



# Improving plant function and care in an efficient way

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## Hudson River Biotechnology

- Agricultural biotech company
- Based in Wageningen, Netherlands
- Private & public funding
- >50 employees and rapidly growing



2015

↓  
Founded

2018

↓  
Seed funding &  
EU grant

2019

↓  
Ranked among  
top 15 Biotech  
start-ups in  
Europe

2020

↓  
Ranked among 5  
top CRISPR start-  
ups globally

2021

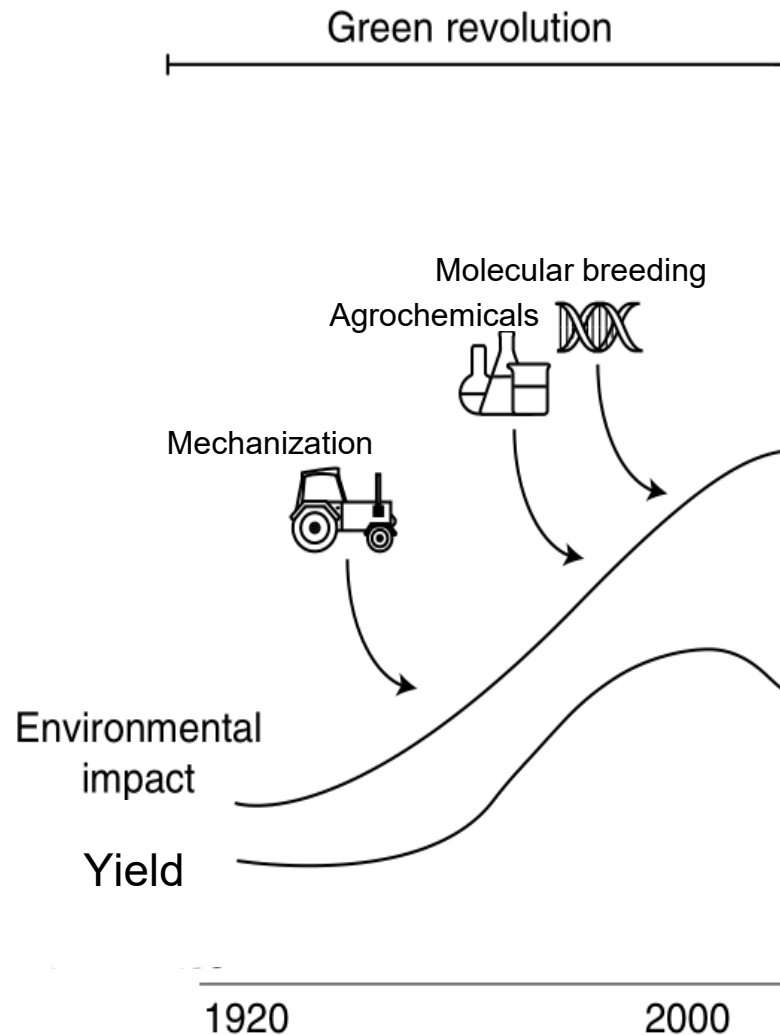
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Series A funding



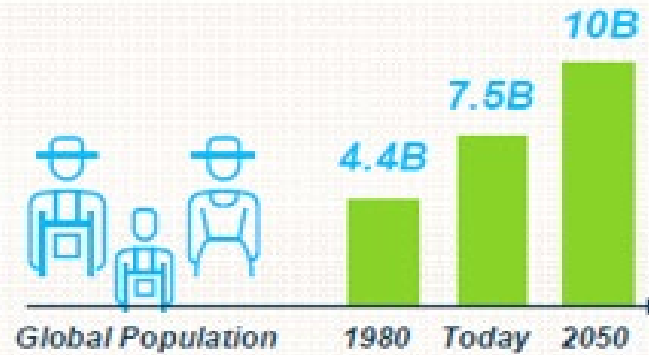




# A New Revolution is Needed



## Rising Population



## Changing Economies and Diet



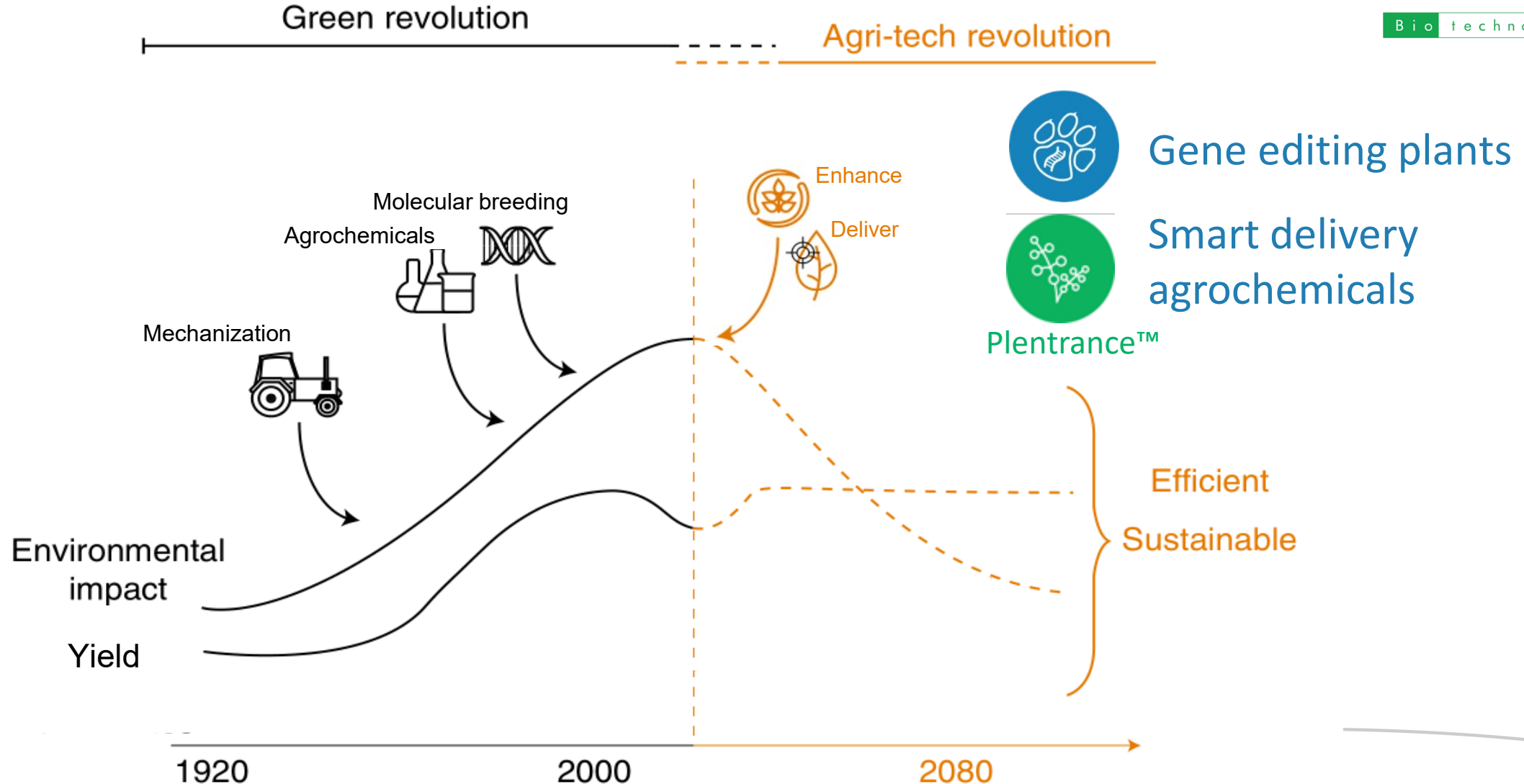
## Changing Climate



## Limited Farmland



# The Agri-Tech Revolution





## Genome Editing - TiGER

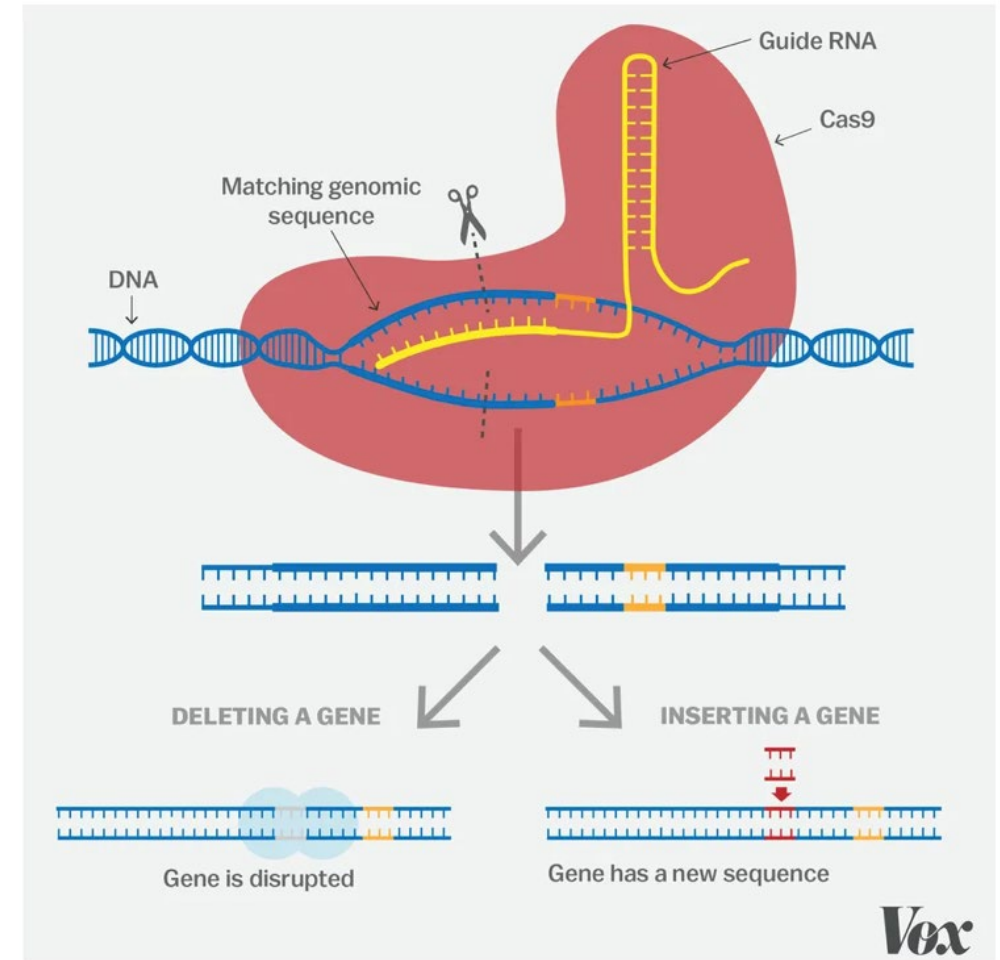


# What can CRISPR do for Plant Breeding?

With the use of CRISPR you can, at any given location in a genome

- Disrupt a sequence
  - Knock-out a gene or regulatory element
- Insert a sequence
  - Knock-in a gene or regulatory element
- Homology Directed Repair (HDR)

Influencing gene expression can confer traits. There are simple traits enabled / disrupted by one of a few genes and complex traits controlled by many genes.



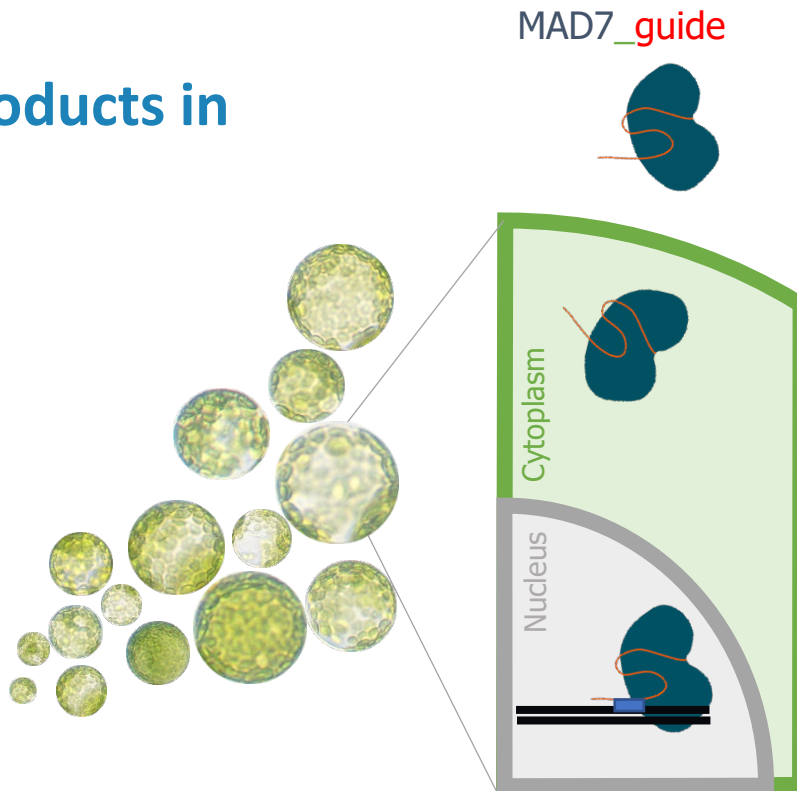
Javier Zarracina/Vox

## Our approach: MAD-TiGER

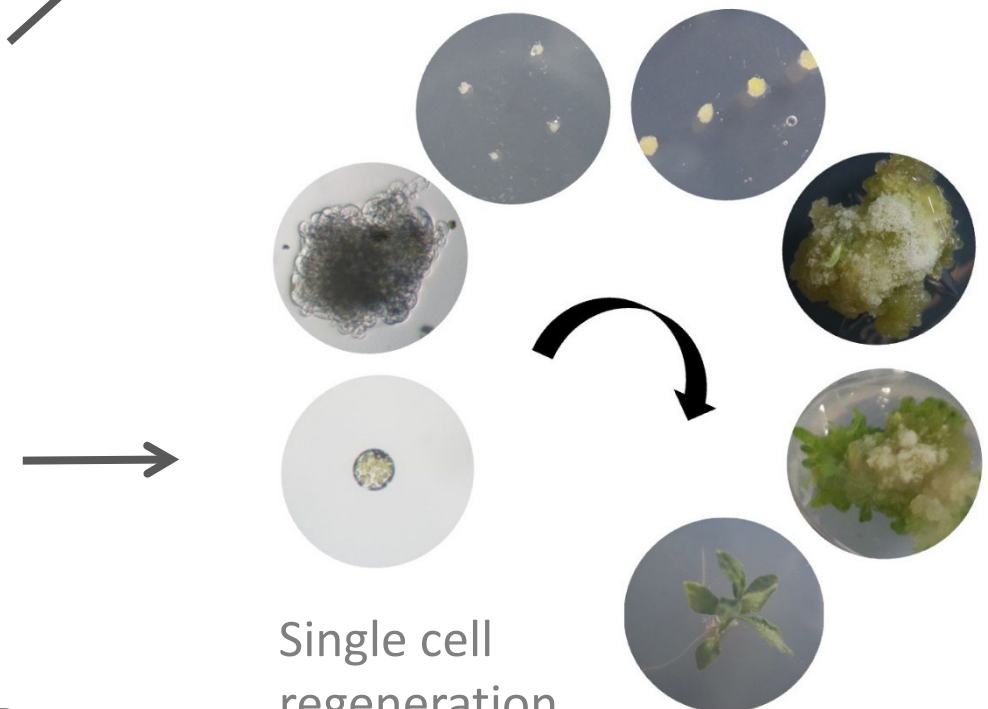
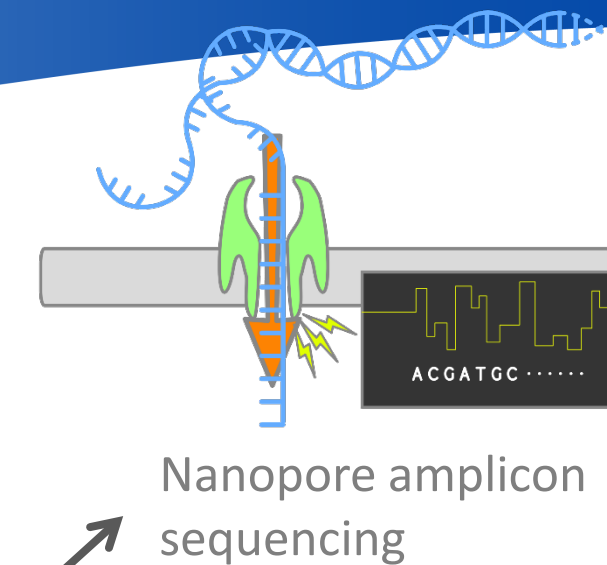
- Transgene free
- Homogeneous products in one generation



In vitro plant material



Protoplast isolation & transfection with MAD7-based RNPs



Single cell regeneration



## MAD-TiGER: Fast, transgene free CRISPR Plants



9-24 months



**Transgene-free**  
editing



Proprietary  
guide design  
**software**



**MAD7** nuclease  
**>40%** efficiency



**Single-cell**  
regeneration

**Homozygous**  
plants with  
single / multiple  
genes edited in  
**one round**



Already works for multiple plant species

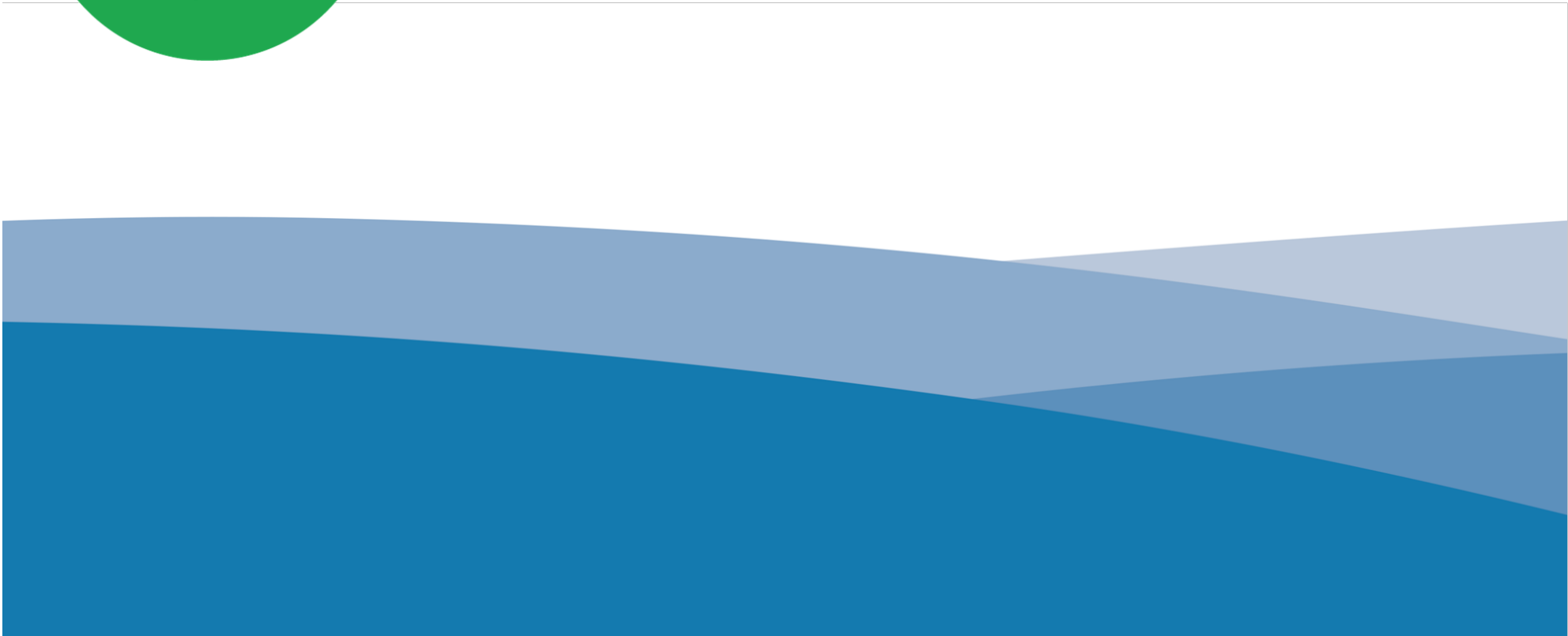


## Creating Mutual Success with Our Customers

- **Seed companies of any size**
  - Large seed companies – CRISPR end-to-end solutions & specific technologies
  - Smaller / medium sized breeders – CRISPR end-to-end solutions
- **Ingredient / food companies**
  - Outsourcing gene-editing activities
  - Alternative plant proteins, and modified starch, oil composition
- **Other biotech companies**
  - Pharmaceutical production using plants as a factory

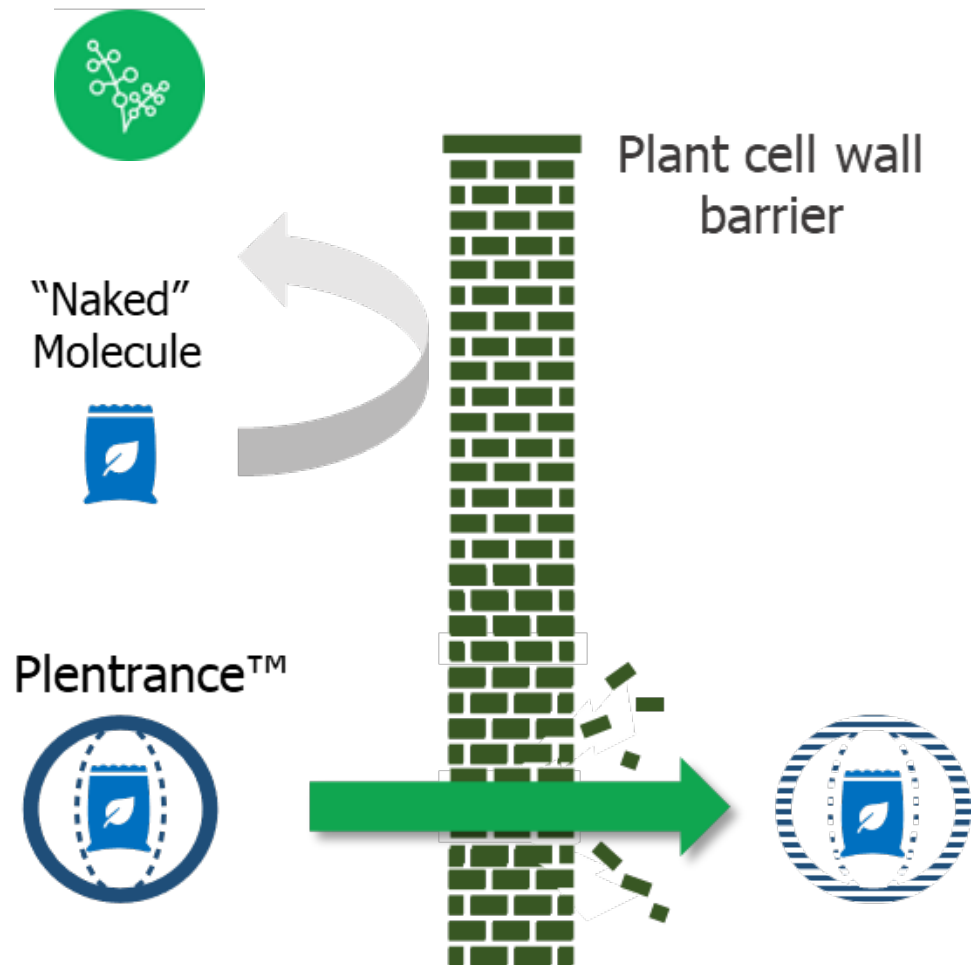


## Nanoparticles - Plentrance™

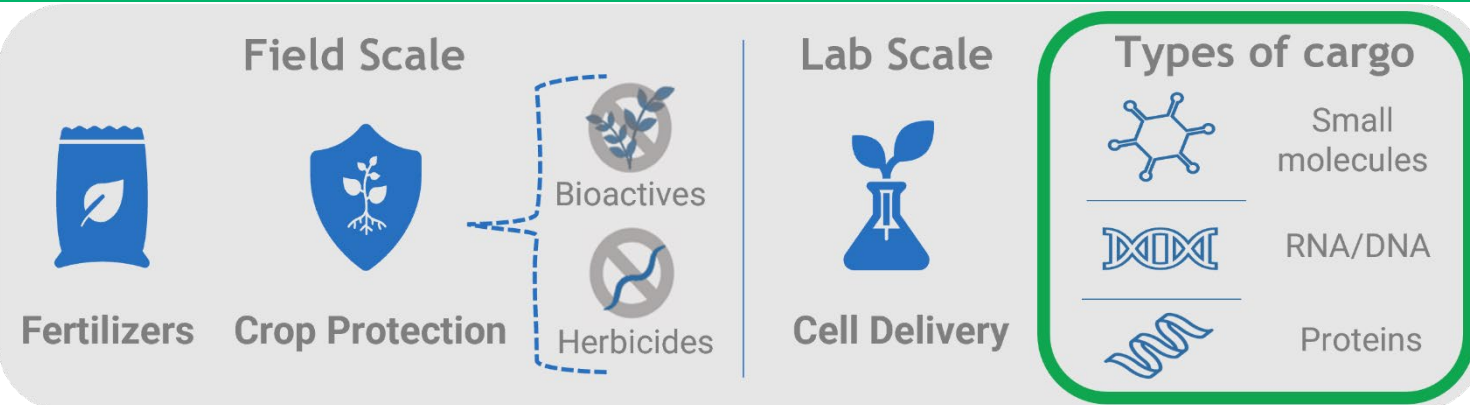




# Plentrance™: Nextgen Smart Delivery of Active Ingredients



- Able to penetrate through plant cell wall
- More efficient use of active ingredients
- Increased bioavailability leads to less waste
- Biodegradable, compatible with ecological agriculture
- Materials selected for affordable scalability



## Successful Collaboration Models

- **Breeding projects**
  - End-to-end CRISPR breeding solutions and trait development
  - Technology licensing
- **Technology co-development**
  - Crop specific breeding projects
  - Disease resistance, yield, drought, plant architecture, nutritional quality, etc.
- **Strategic partnerships**
  - Tailored outsourcing of gene-editing activities
  - Long term breeding and / or technological development



# Thank you!

## Contact Information

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