# PCT PORTRAITS
## Meet the Innovators

Since the Patent Cooperation Treaty (PCT) began operating in 1978, more than one million international patent applications have been filed, covering inventions and new technology of every description. This is the second in a series of articles in which WIPO Magazine picks out a few innovations from among the profusion of applications, and looks at the people behind the patents.

## Nobel Prize for a dance which creates new molecules

To describe Yves Chauvin as a modest man would seem an understatement. After hearing that he was to share the 2005 Nobel Prize for chemistry with U.S. scientists Robert Grubbs and Richard Schrock, the 74 year old Frenchman declared himself "embarrassed" by his sudden fame, adding, "I don't have anything much to tell." Former colleagues at the French Institute for Petroleum (IFP) recount how, indifferent to status, he would turn down more senior posts in order to pursue his research, remaining in the same office for more than 40 years.

Typoform courtesy of The Royal Swedish Academy of Sciences

*Yves Chauvin's mechanism is likened to dancing couples, in which the "catalyst pair" and the "alkene pair" of atoms change partners and so create new molecules.*

As Yves Chauvin recalls, it was on a rainy Sunday afternoon back in 1971 that he thought: "Ah yes, it's obvious!" and so made his quiet breakthrough in an area of organic chemical synthesis known as ***metathesis***. These chemical reactions are now widely used in industry in the production of pharmaceuticals, polymers and advanced plastics, for example, and are the only means of producing certain useful substances. But some 20 years were to pass before Robert Grubbs and Richard Schrock made it possible to walk through the door that Yves Chauvin's new "mechanism" had opened and unleash the potential.

***Metathesis*** means 'exchange places.' It refers to a process in which the bonds between different pairs of carbon atoms are broken and new bonds formed, so creating new substances. (It can be thought of as a dance, during which the couples change partners and dance off as new couples). The critical advances made by the Nobel Prize laureates enabled the development of efficient catalysts to trigger these reactions. The new catalysts marked a great step forward for "green" chemistry. They enable industry to conduct reactions at lower temperatures, produce less hazardous waste and save energy.

Researchers are now using ***metathesis*** in the quest for new pharmaceuticals to fight diseases including cancer, HIV/AIDS, Alzheimer's disease and Down's syndrome. In the words of the Nobel Prize citation: "Imagination will soon be the only limit to what molecules can be built."

Yves Chauvet, Robert Grubbs and Richard Schrock have all used the PCT system to disclose and protect their scientific advances. (For more see: ***http://nobelprize.org)***

♦

## A plant programmed to find landmines

Everyone knows about sniffer dogs. But sniffer cress?

In 2002 Carsten Meier, a young Danish plant biologist, filed a PCT application for a "reporter system" in plants. Based on extensive research at the Institute of Molecular Biology and Physiology in the University of Copenhagen, it describes a means of genetically modifying the responses of plants to external stimuli, such as pollutants in soil.

>>>

Photo: Henrik Freek

Photo: Aresa

*Red Detect™ plants growing near a buried landmine*

With this, Carsten Meier re-engineered a common weed, Thale Cress, to make it change color from green to red when – and only when – growing near buried landmines or explosives. Using the pigmentation that causes leaves to change color in cold weather, the cress is genetically programmed to react to the traces of nitrogen dioxide which seep into the soil from explosives.

"Carsten and the team want to use the genetic modification technology for a good purpose," explained Simon Østergaard, Chief Executive of ***Aresa Biodetection***, which was set up to develop the project. "We hope it can become a valuable addition to demining methods, by helping to identify landmines on arable land more quickly and cheaply, so that the land can be released for local crop production." The UN estimates that landmines cause some 15 to 20,000 civilian deaths and injuries each year.

Thale cress occurs naturally in many countries and thrives in a range of soil types and climates. To prevent any uncontrolled spread, the modified strain cannot produce seeds, nor even germinate without being fed a missing hormone. The seeds would be sown from a crop-spraying plane or with an off-the-shelf pump.

The Danish Armed Forces have been testing the ***Red Detect™*** plant with ***Aresa Biodetection***. In their latest results the plants changed color within three weeks and identified all the hidden explosives. With the viability of the system unproven as yet, a number of demining organizations have naturally reserved judgement. But several are enthusiastically supporting ***Aresa's*** development of the technology.

And why did they patent via the PCT? "It just seemed the obvious choice," says Simon Østergaard. (For more see: ***www.aresa.dk***)

## One man and his tent

Inventions and patents are not the unique preserve of research institutions and business.

Australian Gary Lewtschenko is a 23-year-old camping and outdoors enthusiast. Since childhood he has spent his leisure time climbing mountains and hiking deep into bush land. But he grew frustrated by the limitations of tents on the market, which were ill-suited to rough terrain. At age 18, encouraged by his inventive grandfather, he set about creating his own solution to the problem.

The result was his ***Anywhere Touring Tent***. With strong, telescopic legs and a hammock-like, raised base, the tent is designed to provide a level sleeping surface on any terrain. "It can be pitched on the side of a mountain but still remain flat, on rocky ground without needing tent pegs, and over water up to 80 centimeters deep," says Gary. The company he set up to manufacture and sell the tent, ***Unique Creation***s, is growing steadily.

Photo: Unique Creations

*The Anywhere Tent - living up to its name*

Gary Lewtschenko is featured in the Australian government's "Smart Start" IP studies. He filed a PCT application in 2003. "I knew it was a really good idea, so I wanted to own the invention from the start," he explained, adding "I've got another five ideas up my sleeve that I want to develop." (For more see: ***www.uniquecreations.com.au)***