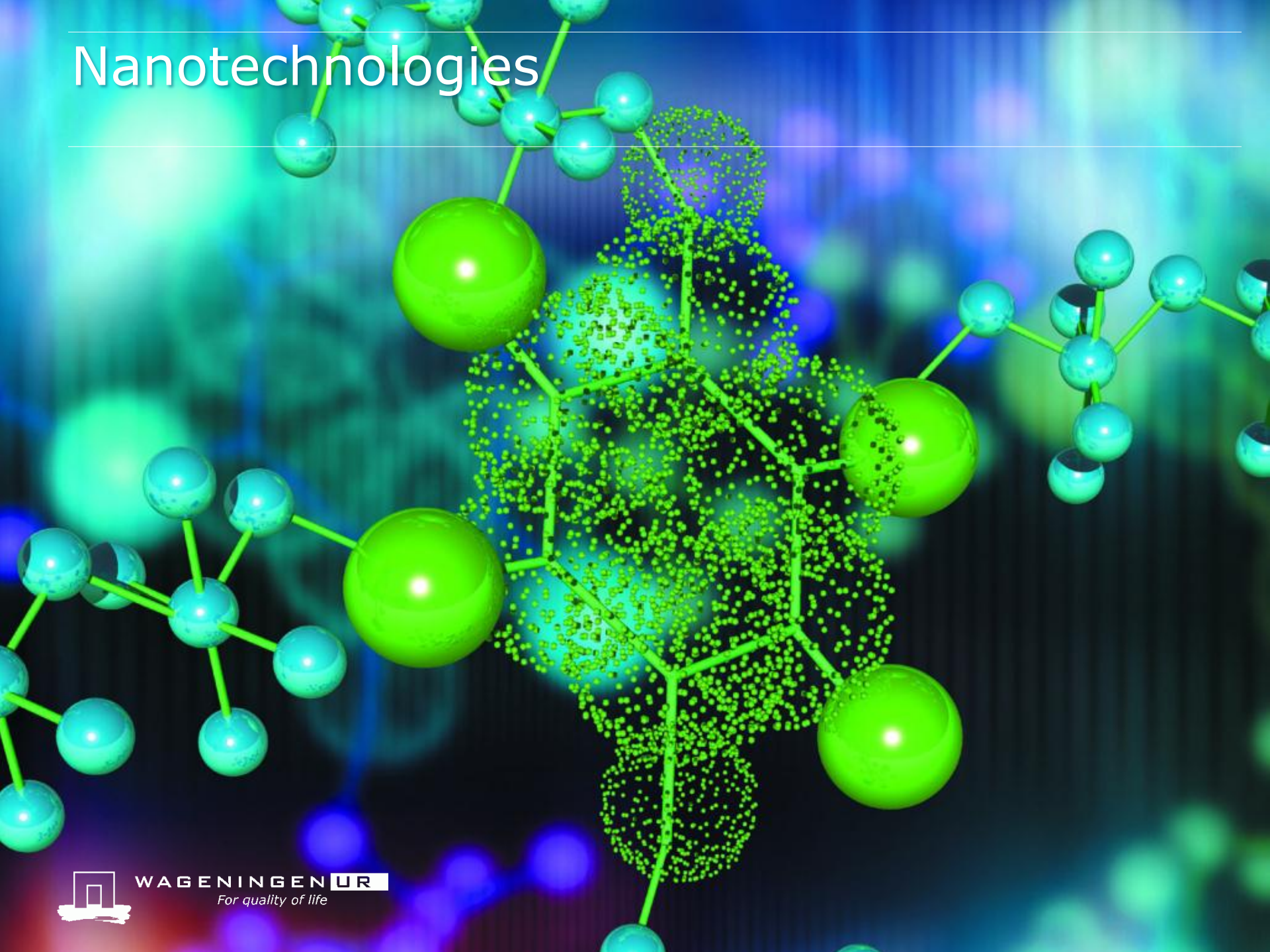


Applications of nanotechnologies in food

- Fertilizers and feed
- Process monitoring and early plague detection
- Pesticides
- Detection of pathogens and residues
- Food process innovations
- Structuring of food stuff
- Ingredients and novel products
- Packaging and logistics

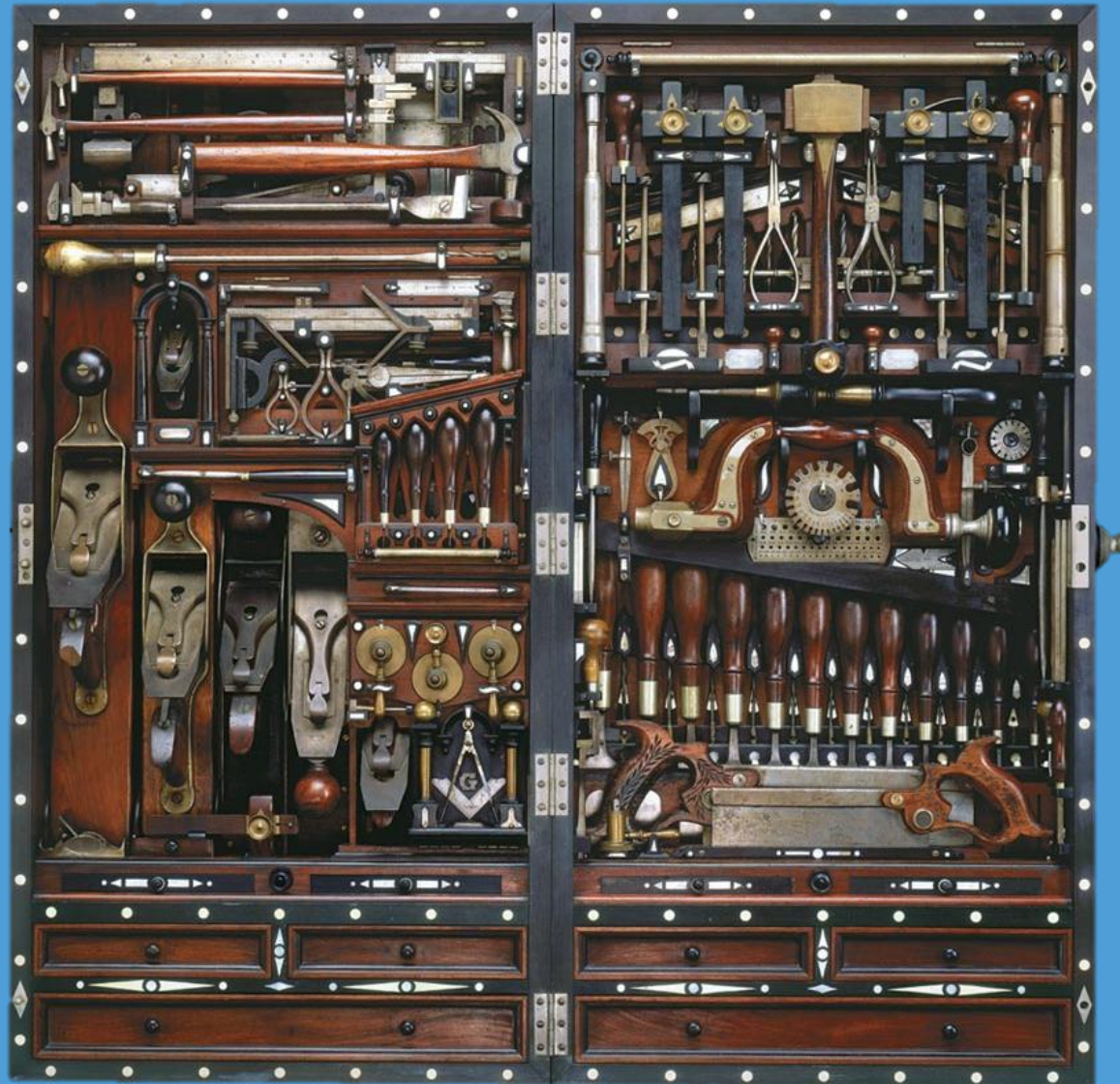


Nanotechnologies



Tool set

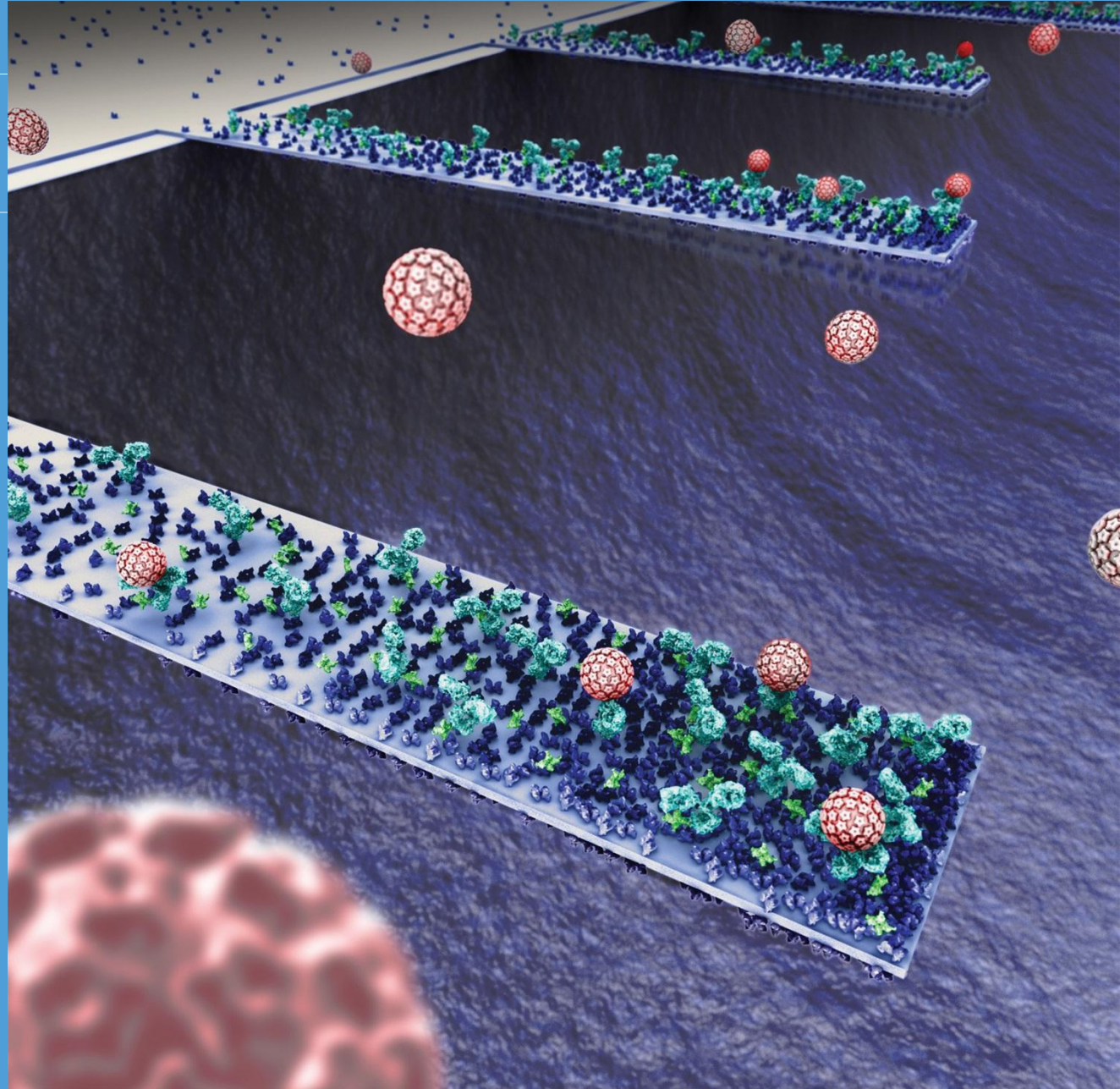
- Precise
- Efficient
- Economic
- Opportunities



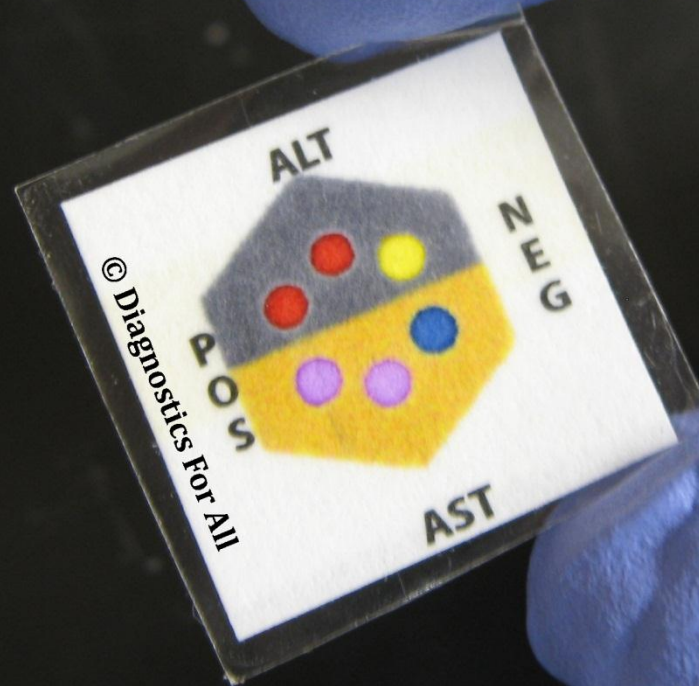
Early plague detection



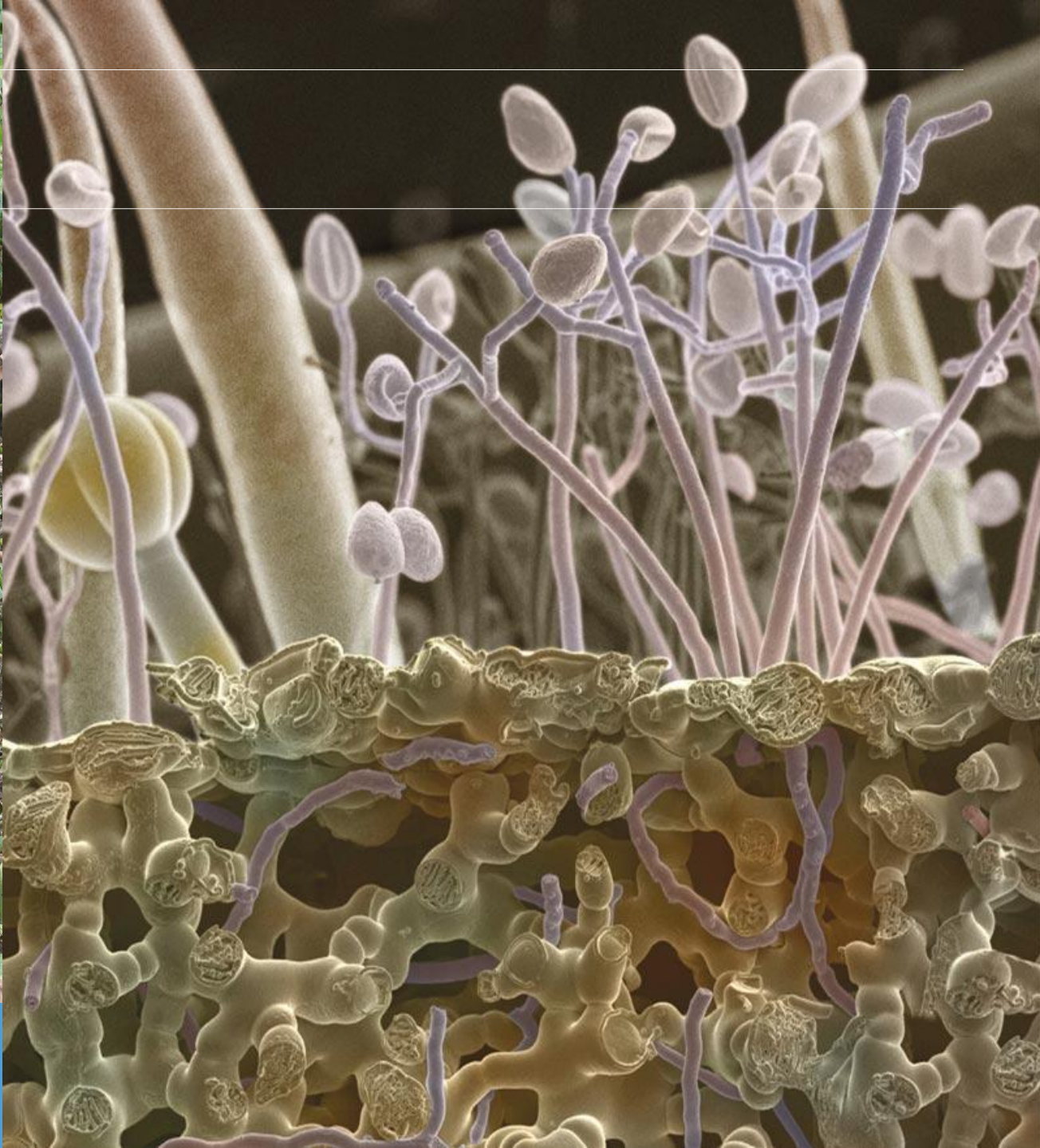
Biosensors



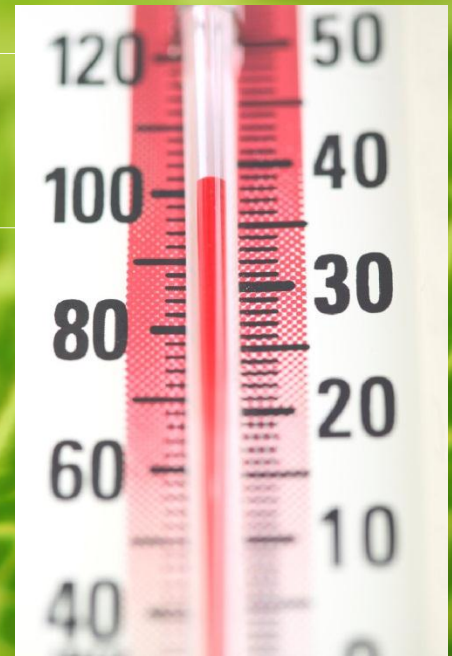
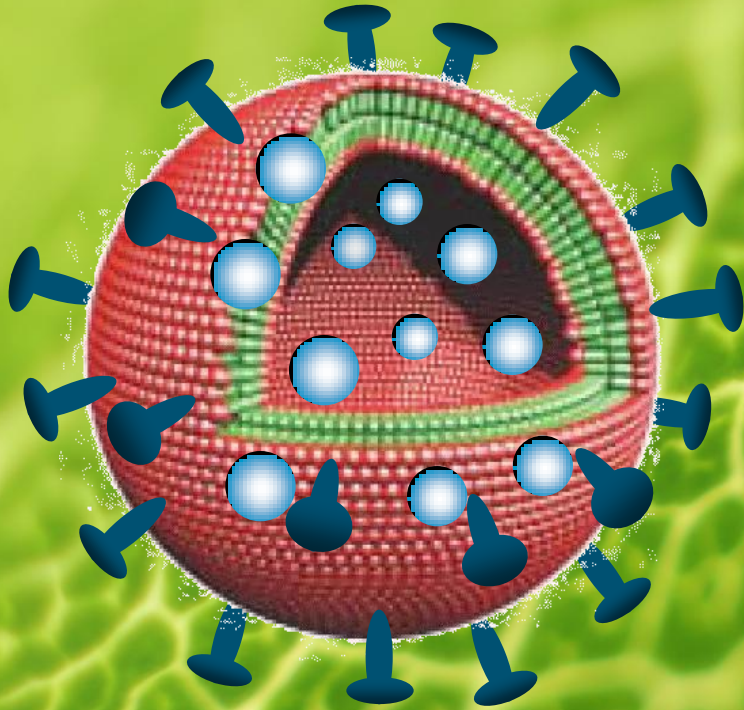
Paper based test



Pesticides

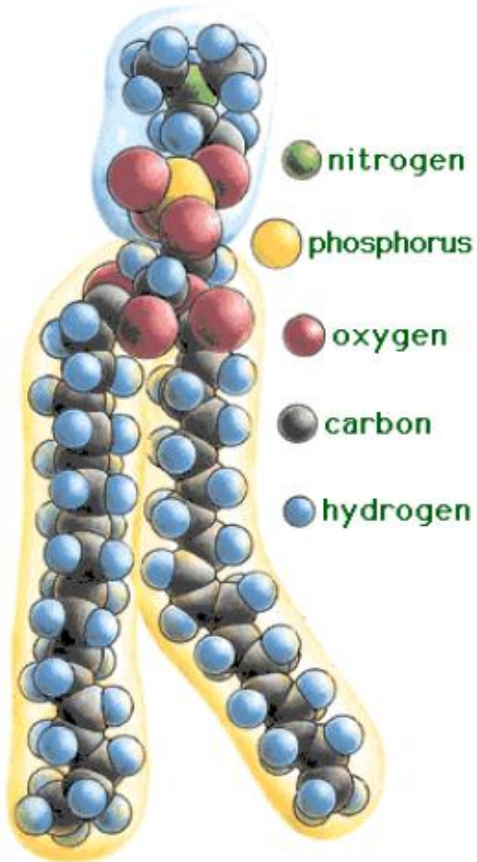


Pesticide encapsulation

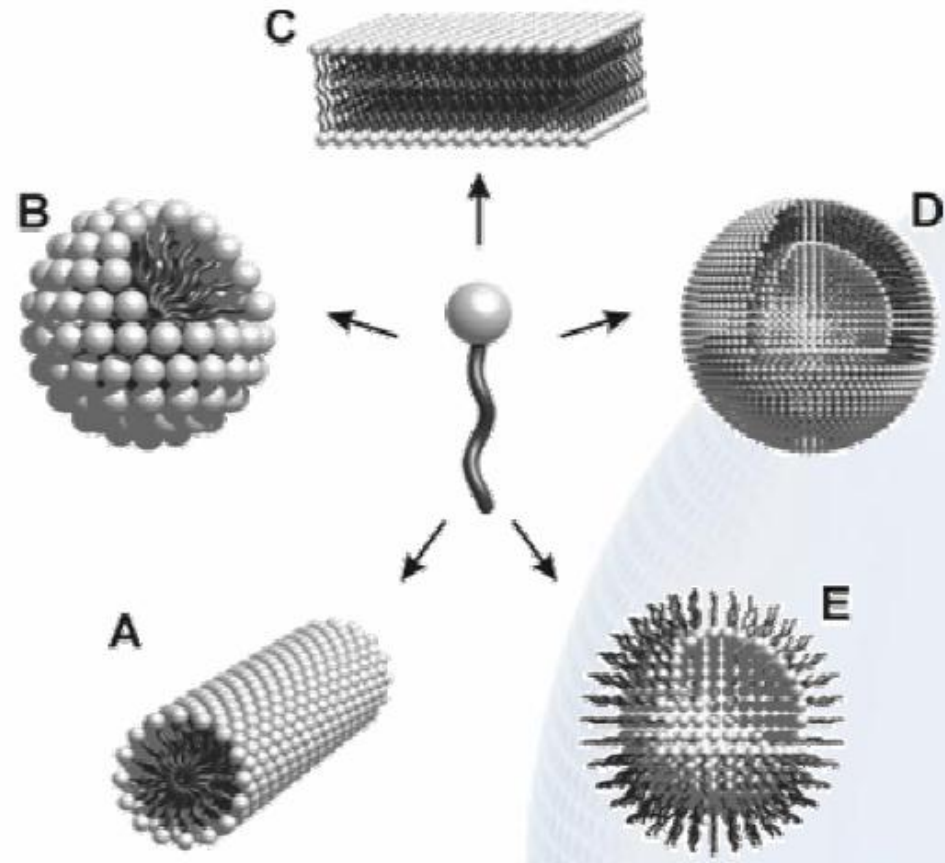


Encapsulation

Phospholipid:



Aggregates:

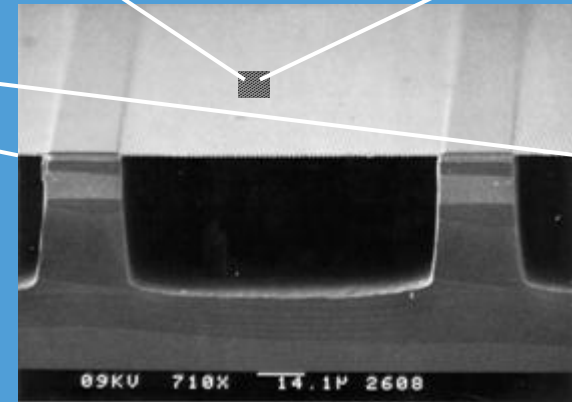
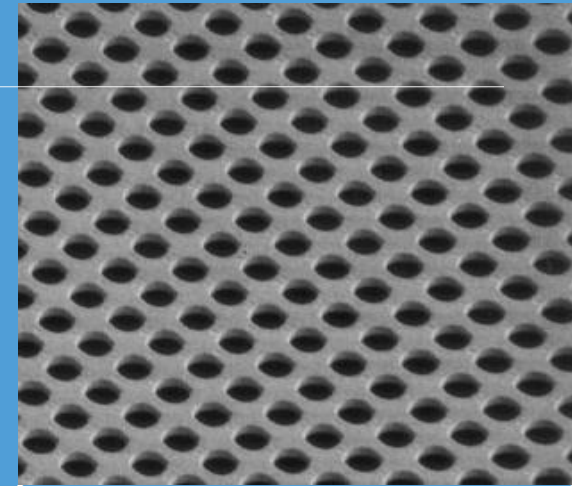
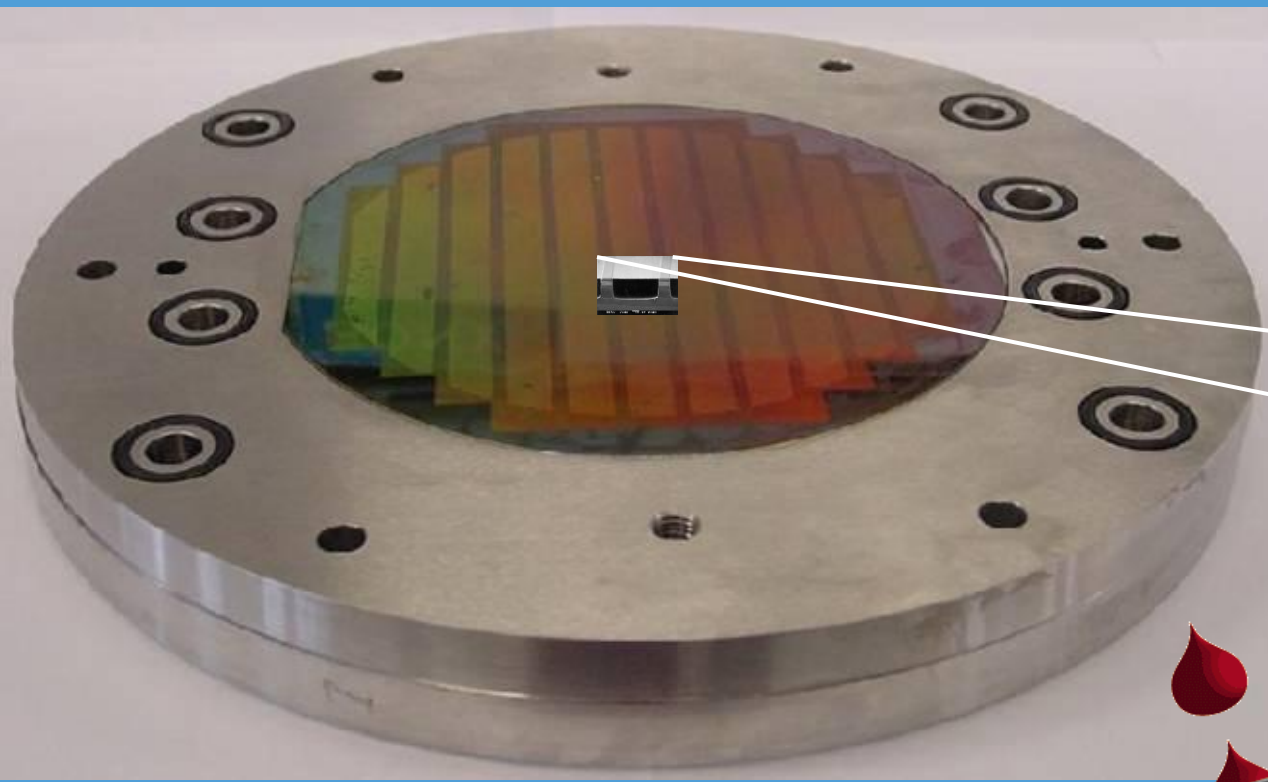


Filtration / Fractionation



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For quality of life

Separation / Fractionation



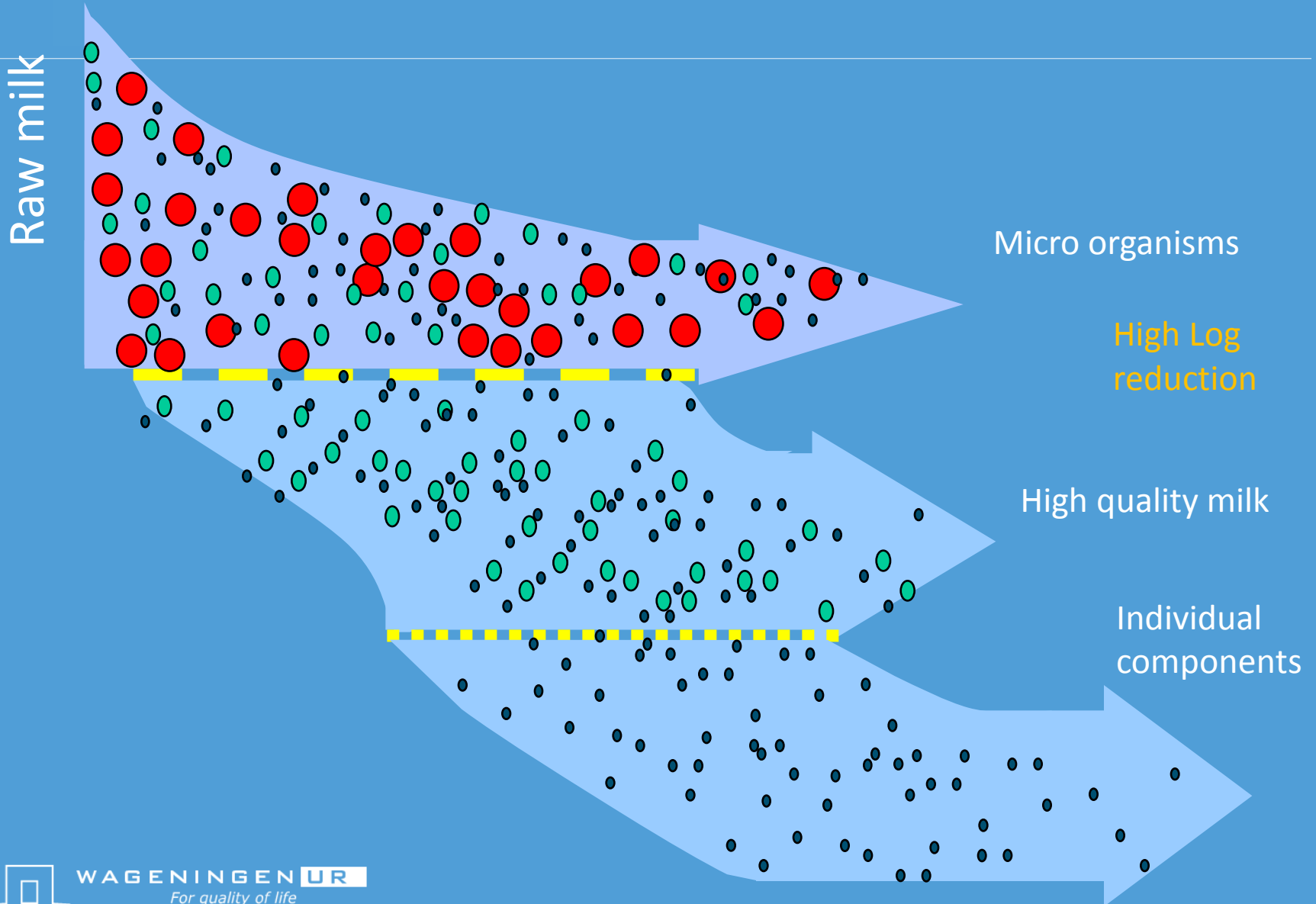
Cees van Rijn – Aquamarijn



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Fractionation



Food security



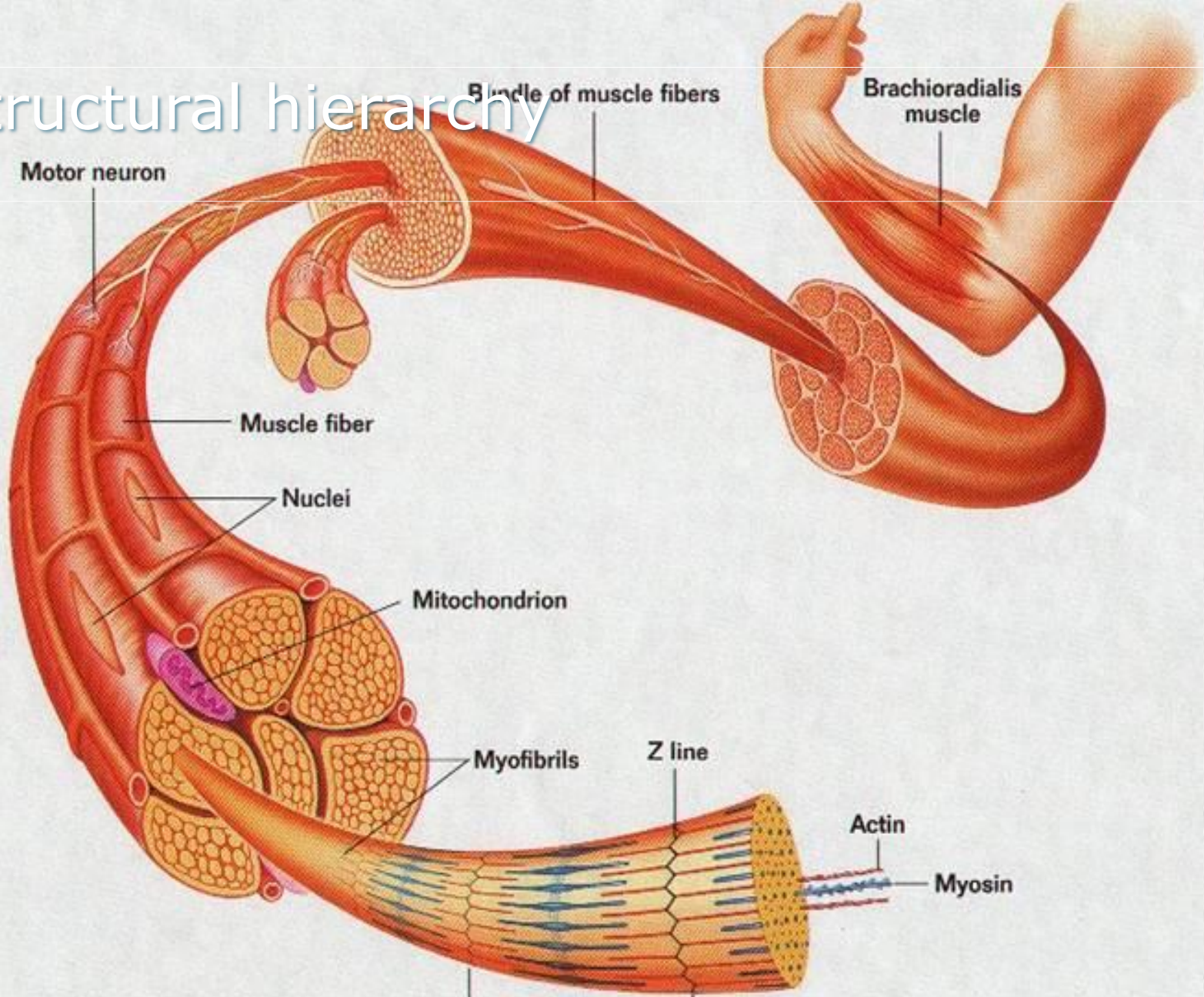
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Hironobu Mochizuki

Traditional meat production

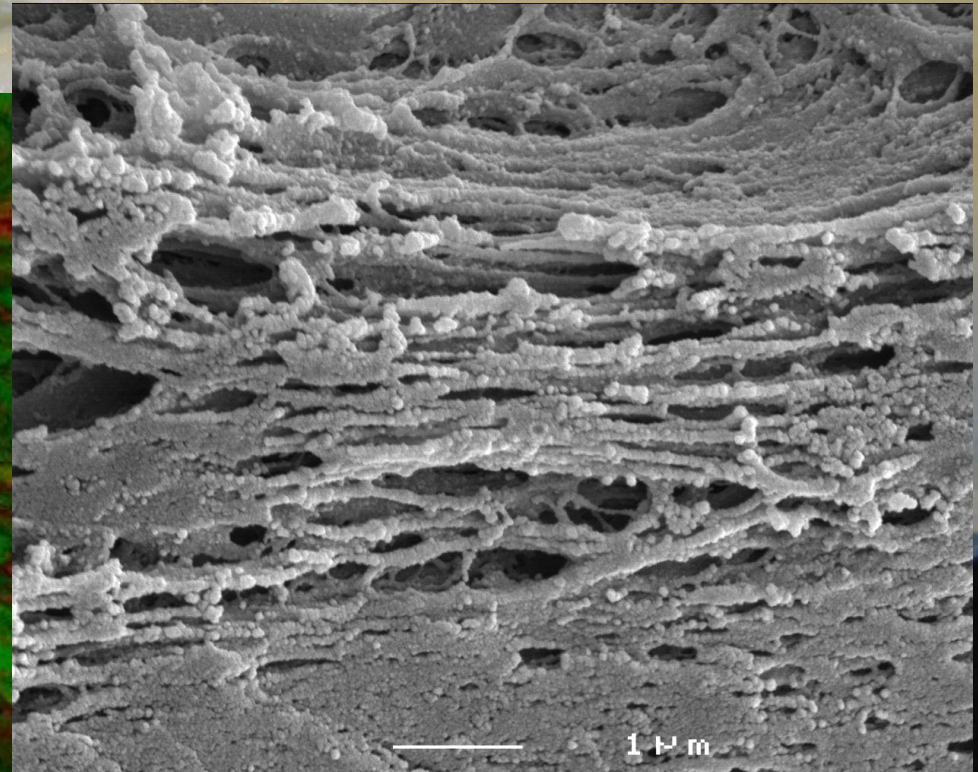
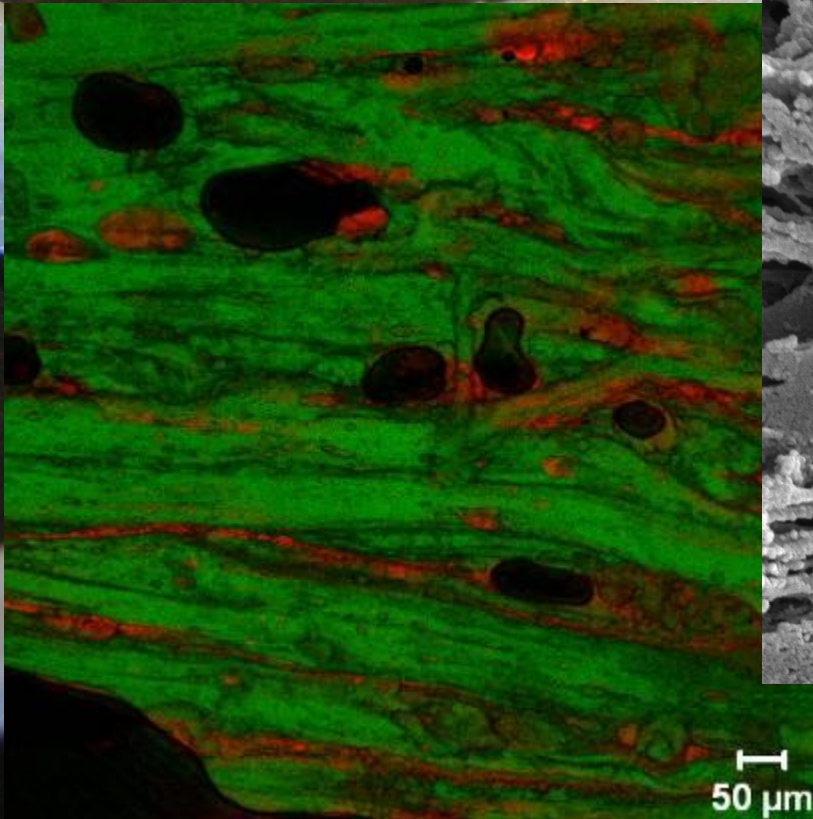


Structural hierarchy



Meat from alternative protein sources

Ca-caseinate / fat



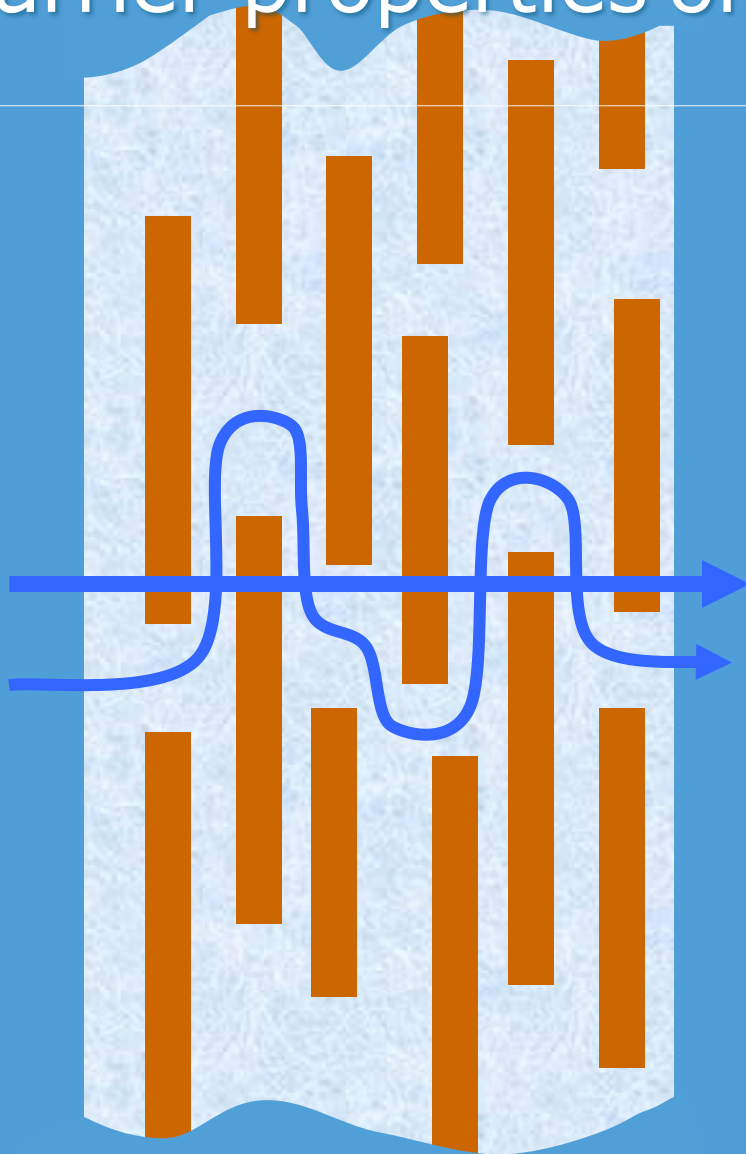
Challenge



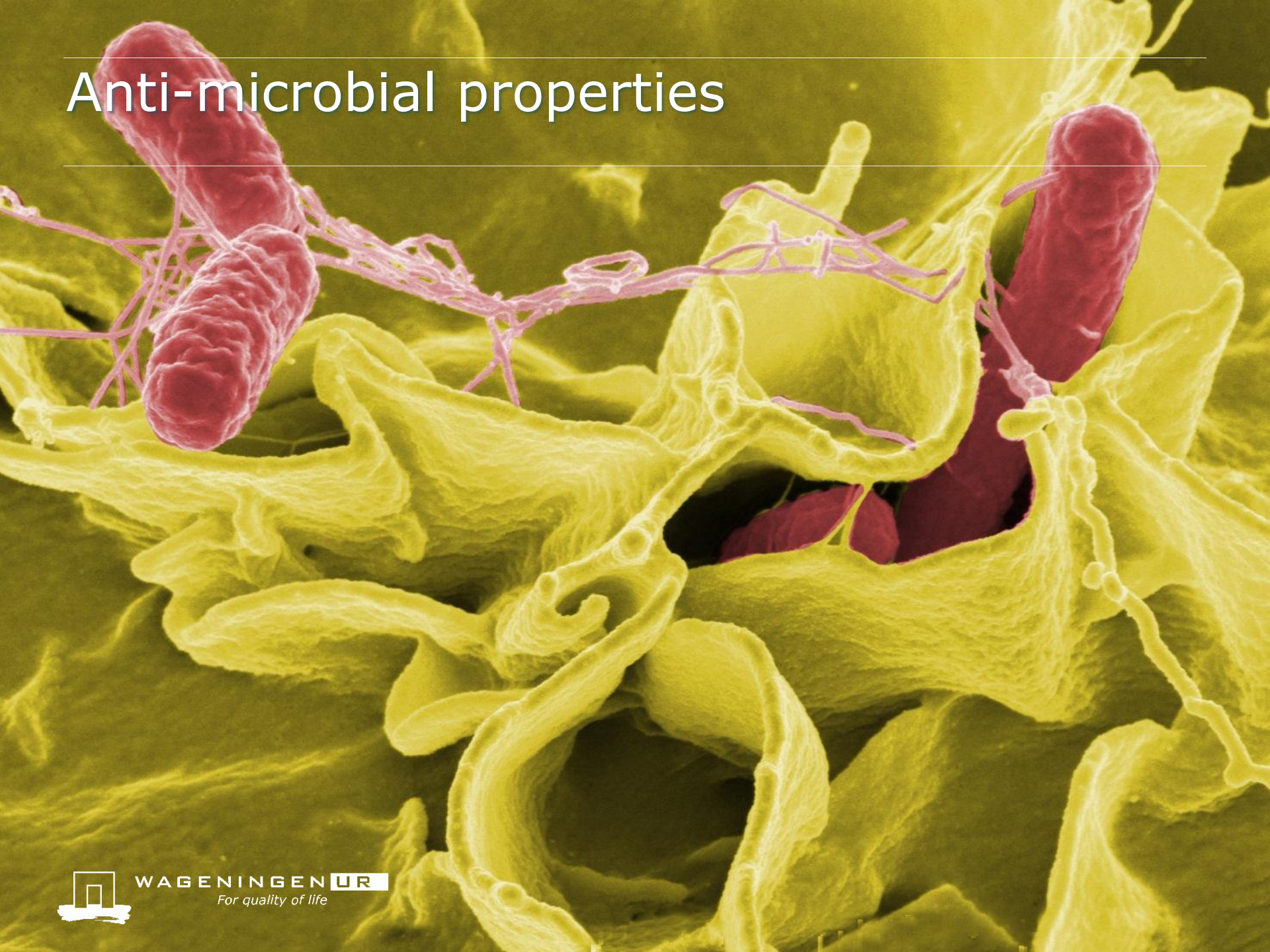
Food Packaging



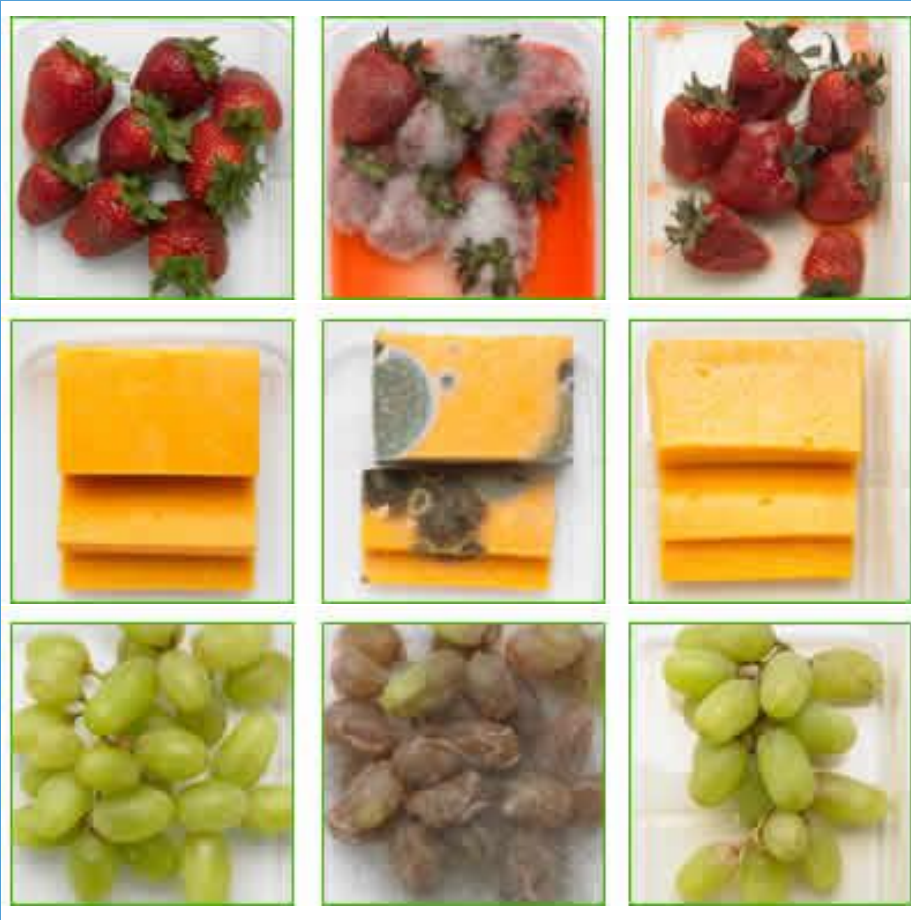
Barrier properties of nanocomposites



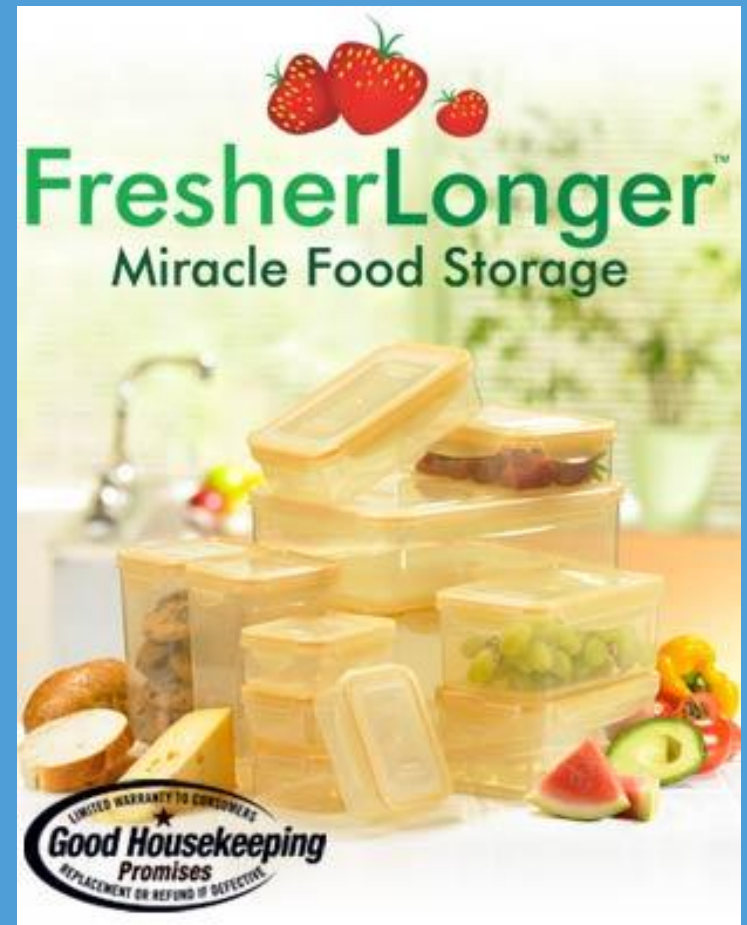
Anti-microbial properties



Nano silver



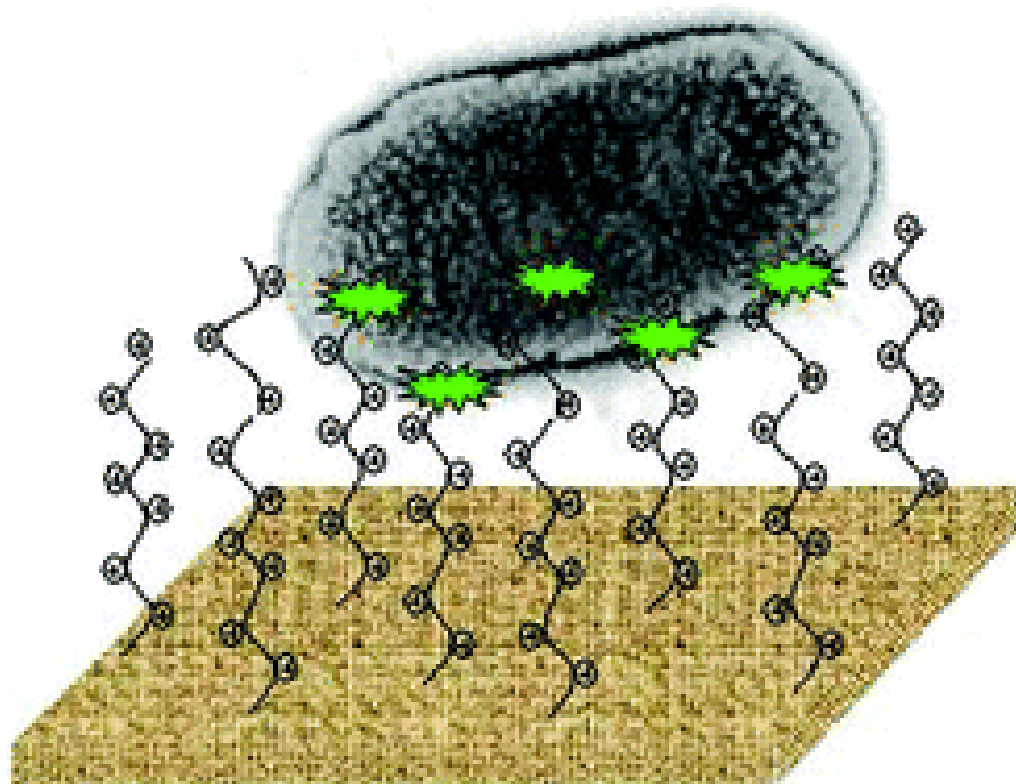
After 8 days



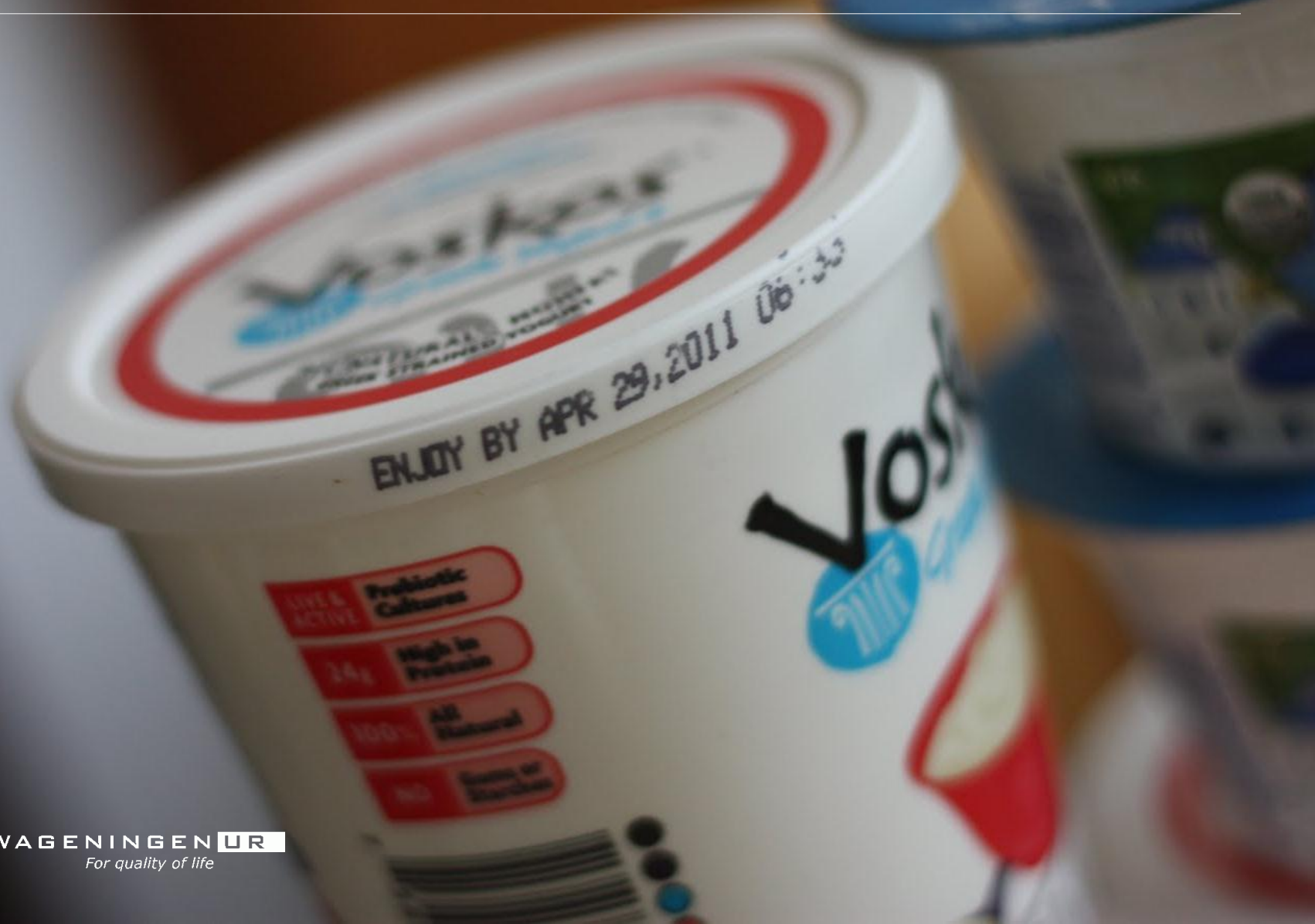
Nano silver



Cation loaded polymer brushes



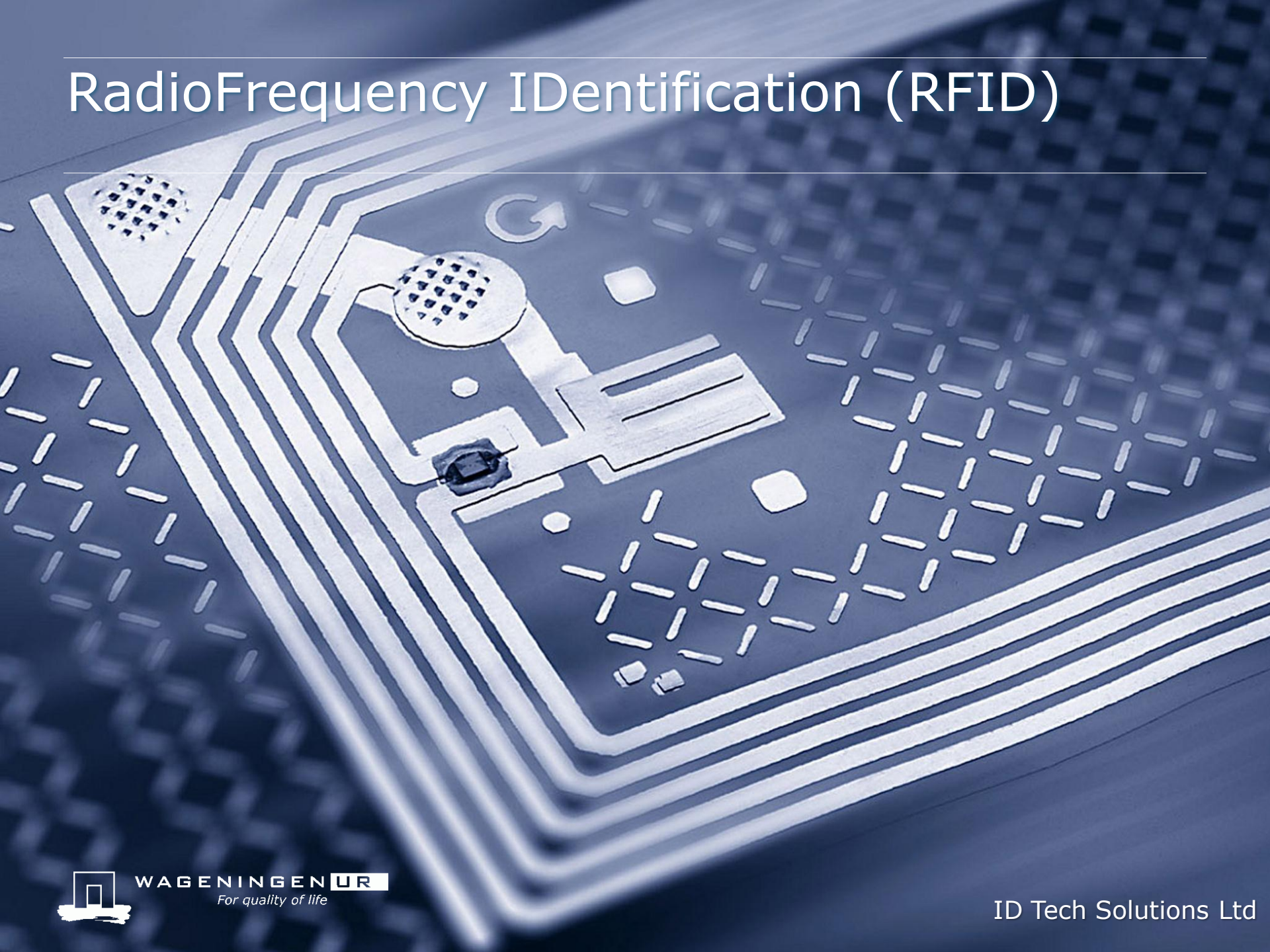
Use-by dates



Time/temperature indicators



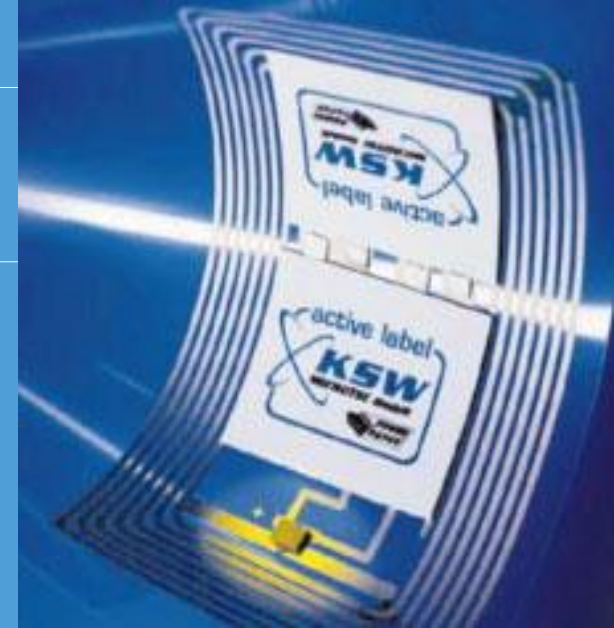
RadioFrequency IDentification (RFID)



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ID Tech Solutions Ltd

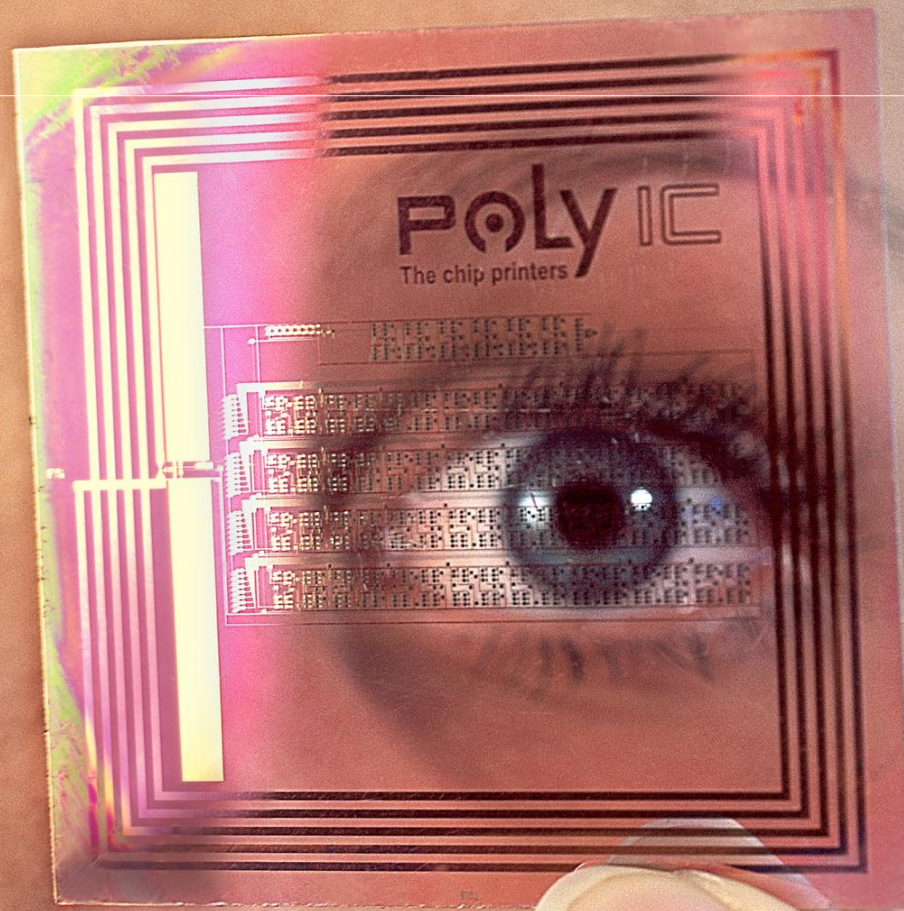
RFID labels



KSW TempSense®



RFID



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Poly IC GmbH

Retail automation



Thank you
for your attention

Questions?

