



# **FESPB***Alert*

No. 3(2) February 2003

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## **Contents:**

**Research news**

**Other news**

**Positions available**

**Forthcoming meetings**

**Useful web sites**

**FESPB News**

**Items for *FESPBAlert***

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### **Research news**

Scientists identify bovine gene regulating milk production

MTT Agrifood Research Finland and the University of Liège, Belgium, have worked together successfully in locating a gene that regulates total yield and protein and fat content of milk. The scientists found a variation in the growth hormone receptor gene in the bovine chromosome 20. The variation in the receptor gene is associated with a major effect on milk yield and composition in Ayrshire, Holstein and Jersey cows.

Dr Johanna Vilkki of MTT says that developing associated markers for genes that affect milk traits is not highly prioritised in breeding since it is relatively easy to improve these traits by conventional selection.

The value of the finding is scientific. This is the second time that a clear quantified association has been demonstrated between a single gene and bovine milk production. The MTT group is currently fine-mapping the genes that affect cows' susceptibility to mastitis. This is of interest to cattle breeders, since traits sensitive to environmental effects, such as disease resistance, are difficult to improve by conventional methods, and for economic and welfare reasons the eradication of mastitis is an important goal for dairy cattle breeders.

#### Milk Genes Diagnosed From The Embryo

The present discovery will help breeders select bulls siring daughters with more economical milk production.

The 'water' version of the gene results in a 200 kg increase in annual production per cow, respectively decreasing the fat and protein content. The more cost-effective version of the gene will increase the average protein content in milk by 0.06 percentage units and the fat content by 0.15 percentage units, albeit at the expense of total milk yield. In 2002 the annual yield of the Finnish Ayrshire cow was 7,381 kg of milk with fat % of 4.36 and protein % of 3.36. According to Dr Vilkki, the vast majority of Finnish Ayrshire cattle are already carrying the more advantageous form of the gene.

The study, launched in 1999, was part of the EU biotechnology programme project EURIBDIS, in which altogether six European research groups cooperated. The sparse mapping of the entire genome of the

**Finnish Ayrshire, completed by MTT about two years ago, provided the basis for the present study.**

**MTT is a co-applicant in an international application for a patent for the use of the variation in the sequence of the growth hormone receptor gene in selection for milk-composition. There is only one comparable patent anywhere in the world, and that is also a result of work by the same international research group.**

**Simultaneously with the milk gene discovery, MTT's researchers have developed a method allowing diagnosis of the gene variants from a bovine embryo biopsy. This allows the results to be immediately applied in the ASMO breeding programme, where selection is enhanced by extensive use of embryo transfer.**

22 February 2003 16.10 GMT

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Tim Watson

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Posted By:  
 Royal Society

17 February 2003  
 under embargo until  
 19 Feb 2003 00:01 GMT

keywords  
 Engineering, Environment  
 - science, Social  
 Sciences, Earth Sciences,  
 Physics, Chemistry, Life  
 Sciences

Please find below the summaries of papers in Proceedings A and B that are due to be published this week on FirstCite, the Royal Society's new rapid online publication service. Passwords for this site can be supplied to bona fide media on request.

PROCEEDINGS B (Biological sciences)  
<http://www.catchword.com/rs1/09628452/previews/contp1-1.htm>

Does morality have a biological basis? An empirical test of the factors governing moral sentiments relating to incest by Dr D Lieberman, Professor J Tooby and Professor L Cosmides

Are moral attitudes shaped by culture alone, or does our evolved psychology help generate them? Results reported here support evolutionary psychology's claim that the human mind includes mechanisms designed to determine which individuals are genetic siblings, and inhibit sexual desire toward them - an outcome that also shapes moral judgments. Nonconscious mechanisms assess kinship based on how long two individuals coresided from infancy through adolescence. The longer individuals lived with opposite sex siblings during childhood, the greater their moral opposition to third-party incest as adults. The results also undermine Freud's claim that moral opposition to incest originates in incestuous desires toward

parents.

Contact: Professor John Tooby, Center for Evolutionary Psychology,  
University of California, SANTA  
BARBARA, CA 93106-3210, USA

Variable preferences for sexual dimorphism in height as a strategy for  
increasing the pool of potential partners in  
humans by Dr B Pawlowski

From preferences expressed in relation to pictures showing couples of  
different relative heights to each  
other, we found that people adjust their preference for height in an ideal  
mate in relation to their own  
heights. However, relatively tall men and short women prefer to be one of  
a pair with a higher SDS value  
( $SDS = \text{male height} / \text{female height}$ ) and relatively short men and tall  
women prefer to be one of a pair  
with a lower SDS value. We suggest that choices at the extremes of  
height are an attempt to balance the  
desire to increase an individuals chances of finding a partner and the wish  
to find a partner whose  
difference in stature from oneself approximates the mean population  
SDS. The outcome of all choices is  
likely to be a stabilizing selection on the overall population SDS.

Contact: Dr B Pawlowski, Department of Anthropology, University of  
Wroclaw, ul. Kuznicza 35, 50-138  
Wroclaw, POLAND

Decline of North Atlantic eels: a fatal synergy? by Dr T Wirth and Dr L  
Bernatchez

The European and American eel species have been the major pillars of  
the panmixia paradigm. However,  
empirical evidence based on genetic markers recently led to the rejection  
of random mating in the  
European eel. We here failed to find any population structuring for the  
American eel, which implies that  
the species must be managed as a single population, in contrast with its  
European congener. We also  
found that the effective population size of both species is surprisingly low  
and that they most likely  
underwent severe demographic contractions at the end of the last  
glaciation event. The apparent  
sensitivity of eels to climatic changes affecting the strength and position  
of the Gulf Stream 20,000 years  
ago is worrying, given the effects of the ongoing global warming on the  
North-Atlantic climate, as well as  
man-induced factors that have contributed to recent sharp declines in both  
species.

Contact: Dr Thierry Wirth, Department of Molecular Biology, Max-Planck Institut fur Infektionsbiologie,  
Schumannstr. 21/22, 10117 Berlin, Germany

Trade-offs in the vertical distribution of zooplankton: ideal free distribution with costs? by Dr W Lampert, Dr E McCauley and Dr BFJ Manly

Understanding how the spatial and temporal distribution of organisms is affected by environmental variability is fundamental. In lakes with a deep-water chlorophyll maximum, zooplankton are faced with a trade-off experiencing high temperatures (fast development) but low food availability (low reproductive potential) in surface waters and the opposite in deep waters. In this paper, we report results from large-scale mesocosm experiments where we manipulate two major factors - food availability and temperature, while removing the influence of predators. Depending on the temperature gradient, the freshwater herbivore, *Daphnia*, distributes vertically in the water column as to maximize its individual fitness.

Contact: Dr Winifred Lampert, Max-Planck-Institut fur Limnologie, Postfach 165, D-24302 Plon, Germany

Unexpected discontinuities in life-history evolution under size-dependent mortality by Dr B Taborsky, Dr U Dieckmann and Dr M Heino

In many animals survival increases with body size, for example due to a declining predation risk. We studied how size-dependent mortality should affect life-history traits of animals such as adult size, timing of first reproduction and reproductive rate. Unexpectedly, we found that even very small alterations of environmental conditions can lead to sudden, drastic changes in these traits. Based on predictions from our model, we propose a new mechanism for the evolution of polymorphisms in animal life histories, which occur among a wide range of species.

Contact: Dr Barbara Taborsky, Zoological Institute, University of Bern, Wohlenstrasse 50A, CH-3032 Hinterkappelen, Switzerland

Predators favour mimicry in a tropical reef fish by Dr MJ Caley and Professor D Schluter FRS

We investigated the response of wild predatory fishes to plastic replicas of a pufferfish model species, a leatherjacket mimic species and additional replicas with progressively lower degrees of resemblance to the mimic. Even poor resemblance provided some protection, indicated by fewer approaches by piscivorous fishes. Protection increased with increasing resemblance. Our results suggest that avoidance of fish having the pufferfish colour pattern has generated selection favouring mimetic resemblance by the leatherjacket. The protection obtained through partial mimicry suggests that the initial evolution of mimetic resemblance in a palatable species may occur despite the potential hazards of greater conspicuousness.

Contact : Dr Julian Caley, Department of Marine Biology, James Cook University, Townsville, Queensland 4811, Australia

Sibling competition and the evolution of prenatal developmental rates by Dr JD Lloyd and Dr TE Martin

Siblings commonly compete for resources from parents and this competition can have important consequences for survival. In many birds, for example, the last hatched young compete less effectively with their older siblings for food, and are vulnerable to starvation. This may favour rapid growth and development to gain a position atop the dominance hierarchy. We tested this idea by examining whether the length of incubation period was shorter among species of birds in which siblings were expected to compete more intensely. The data provide some support but were mixed and we noted an important alternative hypothesis.

Contact: Dr John Lloyd, Cooperative Wildlife Research Unit, University of Montana, Missoula, MT 59812, USA

Plankton blooms induced by turbulent flows by Dr R Reigada, Dr RM Hillary, Dr MA Bees, Dr JM Sancho and Dr F Sagues

Plankton blooms are a widely recorded yet not fully understood ecological process that can have devastating environmental implications. Many factors like salinity, nutrient and temperature variations are known to influence bloom formation. In this work, the role of turbulence is investigated, in view of the

small density differences between seawater and plankton. We show that the density and size characteristics of plankton allow some separation of the microscopic plants called phytoplankton from one of their natural foes, zooplankton. This separation is enough to trigger a self-propagating bloom, and suggests that turbulence can induce plankton blooms.

Contact: Dr Ramon Reigada, Department de Quimica-fisica, Universitat de Barcelona, Avgda. Diagonal 647, 08028 Barcelona, SPAIN

Disease evolution on networks: the role of contact structure by Dr JM Read and Dr MJ Keeling

Changes in human social patterns are likely to influence the evolution of communicable diseases, which rely on contact between host individuals to transmit and survive. We simulated the spread and evolution of disease within computer-generated networks that describe two distinct patterns of social contact between hosts. In local networks, individuals belong to many social cliques whose members tend to have contact with each other; in contrast, global networks do not contain such cliques. We find that diseases evolve to be highly infectious in local networks, but much less so in global networks.

Contact: Dr Jonathan Read, Mathematics Institute University of Warwick, Gibbet Hill Road, Coventry CV4 7AL

PROCEEDINGS A (Mathematical, Physical & Engineering Sciences)  
<http://www.catchword.com/rs1/13645021/previews/contp1-1.htm>

The member stiffness determinant and its uses for the transcendental eigenproblems of structural engineering and other disciplines by Professor FW Williams, Dr D Kennedy and Dr MS Djoudi

Eigenvalue problems occur when designing buildings, aircraft and pipelines to withstand loading and vibration. These problems are usually solved by treating the structure as a collection of 'finite elements', though thousands of elements may be needed to obtain an accurate solution. Some problems can be tackled without division into elements, by using the 'Wittrick-Williams algorithm' to solve a smaller, but more difficult, eigenvalue problem. This paper draws analogies between the two approaches, resulting in

the discovery of a new property called the 'member stiffness determinant', which greatly improves the simplicity and efficiency of Wittrick-Williams solutions.

Contact: Dr David Kennedy, Cardiff School of Engineering, Cardiff University, PO Box 925, The Parade, CARDIFF, CF24 0YF

On the decay and drift of free-surface perturbations in viscous thin-film flow exterior to a rotating cylinder by Professor EJ Hinch, FRS and Dr MA Kelmanson

The phenomenon considered is observed in countless homes on a daily basis: rotating a spoon, which has been covered in thick fluid (eg honey), in order to keep the fluid on the spoon. If the spoon is circular, and the rotation rate is maintained, the fluid surface can, in principle, be made to assume a steady profile. How it reaches this steady shape is the object of our study. We uncover a subtle and complicated evolution process which involves four timescales based upon the three competing aspects of rotation, surface tension and gravity. The way in which the surface "wobbles" and "drifts" under these actions is analysed, and formulae are obtained for the timescales of not only these factors, but also the way in which they "decay" to lead to the steady shape. Many industrial "coating" processes (eg for sellotape, cling-film, tin foil) use circular rollers on which the hot viscous fluid cools and solidifies to form the final product. The dynamics of the fluids within such processes are of immense interest from an industrial viewpoint, and our paper is sufficiently general to apply to many such diverse situations.

Contact: Dr Mark Kelmanson, Department of Applied Mathematics, University of Leeds, LEEDS, LS2 9JT

Peer reviewed publication and references  
 Proceedings A publishes peer-reviewed research papers in the mathematical, physical and engineering sciences.  
 Proceedings B publishes peer-reviewed research in all aspects of biology.  
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NIAB patents DNA marker technology

For further information, please contact:

Paul Nelson

NIAB

[paul.nelson@niab.com](mailto:paul.nelson@niab.com)

01223 342225

17 February 2003

keywords  
Agriculture, Technology,  
Life Sciences

NIAB has patent protection pending for a number of schemes for encoding non-genetic information into DNA. The patent describes four methods by which DNA can be made to hold information in a binary or other number base format as a DNA 'barcode'.

Jonathan White, Head of NIAB's Molecular and Genotyping Group said, "The encoding of non-genetic information has the overall major benefit of providing a means of ready identification and authentication of goods and organisms and is particularly relevant to the debate on GM crops."

"We can achieve encoding either directly, through the actual base sequence of the DNA, or indirectly, through the sizes of fragments generated from the DNA," he continued. "The patent also describes ways in which the encoded information can be compressed to save space and how error correction methods can be introduced."

"This is a very exciting development for us and we intend to exploit it through our molecular services. The patent describes a number of scenarios in which such an invention may be useful, as well as the GM traceability application. These include animal passports, tracing oil spills and authentication or counterfeit protection for items like designer clothes and banknotes," added Mr White.

Notes for editor

Technical explanation of the process:

Visit [www.niab.com](http://www.niab.com), go to the free access area and click on 'Research at NIAB' to view a pdf giving full details.

Link to a 'New Scientist' article on the topic:

<http://www.newscientist.com/news/news.jsp?id=ns99993377>

Ranges of possible uses of the technology:

#### Animal

1. Animal passports e.g. by colonisation with transgenic micro-organisms or temporary transformation e.g. by inhalation of liposomes carrying the marker.
2. Marking of valuable cell lines, organs, clonal livestock and other valuable germplasm either by transformation, by adsorption or colonisation with transgenic organisms.
3. To mark animals in 'mark and recapture' experiments.

#### Vegetable

1. Use by producers to mark the authenticity of wine, oil, spirits, beer, jam, honey, fruit juice, vegetable juices and other processed and non-processed foods and ingredients.
2. Tracing transgenic plants and gene flow that may result from their release.
3. Marking new varieties of crop or ornamental plants.
4. Marking banknotes, designer clothes, etc, where the cotton has been transformed with this marker, as an anti-forgery measure.

#### Other

1. Use in burglar alarms or intruder detection systems to mark an intruder (by spray) with the locations they have visited.
2. Tracking the movement of goods such as drugs, contraband, explosives and endangered species.
3. Use by agencies that police industries that produce toxic wastes such as oil and nuclear to mark and track consignments and spillages.
4. Use by pharmaceutical companies to monitor intellectual property and sale of drugs.

Reference URL : <http://www.niab.com>

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Greenhouse effects... also on other  
planets

For further information, please contact:

Monica Talevi  
European Space Agency  
monica.talevi@esa.int  
31 71 565 3183

Posted By:  
European Space Agency

14 February 2003

keywords  
Environment - science,  
Technology, Earth  
Sciences

Our planet is warming up, and experts warn that the consequences will be serious. To see precisely how the process works, scientists need as much information as possible and from many different sources.

There are valuable clues out in space. ESA's missions to Venus, Mars, and Saturn's moon Titan will soon provide useful information to understand how our own planet's climate is regulated.

The Earth's climate seems to be changing much more quickly than it used to do. We are altering one of our planet's natural 'temperature regulators' - the greenhouse effect. The greenhouse effect determines the flow of energy arriving at and leaving from Earth.

The Sun's energy heats the Earth's surface and the planet radiates energy back into space. However, certain atmospheric gases trap some of the outgoing energy, retaining heat. Without this natural phenomenon, average temperatures on Earth would be 30 degrees lower than the current 15 degrees

Celsius. Unfortunately, fossil-fuel combustion and deforestation release large amounts of greenhouse gases to the atmosphere, strengthening the greenhouse effect. Global temperatures have increased more than half a degree in the last century as a result.

For a really strong greenhouse effect, we should look at Venus. Venus is similar to Earth in terms of size and mass, but its surface temperature is about 460 degrees Celsius. This is hot enough to melt lead! The Venusian atmosphere is mainly made up of carbon dioxide, a greenhouse gas. On Earth, carbon dioxide makes up only a tiny fraction of the atmosphere. However, man-made emissions have caused carbon dioxide concentrations here to increase by about 30% since pre-industrial times. Why is there so much carbon dioxide in the Venusian atmosphere? What made Venus evolve so differently from Earth? "Good questions. That is precisely one of the things we want to find out" says Hakan Svedhem, Project Scientist for ESA's mission Venus Express, due for launch in 2005.

Is Venus a mirror that reflects how the Earth will be if global warming continues at its current speed? "Venus will help us understand what happens when the greenhouse effect is really extreme. However, it's not a good example of what will happen to Earth due to human activities. Life on Earth would disappear due to the extreme temperatures much before reaching even half of the concentrations of carbon dioxide on Venus!" says Svedhem.

As a complete contrast to Venus, there is Mars. The Red Planet displays hardly any greenhouse effect. Mars does have some atmospheric carbon dioxide, but almost no atmosphere! The existing atmosphere is so thin that it cannot retain energy from the Sun. There are therefore extreme temperature contrasts between day and night and sun or shade. However, most scientists agree that Mars was much warmer in the past and even had oceans, which means that the atmosphere was also very different. About 3600 million years ago, something happened and the planet evolved towards its current state. What could have triggered such a huge change in climate? "We will answer this question with Mars Express" explains Agustin Chicarro, Project Scientist of ESA's mission to Mars, due for launch in May 2003.

Finally, if we look at Titan, Saturn's largest moon, we see a moderate greenhouse effect mostly due to

the large concentrations of methane, another greenhouse gas, in its atmosphere. Astronomers have compared Titan with the early Earth. It would be a suitable place for life if it were not so cold: its surface is extremely cold at about -180 degrees Celsius. Understanding which factors influence Titan's climate would be enormously helpful to us, on Earth. "What we learn on Titan will certainly be useful to understand the other planets", confirms Jean-Pierre Lebreton, Project Scientist of Huygens, ESA's probe to Tita

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Press conference - Enlargement and  
Deepening of the European Research  
Area to be Reported by the CORDIS  
Greek Council Presidency Service

For further information, please contact:

Virginia Mercouri  
CORDIS  
press@cordis.lu  
(32 2) 238 17 36

12 February 2003

keywords  
Science Policy, Policy -  
technology & industry

The CORDIS Greek Council Presidency Research and Innovation  
Information Service  
([www.cordis.lu/greece](http://www.cordis.lu/greece)) will be featured at a press conference in Athens  
on 13 February 2003 at 11 o'clock  
at the Greek National Documentation Centre. Officially launching the  
service, the Greek General Secretary

for Research and Technology Dimitris Deniozos will address key research, technology and innovation issues for the Competitiveness Council of the European Union during the current Greek Presidency (1 January – 30 June 2003).

Enlargement and deepening of the European Research and Innovation Area, focus on the joint implementation of research activities and policies between the EU and its member states, efficient use of European infrastructure and adoption of the Community patent are among the research and innovation priorities of the Greek Presidency of the EU published on its dedicated CORDIS service. Developed jointly by the National Documentation Centre and the European Commission's research and innovation Web portal CORDIS, the service represents an example for collaboration between the Greek Presidency and the European institutions. It offers advance information, background documents and contacts on key forthcoming Presidency events, including:

- EU Competitiveness Councils on 3 March and 12-13 May 2003 to discuss amongst others, the issues of industrial policy
- Conference for the Promotion of the Sixth Framework Programme to Countries from the Balkan and Black Sea Regions, Thessalonki, 17-19 February 2003
- International conference "Foresight in an Enlarged European Research and Innovation Area", Ioanina, 15-16 May 2003
- Ministerial Conference on the adoption of a science and technology Action Plan for the EU-Western Balkan countries, Thessaloniki, 26-27 June 2003
- European Platform for Biodiversity Research Strategy, Lesvos, 22-27 May 2003
- Conference on the Sustainable Development of the Mediterranean Sea and the Black Sea, Thessaloniki, 29 May – 1 June 2003

The Presidency is also organising a European forum in Chalkidiki to discuss industrial policy and innovation with all Mediterranean and Balkan countries.

The news and press section of the CORDIS Greek Council Presidency Service has already published an overview of the recent Conference on Benchmarking National Research Policies, which took place in Athens on 17-18 January 2003, speeches of the Greek Development Minister Akis Tsohatzopoulos, who is

presiding the Competitiveness Council of the EU, as well as a report on the discussions about the competitiveness and business aspects of the Greek Presidency between Prime Minister Costas Simitis and representatives of the Union of Industrial and Employers' Confederation of Europe (UNICE).

The CORDIS Greek Presidency Service also offers a close up on the Greek national contribution to the debate on the European Research Area. It provides dynamic information on the Greek involvement in European research, including ongoing projects, exploitable results and technology offers from the EU-funded, national and other international programmes.

The service is part of a larger CORDIS gateway on national research services for all EU Member States and the Candidate Countries ([www.cordis.lu/national\\_service](http://www.cordis.lu/national_service)) featuring their research and innovation policies and key actors, as well as their initiatives and activities related to the European Research Area.

All information from the press conference will be published online in the news and press section of the CORDIS Greek Council Presidency Service.

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The 'green revolution gene' goes to the root of how plants control their growth.

For further information, please contact:

Ray Mathias  
John Innes Centre  
sce.mail@bbsrc.ac.uk  
01603 450641

11 February 2003  
under embargo until  
12 Feb 2003 19:00 GMT

keywords  
Life Sciences

Scientists at the John Innes Centre (JIC) Norwich(1), have discovered how plants coordinate and control their development by using a master signal to regulate the growth of cells throughout the plant. The signal, a plant hormone called auxin, affects the ability of cells to respond to another hormone (gibberellin(2)) that 'switches on' cell growth. The gene that controls this genetic switch is the same gene that was the basis of the 'green revolution'(3). Thus a gene of critical importance in increasing the productivity of cereal crops has turned out to have a fundamental role in plant biology. This remarkable discovery explains how a small group of cells in the shoot tip exercise influence throughout the plant, even to the tips of the roots. The paper is published today in the international scientific journal Nature.

"The importance of auxin and gibberellin in controlling plant development has been known for many years", says Dr Nick Harberd (head of the research project at JIC) "but our discovery now explains how the two work together to control growth and so is an exciting new insight into how plants work".

Plant cells normally produce molecules that repress (switch off) the activity of genes that have to be active

(switched on) for cells to grow(4). The plant hormone gibberellin stimulates the breakdown of these repressor molecules and so production of gibberellin switches on the genes needed for growth. Dr Harberd found that auxin also stimulates the breakdown of the repressor molecules and so works in partnership with gibberellin, to stimulate the growth of cells.

The researchers were particularly interested in how auxin, which is produced by the shoot tip, could control the growth of cells in the distant roots. They knew that auxin is transported from the shoot tip to the roots and that this constant flow of hormone controlled growth, but they did not know how. Dr Harberd's team had already isolated and studied the 'green revolution gene'. Mutations in this gene make plants insensitive to gibberellin and this causes them to be dwarfed (in cereals shorter plants actually produce more grain – the basis of the green revolution). The new work shows that the product of this gene is affected not only by gibberellin, but by auxin as well, and that this is how auxin affects cell growth.

“We now have a much better understanding of a process that has been known for years and is fundamental to plant growth”, concludes Dr Harberd. “It is a remarkable insight into how a small group of no more than a dozen cells in the shoot tip can exercise control over the whole plant, with their influence extending right to the opposite end of the plant – the root tips.

#### Notes for editor

1) The John Innes Centre (JIC), Norwich, UK is an independent, world-leading research centre in plant and microbial sciences. The JIC has over 850 staff and students. JIC carries out high quality fundamental, strategic and applied research to understand how plants and microbes work at the molecular, cellular and genetic levels. The JIC also trains scientists and students, collaborates with many other research laboratories and communicates its science to end-users and the general public. The JIC is grant-aided by the Biotechnology and Biological Sciences Research Council.

2) Plants control their growth and development by producing hormones that affect cell division and elongation. Auxin in particular is an important plant hormone that seems to function as a master control system, regulating many aspects of the overall biology of the plant. A continuous flow of auxin is produced by the growing tip of the shoot that travels down the plant stem and into the roots. This flow creates a chemical gradient inside the plant that regulates the growth of side shoots and roots and so determines the overall shape and structure of a plant. On a more local level auxin stimulates cell growth. Gibberellin also contributes to cell growth, in particular it is important in stimulating the elongation of cells.

3) The Green Revolution. In the 1960s and 70's a 'Green Revolution' in world agricultural production took place during which world wheat yields almost doubled. This resulted from the introduction of dwarfed, high-yielding wheat and new cultivation methods. In 1999 Dr Harberd's team at JIC identified and isolated the dwarfing gene (called Rht - reduced height), that was central to the green revolution. Rht affects the plant's response to gibberellin. In normal (tall) wheat plants the production of gibberellin during plant growth stimulates the cells in the developing stem (straw) to elongate. Mutant forms of the Rht gene make the plant partially insensitive to the hormone, so the stem cells do not elongate properly, resulting in shorter straw. The plant consequently puts less of its resources into straw production and more into the developing grains - with a resultant increase in yield. Shorter straw also makes the crop more resistant to damage from wind and rain, which also improves yield.

4) A family of genes (of which Rht is one) are known to produce proteins (DELLA proteins) that repress the activity of key genes involved in plant growth. DELLA proteins are known from a number of plants. Gibberellin destabilises DELLA proteins, reducing the amounts of the proteins in cells and their repressive effects on cell growth.

In dwarf wheat a mutation makes the DELLA proteins produced by the Rht gene insensitive to gibberellin and so they are not destabilised by gibberellin and cell growth is inhibited.

Reference URL : <http://www.jic.bbsrc.ac.uk>

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07 February 2003

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The 40th anniversary issue of the British Ecology Society's Journal of Applied Ecology this month leads with two major papers describing the background, methodology and experimental design of the farm-scale evaluations of genetically modified herbicide-tolerant crops.

In laying out the statistical design and methods of data collection for the trials, these two papers not only pave the way for fuller publication of the results later this year, but also open up the design for close scrutiny by other ecological scientists.

The Journal of Applied Ecology is one of the world's most prestigious periodicals of its type and the papers, respectively by Les Firbank (Centre for Ecology and Hydrology) and Joe Perry (Rothamsted Research) and colleagues, competed for space through the Journal's normal process of stringent selection and peer-review.

#### Notes for editor

1. Abstracts of the two papers, L. G. Firbank et al. (2003) An introduction to the Farm-Scale Evaluations of genetically modified herbicide tolerant crops. Journal of Applied Ecology, 40, 2-16 and J. N. Perry et al. (2003) Design, analysis and statistical power of the Farm-Scale Evaluations of genetically modified herbicide tolerant crops. Journal of Applied Ecology, 40, 17-31 are available at [www.blackwell-synergy.com/servlet/useragent?func=synergy&synergyAction=showTOC&journalCode=jpe&volume=40&issue=1&year=2003&part=null](http://www.blackwell-synergy.com/servlet/useragent?func=synergy&synergyAction=showTOC&journalCode=jpe&volume=40&issue=1&year=2003&part=null)

2. Pdf files of the papers are available from Becky Allen, Press Officer, British Ecological Society, tel: 01223 570016, email: [beckyallen@ntlworld.com](mailto:beckyallen@ntlworld.com), or during the conference on tel: 07625 469391 (pager).

3. For further information, please contact Steve Ormerod, Professor of Ecology at Cardiff University and Executive Editor of the Journal of Applied Ecology, tel: 07968 728090 (mobile), email: [ormerod@cardiff.ac.uk](mailto:ormerod@cardiff.ac.uk).

4. Further information about the Journal of Applied Ecology is available at: [www.blackwellpublishing.com/journals/jpe/](http://www.blackwellpublishing.com/journals/jpe/)

5. The British Ecological Society is a learned society, a registered charity and a company limited by guarantee. Established in 1913 by academics to promote and foster the study of ecology in its widest sense, the Society has 5,000 members in the UK and abroad.

Peer reviewed publication and references

L. G. Firbank et al. (2003) An introduction to the Farm-Scale Evaluations of genetically modified herbicide tolerant crops. *Journal of Applied Ecology*, 40, 2-16 and J. N. Perry et al. (2003) Design, analysis and statistical power of the Farm-Scale Evaluations of genetically modified herbicide tolerant crops. *Journal of Applied Ecology*, 40, 17-31

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Genetically Modified Cotton: Much  
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Dr. Matin Qaim  
University of Bonn  
mqaim@uni-bonn.de  
+49-(0)228-73-1872

Posted By:  
Universität Bonn

03 February 2003  
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Genetically modified (GM) pest-resistant cotton may provide yields up to 80 per cent higher than traditional types. This has been observed by scientists from the University of Bonn and the University of California at Berkeley in field trials in India. Their conclusion: peasants in the tropics and sub-tropics can benefit substantially from GM plants. These findings are surprising, since it has hitherto only been possible to detect very minor increases in yield, if any, in similar studies in temperate climate zones such as the US and China. The researchers are publishing their results in the forthcoming issue of the prestigious journal *Science* (Vol. 299, No. 5608) on 7th February.

The enemy is small, but greedy: the bollworm destroys a large part of the world's cotton crop every year; farmers spray insecticide up to 20 times a year to combat this most important cotton pest. In 1997, therefore, Monsanto launched a type of cotton on the market which is largely resistant to this pest: Monsanto scientists had introduced a bacterial gene into the plant which contains the blueprint for a very specific insect poison. What is known as Bt cotton (Bt stands for the gene donor *Bacillus thuringiensis*) produces its insecticide itself, so to speak.

On more than one third of China's total cotton-growing area this GM type is being grown; the use of pesticides has been reduced by over 70 per cent. Pesticide pollution, which used to be the norm, has been greatly reduced. However, the yield only increased by a maximum of 10 per cent; in GM soya beans scientists have sometimes even noticed slight reductions in yield. However, the 'pressure from pests' in the US or China, where the studies have been taking place up to now, is considerably less than in the tropics and sub-tropics. Also, chemical pesticides are less affordable to farmers in those poorer countries. For example: whereas in the US insects only destroy about 12 per cent of cotton production annually, the losses in India's small farm sector amount to 50 to 60 per cent. Dr. Martin Qaim of the University of Bonn's Centre for Development Research (Zentrum für Entwicklungsforschung, the ZEF) has therefore been investigating the success of Bt cotton in India together with Professor David Zilberman from Berkeley.

In 2001, a successful field trial was started, involving 395 farms from seven Indian states. In three

adjacent fields the farmers were to plant Bt cotton, the same sort without the resistant gene and a third type which is a popular local hybrid. The use of insecticide for the Bt cotton was on average 70 per cent less than for the two other types; however, the yield was more than 80 per cent higher. 'Despite the higher costs for the seeds, the farmers were able to increase their income five-fold with the GM type. Admittedly, infestation with bollworm was particularly high in 2001,' Dr. Qaim cautions. 'In preliminary studies with fewer farmers between 1998 and 2001 we were able to detect an average increase in yield of 60 per cent.'

The Bt cotton findings are basically also applicable to food plants. Particularly regions in the tropics and sub-tropics, which are under severe pressure from pests could benefit from GM plants with increased pest resistance, the scientists conclude. 'We expect the biggest increases in yields to take place in South and South-East Asia and in Central and Southern Africa, i.e. precisely in those areas with the highest population growth, which are especially dependent on increasing yields.' Even so, Qaim argues in favour of taking the potential risks of 'green genetic technology' seriously. 'In all the previous studies Bt cotton has been proved to be harmless to humans and the environment; however, we should test each new application on its individual merits.' He recommends that the production of GM seeds should not simply be left to the big companies, since the dependence of developing countries on the developed nations would then increase further. However, in his view this problem cannot be laid at the feet of gene technology: 'It is in our hands to create the general conditions which enable this promising technology to be made available to the poor at affordable prices.'

22 February 2003 16.21 GMT

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Plant for the Planet, The International  
Tree Planting Campaign, Launched

For further information, please contact:

Nick Nuttall

United Nations Environment Programme

[nick.nuttall@unep.org](mailto:nick.nuttall@unep.org)

254 2 623084

28 January 2003

keywords

Environment - science

Nairobi, 29 January to 8 February 2003 - Kenya is to be the launch pad for an international tree planting campaign that will see more than a million seedlings planted across the country by 2008.

The launch of the campaign, "Plant for the Planet", will be one of the highlights for delegates attending the Global Youth Retreat, taking place in parallel to the Governing Council of the United Nations Environment Programme (UNEP).

Over 50 young people, aged between 16 and 25 years-old and from 45 countries, will join with Kenyan school children and an international group of environment ministers on 8 February at the Ngong Forest Sanctuary to plant 4,000 trees.

The campaign, which is sponsored by the Japanese-based Foundation for Global Peace and the

Environment and Total, is strictly in line with the new Kenyan government's push to restore forests and plant with native and rare, indigenous, trees.

The plantings will involve an estimated 47 native species including the East African Greenheart, warbugia ugandensis; the Naivasha Thorn tree, Acacia xanthophloea; the Brown or Wild Thorn Olive, Olea europeae africana; the Mulundu tree, Elaeodendron buchananii; the Pillar Wood, Cassipourea malosana and the Mugumo tree, Ficus thoningii.

Klaus Toepfer, UNEP's Executive Director, said: " Young people have a critical role to play in shaping the environment and helping to deliver a less poverty-riven world now, and in the future. Young people are some of the biggest consumers of goods such as mobile phones, computers and other electronic equipment. This is a growing area of concern, especially in developing countries where a great deal of this so-called 'E-waste' can end up. So the consumption patterns of the young are crucial in our push to deliver sustainable development ".

"Young people can also have a great deal of influence on their peers and elders in terms of promoting the new ideas we so urgently need to give the planet a fresh start. So I hope the ideas they develop here at their Global Youth Retreat, and which they will present to environment ministers attending out 22nd Governing Council, will influence the important decisions made not only here in Nairobi but back in their own communities when they return home, " he said.

"The World Summit on Sustainable Development (WSSD) gave us a blue-print for reducing poverty in an environmentally-friendly way. The Governing Council is about making this operational. It cannot be done without the participation of all walks of life including the globe's youth. They are also the future leaders of their families, communities and nations. I hope the retreat will inspire them to take the torch of a fairer, healthier and more equitable world forward," said Mr Toepfer.

The youth retreat, which will open on 29 January, will also involve the election of a Youth Advisory Council to UNEP.

Environment ministers at the Governing Council will, for the first time, discuss and adopt a long-term strategy on the involvement of children and youth in environmental initiatives.

Issues to be discussed at the retreat include the impacts of war on the environment, globalization and poverty, consumerism and the role of youth in implementing WSSD.

Countries participating in the Global Youth Retreat:

From Latin America and the Caribbean: Argentina, Brazil, Chile, Colombia, Cuba, Guatemala, Guyana, Mexico, Nicaragua and Venezuela in the Latin America and the Caribbean region.

The Africa region is represented by the Democratic Republic of the Congo, Egypt, Equatorial Guinea, Ghana, Cote d'Ivoire, Kenya, Nigeria, Rwanda, South Africa, Tanzania, Uganda, Zimbabwe and Zambia.

The Asia Pacific region by Australia, Bangladesh, China, India, Iran, Kazakhstan, Pakistan, Papua New Guinea, Philippines, Singapore, Thailand.

The West Asia region by Bahrain, Lebanon and the United Arab Emirates.

Europe by Austria, Bosnia Herzegovina, Croatia, Germany, Portugal, Russia, Sweden and Switzerland and North America by Canada and the United States.

The "Plant for the Planet" launch will take place at 9.00 am, 8 February, at Ngong Forest Sanctuary. Environment ministers will join in at 11.00 am.

For More Information Please Contact Eric Falt, Spokesperson/Director of UNEP's Division of Communications and Public Information, on Tel: 254 2 623292, Mobile: 254 (0) 733 682656, E-mail: [eric.falt@unep.org](mailto:eric.falt@unep.org) or Nick Nuttall, UNEP Head of Media, on Tel: 254 2 623084, Mobile: 254 (0) 733 632755, E-mail: [nick.nuttall@unep.org](mailto:nick.nuttall@unep.org)

### **Invariant properties in coevolutionary networks of plant-animal interactions**

The interactions among animal and plant species depict the essence of natural communities: a web of relationships that build up links of mutual dependence. Just imagine all the interactions that can take place in a highly diverse tropical rainforest. Many insects, bats, and hummingbirds pollinate flowers and frugivorous vertebrates-like toucans or monkeys- disperse plant seeds; the plants in turn provide key resources for the animals in a complex web of mutually beneficial interactions. The bulk of species have few interactions but some species interact with large numbers of other species.

Scientists from Spain have recently shown in an article published in *Ecology Letters* that for a large number of species sampled, community organisation is always the same despite ecological differences between members of different communities. The food webs considered by these researchers are constructed in a similar way to human-made complex networks such as social networks, the internet, airport connections, etc. This reveals for the first time a generalized topology characteristic of self-organized complex systems and has important implications for the conservation of biodiversity.

### **Palm leaves act like flowers**

Flowers of insect-pollinated plants attract visitors by visual and/or olfactory cues but sometimes, it appears, other organs may steal the scene. In an article published in the January 2003 issue of *Ecology Letters*, scientists from the Centre National de Recherche Scientifique have found that the European dwarf palm, which grows on the Mediterranean coasts, attracts its specialised pollinating weevil in a very surprising way. In this palm, flowers produce no odour and are not visually distinguishable at long distance. However, during the flowering season, the palm's leaves produce a specific fragrance, with typical floral notes. The researchers showed that only the odour emitted by the leaves was attractive to the pollinating weevil. The function of attracting pollinators has thus been transferred from flowers to leaves. Asking why some plants vegetative organs "nose around" in floral business opens new questions about the evolution of pollination systems.

### **Lorenzo's oil works for plants too**

Scientists at Long Ashton Research Station have identified a gene with a pivotal role in regulating seed germination. According to an article published in the January issue of *BBSRC business*, the *Arabidopsis* COMATOSE (CTS) gene, is vital for breaking seed dormancy. It is also analogous to the human X-ALD gene, which featured in the 1992

film "Lorenzo's oil". Treatment of cts mutants with a plant version of Lorenzo's oil cures their inability to germinate.

The researchers were investigating the genetic control of germination, a key transition in the life of a plant. Once they had cloned the CTS gene, they realised that is analogous to the human adrenoleukodystrophy (ALD) gene, mutation of which results in the build-up of very long chain fatty acids (VLCFAs) and ALD disease. Like human ALD sufferers, cts mutant seeds suffer from a variety of effects including inappropriate accumulation of VLCFAs. They are also unable to germinate. Lorenzo's oil was developed by Augusto Odone for his son, who is an ALD sufferer, and was recently proven effective for the treatment of pre-symptomatic ALD patients. "We wondered whether Lorenzo's oil would work for plants too" says team leader, Dr Mike Holdsworth. Sure enough, when he treated cts mutant seeds with a similar mixture of oils, the seeds became able to germinate.

The Long Ashton researchers, in collaboration with Dr Alison Baker (University of Leeds) and Professor Ian Graham (University of York), believe that CTS protein is important as a fatty acid transporter, but may also have a key role as a regulator of germination. They are continuing to investigate CTS in *Arabidopsis*, but are also interested in crops such as wheat and oilseed rape, where dormancy levels are associated with quality and performance.

### **Arabidopsis Knockout Facility**

The Arabidopsis Knockout Facility is an advanced research facility that is crucial to the plant genomics effort. The task is simple in theory: simply insert T-DNA markers randomly into every gene in the Arabidopsis genome at a rate of one per plant and then store the viable seed. When a researcher needs a plant with a specific gene "knocked out", the library is screened and the new line is established for study, typically at the researchers home laboratory. The Knockout Facility is located at the University of Wisconsin, Department of Biochemistry, where it serves as an international resource.

<http://www.biotech.wisc.edu/Arabidopsis/>

### **Genetically modified crops offer hope for endangered wildlife**

In the first piece of research into how genetically modified (GM) herbicide tolerant crops could be used to benefit the environment, scientists\* from Broom's Barn Research Station in Suffolk show that creative use of GM crops could bring back increasing numbers of endangered wildlife and birds such as skylarks and finches. This new research, to be published in *Philosophical Transactions B*, a learned journal produced by the Royal Society, suggests that GM herbicide tolerant crops could be a powerful tool in developing sustainable farming systems in the future.

The research is based on a new weed-management system for GM sugar beet, demonstrating that weeds can be retained for longer without affecting the crop yield. The weeds and associated insects provide vital food and habitats for the farmland birds and other wildlife, which have dramatically declined as a result of intensive farming systems.

Broom's Barn Research Station director, Dr John Pidgeon, says: "Frequent spraying destroys the weeds on which the insects and birds feed, but our system means we can reduce the amount of spraying and allow weeds between the rows to flourish in summer without affecting yield. Our method could easily be applied to other row crops.

"We are excited about our results because this is the first time research has shown that GM herbicide tolerant crops can be managed for environmental benefit. This marks a vital contribution to the GM debate, which until now, has been largely focused on fears of possible negative impact. The environmental benefits are particularly important for the UK and the rest of Europe, where around 80 per cent of the land is farmed," he says.

## Other news

### The Public Perception of Science in Portugal

In a research on the public's perception of science in present Portuguese society, recently published by Gradiva, three sociologists at the Centre for Research and Studies in Sociology achieved results that allowed them to identify a typology of the main ways the Portuguese relate with science.

António Firmino da Costa, Patrícia Ávila and Sandra Mateus, obtained the data through an extensive survey using a questionnaire, applied to a representative sample of the Portuguese population resident in Continental Portugal and aged between 15 and 74 years. The respondents are characterized, amongst other things, by the practice of the acquisition of scientific knowledge, by the use of science in various social contexts, by the self-evaluation of scientific knowledge and by the willingness to acquire/improve it, and by their position regarding aspects to take into account in the desirable profile of scientific magazines.

The study revealed seven profile-types. Four of these types, which cover about a third of the population under consideration have high or significant levels of closeness to science. These profiles are “Committed”, “Insiders”, “Beginners” and “Self-taught”. The “Committed” are a very small minority - little more than 2%, professionals and high-level students - who have various and intensive ways of acquiring scientific information; the “Insiders” are more numerous - around 9% - generally highly educated, middle-age professionals, who also obtain scientific information on a regular basis, and who use science in their professional sphere and personal lives; they see their knowledge as reasonably good. The “Beginners” constitute about 8%, are younger, and relate to science mainly at school. The “Self-taught” (almost 18%) come from a broad age and education range; they acquire information in the same intermediate level as the “Committed”; they put their knowledge at a lower level than the previous profiles and demonstrate a disposition to improve this knowledge.

The other three types include almost two thirds of the population studied and their ways of relating to science are designated as “Indifferent”, “Benevolent” and “Withdrawn”. Generally they have low levels of education, and are employed in the service sector. The “Indifferent” (almost 23%) acquire information in a residual way; the only area where they use it is in their personal life, but at very reduced levels. They are more pessimistic about the consequences of the developments of science than the previous types. The “Benevolent” are the largest category – almost 28% - and are very similar to the previous group in many aspects, although they have a favourable attitude towards the consequences of science. The “Withdrawn” (around 12%) have no contact with science (neither do they obtain nor use information), they see their level of knowledge as very low and have less desire to improve. They hold the most negative opinions about developments in science. They also constitute the oldest, the least educated and the group with the greatest weighting of workers and housewives.

Book reference: Costa, António Firmino da; Patrícia Ávila; Sandra Mateus (2002), *Públicos da Ciência em Portugal*, Lisboa, Gradiva Editora, Coleção “Trajectos Portugueses”

### **European Science Foundation programme – meeting on gene flow**

Will genes from genetically modified crop plants (GMPs) move into wild plants and what will be their environmental impact ? The world's leading scientists will meet at Amsterdam to address this question. At the invitation of this European Science Foundation programme some 40 leading international scientists working in the field of biosafety research will present and discuss the state of the art with respect to the possible consequences of the influx of genetic material from crops into wild relatives. The conference aims to summarize the current scientific knowledge on gene flow from GMPs and the ecological and evolutionary effects of the introgression of transgenes into wild species.

Gene flow - the escape of new attributes from crops to wild plants – is the main focus. “We know that gene flow will happen” says Dr. Hans den Nijs from the University of Amsterdam, who is one of the organizers on behalf of the ESF. “Gene flow is – after all – a basic component of evolutionary biology. We must learn to address the consequences of gene flow”.

This conference is one of a series of meetings organised by the Assessment of the Impact of GM Plants (AIGM ) programme of the European Science Foundation . Dr Jeremy Sweet ( NIAB, Cambridge, UK), coordinator of the programme said " This programme has successfully brought together a very diverse range of scientists throughout Europe to study the Agronomic and Environmental Impact of GMOs. "

More detailed information is available in the web  
<http://www.science.uva.nl/research/ibed/Introgression/>  
or visit the ESF AIGM web site: <http://www.esf.org/aigm>

**Also see meetings details**

## Positions available

Full details of these positions are posted on the FESPP website on the Jobs and Studentships pages (<http://www.fespp.org/jobs.asp>)

### Fructan Metabolism, And Fruit Quality, Danish Institute Of Agricultural Sciences, Denmark

#### 2 PhD studentships

Two PhD fellowships are available within the research group of Crop Ecology and Product Quality at the Department of Plant Biology: at the (DIAS), Department of Plant Biology, Research Centre Flakkebjerg, DK-4200 Slagelse, Denmark

##### 1) Fructan metabolism in temperate grass species

This project will focus temperate grass species with respect to biochemical and agronomic factors affecting carbohydrate metabolism, in particular fructans. There is an increasing interest in these compounds in terms of their agricultural potential, and thus it is important to elucidate also environment x agronomy interactions in relation to carbohydrate metabolism. The research group is focusing on the development of rapid-analytical methods for quality parameters and it is expected that the study will include development of reliable calibrations for the analysis of fructans using NIR (Near Infra-red Reflectance) techniques.

Applicants with experience in crop physiology and biochemistry are preferred.

For further information, please contact Dr Birte Boelt, Head of Research Unit, Dept. of Plant Biology, Research Centre Flakkebjerg, DK-4200 Slagelse, Denmark. Tel.: +45 5811 3425; Email: Birte.Boelt@agrsci.dk.

##### 2) Crop quality: nutritional and environmental constraints

This project will focus on elucidating nutritional and environmental constraints on quality parameters, in particular of carbohydrates and antioxidants in barley. Methodology will include near infra-red reflectance (NIR) and -transmission (NIT) spectroscopy for grain composition, as well as photosynthesis measurements, HPLC analyses of phenolics, and biochemical and EPR measurements for determination of antioxidant capacity and levels of free radicals.

You should have a background in crop physiology and biochemistry, including experience of HPLC measurements, and be able to work independently and creatively.

Further information can be obtained from Dr Bernd Wollenweber, Dept. of Plant Biology, Research Centre Flakkebjerg, DK-4200 Slagelse, Denmark. Tel. +45 5811 3373; Email: Bernd.Wollenweber@agrsci.dk.

Detailed background information for both positions is available at: <http://www.agrsci.dk/pbi/afde/nyt.shtml>.

Applications (4 copies including CV and references) should be sent to: The Danish Institute of Agricultural Sciences, Management Secretariat, Research Centre Foulum, PO Box 50, DK-8830 Tjele, Denmark.

## Plant-Environment Interactions, Newcastle, U.K.

### EU Marie Curie PhD Fellowships Well-funded Training Opportunities for European (non-UK registered) PhD Students

High quality Marie Curie PhD Training Fellowships are available in the Biology School at Newcastle University in the area of Plant-Environment Interactions – an area in which the School has internationally-recognized expertise (see <http://www.ncl.ac.uk/biol/>). Training is available within three principal areas: environmental and molecular plant physiology (Dr. Jeremy Barnes & Dr Anne Borland); microbial ecology (Professor Tony O’Donnell & Dr. Ian Singleton) and plant-insect interactions (Dr. Gordon Port & Dr. Angharad Gatehouse). Emphasis will be placed on developing generic skills (e.g. languages, oral and written presentation, e-science skills) as well as specialist skills, with each ‘training package’ tailored to meet the specific needs of individual applicants, though some potential projects are listed below. In addition to the excellent research facilities that will be at the disposal of Fellows, trainees will be have the option of taking advanced taught courses related to their postgraduate research programme as well as a range of courses aimed at furthering the Fellows’ professional development. Fellowships, upto 12 months duration, are available from January, 2002 (until the end of 2005). Applicants should possess a good quality degree in an appropriate biological subject and be registered for a PhD at an institution outside the UK. Every selected Fellow will be generously supported (stipend = 1200 euro per month [tax free] plus 100 euros per month toward travel to and from home country, with additional financial bursary to cover all other costs (e.g. research consumables, fees, etc.). Selection of Fellows will take place at 3-monthly intervals. Selected Fellows must take-up their appointments within 6-months of selection. If you wish to apply, please contact: Jeremy Barnes or Anne Borland, Dept. of Biology, University of Newcastle Upon Tyne, NE1 7RU, UK (tel. +44(0)191 222 7374 or +44(0)191 222 5959; or email: [J.D.Barnes@ncl.ac.uk](mailto:J.D.Barnes@ncl.ac.uk) or [A.M.Borland@ncl.ac.uk](mailto:A.M.Borland@ncl.ac.uk)). Applications should comprise two-page curriculum vitae, names and addresses of two academic referees and a brief statement about the nature and key findings of the candidate’s PhD studies.

Potential projects include:

**Establishing QTLs for the effects of ozone on wheat yield.** Supervisors: Dr. Jeremy Barnes, Prof. S. Quarrie and Dr. Anne Borland

**The circadian control of starch degradation *in planta*.** Supervisors: Dr. Anne Borland and Dr. Jeremy Barnes

**Establishing the function of Heme Activated Protein (*HAP5c*) in the repair and detoxification of oxidative stress.**

Supervisors: Dr. Jeremy Barnes and Dr. Anne Borland

**Employing novel ascorbate oxidase transformants to probe the role of the leaf apoplast in signalling transduction.**

Supervisors: Dr. Jeremy Barnes & Dr. Anne Borland

**Probing the role of cell wall constituents in ozone detoxification** Supervisors: Dr. Jeremy Barnes and Dr. Anne Borland

**Establishing the significance of ozone uptake and detoxification at night.** Supervisors: Dr. Jeremy Barnes and Dr. Anne Borland

**Shifts in rhizosphere microbial community induced by atmospheric pollution.** Supervisors: Prof. Tony O'Donnell and Dr. Jeremy Barnes

**Exploring the use of ozone for contaminated soil remediation.** Supervisors: Dr. Ian Singleton and Dr. Jeremy Barnes

**Impacts of GM pest resistant crops on non-target organisms.** Supervisors: Dr. Angharad Gatehouse and Dr. Gordon Port

**Molecular basis for cross-tolerance to insect predation and oxidative stress *in planta*.** Supervisors: Dr. Angharad Gatehouse, Dr. Anne Borland and Dr. Jeremy Barnes

**Harnessing the use of ozone for the decontamination of freshly-harvested produce.** Supervisors: Dr. Ian Singleton and Dr. Jeremy Barnes

**The regulation of vacuolar sugar transporters.** Supervisors: Dr. Anne Borland and Dr. Jeremy Barnes

**Decontamination of minimally-processed foods using ozonated water.** Dr. Ian Singleton and Dr. Jeremy Barnes

Enquiries about these EU Marie Curie Training Awards to Jeremy Barnes or Anne Borland, Dept. of Biology, University of Newcastle Upon Tyne, NE1 7RU, UK (tel. +44(0)191 222 7374 or +44(0)191 222 5959; email: J.D.Barnes@ncl.ac.uk or [A.M.Borland@ncl.ac.uk](mailto:A.M.Borland@ncl.ac.uk)). Applications should comprise two-page curriculum vitae, names and addresses of two academic referees and a brief statement about the nature and key findings of the candidate's PhD studies. Additional information can be accessed via the EU Marie Curie website by entering

'Plant-Environment' into the vacancy search tool at <http://improving.cordis.lu/mc/> or going directly to <http://improving.cordis.lu/mc/show-PRJ.cfm?objid=MC Fellow0000000000003F59>.

Applicants must be nationals of a Member EU State (except UK) or Associated State and Fellows will be selected on the basis of merit alone.

## **Novel Ion Channels In Plants (NICIP), Gif-Sur-Yvette, France**

### **Postdoctoral position in EU - Research Training Network**

Plant ion channels play important roles in physiological processes such as osmoregulation, turgor-driven movements and control of membrane potential, and thereby influence the development of higher plants, differentiation of their organs and specialisation of individual cell types. The joint project NICIP aims at improving knowledge on novel ion channels in plant cells at the molecular and protein level by using multidisciplinary approaches. It includes 6 European labs who have scheduled exchanges of fellows to provide additional training, workshops, and annual meetings : (1) Bernd Mueller-Roeber / Katrin Czempinski, Potsdam, Germany; (2) Mark Tester, Cambridge, Great Britain; (3) H el ene Barbier-Brygoo, Gif-sur-Yvette, France; (4) Herv e Sentenac / Sabine Zimmermann, Montpellier, France; (5) Enrico Martinoia, Neuch atel, Switzerland; (6) Franco Gambale, Genova, Italy.

A postdoctoral position for a European (but not French) citizen, is available immediately and open for 3 years in the group of H el ene Barbier-Brygoo in Gif sur Yvette (25 km South West of Paris). Our group is working on the molecular mechanisms of anion transport across plant membranes. Current research is dedicated to electrophysiological characterization of plasma membrane anion channels and molecular identification of anion channel genes in *Arabidopsis thaliana*. Our group is part of the "Institut des Sciences du V eg etal" belonging to the CNRS, and offers all facilities of plant molecular biology, membrane biochemistry, electrophysiology and cell biology (fluorescence and confocal microscopy).

The postdoctoral researcher will participate in the molecular and functional characterisation of genes from the *Arabidopsis* CLC (Chloride Channel) family, including expression in heterologous systems and study of cellular and subcellular localisation of channel proteins. He/she will also identify and analyse new insertion mutants in CLC genes with the purpose to correlate their phenotype with electrophysiological abnormalities in the anion currents measured on native plant cell membranes by the patch-clamp technique.

All motivated EU candidates with a strong background in molecular biology and/or transport physiology will be considered. Previous experience in electrophysiology or plant biology is not required as training can be provided.

Applications including CV, a description of previous research experience and names and addresses of two possible referees should be sent by Email to Hélène Barbier-Brygoo ([brygoo@isv.cnrs-gif.fr](mailto:brygoo@isv.cnrs-gif.fr)).

For more information, contact:

Helene Barbier-Brygoo

Institut des Sciences du Végétal (UPR 2355)

CNRS, Avenue de la Terrasse

F-91198 GIF-SUR-YVETTE Cedex

France

Phone: +33 1 69 82 38 68

Fax: +33 1 69 82 37 68

Email [brygoo@isv.cnrs-gif.fr](mailto:brygoo@isv.cnrs-gif.fr)

## **Forthcoming meetings**

### **Introgression from Genetically Modified Plants (GMP) into wild relatives and its consequences**

Aula, Free University Amsterdam, 21-24 January 2003

Initiated by the European Science Foundation Programme on Assessment of the Impact of Genetically Modified Plants (AIGM )

Prior to the start of the conference, there will be a PRESS CONFERENCE:  
TUESDAY JANUARY 21, 13.00-14.30 , AT THE MAIN BUILDING OF THE  
VRIJE UNIVERSITEIT, DE BOELELAAN 1105, AMSTERDAM.

During the conference several in-depth discussions will take place in special workshops. Currently, more than 200 participants from science, plant breeding, governmental regulatory institution, and policymakers, involved in this field have registered for the meeting.

This conference is one of a series of meetings organised by the Assessment of the Impact of GM Plants (AIGM ) programme of the European Science Foundation . Dr Jeremy Sweet ( NIAB, Cambridge, UK), coordinator of the programme said " This programme has successfully brought together a very diverse range of scientists throughout Europe to study the Agronomic and Environmental Impact of GMOs. This conference discusses the findings of separate research groups in Europe and elsewhere and also the conclusions of several workshops on this topic that have been conducted over the last four years of the programme. We are very grateful to the ESF and its member organisations for their continuing support. "

More detailed information is available in the web  
<http://www.science.uva.nl/research/ibed/Introgression/>  
or visit the ESF AIGM web site: <http://www.esf.org/aigm>

### **Optimisation of water use in the Mediterranean region.**

Palma, Mallorca, 24-28 March 2003.

Information at  
<http://www.aab.org.uk/meetings/mtgs2003/optimize.htm>

Dr G. Russell  
University of Edinburgh  
School of Earth, Environmental and Geographic Sciences (Agriculture Building)  
West Mains Road  
Edinburgh EH9 3JG  
SCOTLAND  
International phone +44 131 535 4063 Fax +44 131 667 2601  
UK phone 0131 535 4063 Fax 0131 667 2601  
<http://www.ierm.ed.ac.uk/people/academic/russell.htm>

**APOPTOSIS 2003 : From signaling pathways to therapeutic tools**

January 29 - February 1st, 2003

European Parliament Conference Center (Luxembourg)

<http://www.transduction-meeting.lu>

We are encouraging potential participants to submit papers for oral and poster presentations at this the fifth molecular and cellular biology meeting. More than 40 additional talks will be added chosen from registered participants.

Selected speakers will receive a notification early January 2003.

All abstracts will be available online prior to the meeting at

<http://www.pharma-transfer.com>

Our website contains additional information about Luxembourg, selected hotels, our expo and includes now a link to a secure credit card payment site.

**Fifth International Workshop on Field Techniques for Environmental Physiology.** The workshop will be held in Tenerife, Canary Islands, Spain, 16–22 March 2003. The principal organizer is Dr Johanna Pulli, Edinburgh University, UK. Postgraduate students are especially welcome and will be introduced to the practicalities and pitfalls of a wide array of techniques. There are grants available for postgraduate students to attend either from the British Ecological Society or from the Society for Experimental Biology (an FESPP constituent society). Early applications are encouraged. Full details are available on:

<http://www.ierm.ed.ac.uk/instrument.workshop/>

**7<sup>th</sup> International Congress of Plant Molecular Biology**

Barcelona, Spain. 16 – 21 June, 2003

<http://www.ispmb2003.com>

**ASPB Annual Meeting**

Honolulu, Hawaii. 26 – 30 July, 2003.

<http://www.aspb.org>

## **Joint meeting of the Plant Growth Regulation Society of America and the Japanese Society for Chemical Regulation of Plants**

Vancouver, British Columbia Canada. August 3-7, 2003).

Sessions on: molecular aspects of plant growth regulation, fruit maturation, PGR uses in tree and woody plants, and applied PGR research.

## **3rd International Symposium on Dynamics of Physiological Processes in Woody Roots**

Perth, Australia, 29 September-3 October 2003

Meeting web URL: <http://www.botany.uwa.edu.au/woodyroots/>

Sessions include:

1. Assimilate allocation and partitioning in roots
2. Root growth, development and turnover
3. Water flux
4. Nutrient uptake and utilization
5. Rhizosphere ecology/interactions
6. Root architecture

Keynote speakers:

Frederick (Rick) Meinzer (USDA-FS Corvallis, USA)

Mary Topa (Boyce Institute, USA)

Carol Peterson (Univ. Waterloo, Canada)

Christoph Leuschner (Univ of Gottingen, Germany)

Heinz Rennenberg (Uni of Freiberg, Germany)

Sally Smith (Univ of Adelaide, Australia)

Torgny Nasholm (SUA-Umea, Sweden)

Petra Marschner (Univ of Adelaide, Australia)

David Crowley (UC Riverside, USA)

Margaret McCully (CSIRO Canberra, Australia)

Günter Neumann (Univ. of Hohenheim, Germany)

Meine van Noordwijk (ICRAF, Indonesia)

Stephen Burgess (UC-Berkeley, USA)

Enquiries to: [woodroot@cyllene.uwa.edu.au](mailto:woodroot@cyllene.uwa.edu.au) OR Pauline Grierson at [pfgblue@cyllene.uwa.edu.au](mailto:pfgblue@cyllene.uwa.edu.au)

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NEW!! Woody root meeting : <http://www.botany.uwa.edu.au/woodyroots/index.html>

## Useful web sites

### **Bio-Web: Resources for Molecular and Cell Biologists**

<http://cellbiol.com/>

The Bio-Web is a scientific news/resource site for molecular and cellular biology. With a newspaper-like appearance, the left column leads to major sections, cool sites (including powerhouse sites like Science, Nature, PubMed and others), followed by more news sources.

### **US National Arboretum**

<http://www.usna.usda.gov/>

There is a remarkable depth in coverage and content in this site, which is a virtual arboretum, presenting many educational opportunities. Operated by the USDA, this operation provides some routine "county agent"-like services to farmers, hobbyists, and those trying to grow plants. The menu of options provides a plethora of pull-down menus, where services like the zone hardiness map is displayed, sheets on disease characterization and prevention, and planned plant introductions into the U.S.

### **Where Food Crops Originated**

<http://horizon.nmsu.edu/garden/history/>

This web site discusses Old and New World crops and their origins. It reflects on the botanical diversity that we gained through sharing crops. This is part of the Seeds of Change Garden site.

### **EPA Global Warming Site: Climate Change Education Resource Database**

<http://yosemite.epa.gov/oar/resources.nsf/websearch?openform>

The EPA Global Warming Site presents information at educational levels beginning in elementary school, but the bulk of the links include numerous formal government research reports. The following topics are available: waste management reports, sea level rise reports, reference material (from UNFCCC, IPCC and others), position papers, outreach material, international material, greenhouse gas emissions reports, EPA conference reports and additional documents. Although there is general agreement that the earth is becoming warmer, there is no clear sense of what will happen. One idea in fact proposes that the warming may trigger a new ice age. Lots of activities and discussion topics.

## **FESPB News**

### **Change of name**

As you will probably have noticed, the abbreviation is now **FESPB**; at the recent congress, the executive committee agreed to a change in the name of the federation to the **Federation of European Societies of Plant Biology**, thus reflecting the wider activities of society members, and also bringing us in line with the American Society for Plant Biology.

### **Items for FESPAlert**

If you have items, job opportunities or information you think FESPP members would like to see in *FESPPalert* or have any comments on content please e-mail me [pjlumsden@uclan.ac.uk](mailto:pjlumsden@uclan.ac.uk)

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### **The source of this FESPAlert is**

Dr Peter Lumsden  
Department of Environmental Management  
University of Central Lancashire  
Preston  
PR1 2HE  
Tel. 01772 893917

email [pjlumsden@uclan.ac.uk](mailto:pjlumsden@uclan.ac.uk)