AppliSurf

BRINGING NEW BIOSURFACTANTS TO MARKET: JOIN US IN APPLISURF

Join the Industry User Group Today!

Dr. Ir. Sophie Roelants
Project Coordinator Biosurfactants InBio/BBEPP

FLANDERS BIOBASED VALLEY

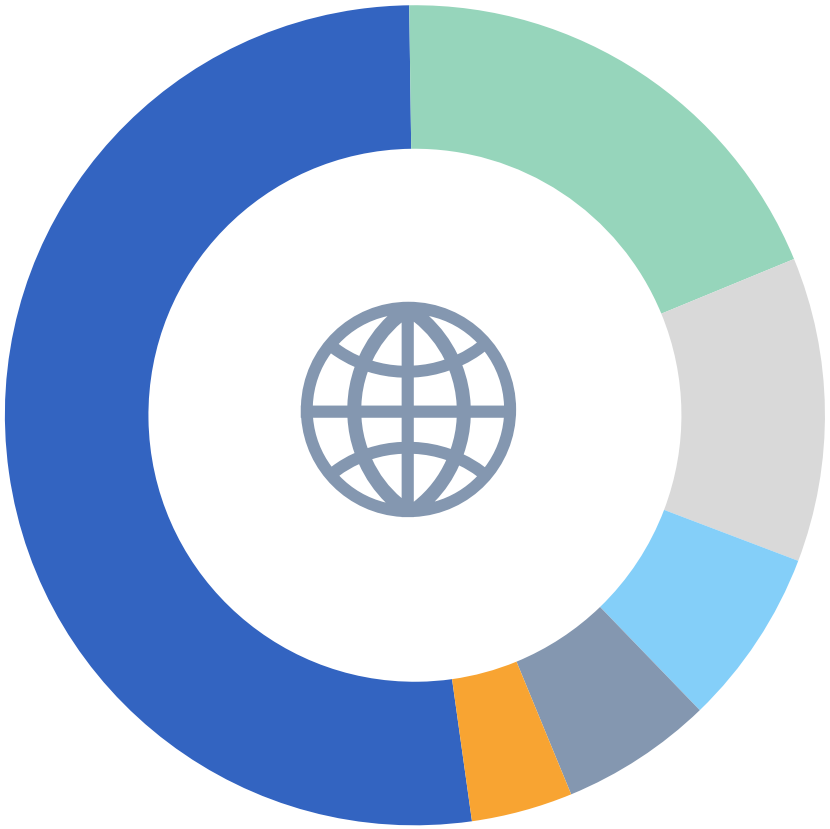
FLANDERS INNOVATION & ENTREPRENEURSHIP CATALISTI
Clusters for Growth

FLANDERS INNOVATION & ENTREPRENEURSHIP SIM
Clusters for Growth

GHENT UNIVERSITY GLOBAL CAMPUS · INBIO MICROBES AT WORK · SynBioC · honeybee valley · RADIUS @THOMAS MORE · Bio Base Europe Pilot Plant · flamac a division of SIM

01. Surfactants: applications?

01. Surfactants: applications and market



52% Household detergents

19% Others (paints & inks, oilfield chemicals, textiles,...)

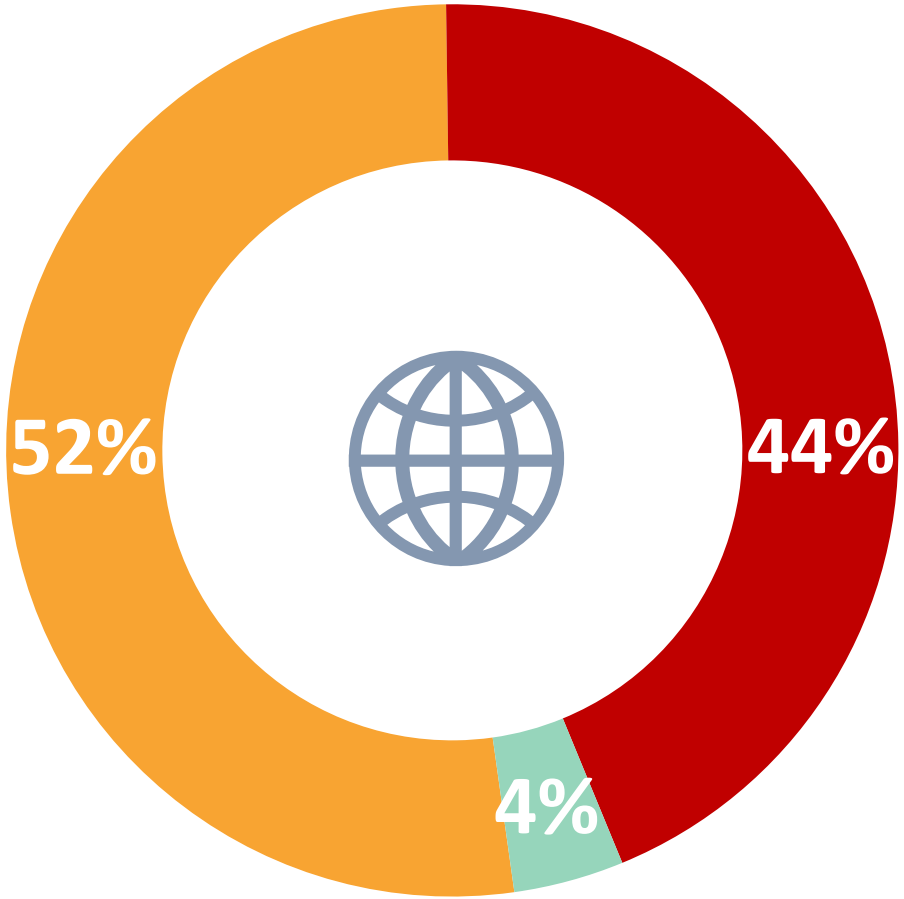
12% Personal Care

7% Industrial cleaners

6% Food processing

4% Agricultural chemicals

01. Origin of surfactants

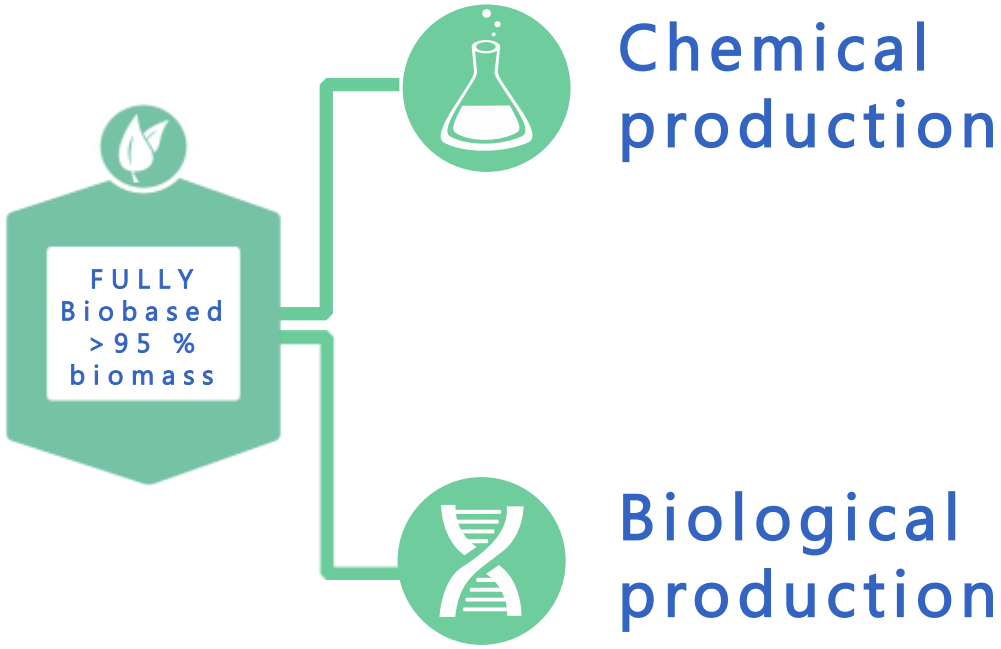


NON biobased surfactants
< 5 % biomass derived

PARTLY biobased surfactants
+/- 40 % biomass derived

FULLY biobased surfactants
> 95 % biomass derived

01. Production of bio surfactants

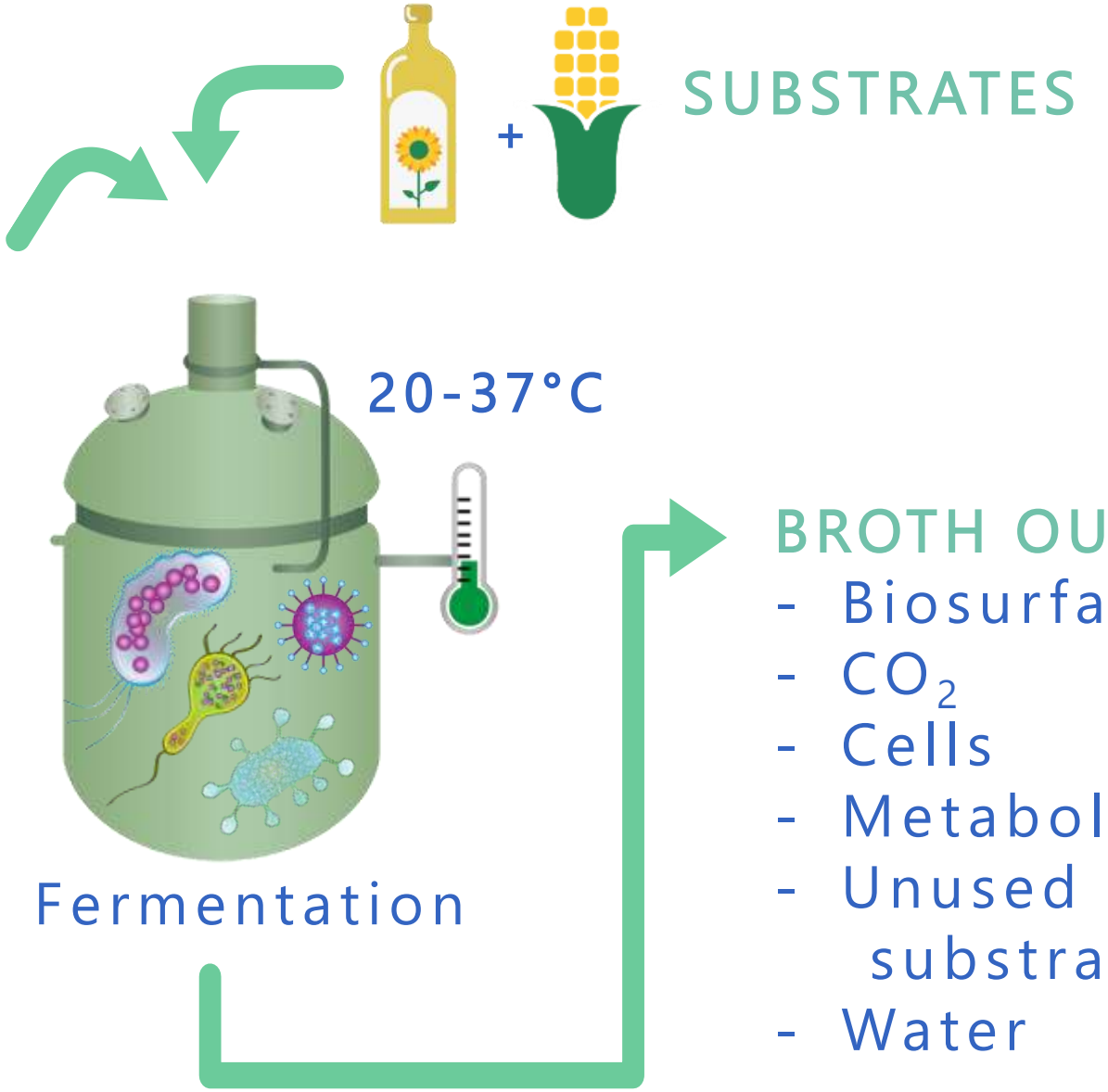


01. Biological production: fermentation

01. Microbial biosurfactants

MEDIUM IN:

- Proteins (nitrogen)
- Sugars (carbon)
- Vitamines
- Salts
- Water
- …



BROTH OUT:

- Biosurfactant
- CO_2
- Cells
- Metabolites
- Unused medium/ substrates
- Water
- …

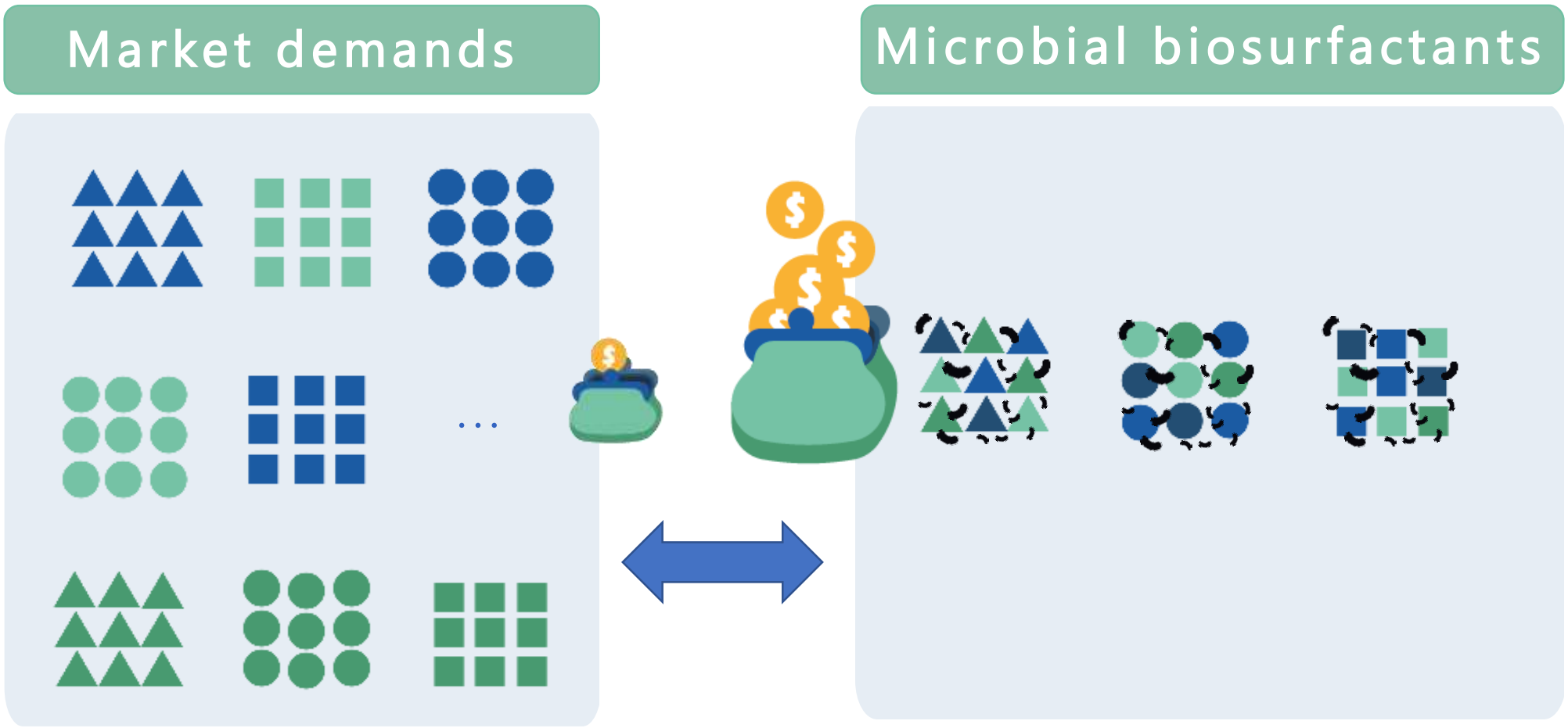
01. Disadvantages of Microbial biosurfactants

Uniform

Pure

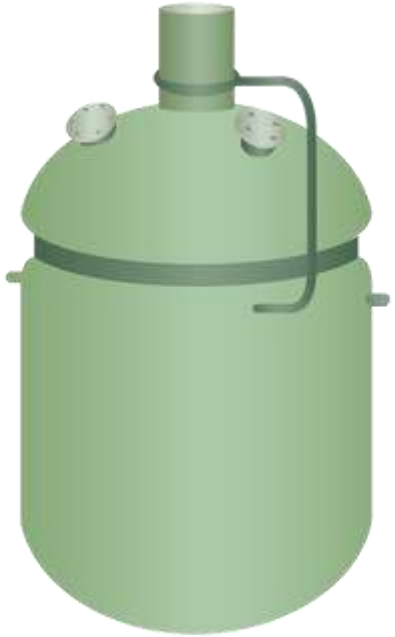
Variation

Cheap



From LAB to Market: IBD

Process development & scale up



Uniform

Pure

Cheap

Genetic Engineering

(New-to-nature) sophorolipids

Uniform

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Application research and Characterisation

02. Workhorse: *Starmerella bombicola*

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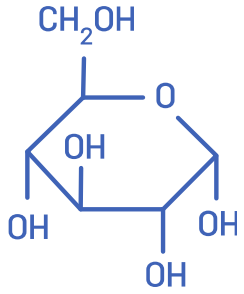
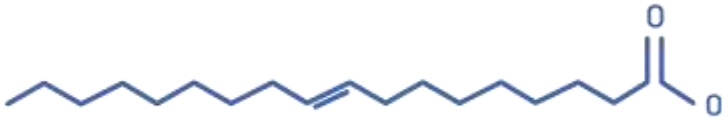
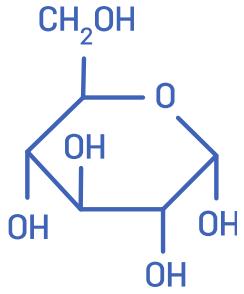
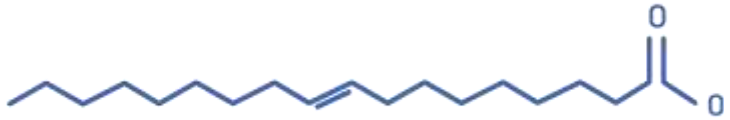
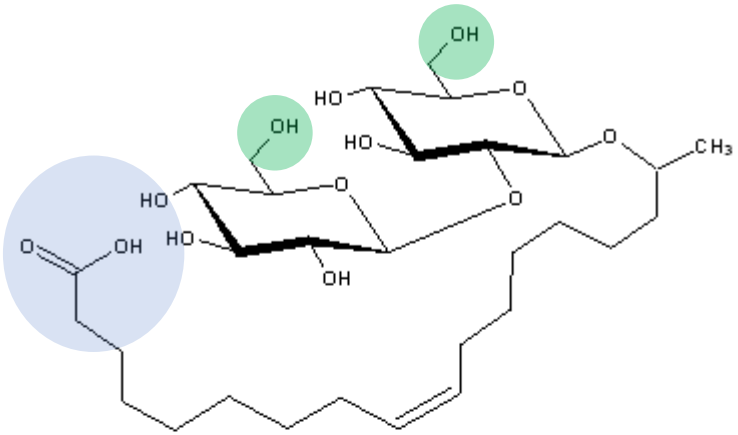




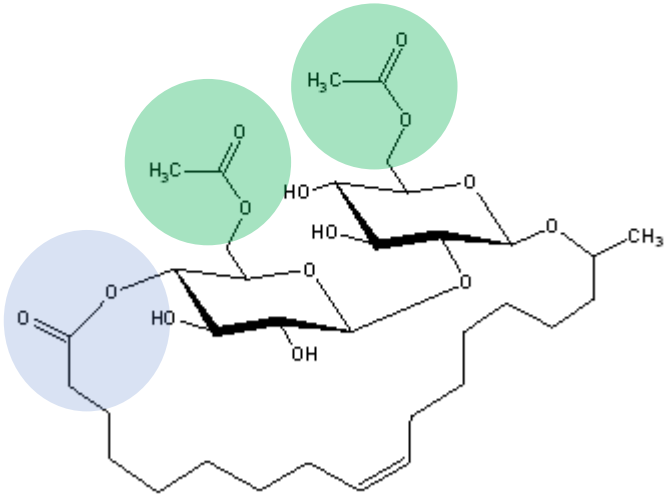
02. Workhorse: *Starmerella bombicola*







Acidic form, non acetylated



Lactonic form, diacetylated

02. Sophorolipids: commercial reality

Fermentation (Microbial)

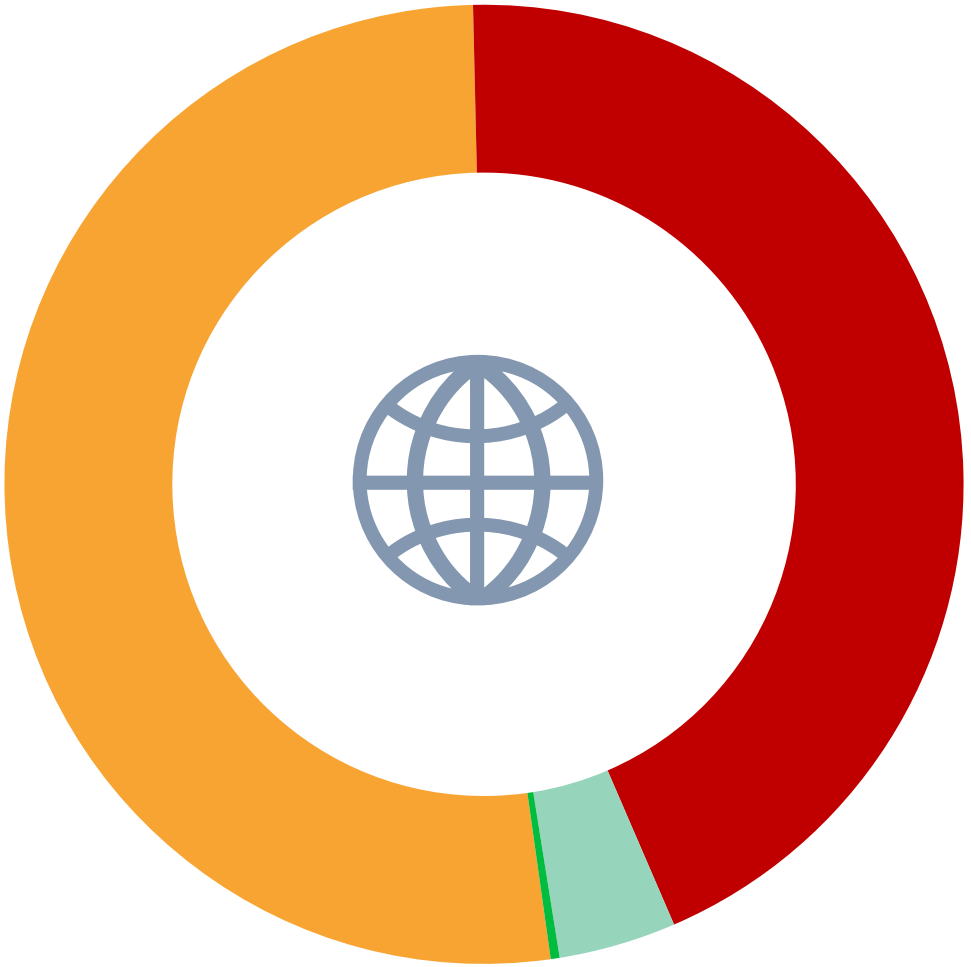
Glycolipids

>> Sophorolipids

SOPHOCLEAN

- Produced by yeasts
- Low foaming surfactant
- Mild antimicrobial properties (anti acne, anti odor,...),
- Antiviral, - cancer, ...
- Applications: detergents and cosmetics
- Part of the Carbosurf project (UGent, InBio.be)

02. Microbial biosurfactants: market



NON
biobased surfactants

PARTLY
biobased surfactants

FULLY
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Microbial biobased surfactants: < 0.1 %

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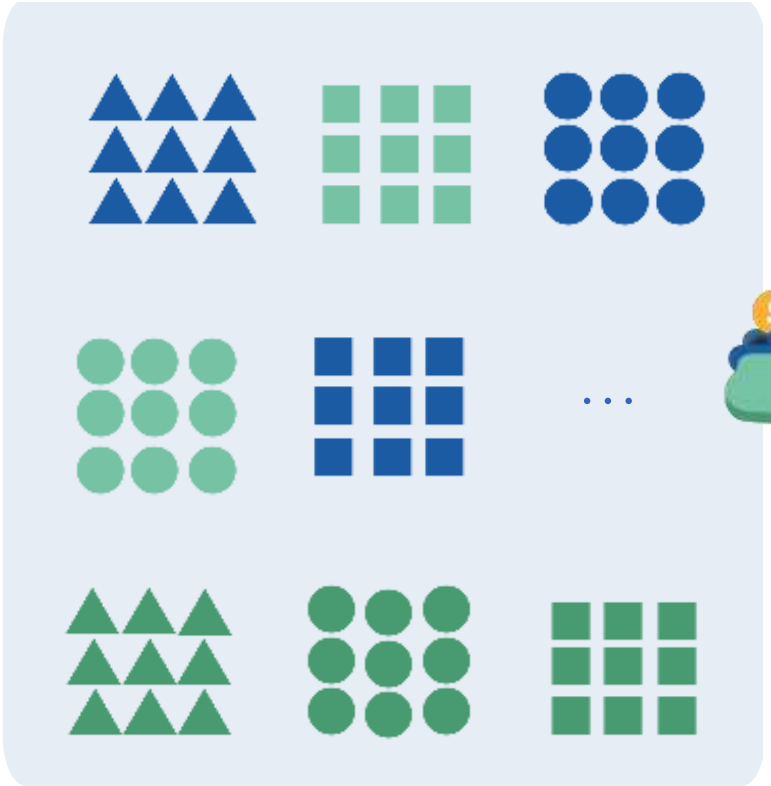

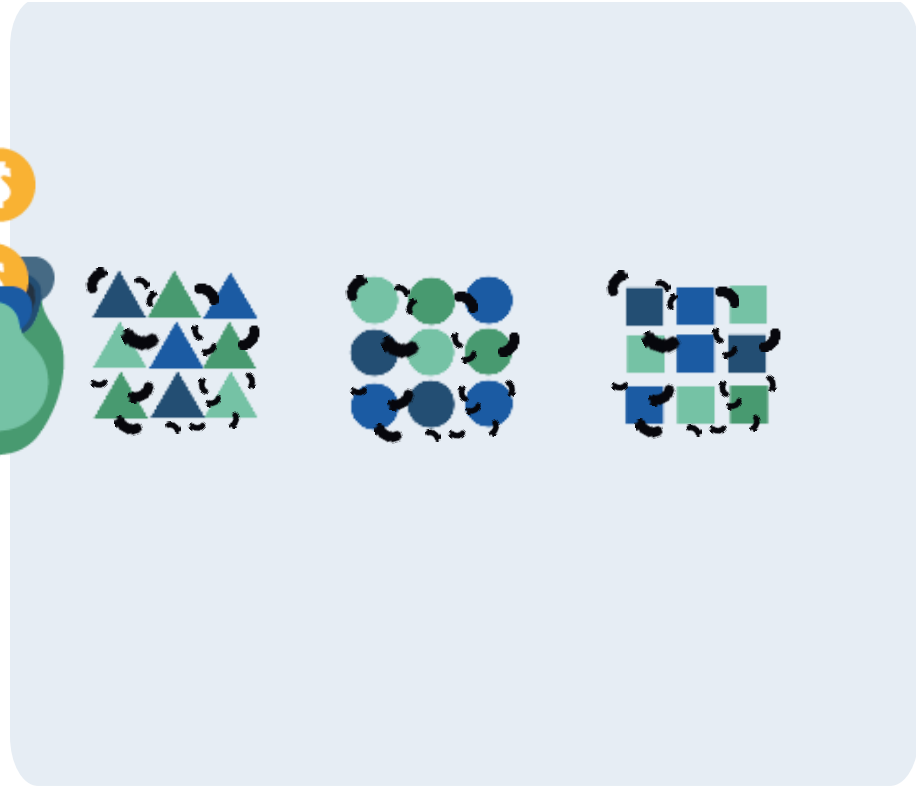

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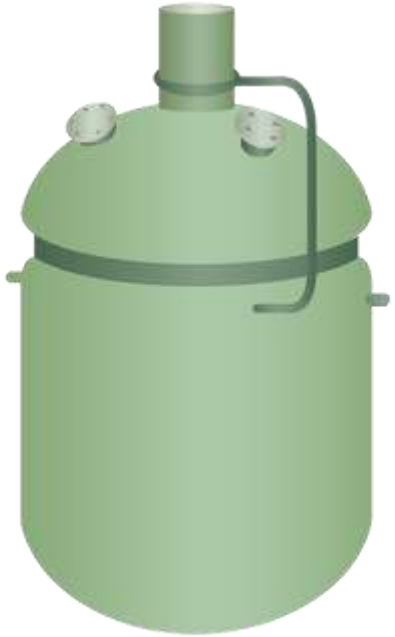

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03. Solving the bottlenecks

Genetic Engineering

INCREASE

- Variety
- Uniformity
- Efficiency

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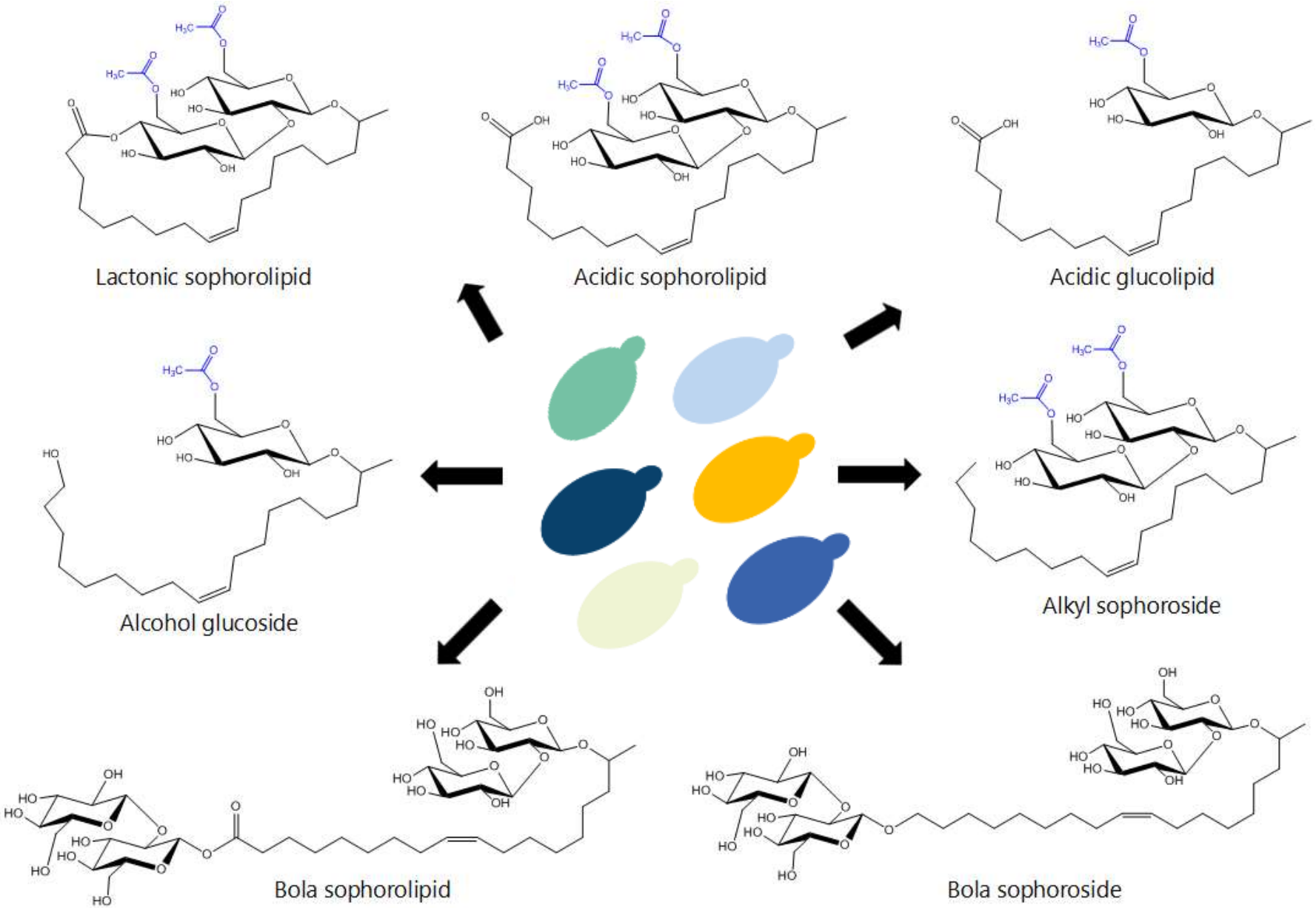
Genetic Engineering



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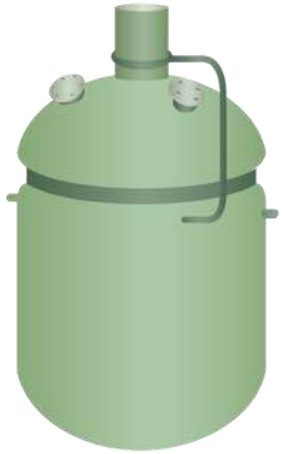
03. Solving the bottlenecks

Process development & scale up



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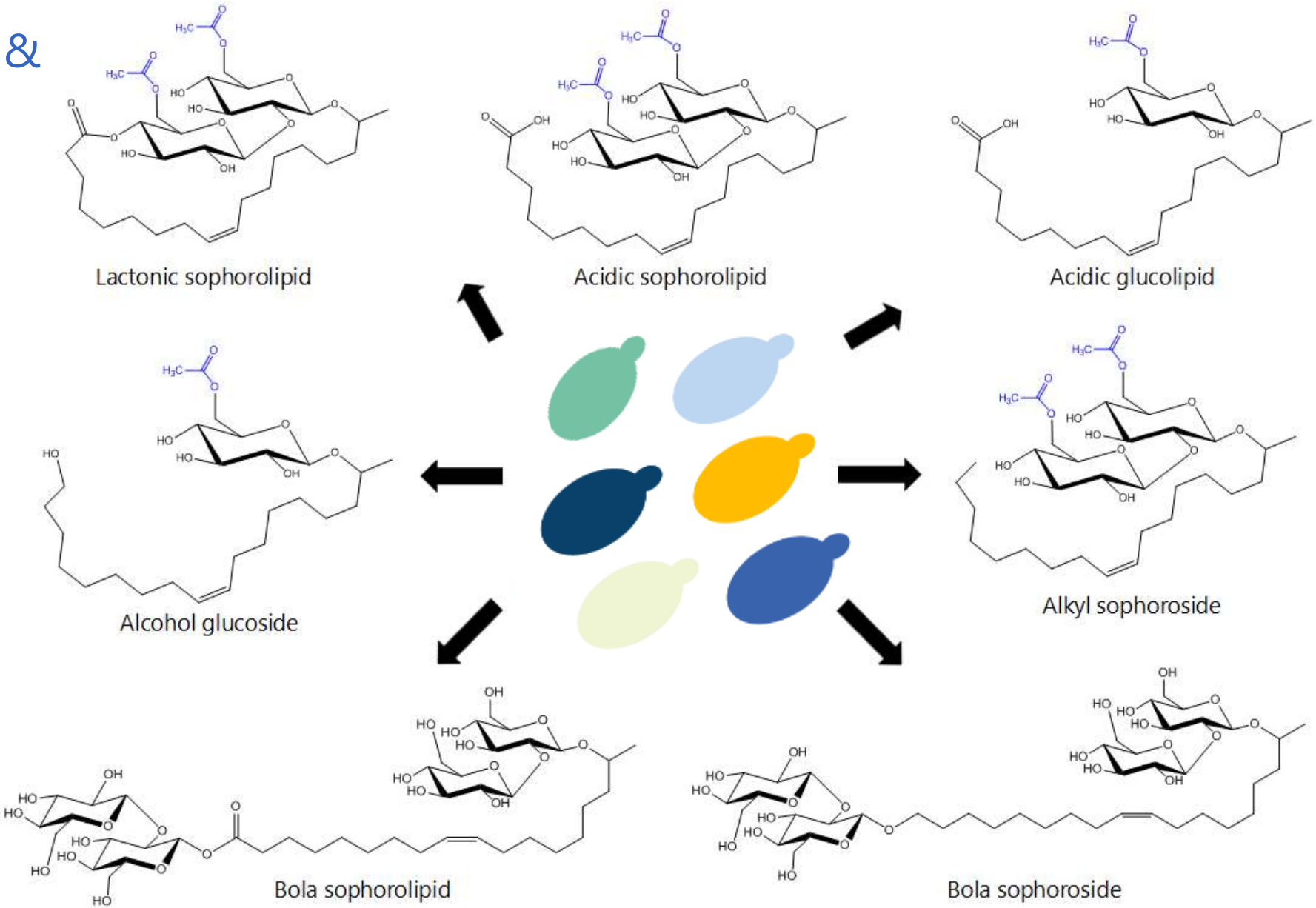
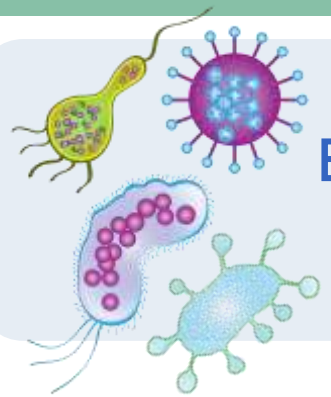


Integrated process design -IPD- to bring IB to market



BIOCATALYST ENGINEERING ⟷ BIOCONVERSION ⟷ PURIFICATION (DSP)

↕

Application 1 ⟷ SCALE UP ⟷ Application 5

Application 2 ↕ Application 3 ↕ Application 4

03. AppliSurf: the approach

Microbial biosurfactant portfolio InBio.be & BBEPP:

⇒ **Opportunities**

- Increased (unique) variety
- Efficient production
- Toolboxes available for further development

⇒ **Bottlenecks**

- Variety still limited
- Products not available
- No or little product information available
- No directed development possible due to lack of knowledge

➡ AppliSurf!

03. AppliSurf project

Join the Industry User Group Today!

http://www.fbbv.be/en/registration-industry-user-group-applisurf-project

Sophie.Roelants@bbeu.org

Thank you!

Bio Base Europe
Pilot Plant

INBIO
MICROBES AT WORK

GHENT UNIVERSITY
GLOBAL CAMPUS