

## 2000 Award

# Technological innovation, food quality and safety

### The theme

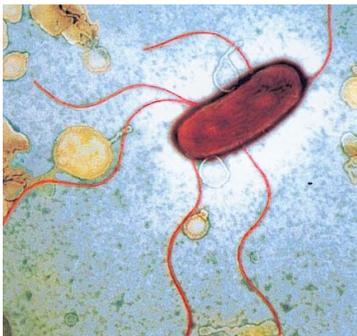
For its 2000 prize, the Altran Foundation has chosen technological innovation and food: food quality and safety as its theme.

## The laureates

### First Prize

Dominique GREGOIRE - France

### Tracing systems to improve the monitoring of the cold chain



The first prize went to Dominique Grégoire from the company Technigreg. The company has developed two revolutionary new tracing systems: TraciLOG and TraciMEAL. This improved monitoring of the cold chain is a major step forward as far as consumer safety is concerned.

It is well known that the food chain is complicated and that the transportation of perishable foodstuff requires that every stage of the cold chain is traceable in the interest of consumer safety. The cold chain must also be constantly monitored for any breaks especially during the transportation phase. The principle is to endow each mobile container with "electronic intelligence", thus enabling it to log each of the phases through which it passes, monitor its

internal temperature and record information about whether its doors are open or closed. This information is gathered automatically and securely, without any contact with the contents, and requires no human intervention. It is a totally reliable global management indicator for use by the logistics service in charge of maintaining the cold chain. In addition, TraciLOG generates data which can be used to take corrective action in the event of any break in the cold chain.

*"The Altran support was an amazing chance for me : such a skilful level for a SME... I was particularly impressed by the efficient and rigorous methods of Altran's consultants"* Dominique GREGOIRE

### Altran Support

Accomplishments achieved throughout the year of technological support: real progress. Altran engineers worked actively, side by side with the prize-winner, on conducting market studies, on the choice of suppliers, at developing product packaging, on the design of an electronic module and on the transition to the production stage for both TraciLOG and TraciMEAL, as well as on raising funds for an increase in the company's capital to FRF 7 million!

### Results

The efforts of these teams were rewarded in March 2001, when a fully operational version of TraciLOG was installed for the first time by a supermarket distributor. As for TraciMEAL, it was adopted last May by an institutional food service provider in Toulouse.

Since then, TechniGREG, which has registered many patents related to this innovation, has come into business with many companies, particularly in the air transport sector.

### After the Award

After the Altran support the Technigreg systems succeeded in raising its capital by €1 million.

### More about the theme



This is a highly topical issue in Europe. Romano Prodi, President of the European Commission, wants to take the "mad cow" issue out of its political context and return it to the arena of public health. This seems to demonstrate his desire to settle the problem of food safety once and for all, to review the current structures and to create a European assessment agency.

Proposals should see the light of day between now and the end of 2000 for the monitoring of food through all levels of the food chain, "from the field to the table". Preventing contamination is also a priority for the food processing industry, which finds itself subject to a two-fold requirement: the provision of increasingly long shelf lives and cast-iron food safety guarantees. These requirements can only be met if we have a precise technological understanding of all aspects of food contamination and microbial reproduction.

## Second Prize

### IAN TOOTH - United Kingdom

#### Method for the rapid and accurate typing of E. coli O157

Ian Toth's project is a method for the rapid and accurate typing of E. coli O157. The system may be used by food safety hospitals and laboratories. The technique, developed by Ian Toth and his team, allows data to be analysed faster, automatically and less expensively. The results can then be interpreted less subjectively and stored in a database which then forms part of a worldwide Internet database of E. coli O157 strains. It will also be possible to use the test on many other bacteria, including Salmonella, Listeria, Campylobacter and a number of other harmful food pathogens. The technique is currently being tested by Dr Fiona Thomson-Carter at the Grampian University Hospital.

#### Altran Support

The first major breakthrough was achieved just a few months after the Altran Foundation conferred the Award on Dr. Ian Toth and his team from the Scottish Crop Research Institute in Dundee (United Kingdom). The

Altran consultants involved in the support services offered by the Altran Foundation for Innovation were successful in immobilizing the virus (phage) on micro titre plates through the use of freeze-drying. These plates are part of the test kit for rapid, low-cost phage typing for food pathogens.

At the same time, the Altran teams carried out tests to obtain the first databases and developed software that will aid in typing Escherichia coli O157, one of the most deadly food pathogens. In addition to its speed, simplicity and low cost, this typing method was designed in such a way as to automate data analysis in order to limit the subjective element during diagnostic procedures, so that results can be compared with databases worldwide via the Internet.

#### After the Award

A research partnership has been signed with Health Canada, the first centre worldwide of phage-typing of E-Coli O157, in order to validate the method internationally. Negotiations are also in process with another important worldwide epidemic centre which envisages integrating the new fast phage-typing software with its current international surveillance system. This will allow the kit to become an international tool for controlling the propagation of food-based toxic-infections. The latest step forward – and a giant one! – consists in the completion of a market study and a business plan. More than 300 laboratories worldwide were contacted, specifically in Canada, the USA, Norway and Japan. All of them are ready to test the kit.

## The Finalists

### Professor DIMCOVSKI - Switzerland

#### **X-raying foodstuffs**

The Swiss company BIOSCAN SA, which makes biomedical scanners, was set up by Professor Zlatimir and Georges Charpak, winner of the Nobel Prize for physics in 1992.

It submitted a new detector which can examine packaged foodstuffs on the production line.

BIOSCAN's alternative is an X-ray detection system and is sufficiently sensitive to need very low doses of radiation. As a result, any dangerous object, such as pieces of glass, metal or bone fragments can be detected in the packaged foodstuffs.

The new system, known as X VIEW, comprises a standard X-ray emitter coupled with a digital imaging system. Dedicated real-time image acquisition and processing software makes it possible to detect, identify and locate defects in the final product in real time while on the production line, and to alert the person in charge.

### Martin GEORGE - United Kingdom

#### **Temperature sensors to monitor food quality**

In the food-processing industry, food quality depends greatly on the precision of temperature measurement. However, in certain environments, it is often difficult to measure these temperatures.

In an attempt to make up for the possible malfunctioning of systems that measure food temperature, the Camden & Chorleywood Food Research Association has developed a remote controlled miniature temperature sensor system – less than 5 minutes – that can be used in food processing and in food storage validation.

### Dominique CHAMPIAT – France

#### **CANDELIFE, an in situ real-time quality control kit for food, pharmaceutical and cosmetological products**

Dominique Champiat, water biology specialist and internationally-known researcher, has developed a selection of rapid analysis solutions (from 5 seconds to 30 minutes, compared to the previous system that needed several hours or days), which can be used to screen for aerobic and anaerobic bacteria, as well as the detection of chemical or biological contaminants.

The aim of the Candelife project, led by Dominique Champiat is to develop possible applications for this technique in the food and medical sectors, the pharmaceutical and cosmetic industries, as well as in environmental management (air and water quality etc.).

### Dr Christian GERTZ - Germany

#### **Fri-check: a rapid test to determine the degree of decomposition of cooking fats and oils**

An estimated 20 million tonnes of cooking oil and fat are used worldwide per year. However, decomposed cooking oils can be harmful to health.

Fri-Check is a fast and accurate electronic oil tester which works by monitoring the viscosity and density of the oil. It allows food inspectors and operators (in frying factories, restaurants and catering outlets) to monitor the quality of fats and the degree of contamination. The test determines when exactly the oils should be discarded, and monitors the changes that they undergo as a result of oxidation and heat.

## The jury

### President of the jury

#### Guy PAILLOTIN

Former President of the INRA, France's national institute for agronomic research, President of the regional council of the Paris-Grignon national agronomics institute and advisor to the ECA's High Commissioner on environmental issues.

#### Armanda BRAZ SEVERO – Portugal

Head of the "Food technologies department" of Portugal's national institute of research into industrial technologies in Lisbon.

#### Jacques DECOMBAZ – Switzerland

Researcher at Nestlé's Research Centre.

#### Petra HIERHOLZER – Germany

Centre for veterinary health monitoring at Frankfurt airport.

#### David HUGHES – United Kingdom

Professor, head of the "Food Industry Management" department at Wye College.

#### Carlo POMPEI – Italy

Professor, Head of the food technologies department at the University of Milan.

#### Giuseppe ROTILIO – Italy

Professor, President of the national institute of nutrition in Rome.

#### Guy SAVOY – France

Headcook in Paris.

#### Bernhard TAUSCHER – Germany

Director of the Karlsruhe Centre for Nutrition Research.

#### Anne-Lucie WACK – France

Head of the food industry programme at the Centre de Coopération Internationale en Recherche Agronomique pour le Développement (International Cooperation Centre on Agrarian Research for Development).

#### Jorge WAGENSBERG – Spain

Director of the Barcelona Science Museum.

