



Innovation and Quality Mycorrhiza

INOQ GmbH

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*Innovation and Quality
Mycorrhiza*



About us

INOQ is a leading developer and producer of beneficial microorganisms for sustainable agriculture and food production. We specialize on high quality Mycorrhiza products.

INOQ works as an interface between research and application in the field of Agriculture, Horticulture, Gardening and Forestry. Our scientists work with our sister company Institut für Pflanzenkultur and other national and international research institutions in world-class research and innovation projects.



Horizon 2020
European Union funding
for Research & Innovation



Executive Agency for SMEs



Federal Ministry
of Education
and Research



Mycorrhiza for all plants

Mycorrhiza is the symbiosis of plants and fungi in the soil. The fungi provide the plants with nutrients, mainly phosphates and nitrates, and make water more easily available. Through this symbiosis, root growth is strongly stimulated, the plants bloom more and become more tolerant of diseases, bad weather and poor soil conditions. Mycorrhizal fungi also improve the soil structure. Soil aggregation is improved by the hyphal network.



*Innovation and Quality
Mycorrhiza*

Infrastructure

Infrastructure for commercial plant propagation with 11 sterile workplaces, 5 climate chambers,

Microbiology laboratory for investigation of soil and root samples as well as for investigation of specific plant growth promoting characteristics of microorganisms with multimode plate reader (spectrophotometric measurements of f. e. DNA, RNA, enzyme activities, optical density of bacterial cultures etc.)

Molecular laboratory (German S1 standard) for the identification of microorganisms (PCR, electrophoresis, gel documentation, incubation rotator)

Greenhouses (1.800 qm foil tunnel)

16,5 ha agriculture with field trial areas as well as production of plants.

Production Capacity

Production facilities for plant propagation and climate chambers

Production facilities for mycorrhizal fungi on different carrier materials (open system, sterile root organ culture ROC).

We offer infrastructure and specialized scientific personnel to support the product development process of our customers.

We have the capacity to produce mycorrhiza fungi propagules to inoculate up to 2 Mio hectares.



Benefits of Mycorrhiza

Increases growth and survival rates

Increases tolerance to pests, and diseases

Aggregates soils particles with fungi's binders

Promotes rapid crop cover and root penetration

Improves rooting of cuttings and increases blooming

Promotes efficient water and nutrients intake on plants

Improves plant tolerance of adverse weather conditions





Mycorrhiza Products and Applications

INOQ provides high concentrated mycorrhiza products for professional users :

Up to 550 Million Mycorrhiza units (propagules) per Hectare.

INOQ ADVANTAGE is sold in concentrated powder form and can be mixed with most of the commercially available substrates and growing media. Our product is ideal to enrich non-peat substrates and to mix with fertilizer formulations.

INOQ products can be used also in organic farming in accordance to EC Regulation 889/2008 Article 3(4).

INOQ products contain no genetically modified organisms (NO-GMOs)

Applications



Gardening and
Landscaping



Horticulture and
Agriculture



Golf and
Sport Greens



Plant
Production



Recultivation



Tree planting and
restoration

Hobby and semi-pro Users



Professional Users





Products for Professionals and Private Label



INOQ supplies Mycorrhiza to seed coaters, fertilizer and substrate companies. We provide mycorrhiza ready-to-mix products.



INOQ provides technical support to develop custom-made and special products based on mycorrhiza for different applications.



INOQ also supplies mycorrhiza for distributors selling their own brand (private label).

A white star icon is positioned to the left of the section header, enclosed within a light green square.

Our value proposition for your business

- **Mycorrhiza products with high quality and high concentration of propagules.**
- **Strong quality control to secure product effectiveness, vitality of spores and phytopatogens-free products.**
- **Competitive price and quality per value products.**
- **Strong technical and scientific background with access to a large network of scientist to support our product development process:**
 - **Research collaboration with more than 60 Top ranked Universities and private firms from all over the world.**
 - **Proven strong scientific background with more than 45 scientific publications on internationally recognised peer reviewed journals and conferences.**
 - **Research and innovation experience with more 25 European and international projects (EU's H2020, Eurostars, others).**



Quality Assurance and product performance

INOQ has a strict quality control process to secure that our product meets the quality and performance declared in our product declaration sheets.

INOQ certifies that all of our product contains the declared number of mycorrhiza units (propagules).

INOQ certifies that all of our product contains only living mycorrhiza spores.

INOQ products are produced in controlled environments to secure high effectiveness and products free of phytopathogens (DNA multiscan®)





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ENZYMATIC SOLUTIONS FOR INDUSTRIAL BIOREFINERIES

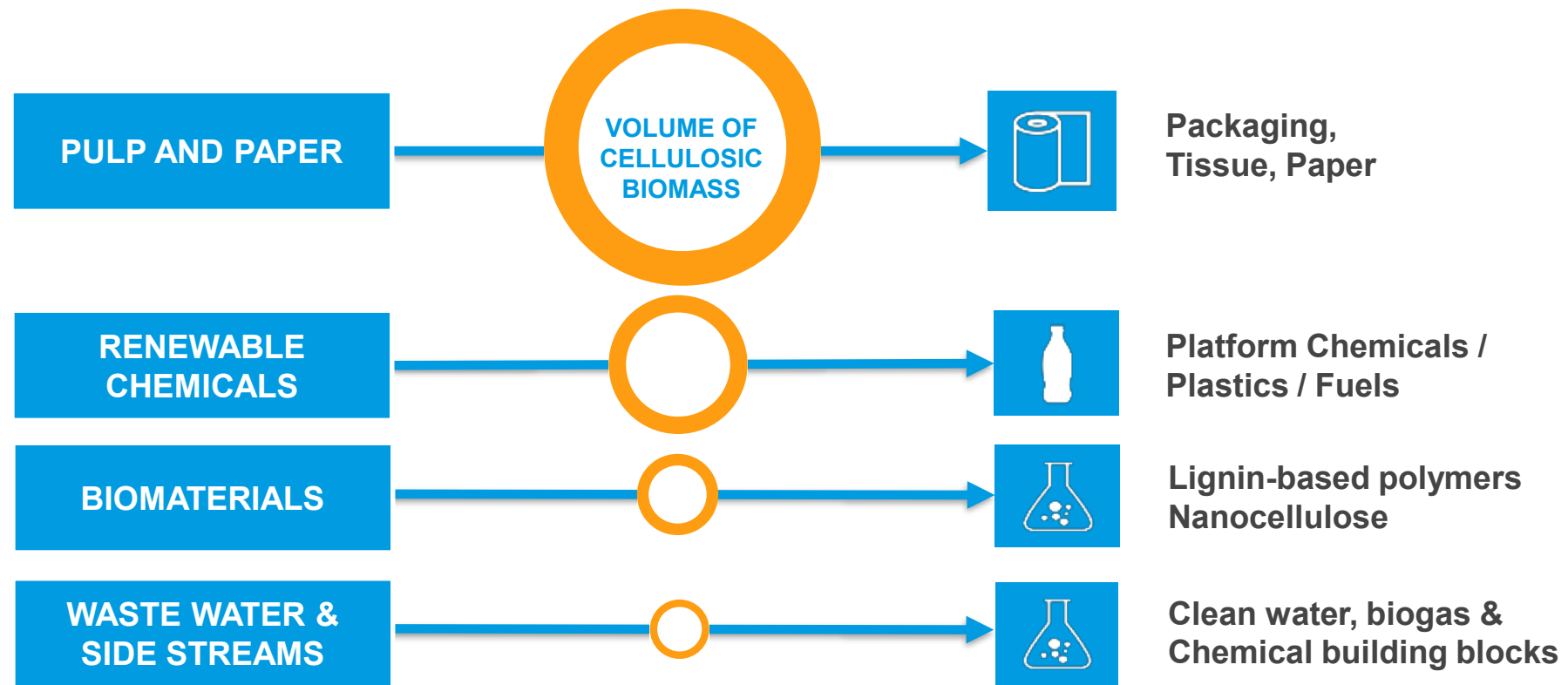
Pitch Perfect 2018 Brussels
MATTI HEIKKILÄ
CTO

Veera Hämäläinen, Toni Grönroos, Anu Suonpää, Bastiaan Romein, Petri Ihalainen, and Klara R. Birikh



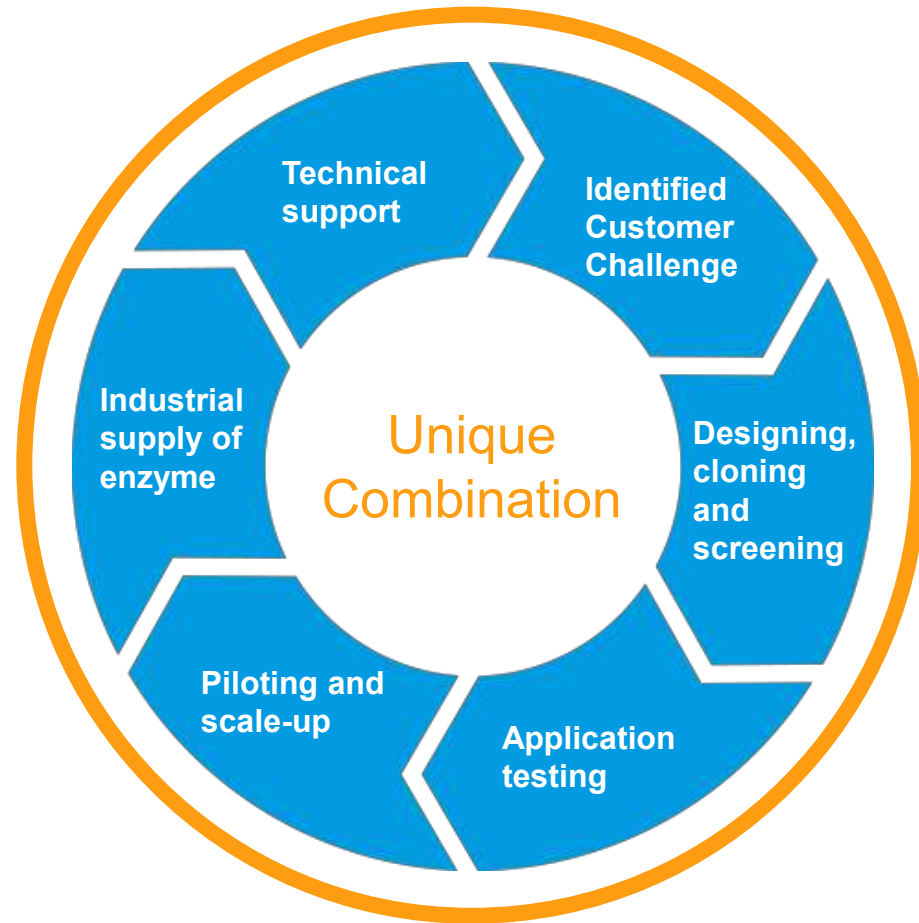
METGEN'S "WHY"

MISSION: EMPOWER INDUSTRIES TO GET MOST OUT OF BIOMASS



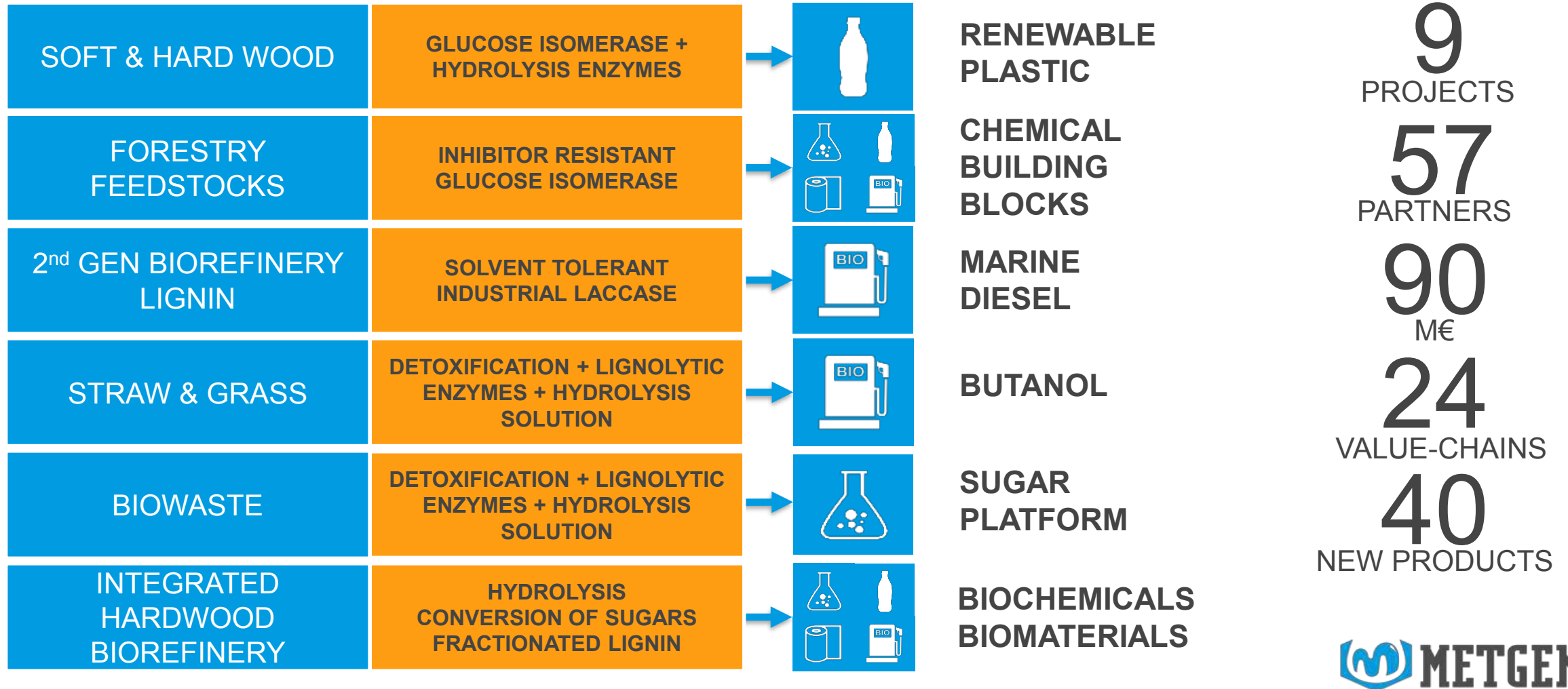
METGEN'S "WHAT" ENGINE® TECHNOLOGY PLATFORM

- **FAST:** Industry leading short development cycle
- **FLEXIBLE:** Tailored enzyme design approach to meet challenging industrial conditions
- **ADAPTABLE:** Can produce large amounts of different enzymes, cost-effectively and supply globally
- **PROVEN:** Developed several novel enzymes from concept to validation at industrial scale and production



METGEN'S "HOW"

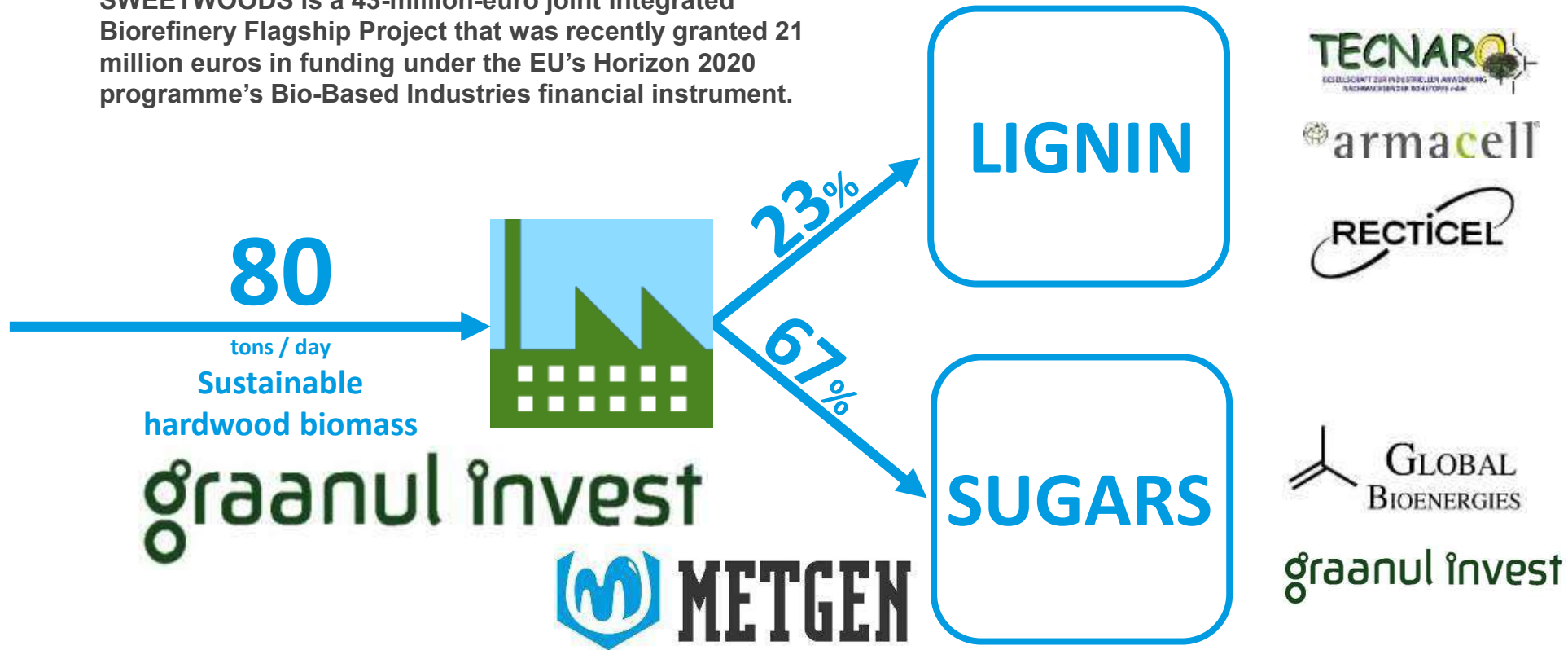
IDENTIFYING FULL VALUE-CHAINS & OPEN INNOVATION



SWEETWOODS PROJECT



SWEETWOODS is a 43-million-euro joint Integrated Biorefinery Flagship Project that was recently granted 21 million euros in funding under the EU's Horizon 2020 programme's Bio-Based Industries financial instrument.



LSCA: 2B S.p.A
Technology viability: Vertech
Project management: Spinverse

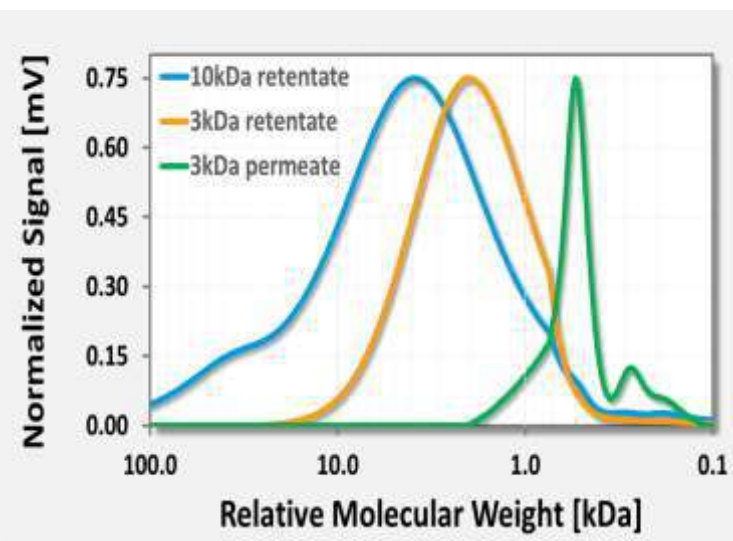


LIGNIN VALORIZATION

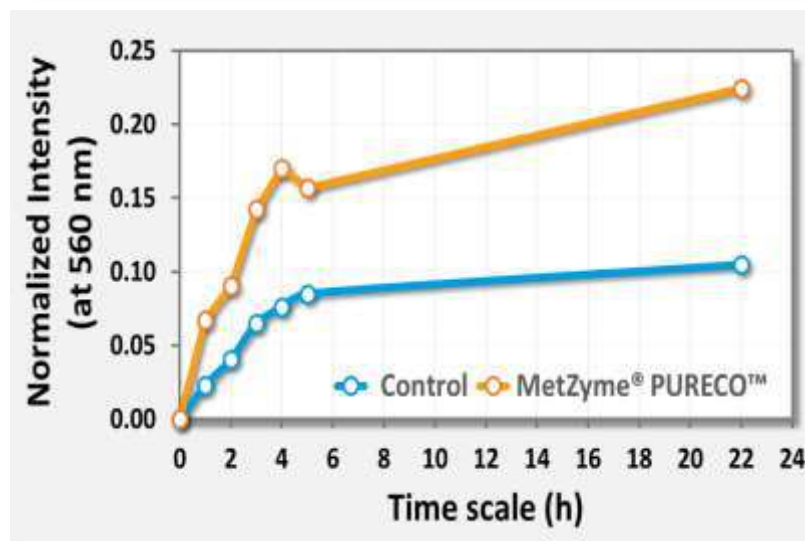
METZYME® PURECO™ is a lignolytic enzyme solution with optimal performance in **high pH (~11)**

PURECO™ enables more efficient and more specific oxidation of lignin, generating highly active lignin fractions and leading to fractionation, demethylation and functionalization.

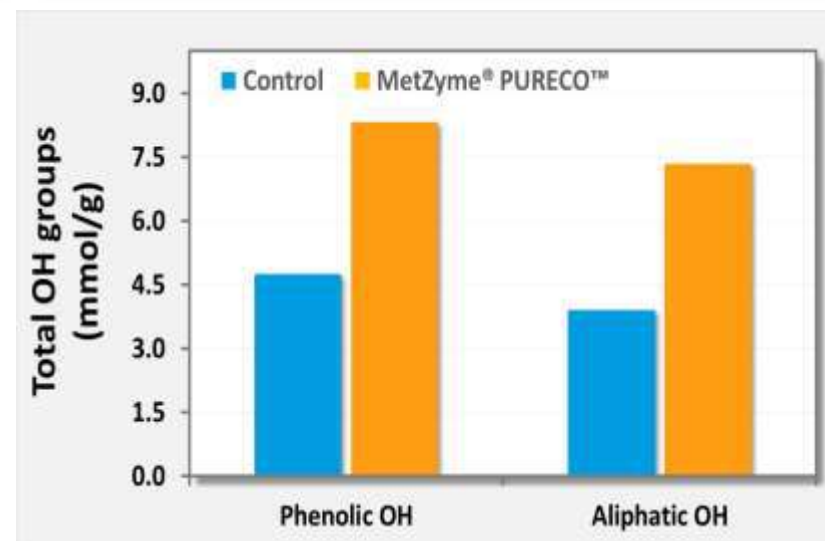
FRACTIONATION



DEMETHYLATION




ACTIVATION



Analysis provided by Prof. N. Labbé et al. Department of Forestry, University of Tennessee, USA.

LIGNIN DEPOLYMERIZATION ADDS VALUE

 METGEN	Molecular Weighth	Activity	Solubility in Water / Solvent	Application	Bio-Equivalent of	Price
Industrially available lignin	5–100 kDa	-	-	Burning	Oil / Electricity	50 - 100 €/ton
Enzyme activated lignin	3–50 kDa	++	++	Resins & Adhesives	Form-aldehyde	400 – 500 €/ton
Enzyme depolymerized lignin	0,3–2 kDa	+++	+++	Foams & Composites	PVA	1000 – 1500 €/ton
Enzyme depolymerized specific fractions	0,3 kDa 0,5 kDa 0,7 kDa ... 2 kDa	+++	+++	New materials	Specialty Chemicals & Polymers	> 2000 €/ton

ACKNOWLEDGMENT OF PUBLIC EU H2020 FUNDING



SWEETWOODS



Horizon 2020
European Union Funding
for Research & Innovation

FALCON (720918), SWEETWOODS (792061), WoodZymes (792070), UNRAVEL (792004), BIOrescue (720708) and BIOFOREVER (720710) have received funding from the Bio Based Industries Joint Undertaking / European Union's Horizon 2020 research and innovation programme.



- SuperBIO is a HORIZON2020 innovation project that aims to develop new, innovative, cross-border and cross-sectorial industrial value chains in the bio-based economy.
- The SuperBIO project will support the development of value chains producing **bio-based materials, chemicals, fermentation products, innovative food/feed ingredients and liquid or gaseous fuels.**
- MetGen has successfully applied for Market Research innovation service related to Biogas sector.

CONCLUSIONS

METGEN COMBINES SYNTHETIC BIOLOGY AND CHEMISTRY TO ENABLE INTEGRATED BIOPROCESSING:

- Technology platform allows for rapid development of industrial solutions to specific needs
- Enzymes are manufactured and supplied in industrial scale
- Ready to license bioprocessing technologies built around the synthetic biology innovations

CALL FOR ACTION:

- Join us in changing the future of bio-refining by **making lignin a main process stream**
- MetGen is actively looking for new partners to accelerate the development and diversify the field of lignin-based products and applications
- MetGen is open for utilizing the tech platform for joint development of new revolutionary enzymes.

BIO-BASED INDUSTRY REVOLUTION
REQUIRES ONLY ONE MORE THING:
COLLABORATION!

MATTI HEIKKILÄ
CTO
matti@metgen.com



www.bloombiorenewables.com

Bloom

Mining tomorrow's Chemistry



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation
Innosuisse – Swiss Innovation Agency



Climate
Launchpad



Climate-KIC

MC
MASSCHALLENGE
SWITZERLAND

FINALIST

Today

Carbon is in almost every product around us.

Today, these products are derived from:

- ° **Crude oil** (majority)
- ° **Edible biomass** (minority)

In other words, there is **NO sustainable solution** for the most important chemical pillar of our society.

Tomorrow

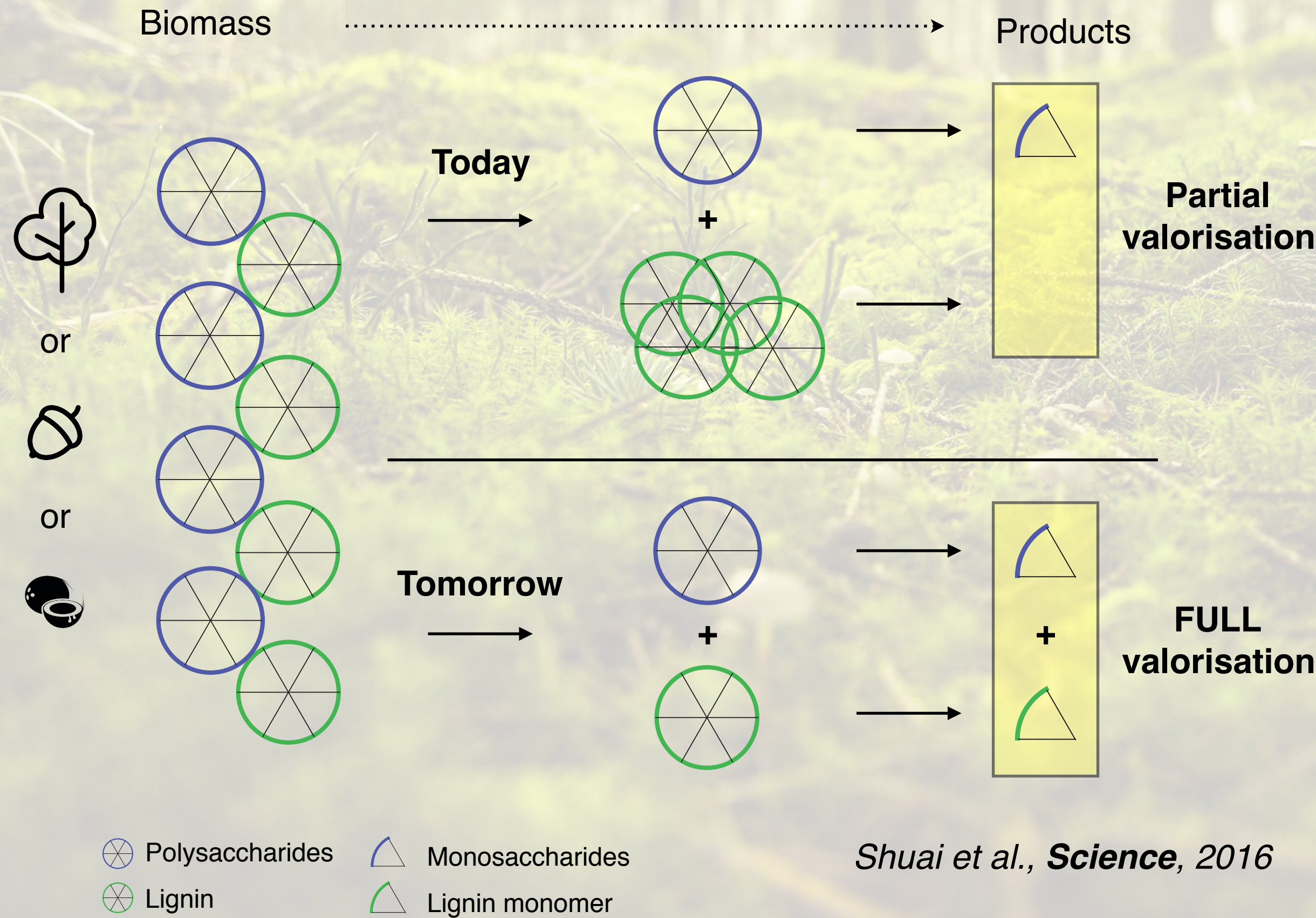
Non-edible biomass (e.g. agroforestry waste) is an **abundant source of carbon**.

Yet, its utilisation is **not cost-competitive** due to the **lack of efficiency** of traditional valorisation processes.

Bloom's Vision

Bloom has developed the most efficient process to mine biochemicals in plant material.

Solution



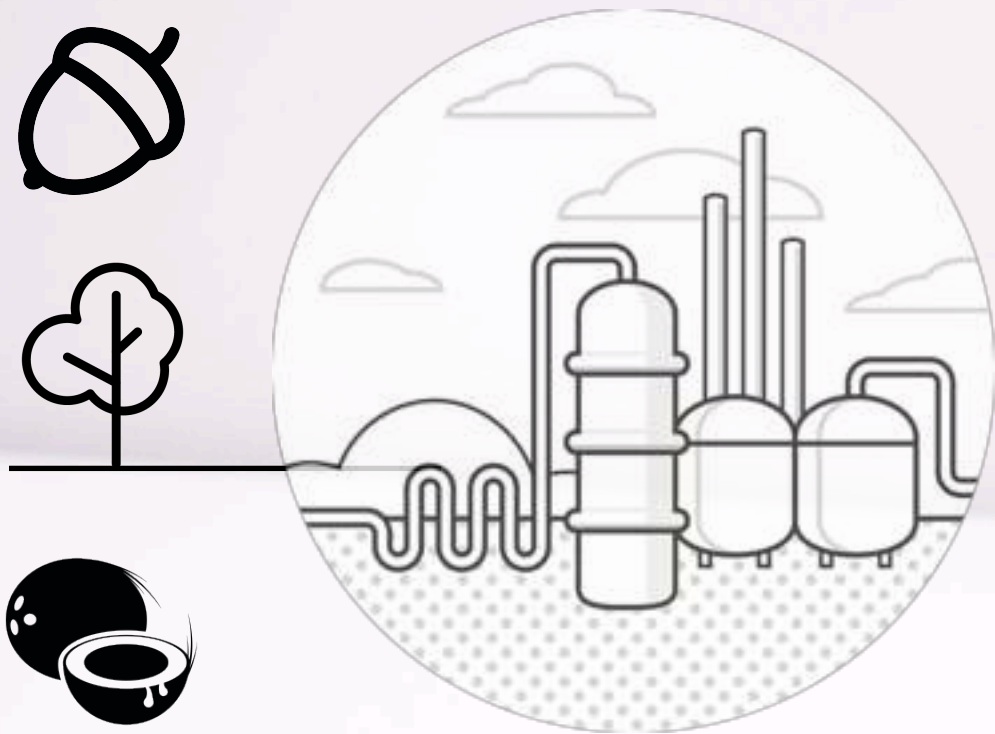
Shuai et al., Science, 2016

Value proposition

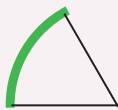
Potential application

Fragrance molecules

B | ° O m



Margin
100-200%

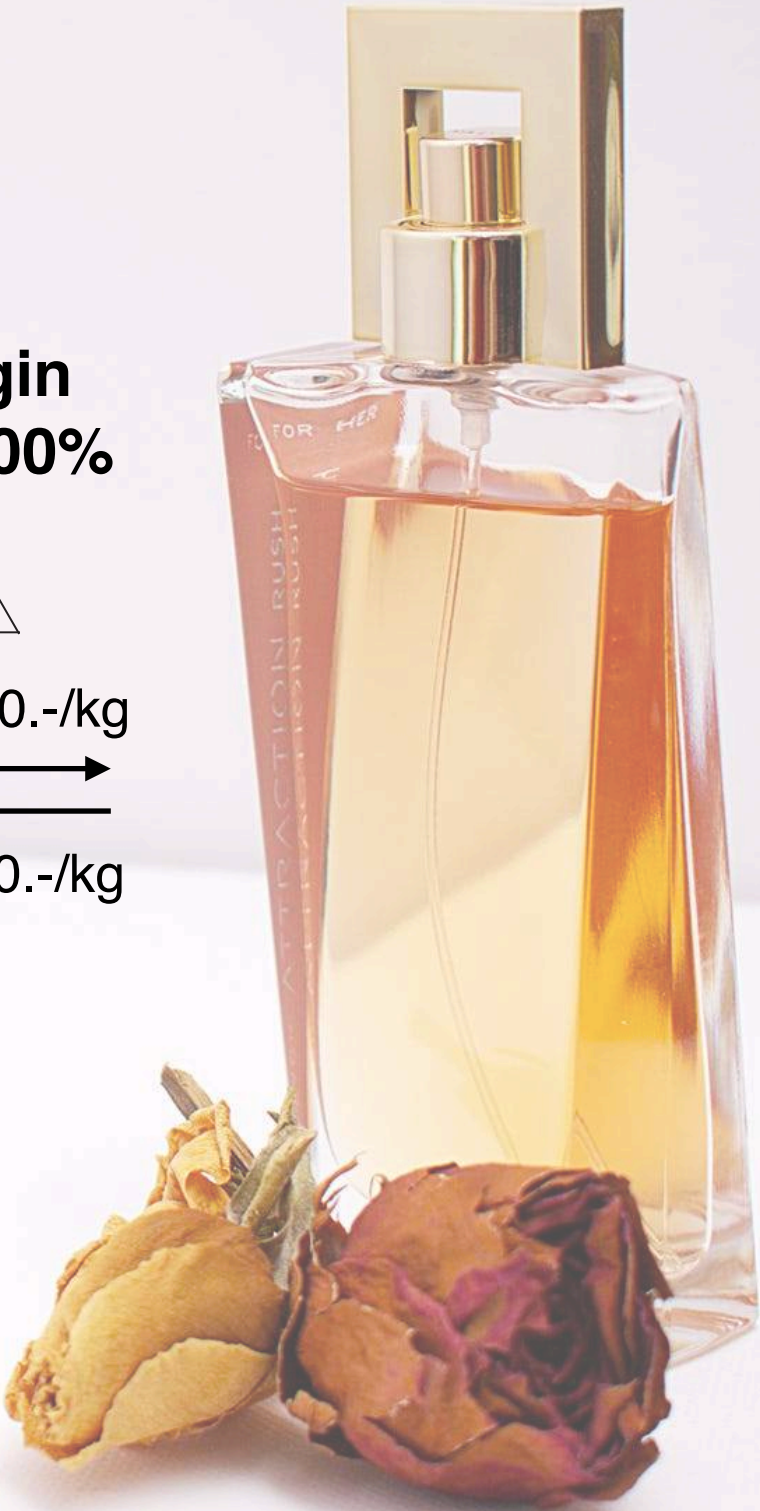


CHF <10.-/kg



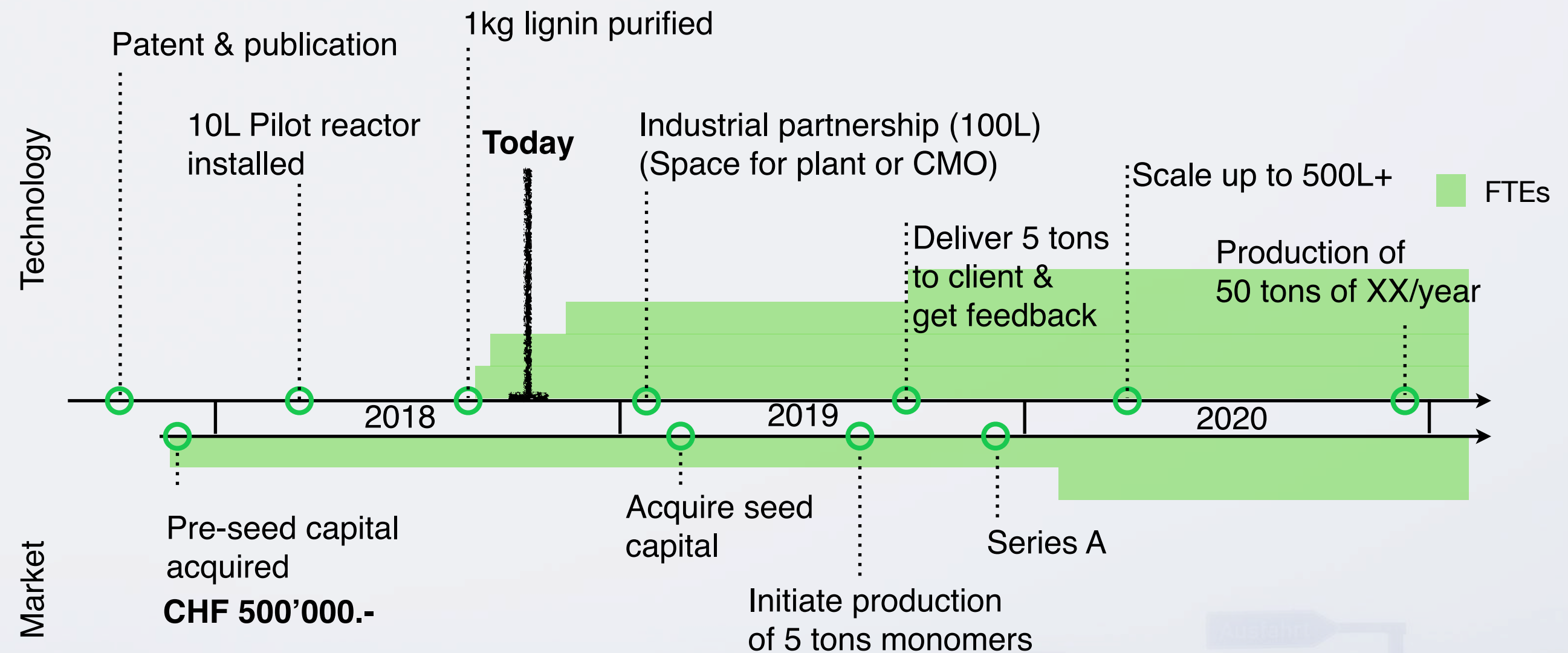
CHF <30.-/kg

Cost-competitive
Constant supply



B | ° O m

Roadmap



Next key milestones

- Establish collaboration with production partner
- Seed funding for pilot-scale production (CHF 0.5 mio)
- Deliver 5 tons of product to confirmed customer
- Series A funding of CHF 15 million for industrial plant
- Produce 50 tons of product/year



Team

Executive



Dr. Remy Buser
CEO & co-founder



Dr. Florent Héroguel
COO & co-founder



Chloé Wegmann
Lab head



Jean Behaghel
CSO

Advisory



Prof. Luterbacher
EPFL - catalytic valorisation
co-founder



Dr. Martin Riediker
Director Innosuisse
Ex-Ciba



Matthias Waehren
Mentor
Ex-CFO Givaudan

Main needs for collaborations

What can we provide:

- State-of-the-art technology to valorise biomass
- Solid network in the field of lignin valorisation
- Experienced and dedicated team
- Connection to Swiss actors of the chemical industry

What we are expecting:

- Access to chemical equipment for the scale-up 500L+
- Take part in a consortium to integrate our process into a more complete structure with different partners
- Network of investors in the bio-based industry and circular economy
- Regional support to build a pilot plant
- International visibility

Contact us!

Jean Behaghel

CSO

jean@bloombiorenewables.com



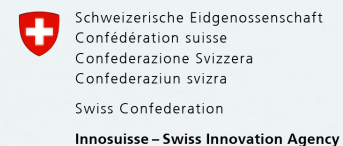
Contact details

B | o o m

Mining tomorrow's Chemistry

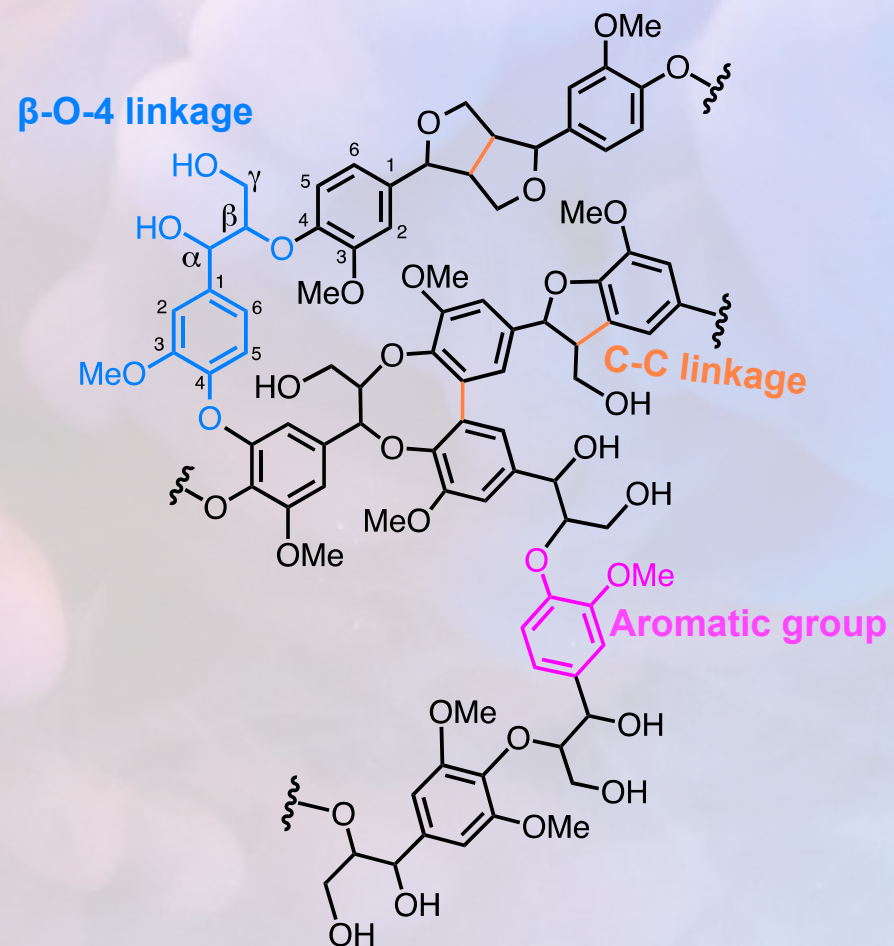
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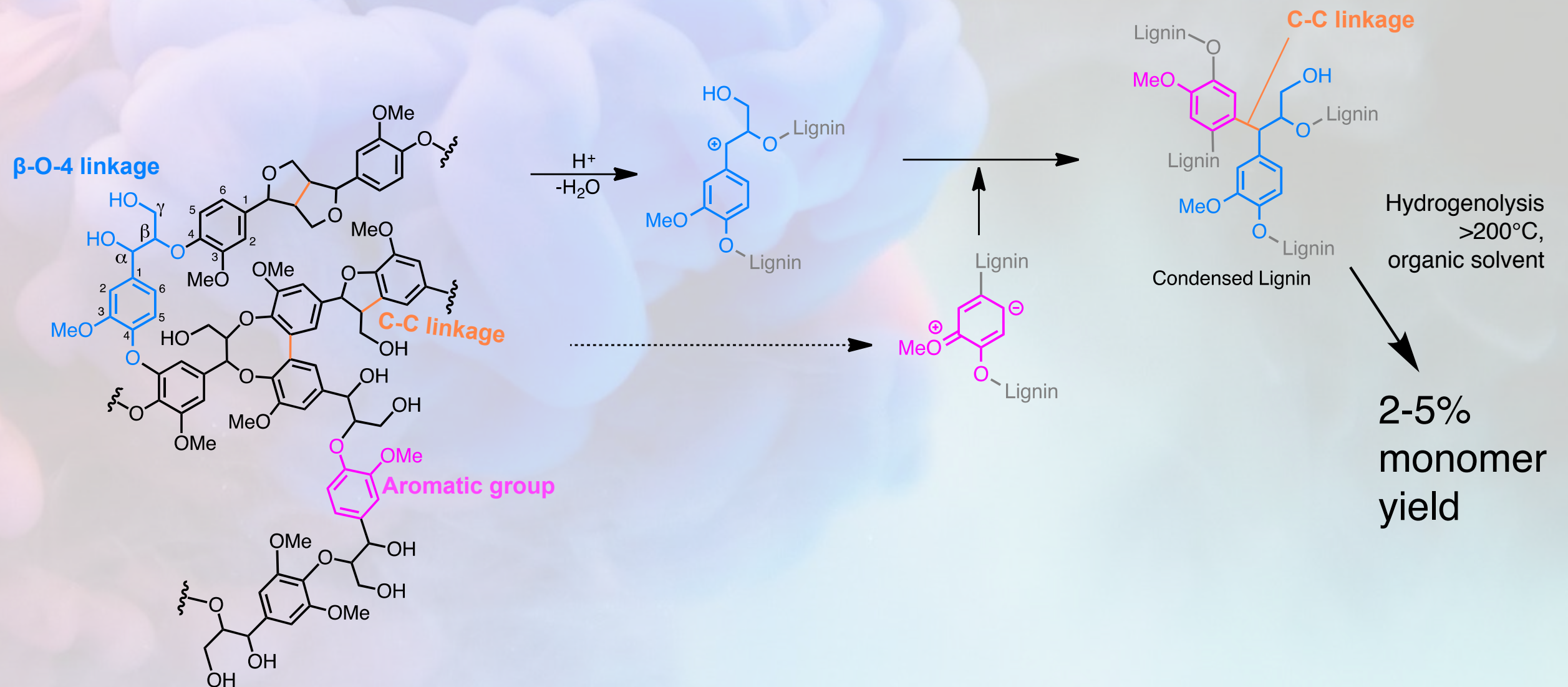
Technology in details

Shuai, Luterbacher et al. *Science*, 2016.



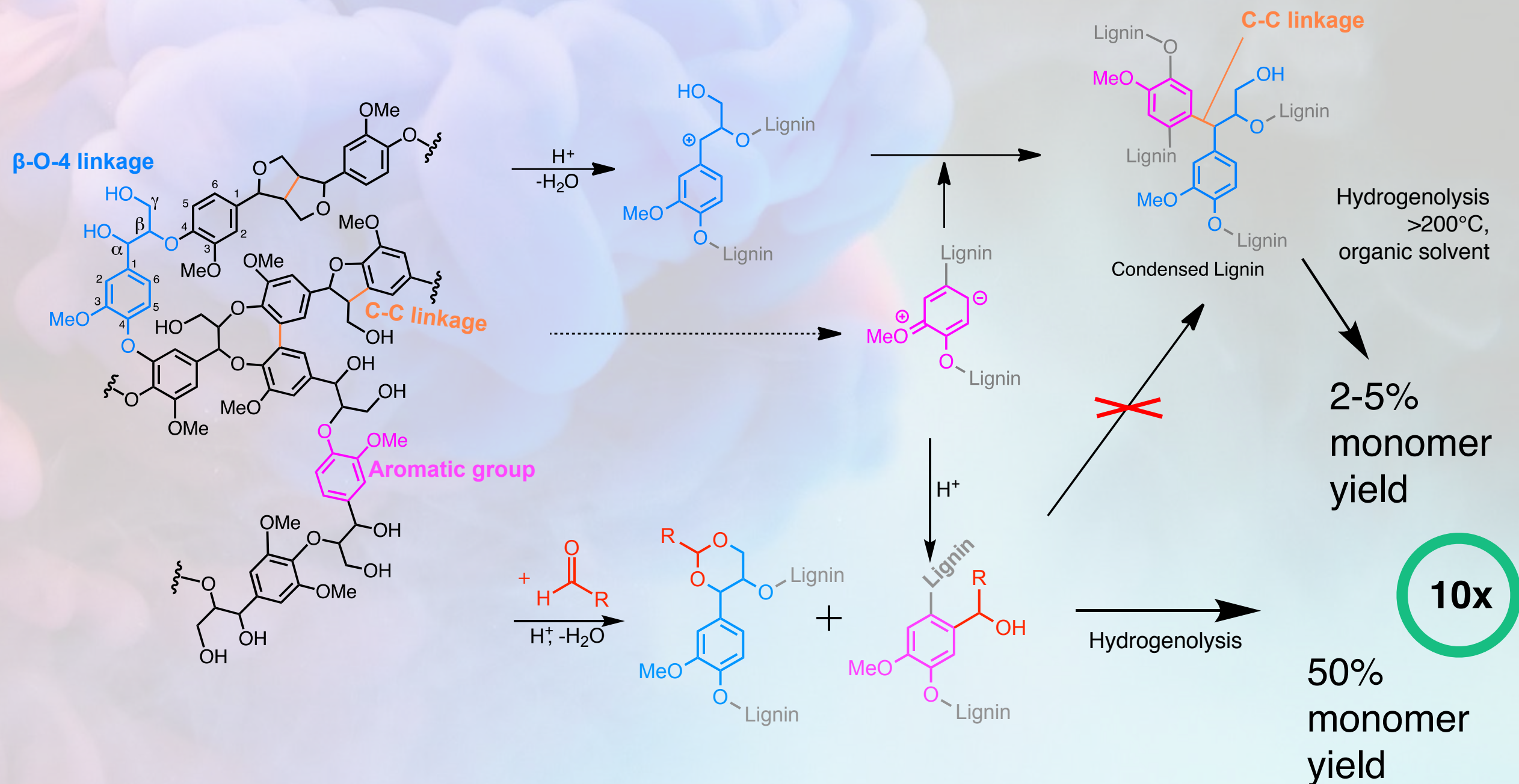
Technology in details

Shuai, Luterbacher et al. *Science*, 2016.



Technology in details

Shuai, Luterbacher et al. *Science*, 2016.



Market potential

A few example of fragrance markets



Vanillin



Eugenol



Confidential

Global

CHF 395 million
revenue in 2016
CAGR 8%

CHF 459 million
in revenue in 2017
CAGR 6.2%

CHF 5 million
revenue in 2017

Accessible

Synthetic vanillin
CHF 10-20.-/kg
CHF 5-10 millions

Synthetic eugenol
CHF 10-20.-/kg
CHF 30 million

CHF <30.-/kg
CHF 1-2 millions
pre-order received

Growth potential

The long-term vision is to enable the **first biorefinery** that fully valorises all fractions of biomass.

Bioadhesives

Polymers (bioplastics)



Global market sizes

CHF 1.4 billion
revenue in 2016
CAGR 13%

CHF 21 billion
revenue in 2017
CAGR 18.8%

Technology IP

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
19 October 2017 (19.10.2017)

WIPO | PCT

(10) International Publication Number
WO 2017/178513 A1

(51) International Patent Classification:
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C07C 43/23 (2006.01) C08H 7/00 (2011.01)
C07H 9/04 (2006.01) D21C 11/00 (2006.01)

(21) International Application Number:
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16165180.7 13 April 2016 (13.04.2016) EP

(71) Applicant: ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE (EPFL) [CH/CH]; EPFL Innovation PARK J, 1015 Lausanne (CH).

(72) Inventors: LUTERBACHER, Jeremy, Scott; Avenue Eglantine 2, 1006 Lausanne (CH). SHUAL, Li; Chemin de Joliette 3, 1006 Lausanne (CH).

(74) Agent: TER MEER STEINMEISTER & PARTNER PATENTANWÄLTE MBB; Nymphenburger Straße 4, 80335 München (DE).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:
— with international search report (Art. 21(3))

(54) Title: PRODUCTION OF MONOMERS FROM LIGNIN DURING DEPOLYMERISATION OF LIGNOCELLULOSE-CONTAINING COMPOSITION

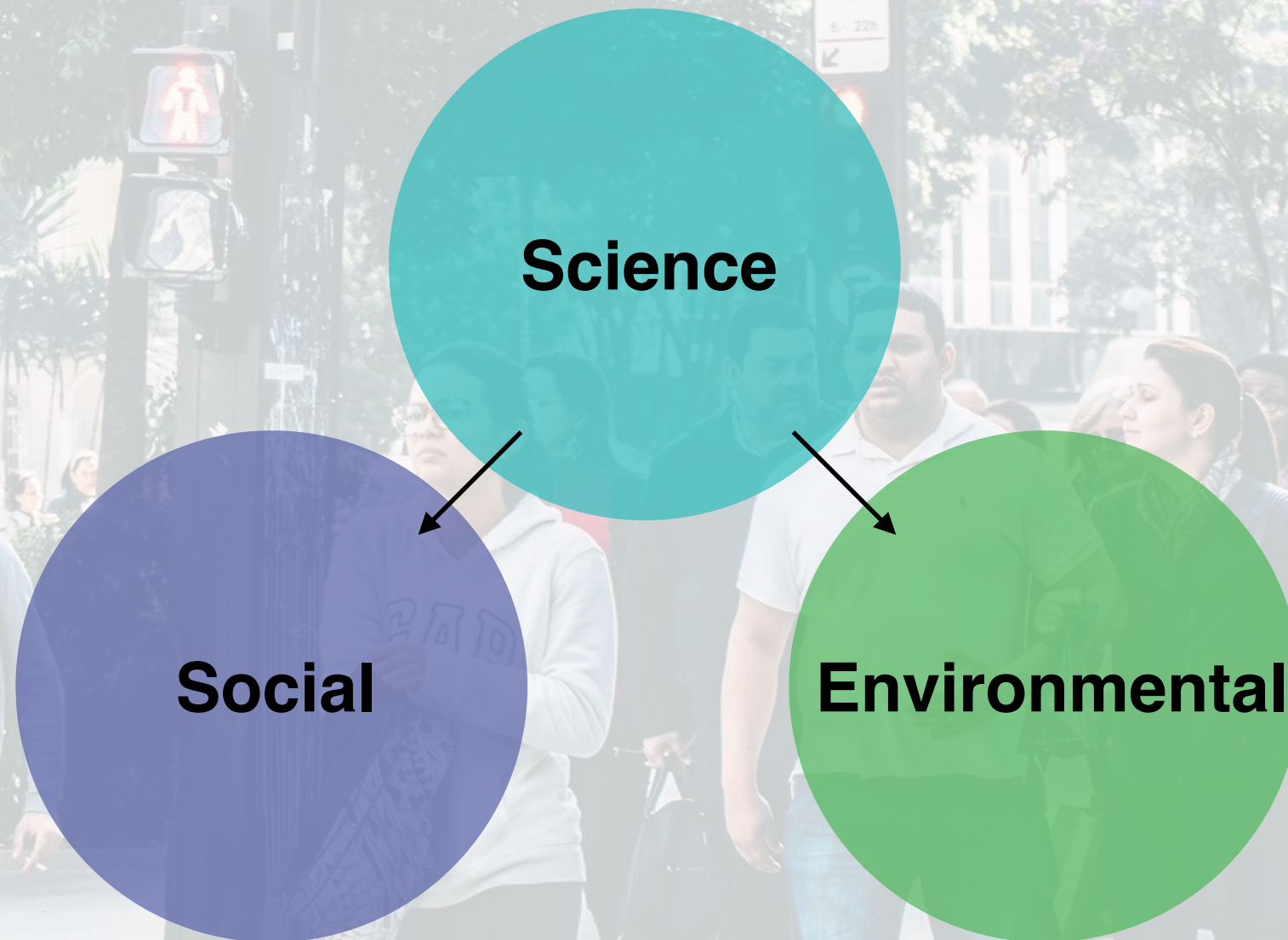
The Bloom technology is internationally protected and we have a strong patent strategy in place (applications)

Competition landscape

	other biomass conversion processes					
	Kraft/Water-based	Organosolv	Enzymatic	Lignin first	Ball milling	Bloom
Global usage	>95%	<5%	<1%	R&D	R&D	
Full value					✓	✓
High selectivity				✓	✓	✓
Low temperature			✓	✓	✓	✓
Fast	✓	✓				✓
Scalable	✓	✓	✓	✓		✓

Impact

Bloom leverages science to maximise impact.



We generate more value from any type of lignocellulosic biomass and offer a unique solution of the increasing demand in bio-based materials.

CaBeC 

Cascading Benefits...

...of Coffee

CaBeC 

Valcofex

Valorization Coffee Extraction

CaBeC 

Valcofex

- ❖ *Environmentally friendly processing*
 - *Cascade extraction*
 - *Near- Zero minimal waste*
 - *Scalable biorefinery*

CaBeC 

Valcofex

Objectives

Coffee waste valorization

Local, regional and international development

Integrated Biorefineries

Sustainable bioprocesses and markets

CaBeC 

Valcofex

Products for a cleaner future



CaBeC 

Valuable added products and building blocks:

CaBeC 

Lipids
Fatty acids
Phytosterols
Diterpenes
Phytohormones
Saccharides
Fibers

The background of the slide is a close-up photograph of coffee cherries. Some cherries are in sharp focus at the top, showing their green and red colors, while the rest of the image is a soft-focus blur of many cherries in various shades of red, green, and yellow.

Market Figures for raw materials:

❖ SCG (Spent coffee grains)*

6 -12 million tons/year Worldwide

100 -200 ktons/year Belgium

****based on local and industrial usages***

❖ Close to 100% value added extractables ca.15% for Cosmetics alone



CaBeC 

HUMANS
as the PRIORITY

MIKHAIL GORBACHEV

the CLIMATE CHALLENGE

EXAMPLES ~~in~~ ACTION EXIST!

CLEAN ENERGY
FUTURE *is* NOW

COPENHAGEN
- A STATEMENT
OF DIFFERENCES,
NO RESOLUTION

'NATUR
LEFT BEH

ENVIRONMENT & POLITICS

CONFLICT BETWEEN MAN & NATURE

NOT ON
THE POLITICAL
AGENDA

HISTORY DOES NOT FORGIVE THOSE WHO DELAY

MULTI-DIMENSIONAL
SOLUTION

MY STORY

IS ANY INTERVENTION TOO LATE?

How Do We RE-ESTABLISH the BALANCE?

SINCE 1900

EXPONENTIAL CONSUMPTION
DISEASE

POPULATION

WATER CONSUMPTION

GDP

MIGRATION - ECOLOGICAL

TREMENDOUS ECONOMIC GROWTH

CONSERVATION & PRESERVATION

SUSTAINABLE DEVELOPMENT

IS THE RESPONSIBILITY of EVERYONE.

REQUIRES A GLOBAL RESPONSE,

2 can PREVAIL

DEATH of ECOSYSTEMS

HAND in HAND

id starts
with COOPERATION

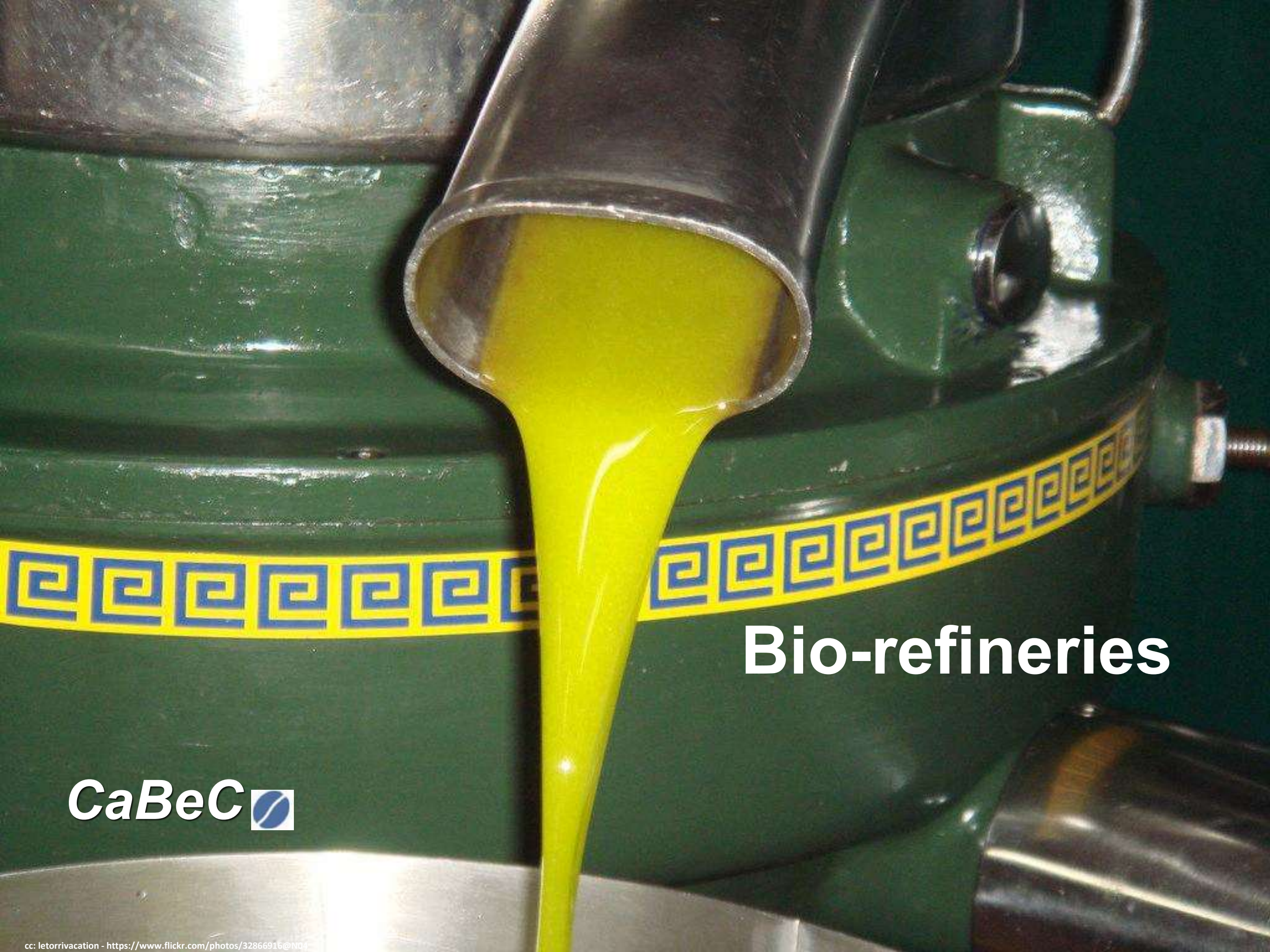
UP TO GOV'T
to SET the STANDARDS... BUT

G-8, 20, ?...
NOT GETTING IT DONE

Lifecycle based Circular Economies

CaBeC 

CaBeC 



Bio-refineries

CaBeC 



CaBeC ●

Healthcare, Cosmetics, Bio-building blocks



CaBeC 



CaBeC PARTNERS





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Jurgén Engerisser 39
PROCESS TECHNOLOGY
Blue Economy
Innovation Expert
Belgium, Europe, Asia

CaBeC 

Milestones

- **2014: Cabec incorporation**
- **2014-2015: Raw material screening/selection**
 - ✓ **Process optimization**
 - ✓ **Supply, production and logistics**
- **2015-2018 Quality Control**
 - ✓ **HACCP and Traceability**
 - ✓ **Cosmetic line validation**
 - ✓ **Scaled-up Logistics planning**
- **2019 Product line launch**

❖ ***Commercial development needs:***

- ***International and National B to B***
- ***Branding and distribution***
- ***R&D in-house and partner***
- ***Outsourcing***
- ***Raw material collect and logistics***
- ***Pilot plant to Industrial scale***
- ***Integrated Biorefinery***

Thanks!

CaBeC 



BILLIONS OF GOOD BACTERIA FIGHTING FOR YOUR SKIN

CREATE A BACTERIAL REVOLUTION

The natural alternative for antibiotics

“Antibiotic resistance is one of the biggest threats to global health, food security, and developments today.”

(WHO)

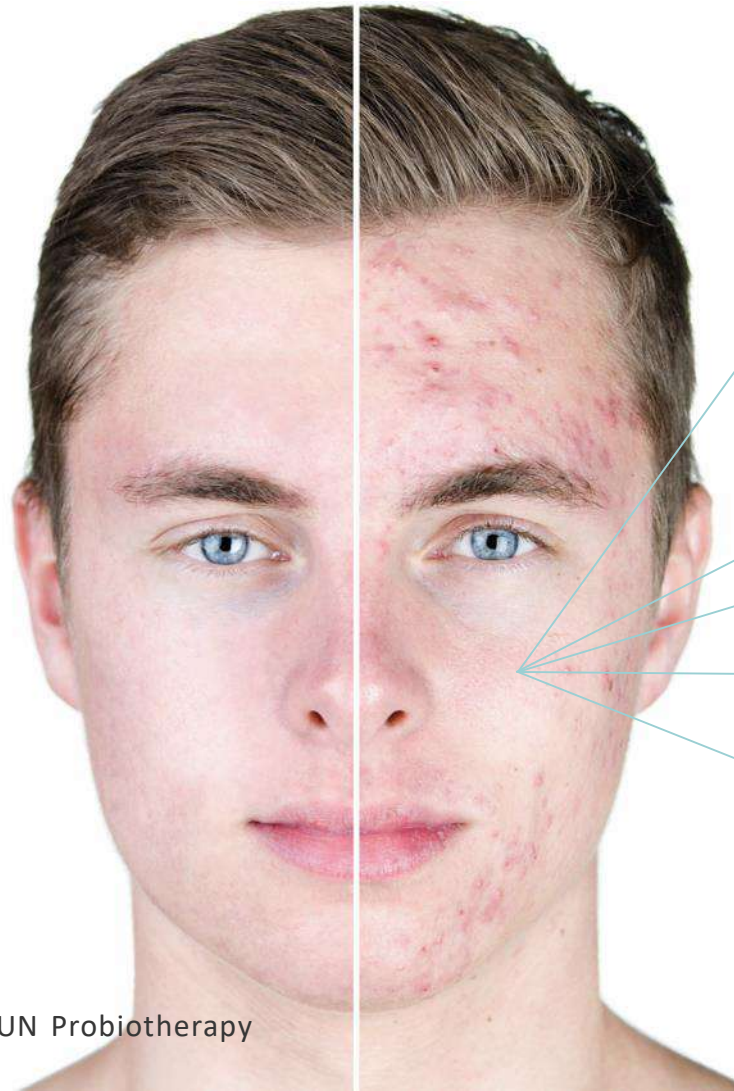
“Drug resistance deadlier than cancer by 2050”

(UK Government Study)



ACNE, A MEDICAL PROBLEM

The 8th most prevalent disease in the world



645 million
people
(9.4%)

4 (out of 7)
top markets
in the EU

4.3 Bn\$
market

Life time
prevalence
85%

Recurring
disease



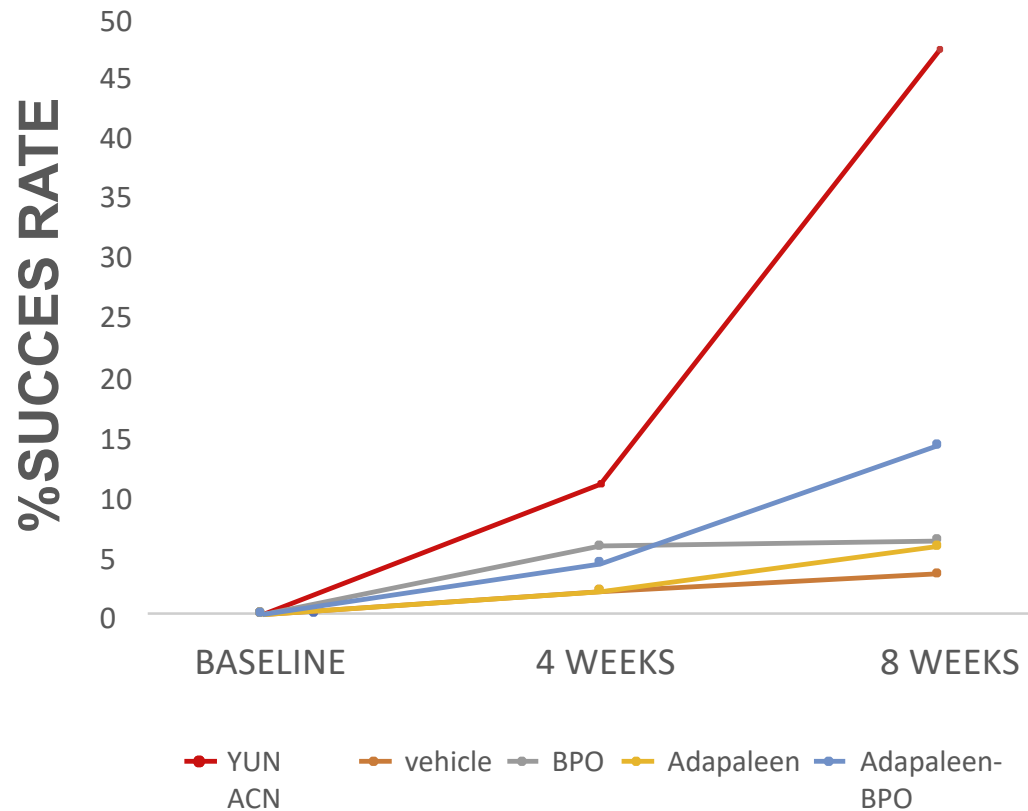
A UNIQUE AND PATENTED R&D SOLUTION

Live bacteria in water-based environments



SCIENTIFIC TRIAL

It is not magic ... it is, but scientifically proven



POST-MARKET FOLLOW UP STUDY

- **Feedback received**
 - 52 dermatologists (6.5% of Belgian total)
 - 199 patients
- **Patient population**
 - Average age (n=174): 22,72 [min. 10 – max. 69]
 - Gender: 34,7% male – 65,3% female
 - Severity: 46,6% mild – 53,4% moderate
- **Result**
 - 165 patients (95%) showed improvement
 - No difference between dermato & patient score



A MICROBIOME PRODUCT RANGE

For common skin conditions with marketing focus on acne



ACNE



SENSITIVE
DRY SKIN



VAGINAL
IRRITATION

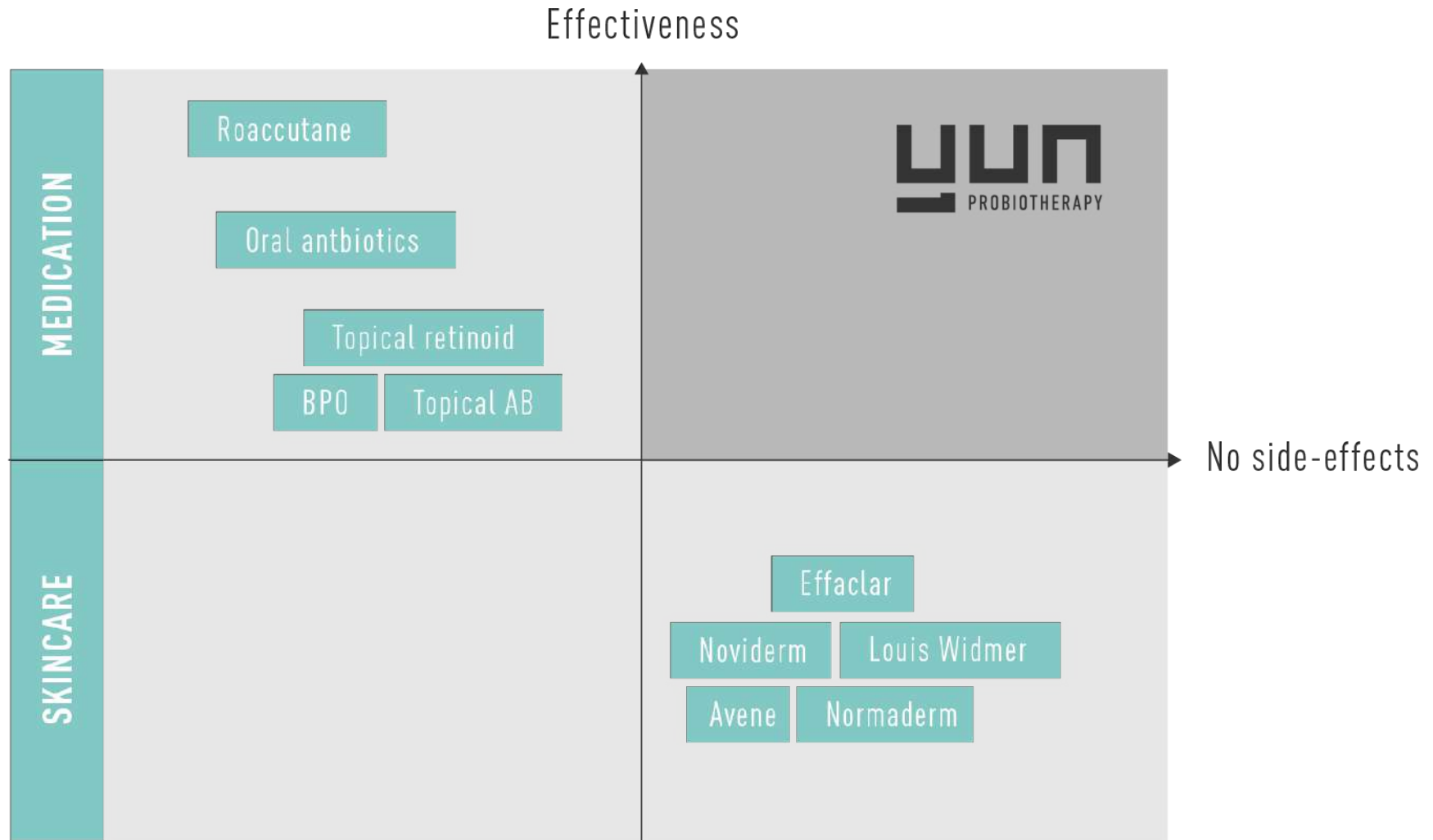


ATHLETE'S
FOOT



BEST OF BOTH WORLDS

As effective as a medicine AND as safe as a cosmetic



LAUNCH RESULTS

Belgian market, based on 4 months results

TO 2018
1 M€

Distribution
100%

Online
conversion
x2

Re-order rate
+40%

“May I congratulate
you on your miracle
product...”

“A huge
improvement...
This is by far the best!”

5,0 ★ ★ ★ ★ ★



4,6 ★ ★ ★ ★ ★

facebook

4,2 ★ ★ ★ ★ ★



5,0 ★ ★ ★ ★ ★

Google



YUN TEAM

We are building a high performance organization



Tom Verlinden
CEO

Kamato
Executive Board Member

Qualiphar / Gifrer
COO

Qualiphar / Gifrer
Vice President



Ingmar Claes
CSO

Phd Bio-engineering
specialization micro-biology
Leading authority on
skin microbiome



Tom Gybels
CCO

SBS (Liberty Global)
CCO

Omega Pharma/Perrigo
Global Commercial VP

P&G
Sales Director BNL Beauty Care



Jan-Frederik Mahieu
CFO

Ideal Standard
EU Finance Director, BU Fittings

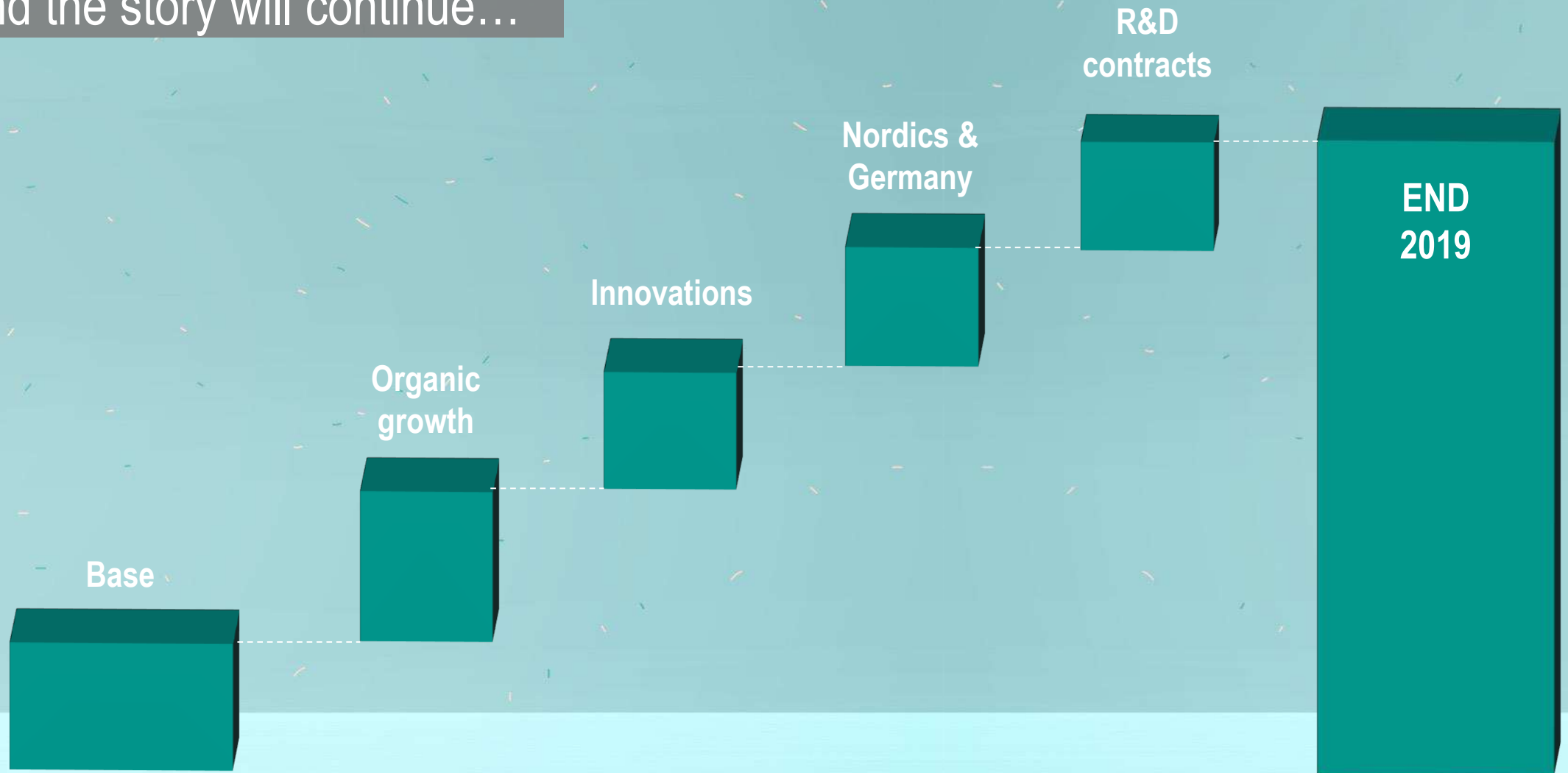
Ideal Standard
EU Finance Director, CO

P&G
WE Finance Manager, Supply Chain



2019 PIPELINE

And the story will continue...



THE NEXT CHAPTER

YUN is looking for a strategic partner to bring the pipeline alive





THANK YOU

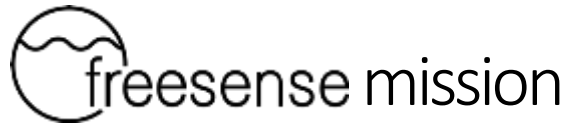
For more information, please contact:
CEO Tom Verlinden
tom.verlinden@yun-probiotherapy.com
+32 477 46 24 53



freesense

Tue Rasmussen, CEO

The freesense journey



Deliver free-floating sensor solutions to improve data-driven process optimization for the bioprocess industry

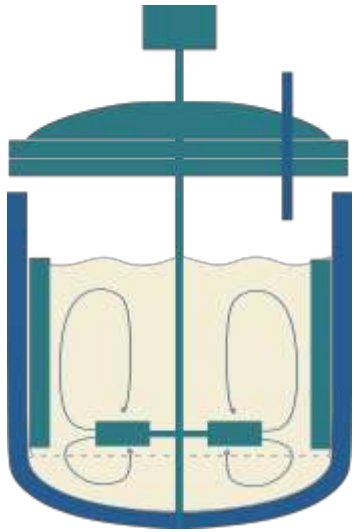


Financing
2018 | venture funding

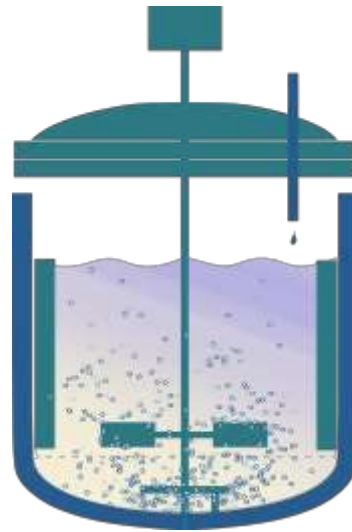
FermSense 3D
2018 | sensor sphere



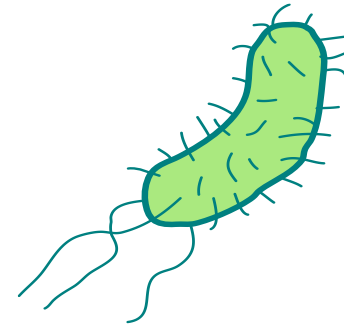
Lack of data from inside industrial scale fermenters limits process optimization



Flow characteristics



Gradients



Productivity

We deliver data-based fermentation mapping

FermSense 3D

Sensor sphere

Patent pending positioning system

Single point
sensors



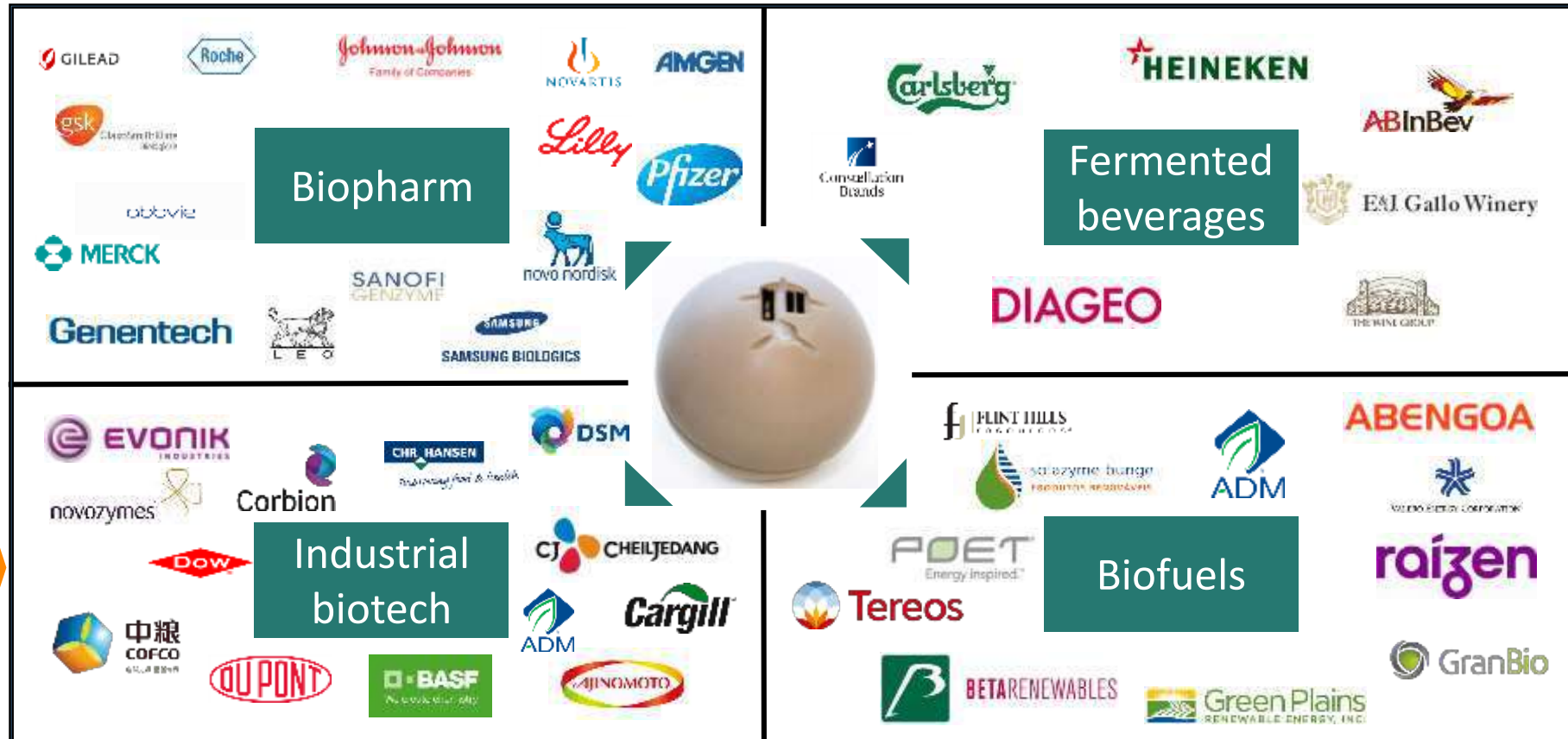
Computational
fluid dynamics

Optimize based on data

Temperature | Flow and mixing dynamics
pH | Dissolved oxygen (under development)

Bringing industry 4.0 into the fermentation industry

OUR
FOCUS



Freesense is looking for:

1
Customer
partners



2
Next stage
investors

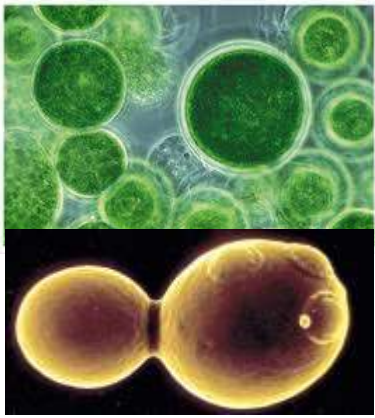
www.freesense.dk
tr@freesense.dk



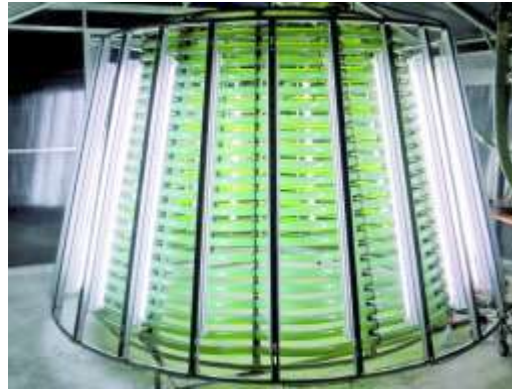
Fitch perfect and boost the European bio-economy
November 2018, Brussels



The Bio-Economy Revolution [bio-manufacture]



Microbe-based production



Scaled up manufacturing



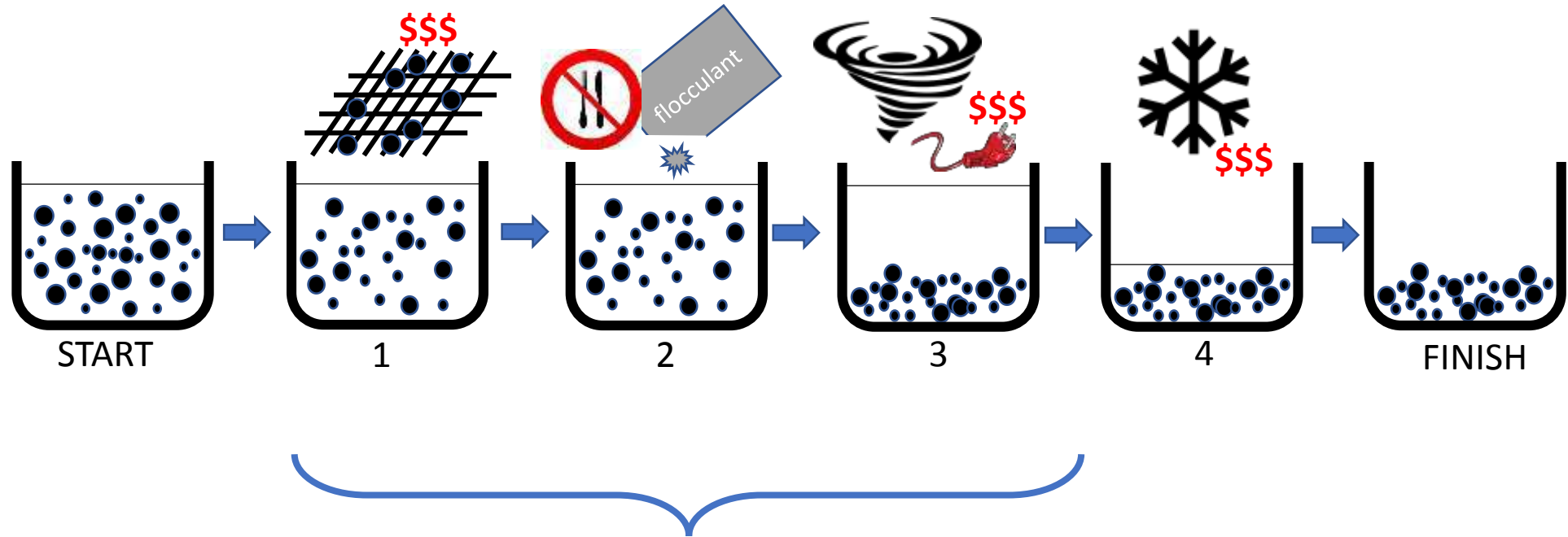
Products



Problem / Solution

Problem

- Multistage
- Inefficient
- Expensive





Pilot test



Swansea University
Prifysgol Abertawe

Microfluidics-based biomass harvesting system

**CLEAN
OUTLET**

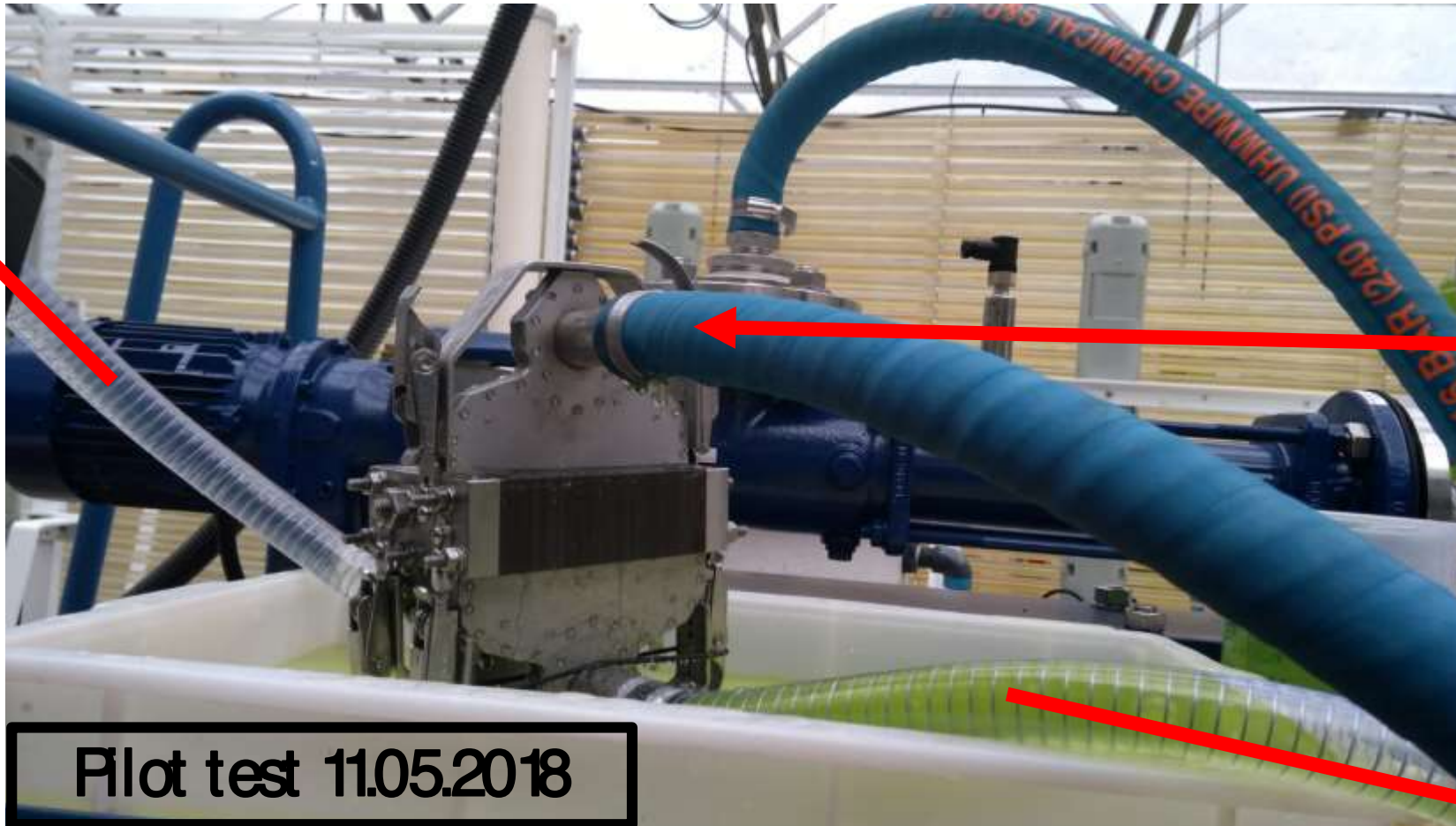
Water

Culture ready
for harvest

INLET

Biomass

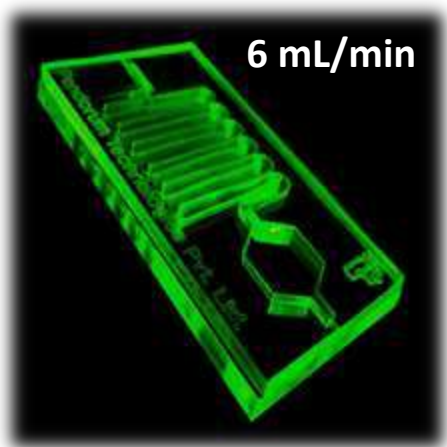
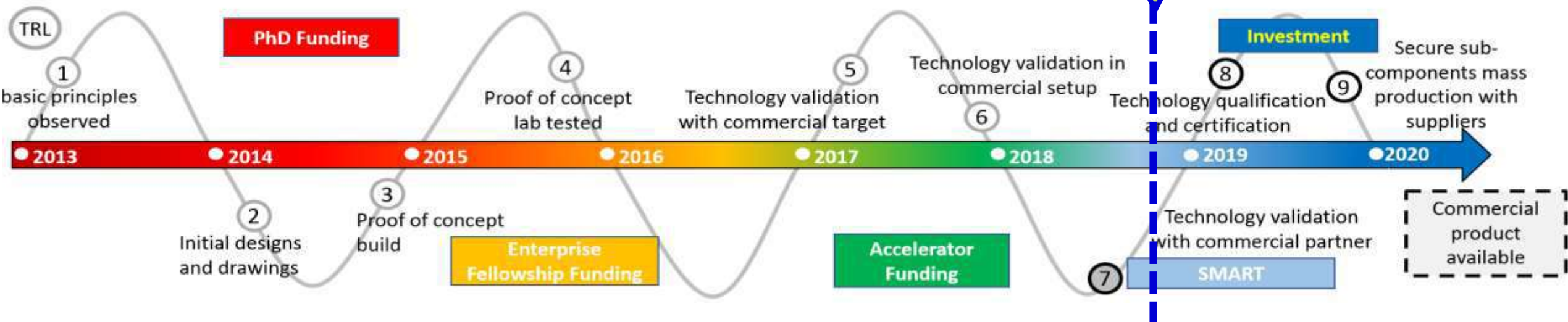
CONCENTRATED OUTLET



Pilot test 11.05.2018



Where we are now



6 mL/min

Lab scale microfluidics



prototype



5 Litres/Min

pilot test



100s Litres/Min

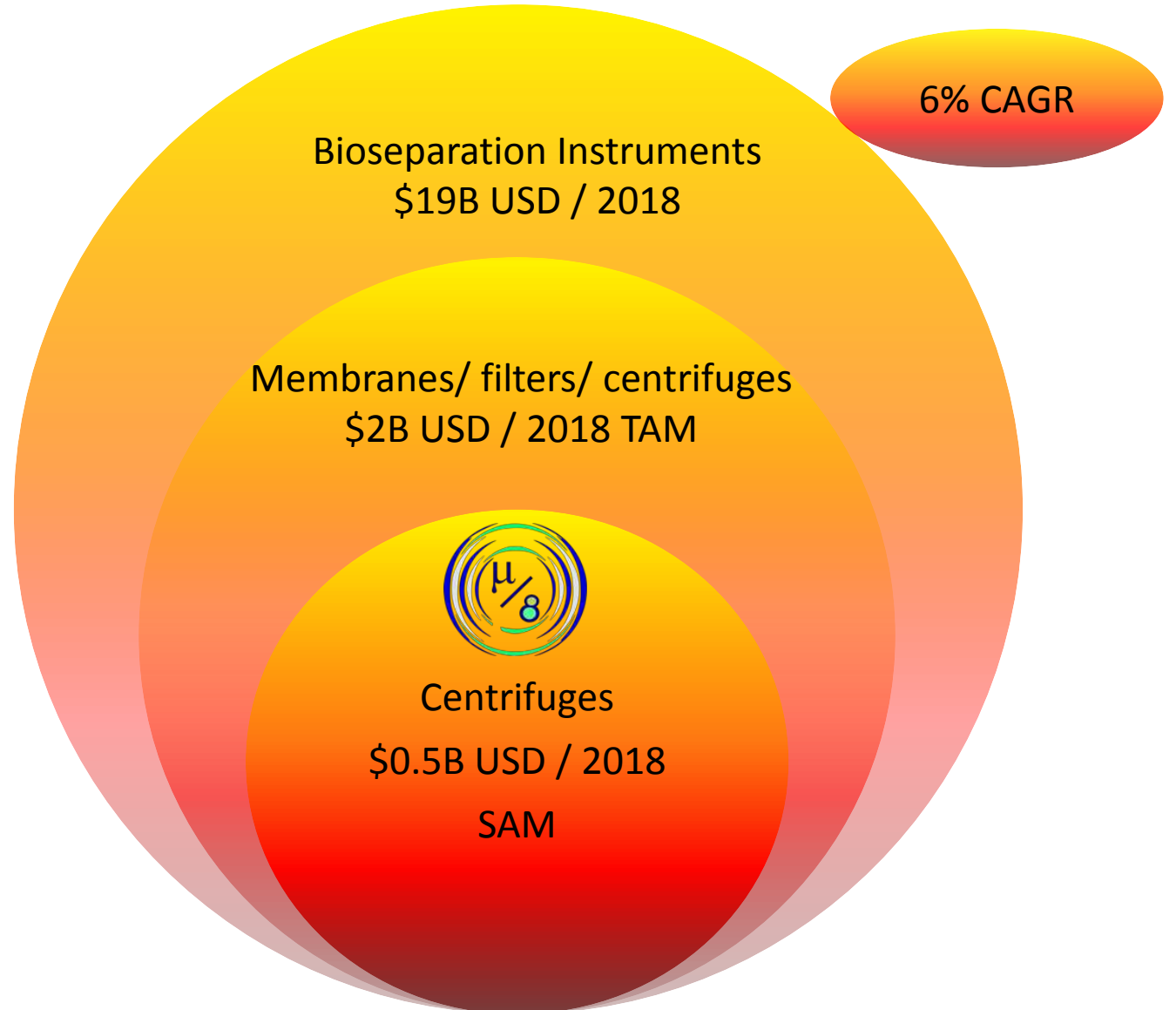
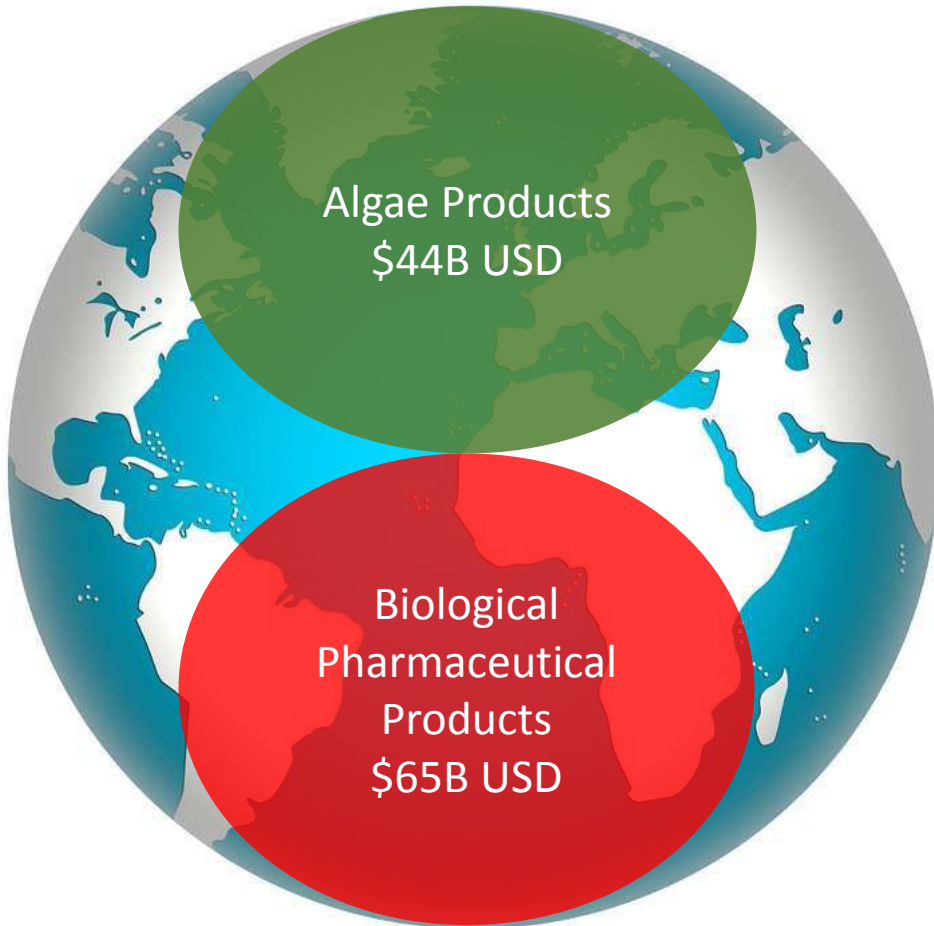
Industrial scale microfluidics



Market Size

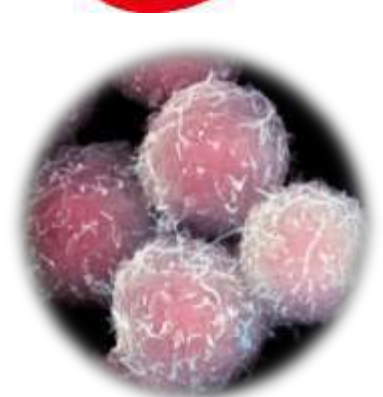
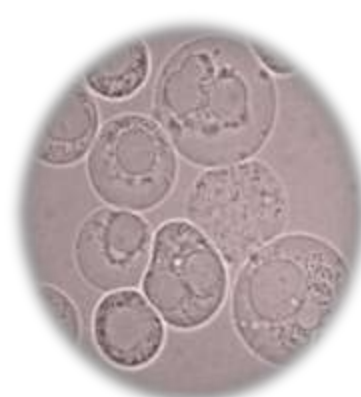
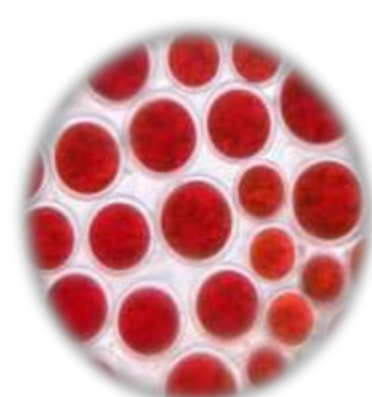
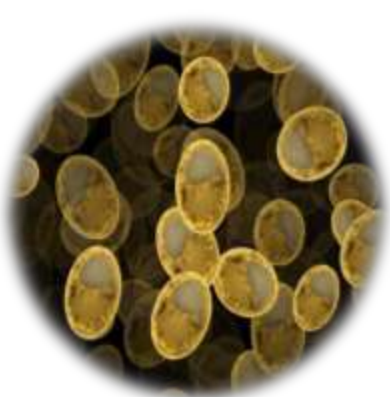


because **innovation** needs **direction**





Target customers - biomanufacturers



Beer

Food

Pigment

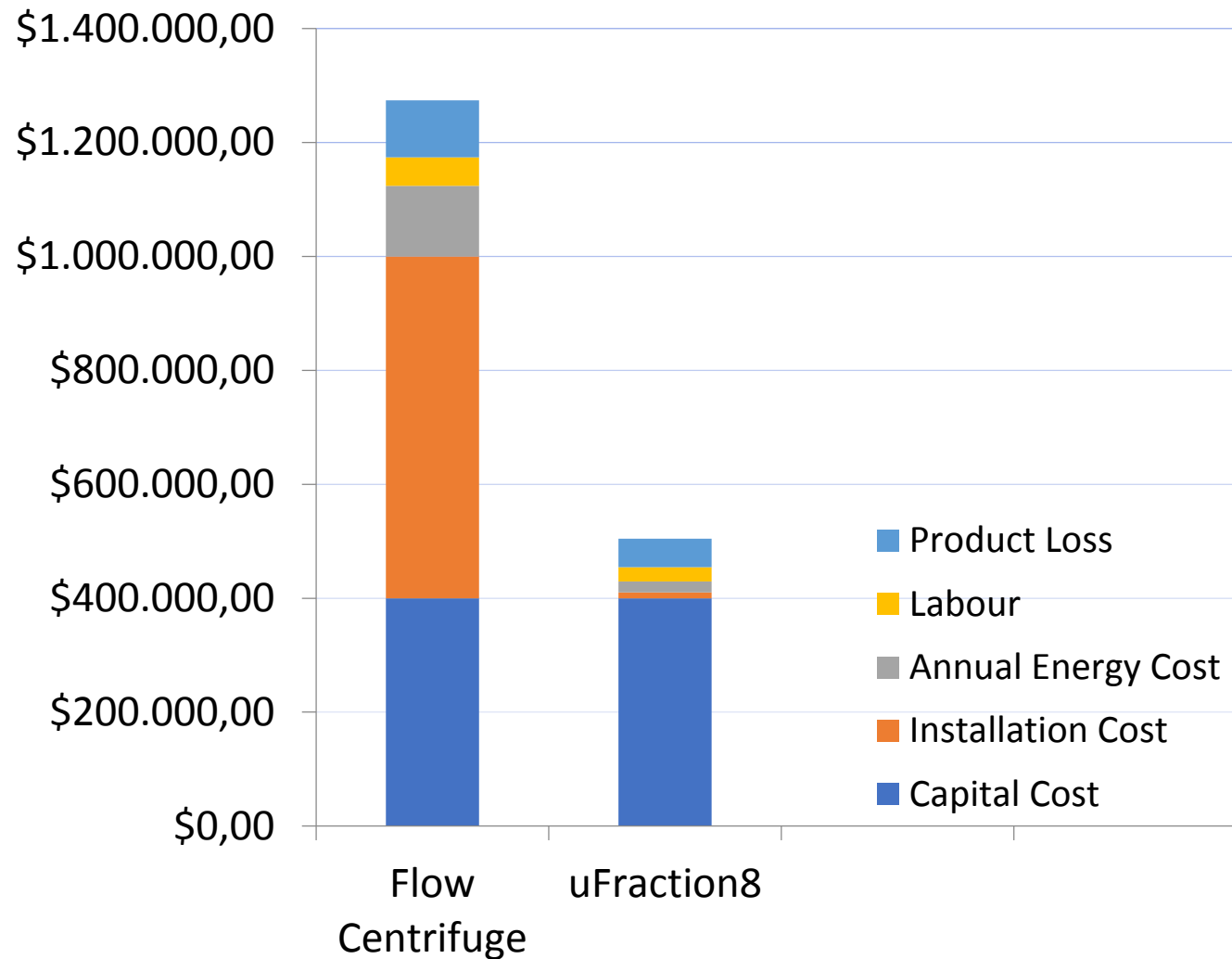
Drugs

Animal
Feed

Cell
Therapy



Customer Value Proposition



\$770,000 saving in first year on
\$400,000 capital cost

Immediate ROI based on installation
costs

Total cost of ownership reduction
even if centrifuge was free

Up to 15% more product recovered

Cost of new technology implementation at the customer side

(example shows comparison between uFraction8's medium size unit costing £400k and the equivalent sized centrifuge system)



Features, Benefits and Competitive Advantages

Feature

- Modular
- Energy Efficiency
- Single Stage Process
- Gentle Flow Regime
- Closed System
- Low Stored Energy

Customer Benefit

- Scalable to match process
- Reduced OPEX
- Ease of use, reduced labour
- Increased product recovery
- No contamination vector
- Safer to operate and maintain

Competitor disadvantage

- Fixed capacity ranges
- Expensive to run and install
- Requires pre-concentration
- Up to 15% product loss
- Can't reuse contaminated liquid
- Confined spaces, catastrophic failure potential



Executive Team



Dr Monika Tomecka

PhD in Biomedical
science

Geneticist and
Biochemist

Previous startup
experience



Dr Brian Miller

PhD in
Microfluidics and
Biosensors

High throughput
microfluidics expert

Automation &
Microfluidics Engineer

Advisors



Liza Sutherland
Enterprise Executive
(University of
Edinburgh)
Business/Corporate
Advisor



Adam Irvine
IP specialist
(Carlton Hill Ltd)
ClimateKIC mentor



Dr Helen Bridle
Associate Professor
(HWU)
Technical Advisor



Andrew McNair
Managing Director
(Innova Partnerships)
Commercial Advisor High
Grow Startup Unit

Team



Ameya Vaidya
Engineer



Catherine Hill
PhD student



Interns



Traction and collaboration

- Industry Partners

First sale



AkzoNobel

ThermoFisher
SCIENTIFIC



Mitsui Chemicals



algaceuticals



SCOTTISH BIOENERGY



ミドリムシ∞カンパニー



- Research Partners



Swansea University
Prifysgol Abertawe



University of
HUDDERSFIELD
Inspiring tomorrow's professionals



Leave a Nest



Summary

- Disruptive, patented and sustainable filtration/ concentration/ dewatering solution
- Tested pilot scale **prototype** –TRL7
- Substantial beachhead market opportunity (**Microalgae**)
- **Market** appetite and traction
- £40k **sales revenue** generated in year 1
- cumulative **£400k** of cash and **£250k** in kind services and partnerships
- looking for **£1.5million** investment
- looking for **collaboration partners**



info@ufraction8.com
www.ufraction8.com

@ufraction8   



POPULATION TODAY
7,6 BN. HUMANS

POPULATION 2050
9,7 BN. HUMANS

INCREASE IN PROTEIN DEMAND UNTIL 2050
AT LEAST 70 %

A top-down view of several petri dishes containing vibrant green microalgae cultures. The cultures are in various stages of growth, with some showing distinct patterns or textures. The word "MICROALGAE" is overlaid in large, white, bold capital letters across the center of the image.

MICROALGAE



PROBLEMS



LOW LIGHT YIELDS



INEFFICIENT GAS (CO₂) EXCHANGE



HIGH PRODUCTION COSTS



WATER & NUTRIENTS CONSUMPTION

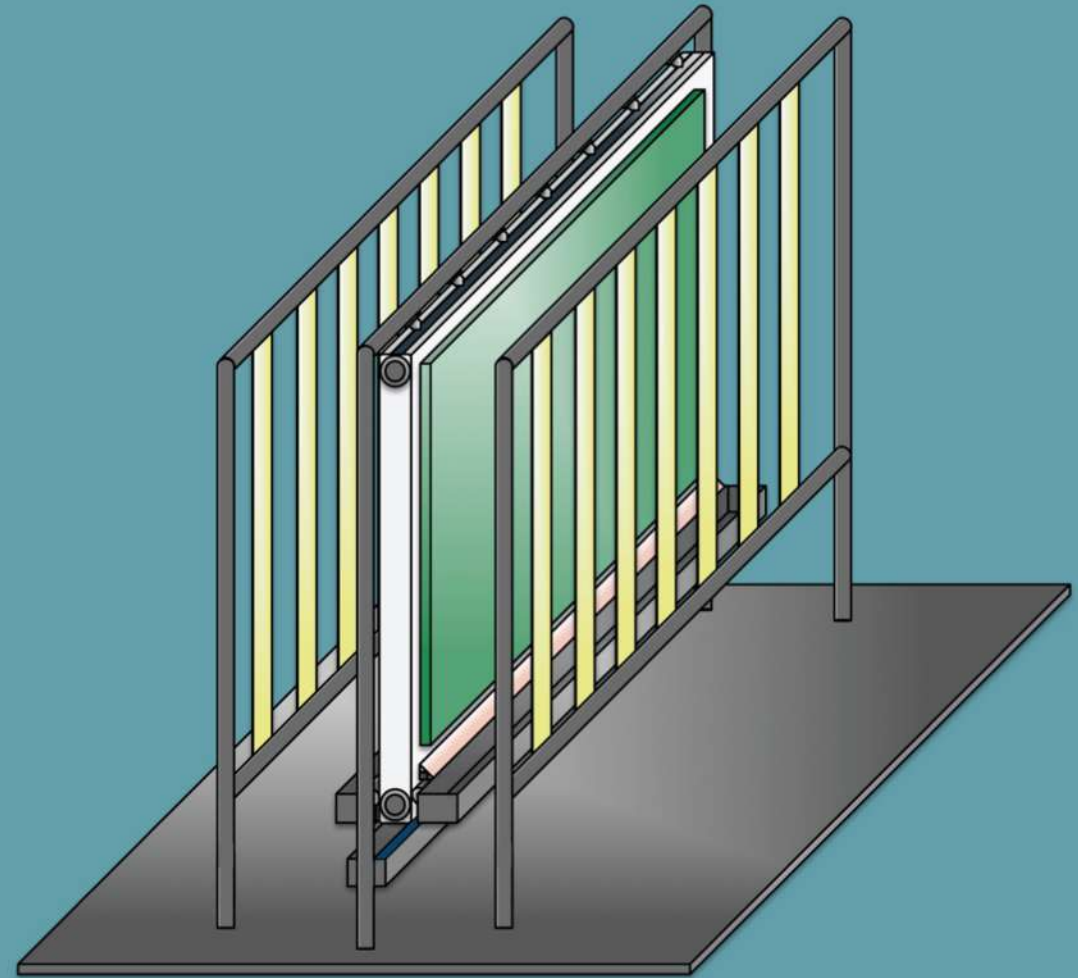


***LIMITED GROWTH OF MANY
HIGH VALUE SPECIES***

PHYTOFENCE

MEMBRAN BASED CULTIVATION

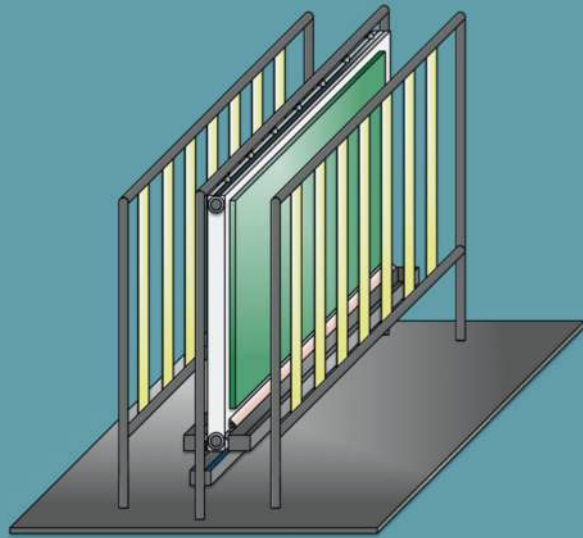
**ALGAE GROW
SEPARATELY FROM WATER**



PHYTOFENCE

MEMBRAN BASED CULTIVATION

**ALGAE GROW
SEPARATELY FROM WATER**



OPTIMIZED LIGHTING



EFFICIENT GAS EXCHANGE



MODULAR DESIGNED



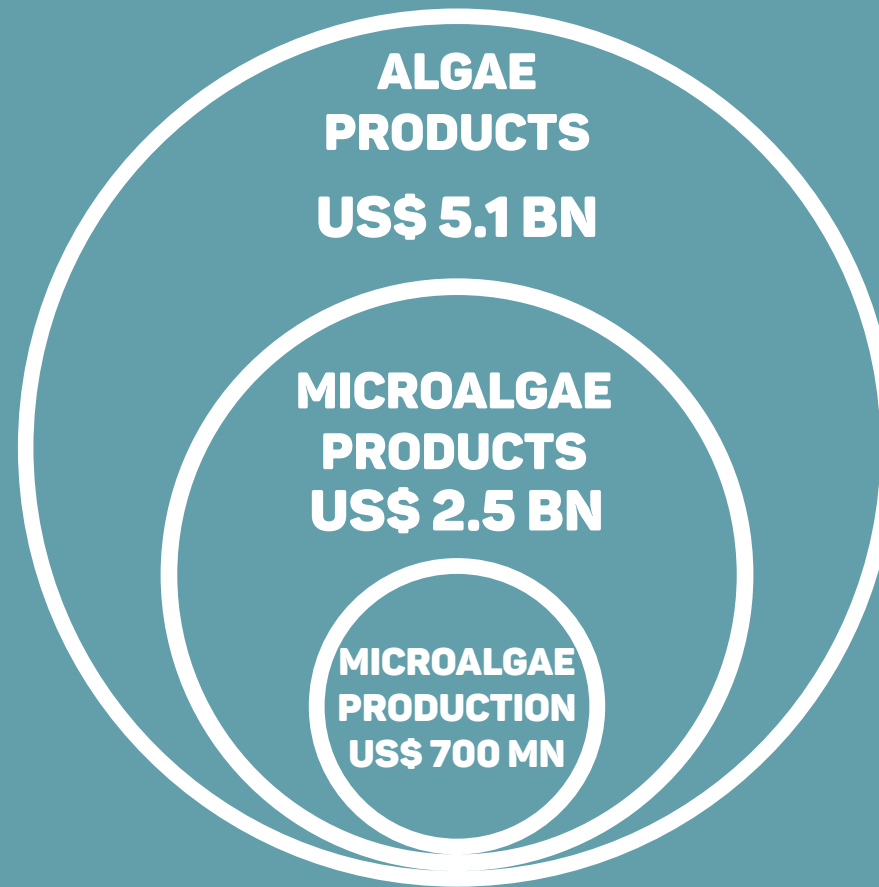
UP TO 90 % LESS WATER



**CULTIVATION OF NEW
HIGH VALUE
ALGAE SPECIES**

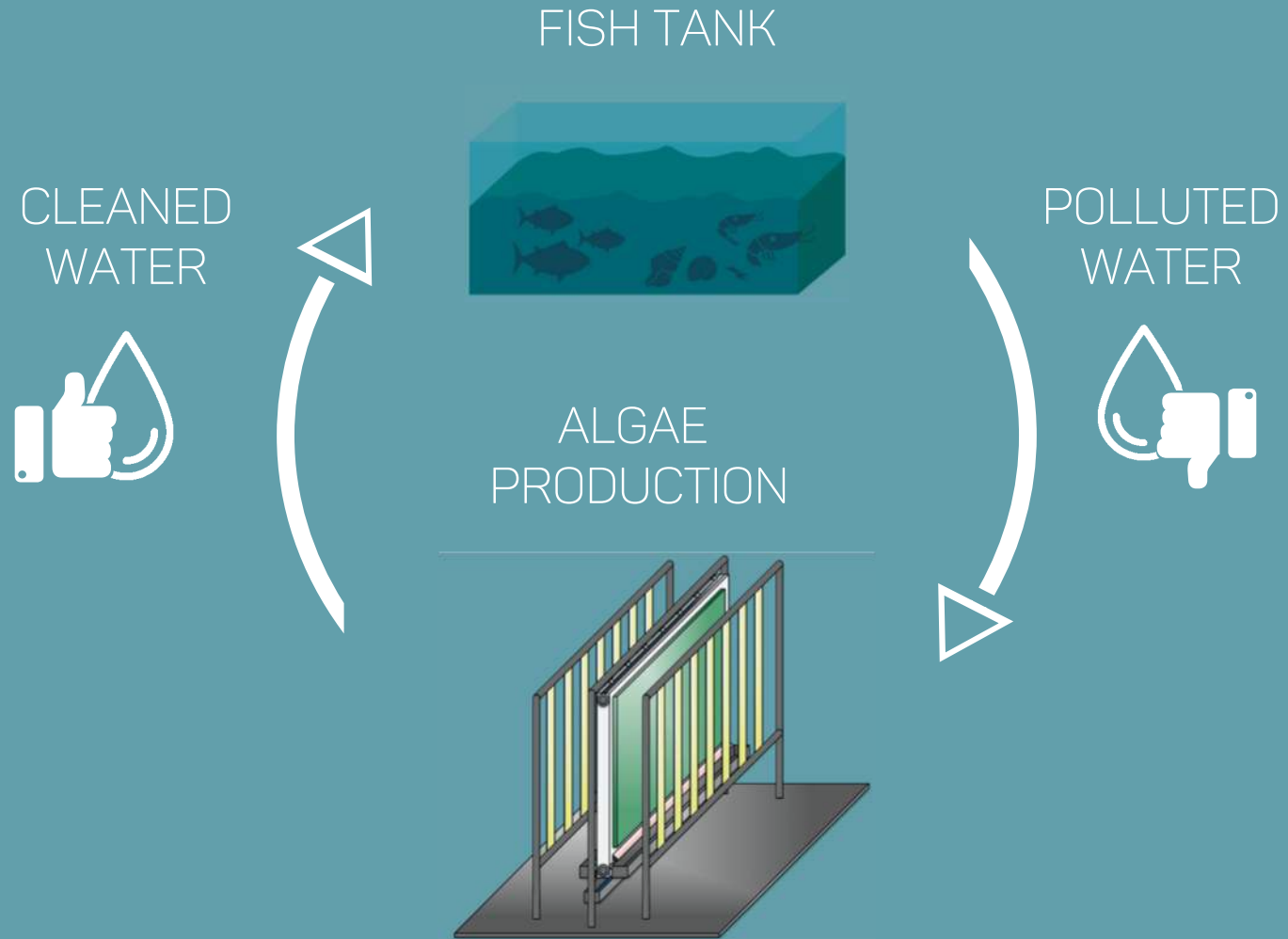
„THE MARKET IS READY FOR NEW ALGAE PRODUCTS“

2018 JÖRG ULLMANN, CEO ROQUETTE KLÖTZE GMBH





MICROALGAE AQUAPONICS



TEAM



JAN ZAABE, SCIENCE

M.SC. BIOLOGY

ARNE MAERCKER, BUSINESS

M.SC. BUSINESS ECONOMICS

DENNIS PRAUSSE, HEAD OF TEAM

M.SC. BIOLOGY

NETWORK

MENTORING

ROQUETTE KLÖTZE GMBH

MICROALGAE PRODUCER

FUTURE FISH GMBH

RAS FACILITY PLANNER

HERZBERG CONSULTING

PROCESS TECHNICIAN

PARTNERS

ALFRED-WEGENER-INSTITUT

RESEARCH FACILITY

COLOGNE-CULTURE- COLLECTION OF ALGAE

SUBMARINER- NETWORK

CRUSTA NOVA

SHRIMP RAS FACILITY





PHYTOLINC

ALGAE FOR AQUACULTURE

www.phytolinc.com