

## TECHNOLOGY OFFER

# CHEMISTRY AND BIOTECHNOLOGY

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## HIPOD – ONE-STEP HYBRIDIZATION

Polyspermy enables hybridization of three parent plants (UN523)

### THE PROBLEM

Agriculture is facing a great challenges these days: Given the steadily growing world population and a measurable climate change, spaces available for agriculture are stagnating in the industrial countries. At the same time, the demand for food and agricultural commodities is rising, for example, for energy production or raw materials needed in manufacturing. One way to satisfy the growing demand for agricultural products consists in improving crop productivity. The methods of molecular biology can make a substantial contribution to this end.

### THE SOLUTION

One innovative approach comes from the University of Bremen: The research group led by professor Rita Gross-Hardt has developed a method which some day will allow them to combine the genetic profiles and breeding advantages of three partner plants. The so-called HIPOD method (high-throughput polypaternal breeding design) creates plants which result from polyspermy, i.e. the fusion of one egg cell with more than one sperm cell. Due to the additional set of genes, the progeny will display a higher ploidy level and carry the genetic information of three parents. The success of the method has already been demonstrated in model plants. The next steps consist of exploring the applicability of the system to crop plants.

### ADVANCES AND APPLICATIONS

- Faster breeding success
- Hybridization of hitherto incompatible plants and development of new varieties
- Combination of traits from more than two parent plants in only one generation

In Germany, the successful developments in plant breeding made it possible to increase the yields per hectare by up to 20 percent within the last 20 years. Regardless of the progress made, plant breeding is still a time consuming process. Techniques accelerating breeding thus have a high economic potential.



Flower of a triploid model plant (Arabidopsis)



Fertilization of a plant with the pollen from two fathers

### FIELD OF APPLICATION

Agriculture, horticulture, plant breeding

### KEYWORDS

Polyploidy, hybridization

### PROPERTY RIGHTS

European patent application

Official file number: 16179967.1

### OFFER

Licensing, sales, cooperation and further development

### AN INVENTION OF

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