

# *PureUpgrade*<sup>TM</sup>

- **Package of technologies to achieve:**
  - Higher transformation efficiency
  - Broader range of germplasm with practical transformation efficiency
  - Shorter timeframe from transformation to seed
- **Please contact us for further information.**

# PureUpgrade<sup>TM</sup>

Transformation efficiency achieved by *PureIntro*<sup>TM</sup> plus *PureUpgrade*<sup>TM</sup>

Crop	Material	Frequency	Time	
		Ind. plants/piece	Infect. to seed	
Rice	Japonica	Immature embryo	15.0	5 M
	Japonica	Callus	0.6	5 M
	Indica	Immature embryo	5.0	6 M
Maize	A188	Immature embryo	0.5	6 M
	W117	Immature embryo	0.3	6 M
	H99	Immature embryo	0.2	6 M
	A634	Immature embryo	0.1	6 M
Wheat	Public	Immature embryo	0.05	6 M
Barley	Public	Immature embryo	1.0	6 M
Tobacco	SR1	Leaf disk	2.0	6 M



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## ■ Publications

### ■ Articles

- Ishida Y, Saito H, Hiei Y, Komari T
  - Improved protocol for transformation of maize (*Zea mays* L.) mediated by *Agrobacterium tumefaciens*. *Plant Biotechnology* **20**: 57-66 (2003)
- Ishida, Y., Murai, N., Kuraya, Y., Ohta, S., Saito, H., Hiei, Y., and Komari, T.
  - Improved co-transformation of maize with vectors carrying two separate T-DNAs mediated by *Agrobacterium tumefaciens*. *Plant Biotechnology* **21**, 57-63 (2004).
- Hiei, Y., Ishida, Y., Kasaoka, K., and Komari, T.
  - Improved frequency of transformation in rice and maize by treatment of immature embryos with centrifuging and heat prior to infection with *Agrobacterium tumefaciens*. *Plant Cell, Tissue and Organ Culture* **87**, 233-243 (2006).



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## ■ Publications

### ■ Articles

- Ishida, Y., Hiei, Y., Komari, T.
  - Agrobacterium-mediated transformation of maize.  
*Nature Protocols* **2**, 1614 - 1621 (2007)
- Hiei, Y. and Komari, T.
  - Agrobacterium-mediated transformation of rice using immature embryos or calli induced from mature seed.  
*Nature Protocols* **3**: 824-834 (2008).

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## ■ Publication

### ■ Patents

- Heat, Centrifuging (pre-treatment for plant tissues)
  - Method of improving gene transfer efficiency into plant cells.  
[WO2002/12521](#)
- Centrifuging (pre-treatment for plant tissues)
  - Method of improving gene transfer efficiency into plant cells.  
[WO2002/12520](#)
- Cu<sup>2+</sup>
  - Method of improving plant transformation efficiency by adding copper ion.  
[WO2005/017152](#)
- Powder (addition of powder to inoculums)
  - Method of improving transformation efficiency using powder.  
[WO2007/069643](#)



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## ■ Publication

### ■ Patents

- Pressure (pre-treatment for plant tissues)
  - Method of infusing genes into plant material.  
[WO2005/017169](#)
- Dicamba (use for co-culture medium)
  - Method of improving efficiency of transformation in plants, comprising a 'co-culture step' of culturing plant tissue in a co-culture medium containing 3,6-dichloro-o-anisic acid.  
[WO2008/105508](#)
- Dicamba (high-speed transformation)
  - Method of production of transformants using *Agrobacterium* without a selection step.  
[WO2008/105509](#)