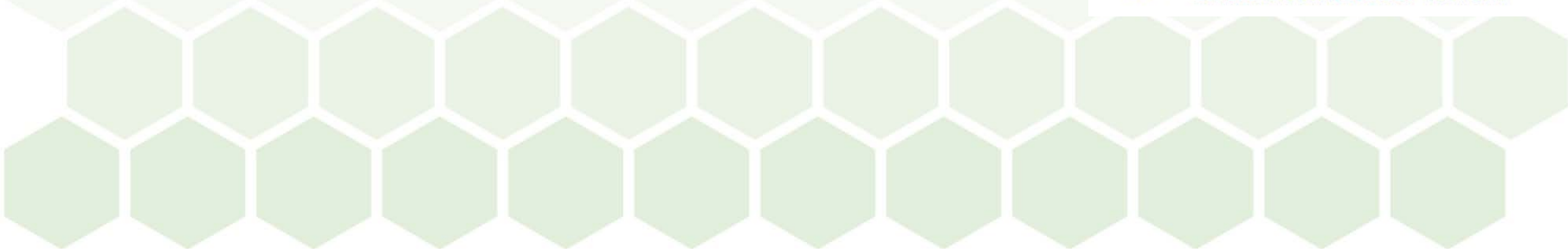




LXP GROUP

Revolutionary pre treatment that
gently cracks 2G biomass

Ecosummit Berlin 2016



Lignin-EXtraction-Process for...

2G BIOFUELS

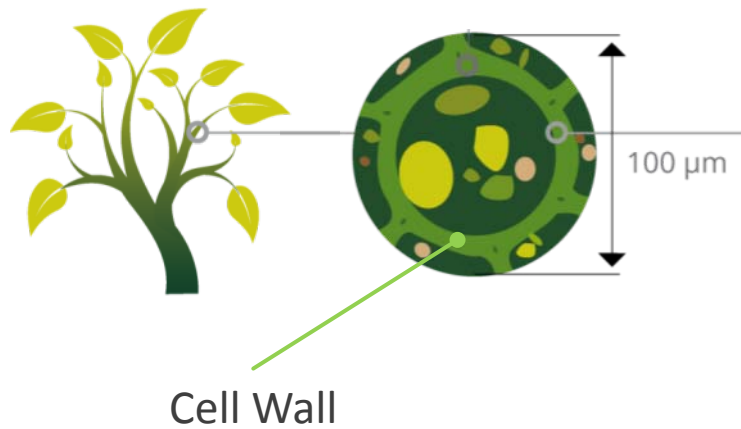
2G BIOCHEMICALS

NATURAL LIGNIN

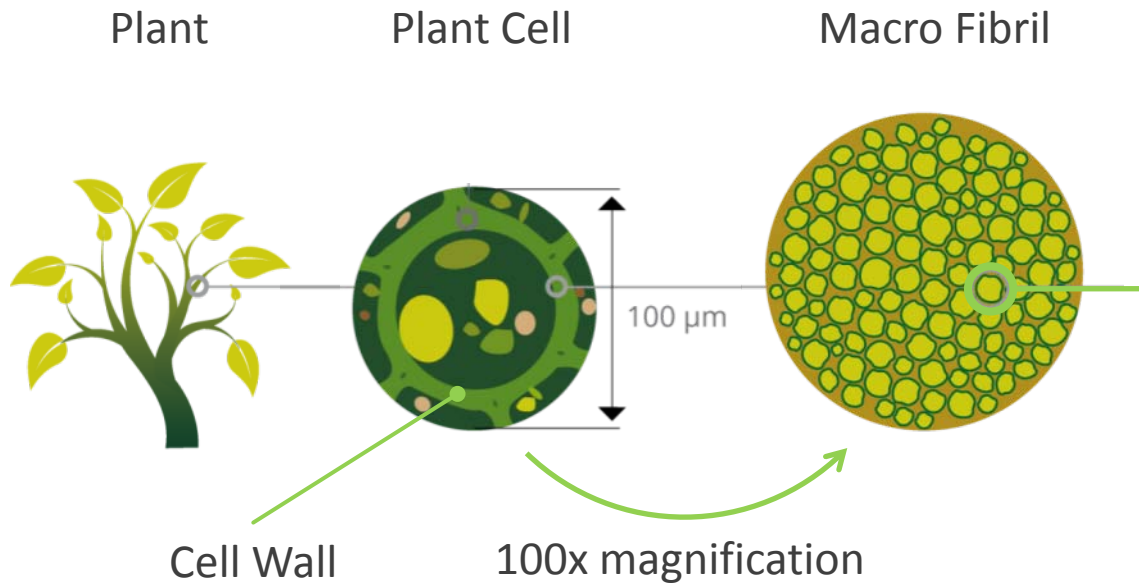
Plant Cell...

Plant

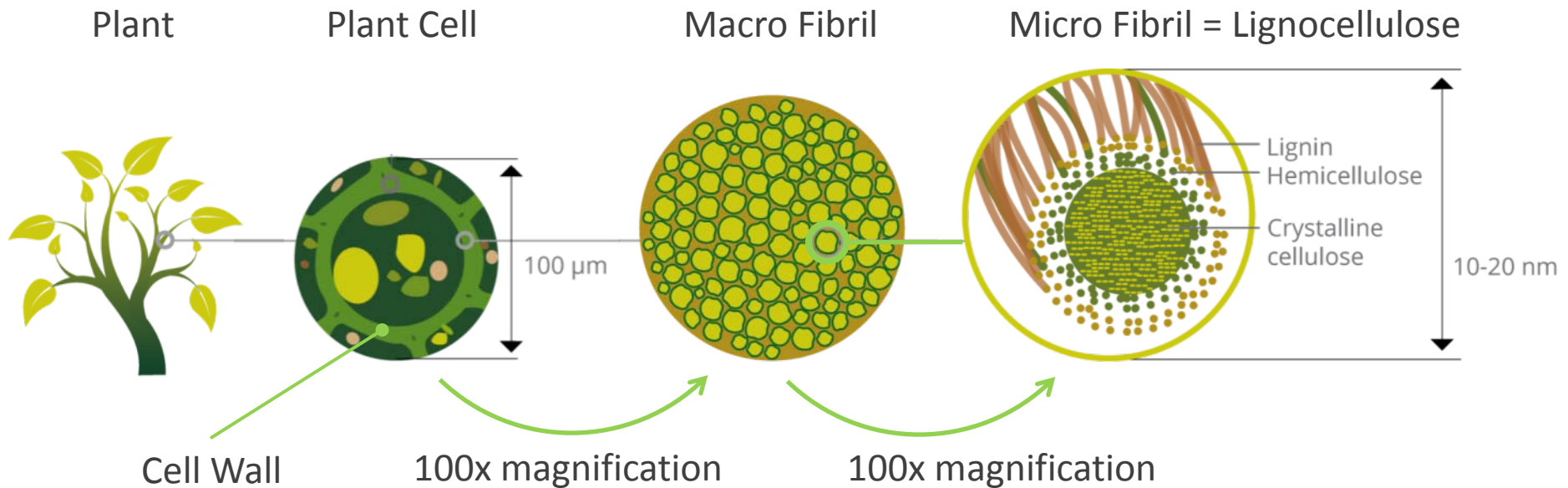
Plant Cell



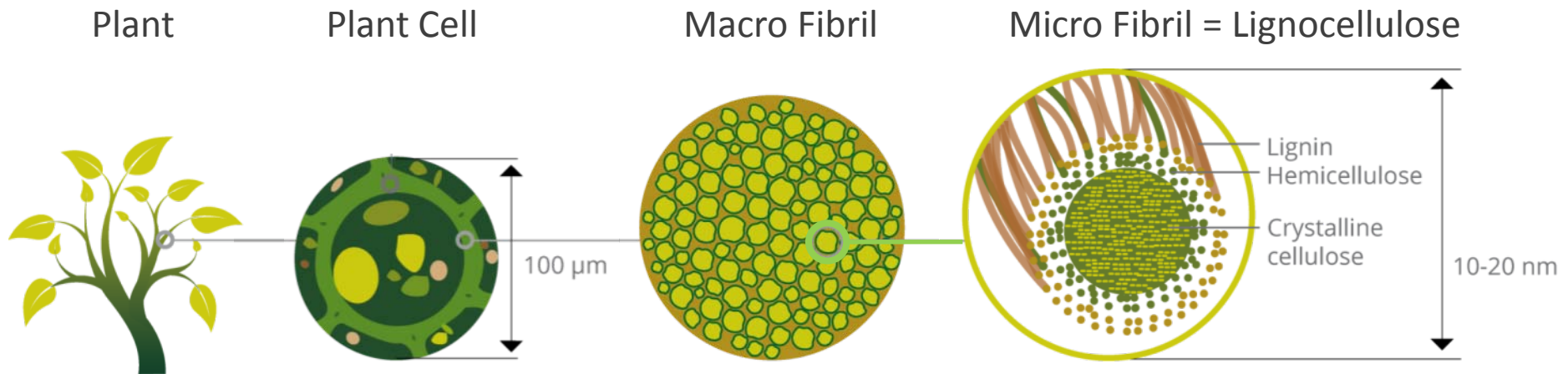
Macro Fibril...



Micro Fibril / Lignocellulose...

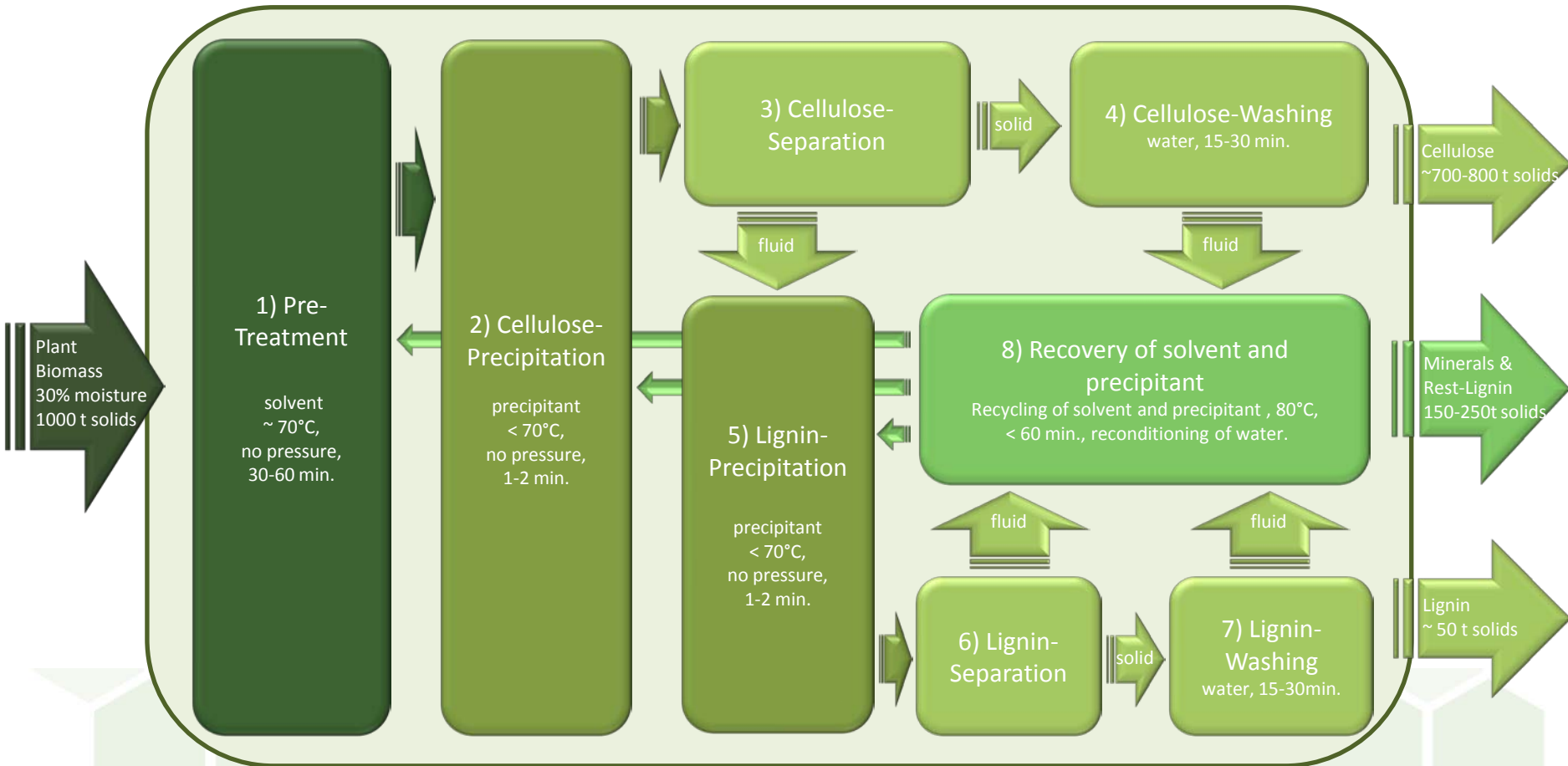


The Problem



The problem: Lignocellulose is tightly packed, is too little for an attack by microorganisms and has a protective lignin shell.

LX-Process Scheme





2G Biofuels

- The LX-Process can readily be adapted for **large-scale 2G bio ethanol manufacturing**, but is also inversely scalable, enabling economic retrofit of smaller, decentralized biogas plants starting at 500 kW.
- maxbiogas GmbH, a subsidiary of the LXP Group, is building this year the **first full size commercial LX-Plant**.



- 1G biochemical manufacturing processes are rapidly developing for bio-based products, such as 1,4 butandiol (BDO), succinic acid, acrylic acid, adipic acid, Polylactic acid (PLA) – as replacements for petrochemical counterparts.
- By implementing the LX-Process, all of these products (and many more) can be manufactured from **2G feedstocks**, which increases operating flexibility as a whole range of new substrates, such as **agricultural straws and other plant residues**, can be used.



Natural Lignin

- The LX-Process produces an **unparalleled quality of natural lignin** as a co-product. This quality is not available today and opens the floodgate for entirely new generations of products to be developed, for example:
 - as an additive for various plastics, paints, resins and glues,
 - as a raw material for carbon fiber, or ink for 3D-printer,
 - as a part replacement for phenol in phenol resins, and
 - for the production of natural aromas in the food industry.

Key Advantages...

- Two value chain → cellulose / hemicellulose and lignin
- Excellent economies → low temperature & no pressure
- Highly scalable → starting at 1.000 t p.a.
- Ideal for bio-processing → very little inhibitors
- High quality co-product lignin → additional value
- Ecological breakthrough → usage of agricultural waste

So far...

Roughly € 3.2 million raised so far for...

- ✓ Research & Development,
- ✓ Lab-Scale-Plant,
- ✓ 26 patents protecting the technology world wide,
- ✓ LX-Pilot-Plant which is already successfully operating,
- ✓ Proof of Concept and Detailed Engineering.

Next Steps...

- Construction and operations of the first full size commercial LX-Plant in 2016 and 2017 for € 4 million,
- Further fundraising in 2017 / 2018 for bio ethanol, biochemical and lignin markets / applications.

Contact details



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