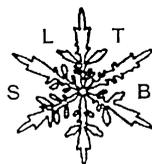


# SLTB Newsletter



## **\*\*STOP PRESS : AGM DETAILS\*\***

Arrangements for the SLTB Scientific meeting and AGM at the University of York on September 15-16<sup>th</sup> are reaching completion. As soon as the scientific programme is finalised it will be posted on the website and a copy sent to all current registrants.

On Wednesday 14<sup>th</sup> from 17:30-19:00 there will be a drinks reception (sponsored by Planer plc) and registration in the Biology Atrium followed by a coach into York for those people who wish to explore the bars/restaurants of the city!

Due to its popularity, the banquet on the evening of the 15<sup>th</sup> has been moved to King's Manor in the centre of York (there will be a coach there and back for participants). Originally the Abbot's House of St Mary's Abbey, the King's Manor served the Tudors and Stuarts as a seat of government, becoming residences in the 18<sup>th</sup> century, a school in the 19<sup>th</sup> and is now home to the Depts of Archaeology, Medieval and 18<sup>th</sup> Century studies.

Monica Wusteman and Belinda Wade  
Local Organisers

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## **SLTB Membership Questionnaire**

With the last SLTB Newsletter was a Membership Questionnaire aimed at maintaining the relevance of the Society to its membership and making improvements for the benefit of everyone. If you have not returned your form the Committee would be grateful if you could find the time to complete the copy of the form enclosed and return it to the General Secretary.



### **CRYO-programmes ~2005 Current research activities – COBRAL**

#### **Past & Present**

As arguments continue to rage over various EU constitutional issues, like colourful schemes of ships flaring broadsides across Solent channels; on a calmer frontier, the scientific **\*algal\***

endeavours within the EU framework – **COBRA** - continue to flourish into a productive expanse of creative research activities. Society members will recall a similar feature in the April04 Newsletter; this is its unofficial sequel - **COBRAL** (**C**onservation of a Vital European Scientific & **B**iotchnological Resource: Micro**A**lgae & Cyanobacteria published Literature, information and outputs)

reporting the final outcome of the three and a half year project. COBRA has public sections in its (<http://www.cobra.ac.uk>) website.

Aside from the educational aspects, of Euro-speak, overall, the project was a huge success throughout the European consortium, creating extensive links between COBRA partners, where current results continue to expand beyond COBRA's remit into other internal Institutional-University research frameworks. I recall, such an outcome, was not foreseen in the beginning, nor during the project's running, indeed, there were times when – well, whatever will happen next? I assure you it did! One partner (Institute of Botany, Trebon), after collecting Antarctic extremophile algae found the awe of polar exploration pale, in contrast to the ~1m submerged laboratory during the Czech Republic flooding disasters of 2002. The richness of Pringsheim's (the founder of 3 of the collections in the COBRA project) early peripatetic algal research activities, was mirrored by our coordinator's translocation, from his fresh water ecosystem (Ambleside, Lake District), to a more osmotically stressful location in Oban, Scotland.

### **Perspective**

COBRA partners represent many different sectors: Culture Collections, Biotechnology Industries, Academia and Countries from the Czech Republic, France, Germany, Portugal and UK. Eight partners distributed as five European Algal Culture Collections (CCAP, IMAR, IP, IB, Uni-Goe). These are custodians of unique diverse algae and cyanobacteria collections obtained from globally dispersed origins, representing excitingly diverse habitats (ranging from the Sahara desert to Polar regions); a Small Medium Enterprise (Aquaartis) involved in the biotechnological utilization of algae and their products; and a Higher Educational Institute (Abertay) involved in fundamental cryobiological and algal stress research. These inter, multi-disciplinary partners continue to provide expertise to develop new, improved methods for algal cryo-conservation. This involves the application of fundamental, applied knowledge of cryo-injury to assist the optimization of methods for preserving

a wide range of diverse algae. Thus contributing to a greater understanding of algal, biochemistry, molecular biology and stress physiology.

### **Outline**

COBRA's research programme was divided into 3 annual reporting sessions, split by the Mid-term Review (18 month). These periods allowed the management team to strategically monitor progress, problems (what project is without these!) within the consortium. Its structure, embraces 4 main objectives, within 5 work packs, and of course in Euro-speak included 9 deliverables and 11 milestones. The key objectives were as follows: (1) to use physical and virtual networks to link disperse Europeans groups in algal technologies and conservation; (2) apply innovative IT knowledge to create a virtual communications network to enable knowledge transfer; (3) to assist algal culture collection management structures, through cryopreservation and molecular research technologies, in European industries that exploit algae and their products; (4) to stimulate new EU opportunities for algae and cyanobacterial use, thereby enhancing Europe's competitive capacity for its sustainable utilization in key technologies and sectors. The realization of these objectives was achieved through the 5 work packs activities constructed to integrate and complement each partner-skills base:

- wp1 - development of cryopreservation protocols and establishment of appropriate cryostorage;
- wp2 - develop insights into mechanisms of cryoinjury providing fundamental knowledge that could improve traditional storage protocols, and facilitate the use of novel cryopreservation methods, targeted to storage-recalcitrant organisms;
- wp3 - provide criteria for selecting best 'laboratory practice' procedures in genotypic stability and viability assessments;
- wp4 - validate cryo-conservation protocols within and outwith the COBRA consortia in trial laboratories;
- wp5 - provide the IT 'adhesion' in a virtual communications infrastructure as a provider for the algal cryopreservation information data base.

Work pack activities had the collective remit to (1) develop cryo-conservation

methods for environmental and economically important algae; (2) enable the cryopreservation of storage-recalcitrant organisms; (3) create an electronic communications and information systems that encapsulates Europe's algal resource centres in a virtual infrastructure; (4) construct a 'tool-kit' of molecular, biochemical and morphological techniques valid for the conservation and utilization of algae; (5) the production of robust criteria to ensure high standards of culture collection operations.

The project was 'enriched' with the involvement of both European under- and post-graduate students, many of these algal enthusiasts, who had the opportunity to visit and work in collaborating partner laboratories during the lifetime of the project. In total, the work was linked to 3 PhD degree projects, 7 MSc programmes, 7 Diploma studies and 2 BSc investigations. Where appropriate, partners continue to incorporate, into their under- and post-graduate teaching portfolios, aspects of algal biotechnology, bioinformatics components and cryopreservation.

### **Highlights**

The project was originally scheduled to last 36 months, reporting annually and at month 18, for the Mid-Term Review. Project progress during years 1 –2 include: beginning the development of molecular, biochemical and morphological techniques within cryo-storage protocols applied to diverse algal groups progressed to allow their use in environmental extremophile, polar biology and biotechnological sectors. The initiation of networking and communications was not easy going, in the beginning, throughout the dispersed COBRA team, but the versatile Cobras soon got the hang of it. Proactive cross-consortium participation was in place from the start of the project, and the open exchange of knowledge resulted in cohesive research actions soon after the start of the project, especially following the coalescence of mutual cultural activities, by the first of the COBRA Technical Workshops held at Abertay, Dundee. The creation of COBRA's virtual and interactive communications infrastructure (see website above) within the first 3 months provided 'the Cobras' with group identity, and a highly

interactive communications platform and catchy *logo*:



The website provided an effective communications portal for the wider scientific community regarding membership and programme activities, supporting the organisational exchange visits, technical, annual meetings and the Mid-Term Review; including joint participation of the partners at international conferences and society symposia, such as the SLTB, European Culture Collection Organisation and the British Phycological Society. Indeed, the SLTB membership will recall, following her successful application for the Audrey Smith Award to attend the SLTB Medical Society meeting (Oct 02), Ms Julia Muller gave an excellent presentation on 'AFLPs and genetic stability assessments in micro-algae'. She has recently completed her PhD submission. Julia is a highly active member of COBRA and integral to the SAG, Gottingen algal team, a subject of much debate in SLTB committee discussions, to encourage young European SLTB members, in years to come, as scientists likely to be part of the Society's future.

### **COBRA's Mid-term Review**

Essential to COBRA's success, was the Mid-term Review, hosted by University of Gottingen, (June03). This provided a timely opportunity to review project status and share information through posters, oral presentations and WP-focus groups. This was pivotal in orientating activities towards completion. Professor Glyn Stacey, (an active SLTB member) of the National Institute of Biological Standards and Control (UK), reviewed consortium research activities. The project was very positively reviewed with all work packs confirmed to be well focused, and on schedule with effective management in place. This review noted the benefits from a rapid start up, the establishment of an early web-based communications and information structure to demonstrate the highly interactive teamwork, as a valuable model for getting similar projects activated at an early stage.

Recommendations were made regarding specific work packs. These recommendations and COBRA's responses are summarised here:

(1) In consideration of methods, which investigate the mechanisms of cell death, could specific assays be identified accordingly and evaluated within the consortium. In response, Abertay hosted a series of laboratory exchanges, in association with technical visits to Oban (July-Oct03). Several assays were identified, appropriate for studying cryoinjury, and their application allowed the step-wise profiling of injurious and potentially stressful events that could lead to cell death including: polarographic O<sub>2</sub> evolution, in combination with cryomicroscopy to assess cell destruction, and disturbances in primary photosynthetic metabolism; free radical markers of generic oxidative stress and viability assays/stains. The resulting assay methods handbook, was produced by Abertay for the consortium membership was posted to the COBRA website.

(2) Partners might consider, the use of a 'set of reference materials' that include: cryopreserved cell preparations for viability determinations, genomic DNA from reference organisms for molecular analysis. These could benefit technology transfer and form an important element in the project validation exercise. In response, partners immediately began to organise a focus meeting to select 'test' strains and other groups of reference organisms. An '*All Stars*' algal list, based on the SAG-partner '*Best-Sellers*' collection requisitions, was constructed, together with media-culture information, was posted to a specially constructed database on the COBRA Website.

(3) Validation activities could be done, with formal documentation, along with a validation plan agreed amongst the consortium members. This should outline critical criteria for the assessment of methodologies, strict use of controls and reference materials, with experimental details participants should follow and instructions for collation and interpretation of data. In response, planning meetings were hosted; these issues were addressed, where experimental details, critical criteria and assessment methods were constructed. A preliminary, validation database, was constructed, in cooperation with the

COBRA team, and posted onto the Website.

### **'To boldly go...'**

Project culminations focused this concluding year's activities on: (1) completion of practical research activities associated with work packs (2) consolidation of website and 'Knowledge Management' activities, along with arrangements for the transfer of John Day from CCAP-Ambleside to CCAP-SAMS, Oban (3) collation of data across the consortium; (4) establishing an outputs plan and Milestones schedule. A workshop was hosted by the Czech Academy of Science, Institute of Botany, Trebon (April04), as well as reporting work pack activities, the meeting's thematic centred on environmental issues, a uniquely and timely opportunity to evaluate the impact of studies on algal (extreme) environments.

### **Project end: exit strategy**

At this stage, a view of the project status, showed almost all key targets were met, regarding Milestone achievements and Deliverables, although major disruptions, deemed as 'Acts of God & NERC' causing the Czech Republic flood disaster and John Day's relocation to Oban resulted in delays in some final deliverables and outcomes. Consequential, a request for a project extension was granted to complete this outstanding work. It was clear, in discussions at the final meeting held at Oban (Oct04), that COBRA had successfully created a robust virtual and physical infrastructure that will enable and continue to support 'networking of the consortium membership' beyond the lifetime of the EU funding this project. The obvious success of the collections, now holding large collections of cryopreserved algae, along with the website, will continue to produce data, and enable further research. Integral to its function, has been the recruitment of new members to SLTB and to the best of my knowledge, this degree of EU-support is unprecedented in algal-based cryopreservation research projects.

This programme has been highly dynamic and active engaging a wide range of research issues within cryopreservation, equally matched with collaborative European teams of expertise in

cryopreservation and related subjects. Exploitation and dissemination activities, the IT components of the project, have been transferred from the University of Abertay to Oban and will be accessible to the wider user community in due course. It was not initially envisaged that there would be any direct patent activity associated with this project, however, the novel developments in one work pack resulted in an exciting, novel method of detecting viral contamination; however this was found not to be patentable as prior art existed. In addition, under the terms of the Budapest Treaty, it is anticipated that currently freeze-recalcitrant patent deposits may be cryopreservable in the future.

More in-controversially, temporal light-microscopy studies revealed the discovery (in Dundee) of an apparently transient New Species: *Euglena cobra* (strain designation, 1-UAD-Day, Taxonomic authority - Benson & Harding04) and unofficially, these observations indicate the known characteristics & attributes were non-venomous, able to survive extreme habitats, dangerous environments & alcoholic media.



Research outputs have been presented in: key note, invited papers, oral and poster papers, a current total of 108 presentations at 36 national and international meetings during the lifetime of the project. The majority of these meetings have been in Europe, however, the project and its scientific activities has also been presented at meetings in: IAPTC, Orlando Florida; Algae 2002, Tsukuba, Japan; SIVB, Orlando Florida and ICC 10: Tsukuba, Japan. Over the next few years, this will generate outputs, such as joint-consortium, refereed manuscripts, book publications and presentations at conference and symposia. Preliminary estimates, based on outstanding current data, indicate some 25 plus publications have yet to emerge into the public domain. COBRA has many overlapping inter-disciplinary activities with scientific outputs being the subjects

of previous and undoubtedly future SLTB meetings.

Furthermore, the collaborations developed and strengthened during the lifetime of the EU funding of COBRA will endure and a variety of collaborative projects have been initiated and others will be developed over the next few years. The COBRA membership is also linked to other EU algal projects (ALGINET) and CRYMCEPT:

Establishing Cryopreservation Methods for Conserving European Plant Germplasm Collections. The project is linked to research societies (SLTB & ECCO), which will support continued collaborations and allow the involvement and participation of the wider scientific community. This association will continue to provide an excellent opportunity for the cooperative exchange of information related to Europe's broad-based phyto-biological resources.

Dr Keith Harding  
COBRA & CRYMCEPT projects advisor  
University of Abertay-Dundee



### Safeguarding the National Fruit Collection

The National Fruit Collection (NFC) located at Brogdale Horticultural Trust, Brogdale Farm, Faversham holds a live collection of temperate fruit varieties (<http://www.brogdale.org>).

The government department, DEFRA, continues to own the NFC *per se* and provides funds for their maintenance through a research commission held jointly by Imperial College, University of London and the Brogdale Horticultural Trust. Dr Emma-Jane Lamont, of Imperial College at Wye, is the scientific curator of the NFC, the main Imperial contact for the work, and is responsible for this international collection renowned for its scientific, horticultural and historic importance, particularly as the Collection conserves the genetic diversity present in cultivated temperate fruit genera.

Cryopreservation continues to play a key role in the conservation of plant genetic resources to safeguard against the loss of economically valuable germplasm. The impact and realization of this approach, features in an interesting desk project,

undertaken by Prof Mike Jeger (currently the Dean) and his post-doctoral colleague, Samuel Justin, at the Wye Campus of Imperial College. They have been commissioned to prepare a report for DEFRA on 'Safeguarding the National Fruit Collection' utilizing existing understanding and current techniques in cryopreservation and related conservation technologies, the draft, of which is now nearing completion, if not complete! Subject to the government review process, once this report reaches approval, it will enter into the public domain - undoubtedly for wider debate and discussion. As with most pending publications, we await - in anticipation - for this one!



**43rd Meeting of the Society for  
Cryobiology  
Hamburg, 24-27 July 2006**  
in association with the  
**Society for Low Temperature  
Biology**

The meeting will cover a wide range of subjects including hypothermia, physiology of resistance to cold in plants, and applications of cryobiology in conservation, surgery, cell, tissue and organ preservation. Relevant aspects of biology, molecular biology, physics, chemistry, physical chemistry, biochemistry, physiology, medicine, transfusion medicine, mechanical engineering, tissue engineering and transplantation (<http://www.cryo2006.org>)

***Preliminary Programme***

**Sunday July 23, 2006**

Evening: Welcome reception, Hamburg Chamber of Commerce.

**Monday July 24, 2006**

Morning: Symposium on clinical applications of cryobiology (Chair: David E Pegg, University of York, UK)

Afternoon: Free Communications

**Tuesday July 25, 2006**

Morning: Molecular determinants of low temperature and dehydration tolerance in plants (Chair: Dirk K Hincha, Max-Planck-Institute of Molecular Plant Physiology, Potsdam, Germany)

Afternoon: Guided Bus Tour of Hamburg

Evening: Barbecue/ICYR canoe event

**Wednesday July 26, 2006**

Morning: Effects of hypothermia on mammalian cells and tissues (Chair: Ursula Rauen, Institute of Physiological Chemistry, University Duisburg-Essen, Germany)

Afternoon: Free Communications

**Thursday July 27, 2006**

Morning: Peter L Steponkus Crystal Award Competition

Afternoon: Society for Cryobiology Annual Business Meeting and Free Communications

Evening: Banquet

Andreas Sputtek, Chairman

CRYO 2006 Organizer

Email: [sputtek@uke.uni-hamburg.de](mailto:sputtek@uke.uni-hamburg.de)



**Other Meetings**

**Plant Tissue Culture - Contributing to a  
sustainable future  
Perth, Western Australia  
21-24 September 2005**

This conference is organised by the Australian Branch of the International Association for Plant Tissue Culture. This conference will showcase recent developments in plant tissue culture and biotechnology, highlighting contributions to sustainability in horticulture, agriculture and forestry, and conservation of the natural environment.

<http://www.congresswest.com.au/PTC>

**14th International Conference of the  
European Association of Tissue Banks  
Florence (Italy), 8-11 December 2005**

For further information visit:

<http://www.eatb.de/html/events.htm>

**11<sup>th</sup> Congress of The International  
Association for Plant Tissue Culture &  
Biotechnology (IAPTC&B)-  
Biotechnology and Sustainable  
Agriculture 2006 and Beyond  
Beijing, China, 13-18 August 2006**

For further information visit:

<http://www.genetics.ac.cn/IAPTCB.htm>

If you have a meeting or other event that you would like published in the next SLTB Newsletter, please send the information to any member of the Committee. Thank you.



## Workshops and Courses

### CRYMCEPT

#### Cryopreservation training workshop

Plant Cryopreservation Training  
Workshops in Belgium and France in  
September/October 2005

Two training workshops on cryopreservation of plant genetic resources are being organised in the context of the EU funded project entitled "Establishing Cryopreservation Methods For Conserving European Plant Germplasm Collections" (CRYMCEPT) to take place in Katholieke Universiteit Leuven, Belgium, 12-25 September 2005 and in IRD, Montpellier, France, 10-23 October 2005 (<http://www.agr.kuleuven.ac.be/dtp/tro/crymcept>).

The EU project addresses an urgent need to develop cryopreservation techniques and protocols for important plant genetic resources, which otherwise could not be adequately conserved using conventional methods. These workshops will disseminate the results of the research carried out in the project to develop optimal cryopreservation techniques for a number of plants such as garlic, olive, *Ribes*, apple, almond, potato, banana and coffee. The workshop is targeted to benefit germplasm collection holders in Europe, as well as countries from the EU international co-operation programme target countries. For more information please contact Dr Ehsan Dulloo, Senior Scientist, IPGRI - Rome, email: [e.dulloo@cgiar.org](mailto:e.dulloo@cgiar.org).

#### MSc Cryobiology (Cryopreservation and Conservation)

The University of Luton is currently running MSc/PgDip/PgCert Cryobiology Courses to provide formal training and qualification for personnel working in organisations using cryobiology techniques and a sound foundation for

individuals planning to undertake research in related discipline areas.

The courses include the following aspects and applications of Cryobiology:

- Principles of cryobiology
- Cryobiology in biomedicine
- Cryobanking and conservation of biodiversity
- (MSc) Laboratory research project
- (PGD) Literature based dissertation

The teaching team includes:

Prof Barry Fuller, Royal Free and University College Medical School, London

Prof Bill Holt, Institute of Zoology, London

Prof David Pegg, University of York

Prof Hugh Pritchard, Royal Botanic Gardens Kew, Ardingly

Prof David Rawson, University of Luton

Prof Glyn Stacey, National Institute of Biological Standard and Controls, South Mimms

Prof Paul Watson, Royal Veterinary College, London

Dr Tiantian Zhang, University of Luton

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## Membership Subscriptions

There are still a number of members who have not paid their 2005 membership dues. A Standing Order through a current bank account is the most efficient and convenient way to make your payment of £20 for standard membership or £15 for students. At present the Society is unable to accept payment by credit or debit card. A Standing Order Form is available on the 'Forms' page of the SLTB website (<http://www.sltb.info/forms.html>) and if you do not already take advantage of this facility please complete the form and forward it your bank as soon as possible. If you are an established Standing Order

user please would you ensure that this has been adjusted to the current membership rates.

Alternatively,

1. Payment can be made by cheque [increased to cover any bank service-charges, therefore it is cheaper to pay for several years in advance] made payable to the Society and sent directly to the Treasurer.
2. Cash payment can be made at the AGM in September to the Treasurer or any UK based member of the SLTB committee.

### **Gift Aid Declaration**

Since the SLTB became a registered charity in the UK in 2003, we can now

reclaim tax on our UK members' subscription payments from the Inland Revenue. To enable the Society to do this, we need members to declare that you would like the Society to treat your subscriptions as Gift Aid donations. Would UK members (tax payers only) please fill in a Gift Aid Declaration form, a copy of which is enclosed with this Newsletter, as this will greatly help the Society's balance sheet!



*Note: The material for this edition was prepared by Keith Harding.*