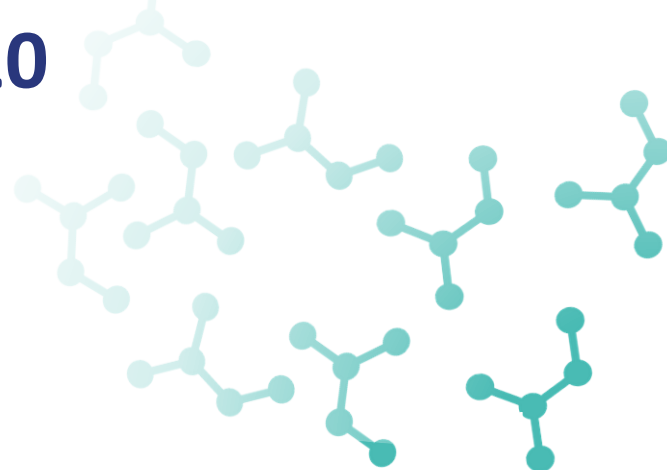


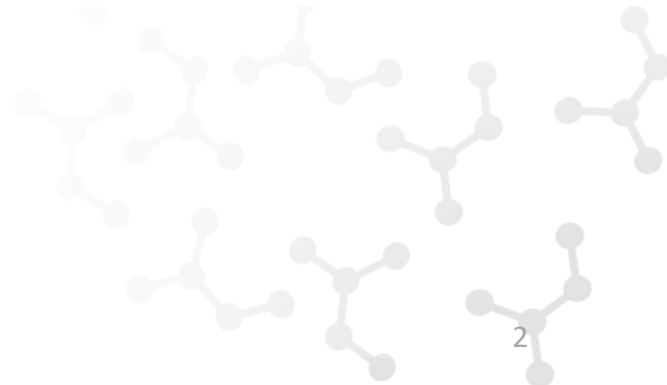


SmartPilots Final Event

Paul Decraemer – CFO Inbiose
4 February 2020



- ✓ Introduction to Inbiose
- ✓ Scale-Up at Inbiose
- ✓ Why working with Pilot Facilities
- ✓ What do we expect from Pilot Facilities



- UGent industrial biotech spin-off with focus on the development of production processes for specialty carbohydrate ingredients for use in **health and nutrition solutions**.
- Proprietary and validated **GlycoActives technology** platform based on natural fermentation, possibly the largest platform of its kind dedicated to **human milk oligosaccharides (HMOs)**.
- Technology valorization mainly through partnerships with market leaders based on a **licensing business model**.
- Partner to ingredient manufacturers and FMCG companies looking for proprietary health and nutrition solutions.

**EST.
2013**

**FTE
50**



Human milk oligosaccharides (HMOs) are a group of unique oligosaccharides found in human milk.

- the 3rd-largest solute in human milk after lactose and fat.
- The types and levels of HMOs vary considerably among women, regions, and the stages of lactation.

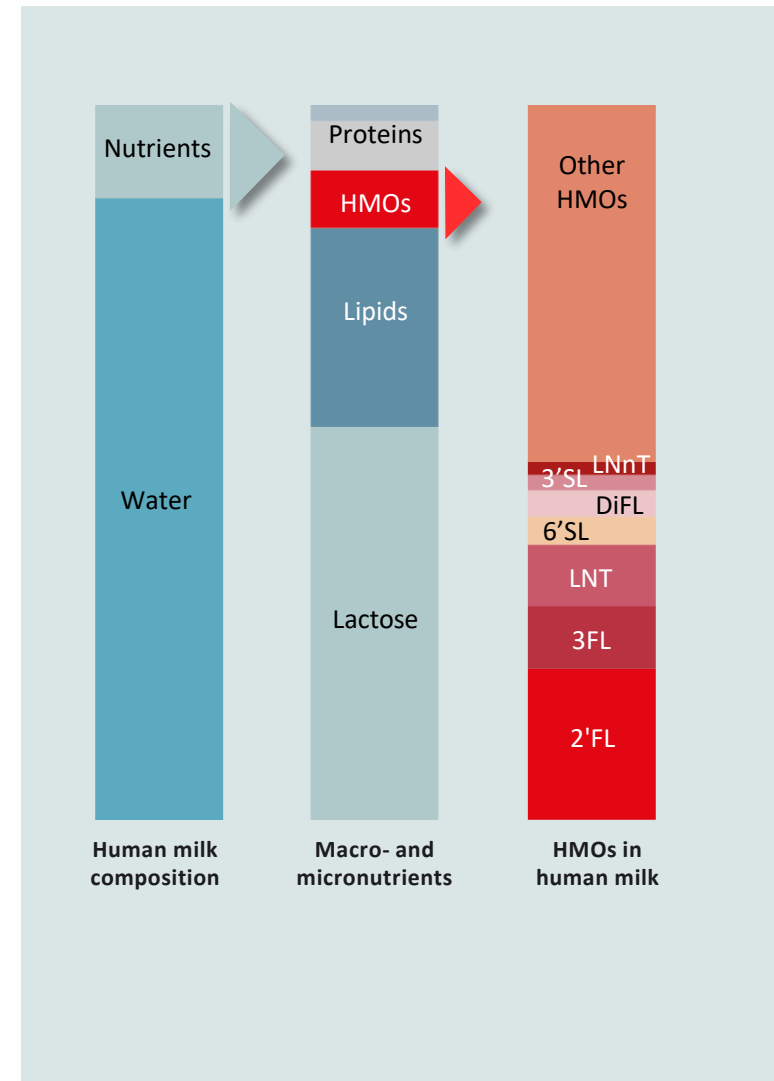
Family of **structurally diverse** carbohydrates

- >130 different oligosaccharides have been identified in human milk, with 2'-fucosyllactose (2'FL) being the most abundant.
- 3 main HMO families: fucosylated, sialylated and neutral/core structures

Not digestible, fermented only by specialized beneficial probiotics

Hot science topic

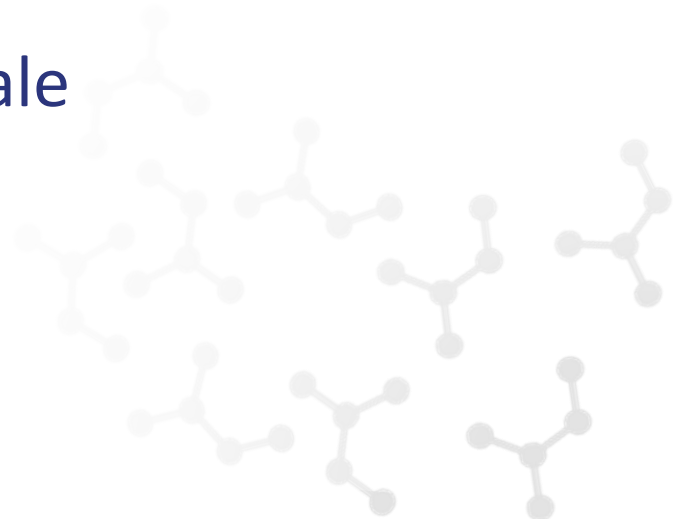
- >3000 publications on potential direct and indirect health benefits
- >20 clinical trials ongoing or completed



Inbiose developed a proprietary
Glycoactives® technology platform

GlycoActives®

to effectively produce
HMOs at industrial scale



Producing essentially 'any' complex carbohydrate in large scale



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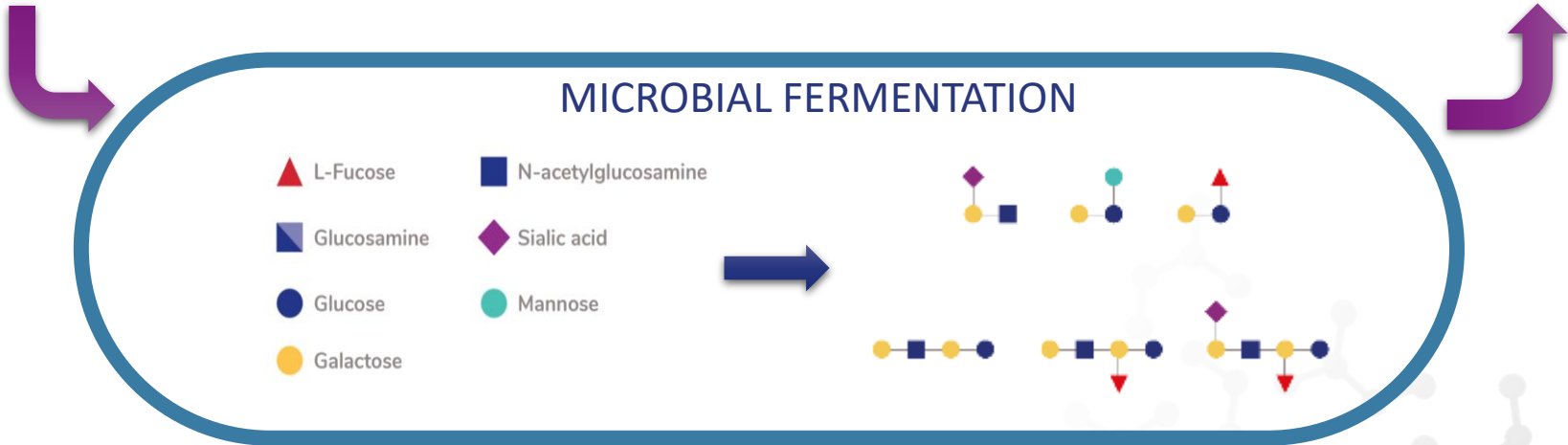
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Simple sugars

Single cell factory

Complex carbohydrate



Purification / Filtration

Evaporation

Drying

Packing

Integrated Process Development, Scale-Up and Transfer to Industrial Partners

In house

5 liter
30 liter



Pilot scale

100 liter
1500 liter
15000 liter



Why working with pilot facilities?

1. Demonstrate that the in house developed process works at larger and industry relevant scale, usually about 50 to 500x of that used in the lab
 - to show process reproducibility
 - to generate process data to support cost models
 - to convince industrial partners
 - to meet investor requirements
2. Generate large quantities of in-spec product
 - for pre-marketing: to seed the market for product testing
 - for regulatory purposes – Novel Food Regulations require tox studies and product stability tests
3. Generate process data to design a fermentation production facility
 - to answer specific process design questions, especially for critical equipment or unit operations
 - to reduce start-up issues of a production plant
4. Reduce financial risks and shorten timeline to market
 - avoid significant investments in pilot and demonstration capabilities

1. Must be a good match with industrial production processes
 - have all relevant equipment or a solution in place for lacking unit operations
2. Have skilled operators, good project management and experts in fermentation and purification
 - in order to conduct a successful campaign and to limit scale-up expenses
 - problem solving capabilities
3. Support for tech transfer to industry scale
 - networks with industrial partners to help us find the right production set-up
 - if requested, support industrial partners during the first runs
4. Proximity helps a lot given the many interactions between the involved parties
5. Trust & Compliance
 - respect confidentiality on process know-how to avoid IP leakage
 - independent from potential industrial competitors

