

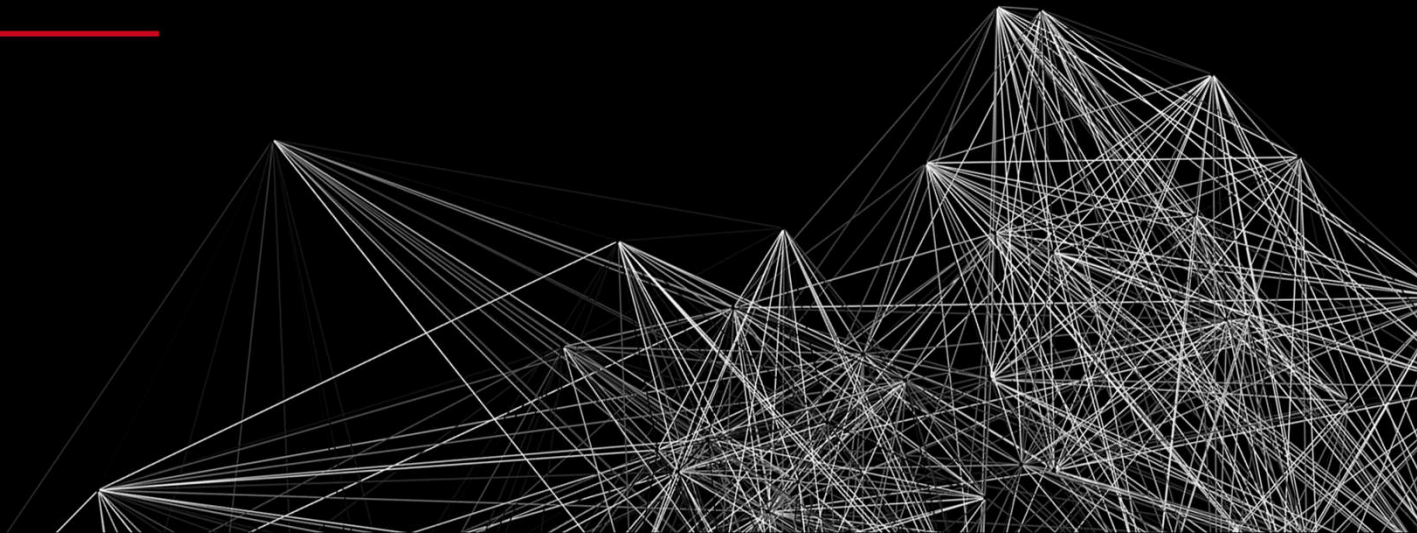
# Impuls: Visionen zur Bioökonomie

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Agendakonferenz: Gemeinsam zur Bioökonomie  
Berlin 29.06.2018

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Dr. Jürgen Eck  
CEO BRAIN AG



## Our mission: enabling BioEconomy

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- We **discover and produce novel biological solutions** on the basis of our proprietary BioArchive for the improvement of product applications in multiple B2B markets.



Enzymes



Microbial Strains



BioActives

- We enable **sustainable, efficient and bio-based products & processes** in the specialty and consumer goods segments of the chemical industry.
- We are on our way to grow our business as a fully integrated bio-specialty company.



## Definition of BioEconomy needed ?

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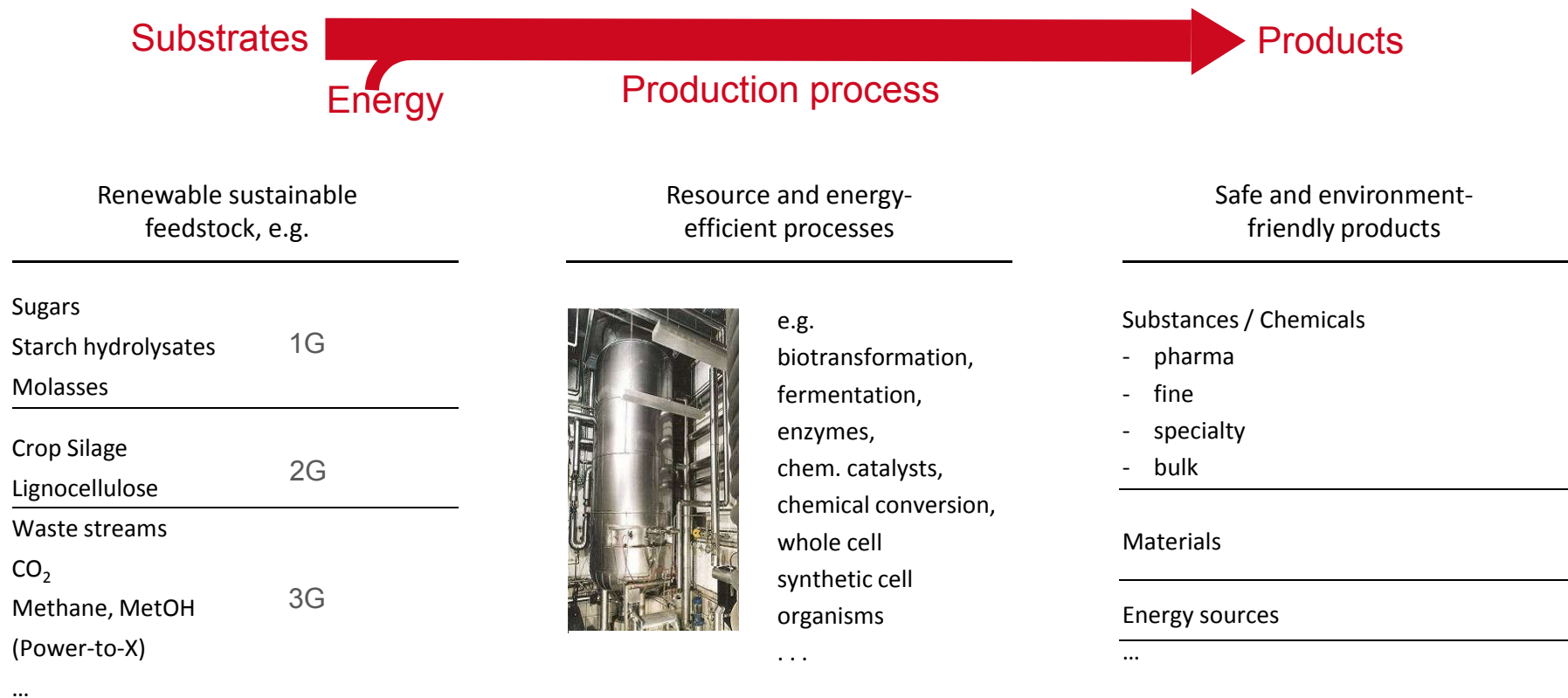
Was ist Bioökonomie?

Der Bioökonomierat versteht die **Bioökonomie als wichtiges Element des gesellschaftlichen Wandels zu einer nachhaltigeren Wirtschaftsweise.**

Die Bioökonomie wird definiert als die Erzeugung und Nutzung biologischer Ressourcen (auch Wissen), um Produkte, Verfahren und Dienstleistungen in allen wirtschaftlichen Sektoren im Rahmen eines zukunftsfähigen Wirtschaftssystems bereitzustellen.

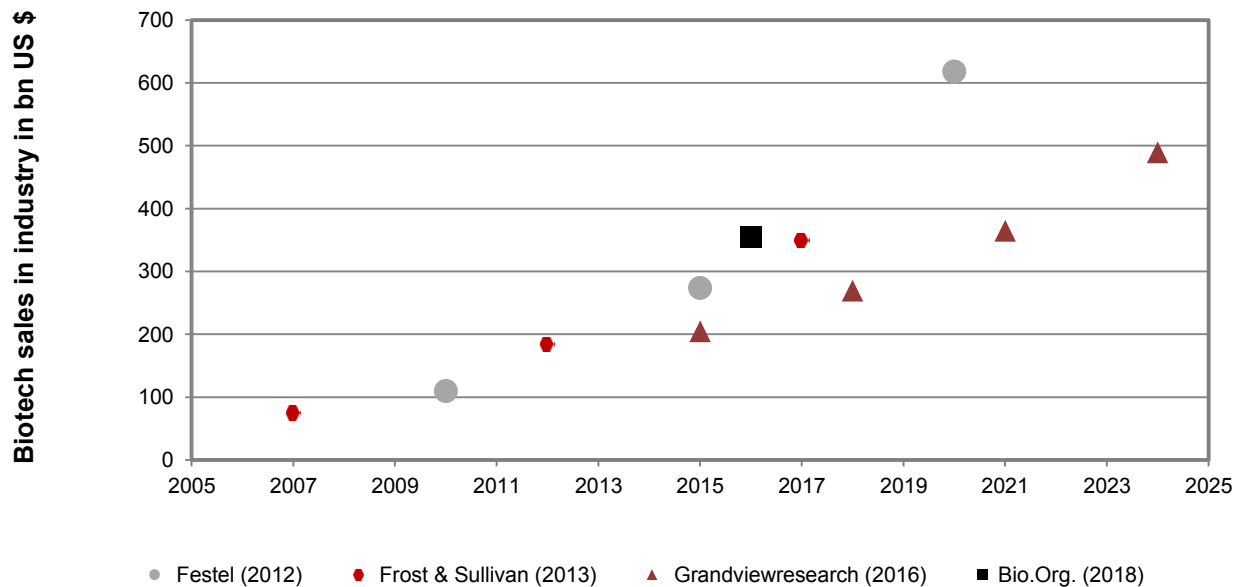


# En Route to the Knowledge Based Bioeconomy



# BioEconomy – transformation of industries

## Growing industrial biotechnology sales in industry



- Experts expect the revenues of biotech-based chemicals to grow from some **144 bn US \$ in 2010** to around **660 bn US \$ in 2025**.
- This revenue increase over the past 15 year period represents a **CAGR of ca 11%**.
- In **2016** global industrial biotechnology sales were **355 bn US \$** (bio.org 2018).
- Industrial biotech sales are **expected to outgrow** the overall Chemical markets – which are expected to grow at 4.1% (CAGR'15-20e)

# En Route to the Knowledge Based Bioeconomy

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Drivers of an transformation process towards a sustainable Bioeconomy

## Alternative Processes

(for known products)

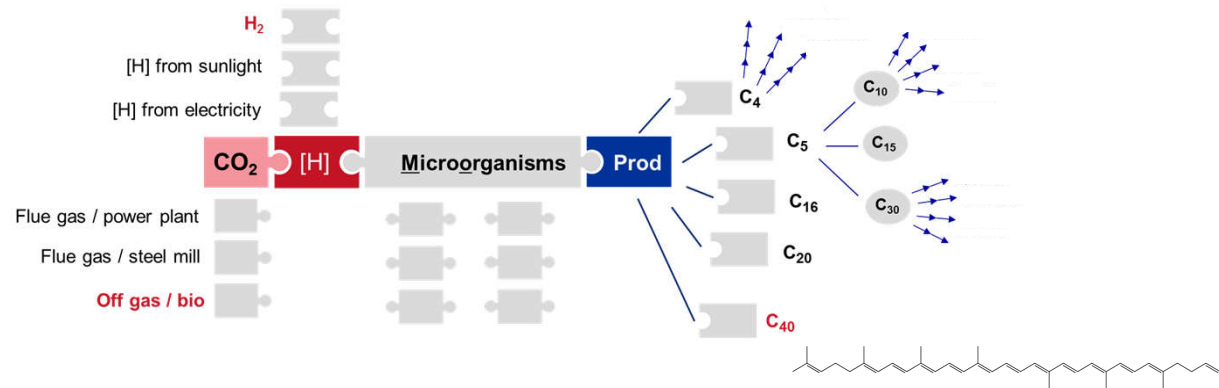
- **Accessing new raw materials / renewable feedstock**
- **Cost reduction by improved production processes**
- **Increase in quality of the product**

## Enabling new products

- **True & Desruptive Innovations**
- **Growth / Market entry with novel Products**
- **Enabling new Applications and Concepts in different industries (chemistry, material, energy, pharma ...)**


# Example: CO<sub>2</sub> utilization as a substrate

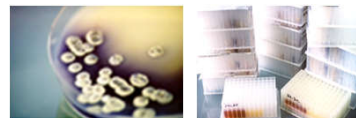
A modular concept



power plant



bioethanol plant  
Partnered with 



BRAIN BioArchives  
& Biodiversity



broad product range C<sub>4</sub>-C<sub>44</sub>



# Example: Next Generation Green & Urban Mining

Innovationsallianz  
ZeroCarbFP

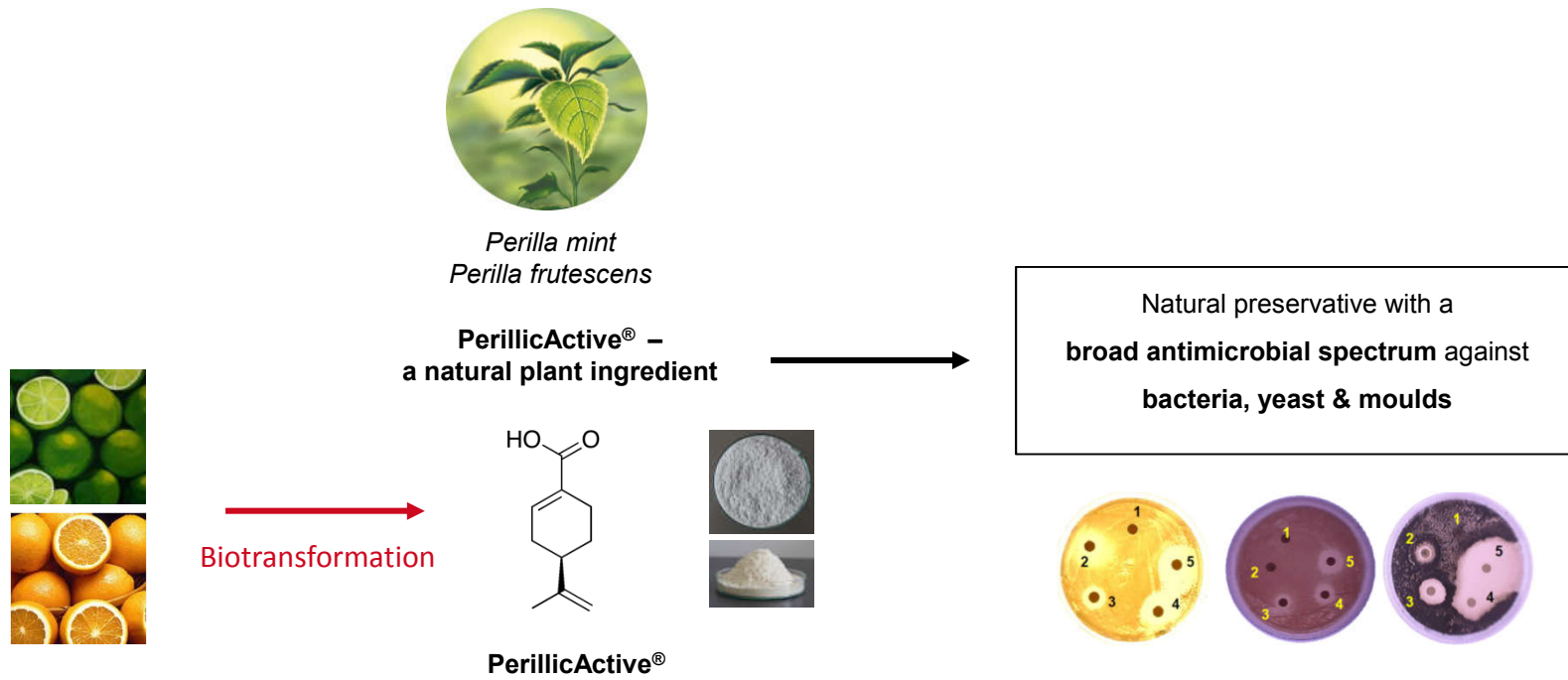




# Example: Novel biological Sweetener

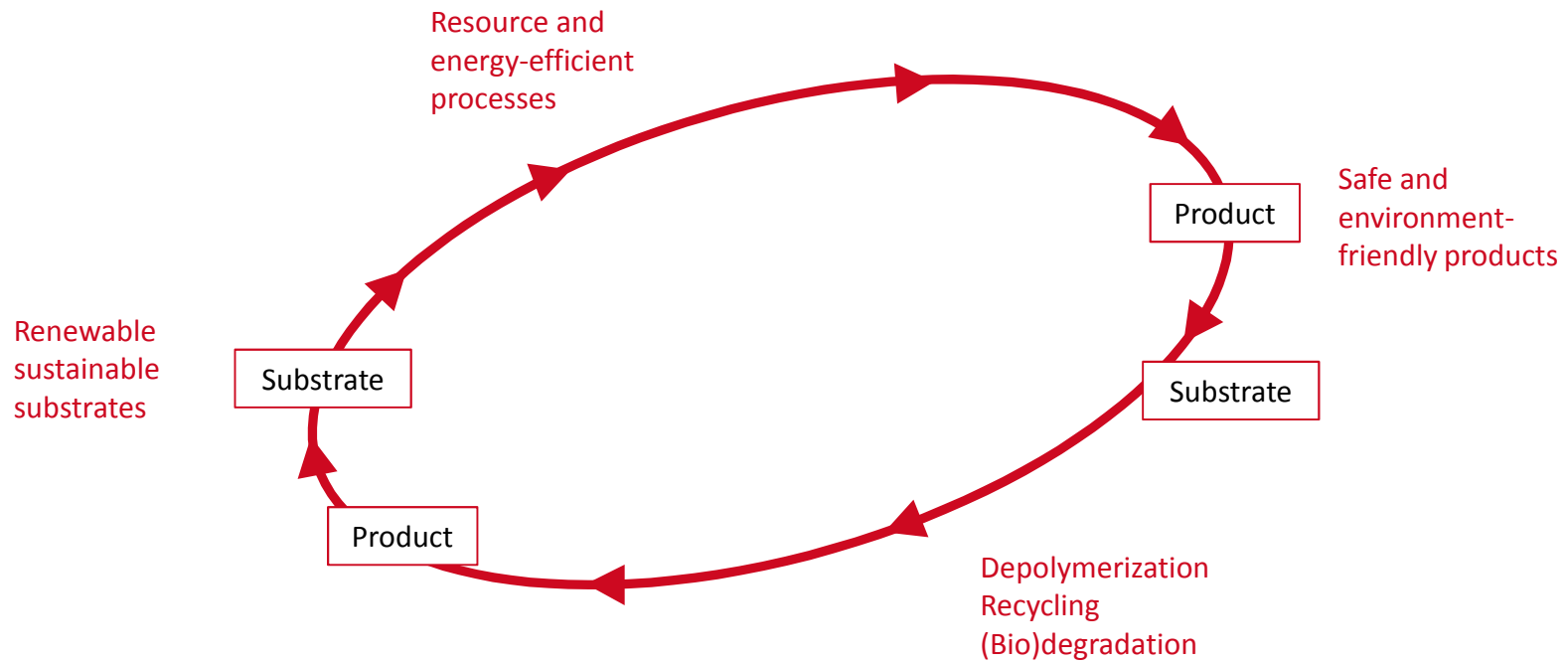


# Example: PerillicActive® – A Natural Antimicrobial Active



# En Route to the Knowledge Based Bioeconomy

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## Bioeconomy – circular economy

## En Route to the Knowledge Based Bioeconomy

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With Bioeconomy we will see (2030, 2050):

- ➔ **Integrated circles of substrate, production, product – zero waste**
- ➔ **Performance and Quality of consumer products driven by new sustainable ingredients/components**
- ➔ **Technology is the driver of transformation towards Bioeconomy (instead of resource ownership)**
- ➔ **Perception of Bioeconomy as an integrated transformation of society for more sustainability and new value creation**

# Thank you for your interest.

Dr. Jürgen Eck

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