

# SmartCell Project

## Exploiting plants to create "green factories"

***SmartCell is an innovative EU-funded research project that has been awarded €6 million to develop tools to use plant cells to produce high value compounds for industrial use. SmartCell will help understand and exploit the biochemical capacity of plants, focusing on the production of specific molecules. The novelty of this research project lies in the development of new knowledge and technologies that will turn plants into "green factories", producing bigger amounts of these high value molecules at a faster pace.***

SmartCell aims at developing fundamental knowledge and technologies so that plants and plant cells can be engineered to produce valuable secondary metabolites, organic compounds generated by plants used for creating pharmaceuticals, in higher quantities and at a faster pace.

Plants produce a wide variety of secondary metabolite compounds but only in small amounts and over very long periods of time. The mechanisms of secondary metabolite production in plants and the metabolic pathways in isolated cloned cells constitute the main areas of research for SmartCell. The understanding of these processes will then be used to develop tools that will exploit these secondary metabolic pathways, synthesising high volumes of valuable compounds quickly, e.g. pharmaceuticals.

The project will also develop an interactive database of plant metabolic pathways and a repository of pathway related genes.

### **In the footsteps of a broader strategy**

It is crucial to seize and exploit opportunities arising from the recognition that renewable resources such as plants are the basis of present and future economic development and prosperity for Europe. The expected impact for Europe is to increase our knowledge exponentially concerning molecular, biochemical, genetic and physiological aspects of plant metabolic pathways at the systems level for the rational, efficient and sustainable production of important compounds for industrial use.

The SmartCell project addresses the specific issues defined in the EU 7th Framework Programme for using plants for sustainable non-food products by providing innovations for plants and plant cells as Green Factories.

The project started less than a year ago and it involves a consortium of 14 leading European research institutions, two small-and medium-sized enterprises (SMEs) and one major industrial enterprise. The total budget is €8.5 million over the next four years.

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