

## Non-Confidential Description - PSU No. 3670 "Transgenic Manipulation of Filamentous Fungi"

### **Keywords:**

Mushroom, fungi, transgene, phenotype,  
genotype, proteins

### **Links:**

[Inventor Website](#)  
[US Patent 8,686,218](#)

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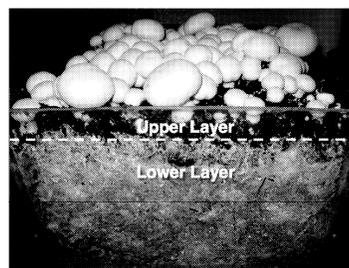


FIG. 1

Fig 1: Cultivation Scheme for Button Mushroom

### **Background**

It is well known that the fruit bodies (mushrooms) of some fungi are commercially cultivated for their culinary, nutritional, and medicinal qualities. It is also generally recognized that the commercial cultivation of mushrooms is limited by diseases, insect pests, and narrow genetic variation. While genetic transformation technology holds enormous potential for crop improvement, genetically modified mushrooms have low commercial value, because they are not currently preferred in the marketplace. Hence, there is a need to provide mechanisms for application of transgenic techniques to increase yield, disease/pest resistance, product quality, shelf life, and culinary/medicinal value commercially by independently controlling the genotype and phenotype.

### **Invention Description**

The proposed technology enables the transgenic modification of a mushroom-forming fungus to confer a transgenic genotype and/or phenotype by independently controlling each. In transgenic breeding of the mushroom, it is possible to manipulate the fruiting body of a fungus conferring an altered phenotype, but a wild-type genotype. The fruiting body is devoid of the cognate transgene, therefore making it preferred in the marketplace. With the transgenic manipulation methods of the invention, genetic engineering techniques can be used to manipulate filamentous fungi for ease of cultivation or production, improved culinary, medicinal, or nutritional value, and production of recombinant proteins for harvest.

### **Advantages/Applications**

- Independently control genotype and phenotype
- Improves cultivation, medicinal value, and the production of recombinant proteins
- Devoid of cognate transgene