Doubled Haploid plant production
Our specialty

Fytagoras BV

knowledge in science

Doubled Haploid technology speeds up plant breeding programs by many years

Partner's elite cultivars → Technology → Trait selection + plant breeding → New elite hybrids with enhanced

- Yield potential
- Size
- Quality
- Metabolites
- Health
- Extreme weather Adaptation
- Disease and crop protection

DH technology is a non-GMO breeding tool that creates full inbred plants in one generation which are used to create elite hybrids

Fytagoras BV
plant science

Why doubled haploids?

Advantages of using doubled haploid plants in your breeding program are:

- Production of 100% homozygous parent lines
- More uniform parents are derived for hybrid seed production
- Highly uniform offspring
- Speeding up breeding progress (varieties are released much faster on the market)
- Faster anticipation towards demands of customers
- Sorting out lethal genes in one step
- Identification of recessive mutants
- Creation of stable populations for genetic studies

Fytagoras BV
plant science

Fytagoras' goal

Providing doubled haploid technology service to customers around the world

- Applicable for a wide range of genotypes
- Accurate risk and cost estimation
- Cost effective DH plant production

Fytagoras BV
plant science

Screening of a wide range of crops

Tomatoes

Potatoes

Sweet pepper

Barley

And more

Fytagoras BV
plant science

Growth of donor plants

Fytagoras BV
plant science

Early evaluation

- Early estimation of line responsiveness to DH protocol gives a DH production prognosis for the customer

Plated tomato DH embryo's

Fytagoras BV
plant science

Embryo and plant production

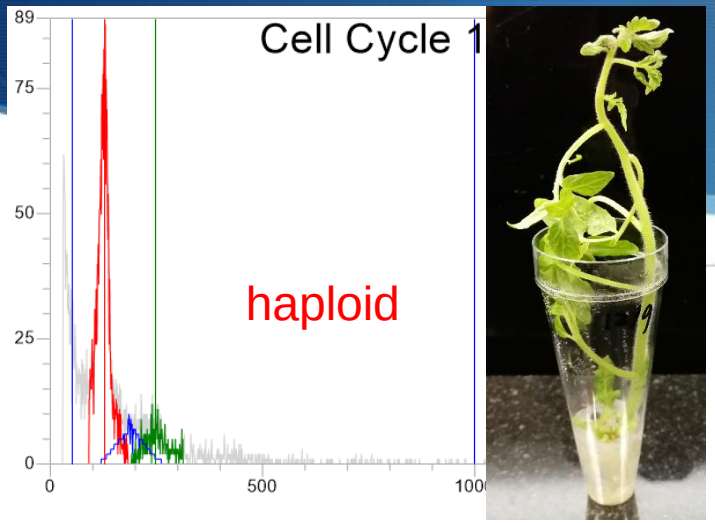
Embryogenic callus

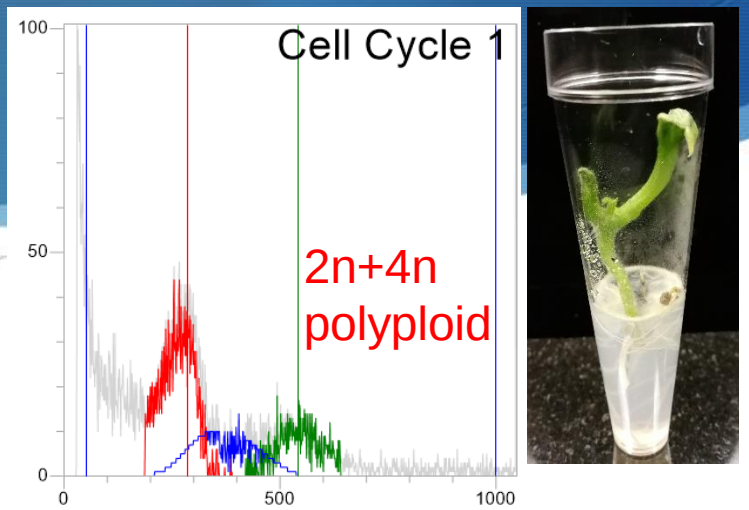
Plantlet

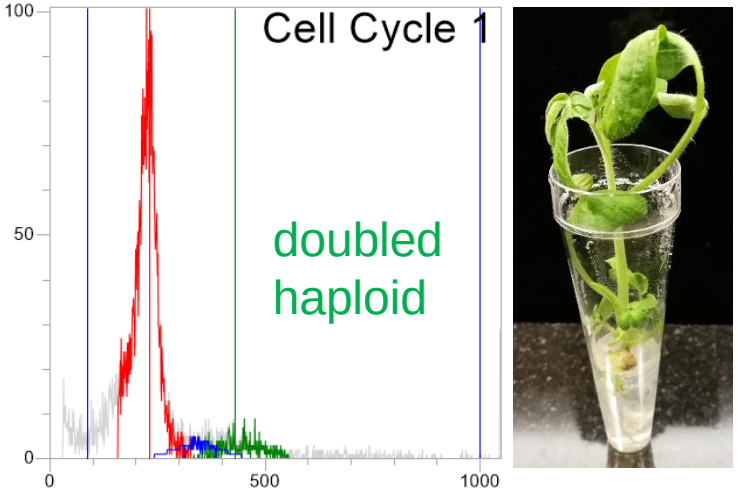
Selected DH shoots

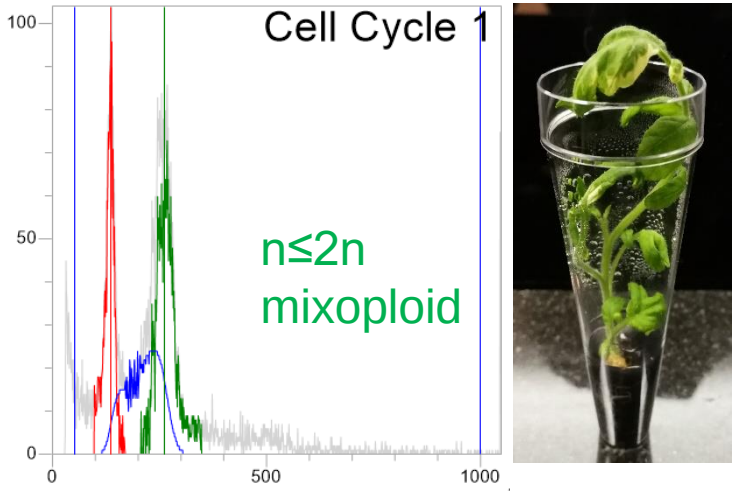
Fytagoras BV
plant science

Ploidy measurements with flow cytometry









Haploid, Doubled haploid and n≤2n mixoploids are difficult to identify by morphology. Polyploids are often deformed.

Fytagoras BV
plant science

DH plant growth and seed production

Doubled haploid plantlets in tissue culture jars.

Fytagoras BV
plant science

Delicate handling of tissue culture plants

Fytagoras BV
plant science

DH plant growth and seed production

Multiple doubled haploid tomato plants. Note difference in plant structure.

Fytagoras BV
plant science

Seed production

Doubled haploid plant

Harvested
DH tomatoes

Fytagoras BV
plant science

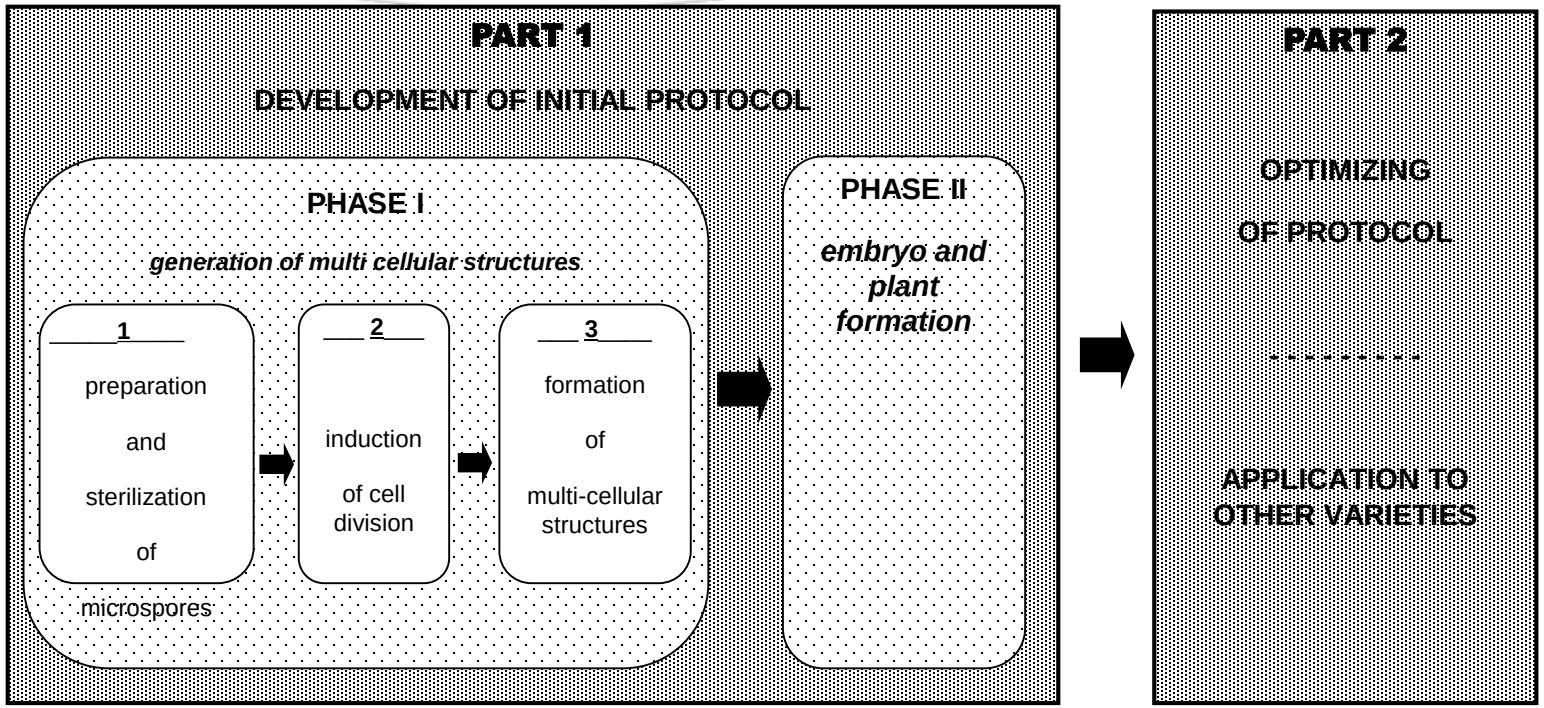
Seed production

Fruits from doubled haploid plants

Seeds from doubled haploid tomato fruit

Fytagoras BV
plant science

Different approach Fytagoras



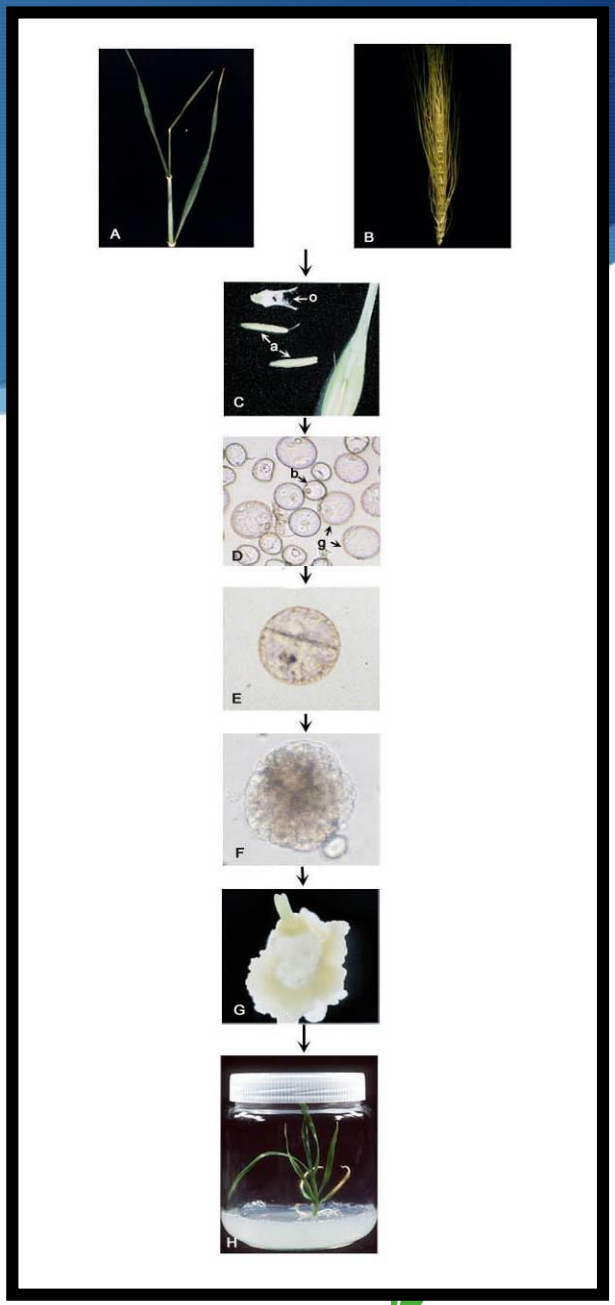
Fytagoras BV
plant science

Different approach Fytagoras

1. Donorplant

2. Induction of celldivision and growth of multicellulair structures

3. Formation of plants



Fytagoras BV
plant science

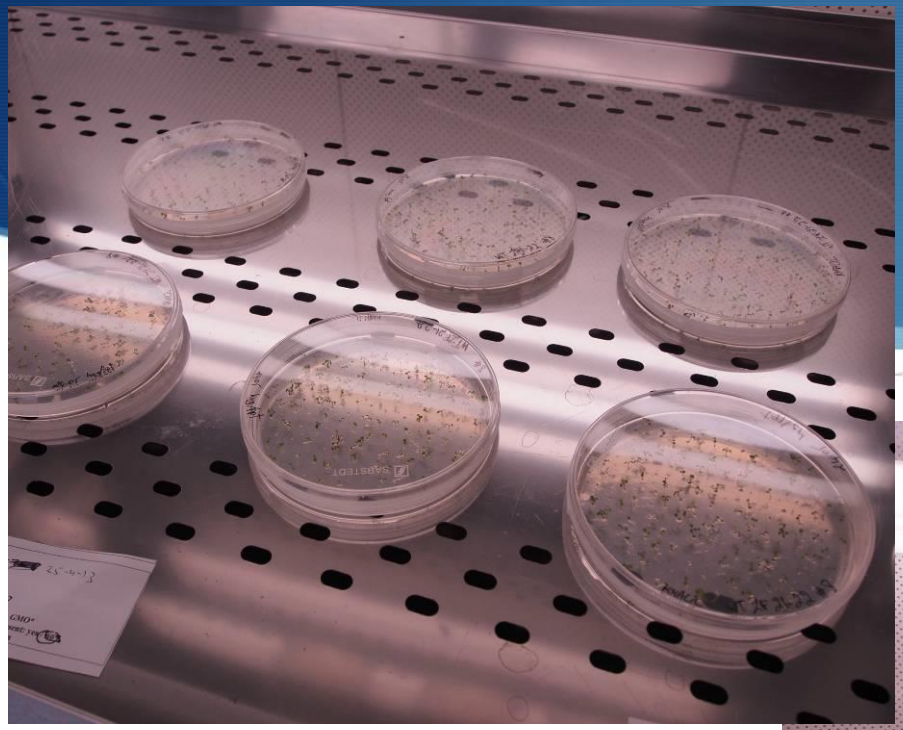
Growth facilities

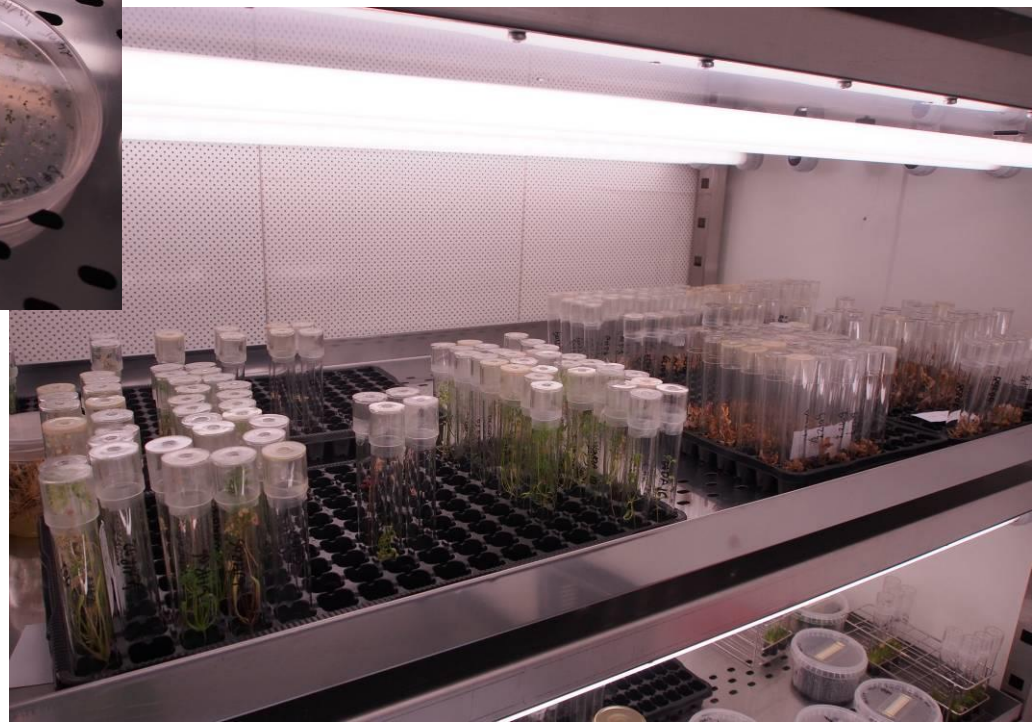
Fytagoras BV
plant science

Our laboratory

Fytagoras BV
plant science

Tissue culture





Fytagoras BV
plant science

Fytagoras team working on DH related technologies.

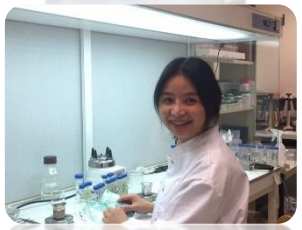
Bert van Duijn
CSO

Marco Vennik
Project manager
& Researcher

Cees Broers
Researcher

Marijke Kottenhagen
Researcher

Yingjie Zhou
Post Doc



Wessel Holtman
Commercial manager

Sandra van Bergen
Researcher

Fytagoras BV
knowledge in science

Fytagoras BV
plant science