



FESPB*Alert*

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Research news

Ultraviolet radiation induced flux of nitrogen oxides from pine needles

Scientists from the University of Helsinki have reported that ultraviolet radiation induced a flux of nitrogen oxides (NO_x) from pine needles to the atmosphere (Nature, March 13th, 2003). This result is interesting because nitrogen oxides participate in several essential chemical reactions in the atmosphere while, plants can utilize the nitrogen of NO_x as a nutrient. The magnitude of the flux observed was $1 \text{ ng s}^{-1} \text{ m}^{-2}$ (needle area). Scaling this up to global levels gives an amount that is comparable to known NO_x sources, such as, traffic and industry. The result is therefore important for the atmospheric NO_x balance and, besides, it might affect the N budget plan.

Detection of the UV-induced NO_x emission was missed in earlier studies, because the measuring chambers were constructed with UV-opaque materials. Use of UV-transparent quartz glass enabled UV radiation to reach the pine needles.

NIAB patents DNA marker technology

NIAB (National Institute for Agricultural Botany) 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, "Encoding 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."

"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.

Ranges of possible uses of the technology:

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.
4. 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.
5. Tracing transgenic plants and gene flow that may result from their release.
6. Marking new varieties of crop or ornamental plants.
7. Marking banknotes, designer clothes, etc, where the cotton has been transformed with this marker, as an anti-forgery measure.

ARE genetically modified crops a danger to the environment?

In experiments in Jutland from 1999 to 2001, ecologists Beate Strandberg and Marianne Bruus Pedersen compared the environmental impact of conventional beet with that of GM beet resistant to glyphosate. Contrary to expectations, they found that the GM beet was more friendly to wildlife, even when used at "label" rates. "When farmers used it as recommended, we found a doubling of the weed biomass compared with conventional beet," says Strandberg. GM plots were also richer in insects, spiders and other arthropods, providing more food for birds than conventional plots. Earlier this year, British researchers at Broom's Barn Experimental Station in Suffolk announced results showing that wildlife flourishes under a less harsh herbicide regime (see *New Scientist*, 18 January, p 6). A separate part of the Danish trial confirmed this: delaying the application of the herbicide till later than recommended produced a ten-fold increase in weeds, and a doubling of the insect population, without damaging yields.

Les Firbank of Britain's Centre for Ecology and Hydrology, who is heading the farm-scale evaluation (FSE) project, warns that the Danish trial may be too small to give a reliable foretaste of the three-year British study. "The issues that Strandberg is investigating relate closely to those we're looking at, but ours include the variations between places and farmers," he says. "The sheer scale is the power of the FSEs, and because of that we can be confident of any generalities that emerge from the results."

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

Scientists at the John Innes Centre (JIC) Norwich, 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 – auxin – affects the ability of cells to respond to gibberellin, which 'switches on' cell growth. The gene that controls this genetic switch is the same gene that was the basis of the 'green revolution'⁽¹⁾. Thus a gene of critical importance in increasing the productivity of cereal crops has turned out to have a fundamental role in plant biology.

“The importance of auxin and gibberellin in controlling plant development has been known for many years”, says Dr Nick Harberd “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⁽²⁾. Gibberellin stimulates the breakdown of these repressor molecules and so production of gibberellin switches on the genes needed for growth. 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.

1) 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.

2) 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.

Scientific design of GM farm-scale evaluations made public

The British Ecology Society's *Journal of Applied Ecology* 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.

Genetically modified cotton: much higher yields

Genetically modified (GM) pest-resistant cotton may provide yields up to 80 per cent higher than traditional types. More than one third of China's total cotton-growing area is being grown with Bt cotton, and has reduced pesticide useage by over 70 per cent. 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.

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; in particular regions such as the tropics and sub-tropics, which are under severe pressure from pests, could benefit from GM plants with increased pest resistance. '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.'

Other news

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

At the beginning February Kenya was the launch site of 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, joined 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 europaea 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.

Annals of Botany Special Issue on 'Flooding and Plant Growth'

Annals of Botany has followed up its special issue on water deficiency stress (vol. 89, pp. 801-963, June 2002) (<http://aob.oupjournals.org/content/vol89/issue7/index.shtml>) with a special issue on flooding stress (vol. 91, pp. 107-309, January 2003) (<http://aob.oupjournals.org/content/vol91/issue2/>).

The issue comprises 19 articles, many of which are reviews, from most of the leading laboratories working in this subject. Abstracts can be accessed by non-subscribers from the Journal's homepage (<http://www.aob.oupjournals.org>) by browsing the archive.

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>)

Role of Sphingolipids in the Secretory Pathway Of Plants

Postdoctoral position, Bordeaux, France

Available September 2003 for 12 months in the Laboratoire de Biogenèse Membranaire, CNRS-Université Bordeaux II. Extension to 18 months possible. Salary: 2150 euros per month.

Research in UMR 5544 deals with regulation of membrane lipid metabolism in plants and its role in the secretory pathway, membrane homeostasis and wax lipid production. The project will focus on the role of lipids and enzymes of lipid metabolism in the structural organization and function of the ER-Golgi-Plasma membrane pathway of plant cells. We will particularly study Glucosylceramide and the ceramide glucosyltransferase.

Glucosylceramide is a sphingolipid which accumulates in the plasma membrane and can be engaged in specific chemical links with sterols and other membrane components to form membrane domains called lipid rafts. Such domains lead to lipid and protein segregation which is a key step in lipid and protein delivery in the secretory pathway and assembly as functional domains at the cell surface.

The postdoctoral program will concern studies on the physiological role of Glucosylceramide in the secretory pathway through different steps:

- * Development of Glucosylceramide deficient mutants of *Arabidopsis thaliana* (salk mutants, RNAi approach, inducible mutants&).
- * Formation and composition of lipid rafts in these Glucosylceramide deficient mutants.
- * Analysis of the targeting of Golgi and Plasma membrane proteins in Glucosylceramide deficient plants (either by expressing protein markers in the mutants or by blocking glucosylceramide synthesis by specific inhibitors in wild plants).

The postdoctoral candidate is expected to have some experience in transgenic approaches in plants and protein expression, and the classical background in biochemistry and molecular biology.

Contacts:

Patrick Moreau (33 5 57 57 16 81 ; pmoreau@biomemb.u-bordeaux2.fr)

René Lessire (33 5 57 57 10 45 ; Rene.Lessire@biomemb.u-bordeaux2.fr).

Auxin Signalling Pathways

3 years Post-Doc position Gif sur Yvette, France

Position immediately available in the context of the EC-Research Training Network: ACCY

The purpose of ACCY is to unravel the auxin signalling pathways that mediate the control of cell growth. The programme will focus on identifying the molecular mechanisms underlying auxin action on the cell cycle in growing cells as well as quiescent cells which re-enter into division under developmental or environmental constraints. ACCY brings together seven participants which have accumulated a wide spectrum of complementary tools and expertise for analysing auxin signalling cascades and the plant cell cycle at the molecular, cellular and whole plant levels.

The overall aim of ACCY is to improve our understanding of the genetic and molecular control of cell division by the plant growth substance auxin in various cell and plant systems using a combination of modern biochemical, genetic and molecular cell biology approaches.

Three key objectives can be defined:

Objective 1: Studying the auxin signalling pathway involved in the control of cell growth

Objective 2: Identifying the molecular mechanisms of auxin action on the cell cycle

Objective 3: Investigating the mechanisms promoting the re-entry of quiescent cells into division

The candidate will search for novel auxin targets and will contribute to the functional characterisation of the auxin-binding protein ABP1, following work already in progress in the lab. Background in molecular and cellular biology, genetics and/or plant development is required. An expertise in genomics and bioinformatics would be an advantage but is not conditional. Collaborative work will be developed with most partners of the Research Training Network ACCY and specific training will be proposed in the context of the network.

Location: Gif sur Yvette, 25 km south of Paris, France

Condition: Due to EC-RTN rules, the position is offered to a PhD researcher from the EC or associated States but not France.

Contact:

Dr C. Perrot-Rechenmann

Institut des Sciences Végétales (ISV), CNRS, Avenue de la Terrasse Bat 23,
91198, GIF SUR YVETTE, Cedex

e-mail : catherine.rechenmann@isv.cnrs-gif.fr

phone: 33 1 69 82 35 88

Impacts of CO₂ and Climate on C4 Plant Fitness

PhD position, Sheffield, UK

A NERC-funded postgraduate studentship is available in the Department of Animal and Plant Sciences, University of Sheffield, England, U.K. (Supervisor: Colin Osborne)

Geological evidence has recently cast uncertainty on the long-held theory that C4 plants evolved in response to a decline in atmospheric CO₂. This PhD project will address the problem for the first time using an experimental approach, utilising state-of-the-art growth facilities at Sheffield. It will provide a timely evaluation of the extent to which a photosynthetic benefit of C4 plants over C3 contemporaries in low CO₂ translates into an increase in fitness. Coupled with field transplant experiments along an altitudinal gradient in South Africa, these experiments will give important insights into the selection pressures acting on C4 plants. The student will have opportunities for fieldwork in South Africa, and will be based in a department rated 5* in the latest RAE, with a breadth of research in molecular and ecological physiology.

Further information and details of how to apply for this PhD can be found at:

<http://www.shef.ac.uk/aps/graduate-information/graduate-opportunities.html>

The Molecular Basis of Plant Development and Environmental Interactions

PhD Studentships, Max-Planck-Institute, Germany

The Max-Planck-Institute for Plant Breeding Research together with the University of Cologne, the Institute of Bioorganic Chemistry (Poznan, Poland), the Institute for Plant Sciences (Gif sur Yvette, France) and the Biological Research Centre (Szeged, Hungary) invite applications for Ph.D. fellowships as part of the International Max Planck Research School (IMPRS).

The program is intended for highly motivated students with a strong training in the molecular sciences. The constellation of participating institutions provides excellent conditions and expertise in plant genetics and biochemistry, structural biology/biochemistry and cell biology. The training includes biweekly seminars, experimental work under the supervision of two senior faculty of the research school, and practical courses on e.g. reverse genetics, characterization of gene function, advanced microscopy, 3-D-structural analysis of proteins, bioinformatics, and novel mass spectrometry-based protein biochemistry at the participating institutions. The program is in English and open for students from all countries. Applicants must hold a Master's degree or a Diploma.

The application should be in English and must include: a cover letter, the completed application form together with accompanying documents. Candidates from countries with another official language should provide a proof of proficiency in English as a second language (e.g. TOEFL or IELTS). In addition two letters of reference should be mailed independently to the IMPRS coordinator.

For further information about the application process and the Ph.D. program visit the IMPRS homepage at www.mpiz-koeln.mpg.de/~imprsc. Deadline for applications is April 1, 2003. The fellowship application should be mailed to:

Max-Planck-Institut für Züchtungsforschung
IMPRS – Molecular Basis of Plant Development
Scientific Coordinator
Carl-von-Linné-Weg 10
50829 Köln/Germany



Forthcoming meetings

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>

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Transposition, Recombination and Application to Plants

Iowa, June 5-8, 2003

(<http://www.bb.iastate.edu/~gfst/phomepg.html>)

The 5th Annual Plant Sciences Institute Symposium, SPONSORED BY the Department of Biochemistry, Biophysics and Molecular Biology, Iowa State University, Ames, IA and the Plant Sciences Institute, Iowa State University, Ames,

The meeting will combine the biology of plant transposons and the applications of transposons and other recombination mechanisms; including advanced transposon tagging systems, and potential uses of transposon-mediated recombination reactions for modifying plant genomes. Both DNA- and RNA-elements will be dealt with at the meeting, although more time will be devoted to DNA elements. The symposium will cover the following areas: Transposon biology: interactions between native elements and their hosts; How transposons have shaped plant genomes; Regulation of transposition; Transposition mechanisms; Transposon tagging; and Applications of transposon-mediated recombination for plant genome modifications.

ISU Symposia attract a world-wide audience, with a broad mix of principal investigators, postdocs, and graduate students. The atmosphere is informal and the format allows for extensive discussion both during and between sessions. An important purpose of these symposia is to promote interactions and new collaborations between individuals who might not normally come together at a single symposium.

ABSTRACT and TRAVEL GRANT DEADLINE: April 4, 2003

REGISTRATION DEADLINE: May 5, 2003

REGISTRATION COSTS:

Advance registration (until May 5): \$450 (regular), \$325 (students and postdocs).

Registration after May 5: \$500 (regular), \$375 (students and postdocs).

Studies of flux-partitioning, allocation and translocation with stable isotope labelling and measurements in mesocosms

Freising (Germany), 2nd - 6th June 2003

The draft programme of the next NETCARB summer-school "" is available. The summer school will be at Freising; the registration form is on NETCARB web page.
<http://www.wzw.tum.de/netcarb/>

Information and registration can be found on the website,
<http://www.spps.kvl.dk/congress2003> <<http://www.spps.kvl.dk/congress2003>>

7th International Congress of Plant Molecular Biology

Barcelona, Spain. 16 – 21 June, 2003

<http://www.ispmb2003.com>

Conference on isotope effects

Uppsala, Sweden, June 22-27, 2003

A multidisciplinary conference will emphasize the diversity of modern research on isotope effects in various areas of natural science with the emphasis on chemistry and biochemistry.

Details, including final call for abstracts, delegate's fee, deadline for registration, registration form and much more are available on the conference web site:
<http://www-conference.slu.se/iiec>

Contact Johanna Thyselius, Conference Secretariat, Akademikonferens, P.O Box 7059
S-750 07 UPPSALA, Sweden

tel 018-67 20 84 int ph +46 18 67 20 84

fax 018-67 35 30 int fax+46 18 673530

e-mail: Johanna.Thyselius@akademikonferens.uu.se

<http://www.akademikonferens.uu.se/>

The XXI SPPS (Scandinavian Plant Physiology Society) Congress

Allinge-Sandvig, Bornholm, DENMARK 21-24 August 2003

Main topics of the congress:

The Plant Nutriome
Stress Biology
Bioimaging in Plant Biology

Invited Lecturers:

Eduardo Blumwald (USA)
Mary Lou Guerinot (USA)
Stefan Jansson (Sweden)
Jakko Kangasjärvi (Finland)
Satoshi Mori (Japan)
Nick Read (UK)
Mark Stitt (Germany)
Jens Stougaard (Denmark)
Michael F. Thomashow (USA)

Deadline for submission of abstracts and paying registration fee is May 1st 2003

Before April 1st PhD students who are members of SPPS may apply for travel grants.

Main Organizer:

Prof. Jan K. Schjørring
Department of Agricultural Sciences
Plant Nutrition Laboratory
Royal Veterinary and Agricultural University
DK-1871 Frederiksberg
Denmark

e-mail: jks@kvl.dk

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 OR Pauline Grierson at

pfgblue@cyllene.uwa.edu.au

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

Useful web sites

Celebrating 50 Years of DNA

<http://www.dna50.org/main.htm>

50 years ago, the belief that DNA was the genetic material was not yet universally accepted. With only 4 bases (ACGT) it was unclear how DNA possibly contain enough information or how could it reliably be replicated for each new cell? These were the questions James Watson and Francis Crick resolved on February 28, 1953. This web site includes the original paper in Nature, a genetics timeline, an archive, more readings in genetics and DNA-inspired artwork, and a summary of social events commemorating the occasion. For full utility, the Macromedia Flash Player is required, but there is a lot of information that even old browsers can access. This site has been created by Cold Spring Harbor, where Watson spent much of his career, as Director from 1968-94 and is still the lab's President.

Crop Description web site

http://www.hort.purdue.edu/newcrop/Indices/index_ab.html

This Crop Database from Purdue University in the United States includes both common and obscure plant crop species. Links are presented as an alphabetical list of mixed scientific and common names and can also be accessed with an integral search engine. Each crop plant has its own page.

PlantZAfrica.com

<http://www.plantzafrica.com/>

This site features information about plants native to southern Africa. The site includes: Plants of SA, Vegetation of SA, Using SA Plants, From the Archives, Miscellaneous Info as well as a site search. The plants site includes images, plant information and growing the plant.

Bioinformatics.Org

<http://bioinformatics.org/>

Bioinformatics.Org is an international organization promoting freedom and open exchange of data, databases, software and supporting resources relative to particular types of biological information. Bioinformatics includes all computer and supporting technologies involved in the analysis and use of the complex life sciences data available from molecular biology studies. This website is a central component in Bioinformatics.Org's goal is to provide "...access to cutting-edge resources can be prohibitively expensive for those working individually, in small groups, at poorly-funded institutions or in developing nations."

www.australiangraduate.com

This web site provides an invaluable introduction to students contemplating study at an Australian University.

Ricin Toxin from Castor Bean Plant, *Ricinus communis*

<http://www.ansci.cornell.edu/plants/toxicagents/ricin/ricin.html>

The recent arrest of terrorists in the United Kingdom for trying to isolate ricin from the castor bean (*Ricinus communis*), has raised interest in this species popular with physiologists interested in collecting phloem sap. It is the seeds that carry the toxin. This page explains the chemical basis of poisoning and why it takes days to kill (it inactivates ribosomes). There are medical uses too such as targetting it against cancer cells.

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.

FESPB News

14th FESPB Congress

The registration procedure for all interested in the participation in the 14th FESPB Congress which will be held in September 2004, in Cracow, in Poland is now open.

All information regarding the above can be found at the Congress website:
www.zfr-pan.krakow.pl/konf/

Please register at the web site. Then, the PRE-REGISTRATION FORM downloaded in the "rtf" format on the Congress website should be filled in and sent to the secretariat of the symposium by fax or by post. In this way all your personal details will be introduced into the FESPB CONGRESS database and you will be up to day informed about organizational issues.

The Second Announcement will be sent only to those who have registered on the Congress website and confirmed their participation in the Congress by completing and returning their PRE-REGISTRATION form to the Secretariat of the Symposium by fax or by post. (Completed forms with an institution stamp, that have been sent by post without registering on the Congress website will be also accepted).

I do hope that you will be able to join us to make this 14th FESPB Congress enjoyable and scientifically fulfilling that meets your highest expectations and reflects your interests in field of present day plant biology.

Prof. dr hab. Franciszek Dubert
THE 14th FESPB CONGRESS ORGANISER

FESPB Web Forum

The FESPB Web Forum is a much neglected feature of the FESPB web site. It has been set up in a way that allows letters to be posted for everyone to read and for any replies to be appended to letter so that again everyone can read it. You may be interested in two letters that have been posted on FESPB Web Forum recently by Mario de Tullio and Geert Potters. They concern the question of the increasing hostility to science by the general public and the need to educate teachers and students at schools to be more enthusiastic about science, especially plant science. To read these letters simply log on to the FESPB web site and click on 'FESPB Web Forum' button on the left side. Both letters make very interesting reading and may provoke you into writing to FESPB Web Forum yourself

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

The source of this FESPAlert is

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Preston
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Tel. 01772 893917

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