



Institut "Jožef Stefan", Ljubljana, Slovenija



center za prenos tehnologij in inovacij  
na Institutu "Jožef Stefan"

# Licensing opportunity

## Development of superior varieties of wheat

### Field of use

03004001 Agro chemicals  
05001004 Organic Chemistry  
06002005 Genetic  
Engineering  
07001004 Crop Production  
07001008 Seed coating

### Current state of technology

Stage of Development:  
Field tested/evaluated

### Patent status

TBA

### Publication

TBA

### Developed by

Jožef Stefan Institute

### Reference

TBA

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### Background

A spin-out company of a Slovenian research institute is developing conventional and alternative methods for exploiting the genetic potential of heterosis (higher fitness of progeny over the parents) in grasses, particularly common wheat, for the purpose of improved breeding of wheat. Financial partners and/or industrial partners for technical cooperation / joint development or a joint venture, are sought.

### Description of the Invention

Regional and global seed markets are saturated by different varieties of wheat whose genetic potential is on the level of the year 2000 or even further back. Global consumption of wheat is increasing, and agricultural areas are shrinking, pushing breeders to improve the yield potential of new wheat varieties. Extant native lines of wheat have weak genetic potential, making it difficult to foresee further improvement. Investigation of hexaploid wheat pre-ancestors for exploitation of heterosis (higher fitness of progeny over the parents) is at an early development stage; nevertheless it already shows added value in modern wheat breeding. The invention represents an innovative way of modern wheat germplasm formation and exploitation through development of commercial varieties.

The described approach to wheat breeding may be applied to other economically important plants as well.

The company seeks industrial agricultural biotechnology companies with experience in plant breeding, seed production and / or agricultural chemicals production, for joint development of the technology, such as adaptation to other economically important plants, field testing, and seed production. The company will benefit from partners with capacities of expanding their present activities. Partners for entering joint ventures, and/or financial partners, are likewise sought for the financial support of the company's activities.

The founders of the spin-out company are also researchers at the leading Slovenian public research institute and are among the leading scientists in their respective departments with strong international publication records. They are experts in organic chemistry, applied pharmacology, plant genetics, and biotechnology, with the focus on development of environmentally friendly organic synthesis and genetics. Their collaboration with the pharmaceutical industry have resulted in a patent and are already implemented in the production. The spin-off company focuses on research and development activities in genetics, biotechnology and agrochemistry, and is active in the field of commercial breeding of field crops.



«The investment is co-financed by the Republic of Slovenia and the European Union under the European Regional Development Fund.»



## Main Advantages

The approach does not include, produce, or apply genetically modified organisms produced by (expensive) genetic engineering, nor does it apply environmentally harmful agro-chemicals. The technology uses targeted evolution by breeding of ancestors of native hexaploid wheat in order to develop highly productive genetics. Thus obtained wheat varieties offer superiority with high productivity and good adaptability to changing environmental conditions. The cost of described technology is similar to classical breeding procedures and is therefore acceptable for further commercial exploitation.

The described technology represents a method for exploitation of heterosis in the first filial generation, and generations which follow the first filial generation. Heterosis is thus preserved as a uniform genotype.