

SLTB Newsletter



This Spring/Summer issue of the SLTB newsletter ranges from humans to protozoa with an article by Dr David Pegg on biosecurity and human tissues and one from Dr John Day on the importance of freezing protists. There are further details of the forthcoming SLTB meeting in Derby in September and notice of a Society constitutional change that will be brought forward at the AGM

I would also like to take this opportunity to tell members about some new developments in the relationship between the society and the journal *Cryoletters*.

In future new SLTB members will receive a complementary issue of *Cryoletters* (up to a maximum of 15 members per year) and new *Cryoletters*' subscribers will be offered a half price subscription to the SLTB for their first year. Abstracts from the Society's meetings will be published in *Cryoletters* and the journal will sponsor a £100 prize at the meeting for young scientists who subsequently submit a manuscript for publication. Whilst the SLTB and *Cryoletters* remain fully independent organizations we hope that members will welcome these proposals as mutually beneficial to the aims of both Society and journal.

Could the Alistair Cooke incident happen in the UK?

Dr David Pegg University of York

You will recall that about a year ago a scandal concerning tissue banking hit the headlines. A New York tissue recovery firm known as Biomedical Tissue Services was alleged to have forged or falsified donor medical records and the consent forms to donation. The tissues it obtained were shipped to five tissue banks that were accredited to the American Association of

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Tissue Banks (AATB): the tissue was processed and at least some was distributed to surgeons for grafting and some of that came to the UK. The AATB operates a self-regulatory function in the USA and its *Standards* explicitly prohibit tissue retrieval without appropriate consent and require a review of all relevant medical records of the donor. One of the deceased donors was reported to be the world famous diarist and broadcaster Alistair Cooke; neither consent nor screening for transmissible diseases was obtained. Could a similar incident happen in the UK? It would be good to be able to say, "Absolutely not" but I clearly recall my medical school teachers cautioning us, "Never say never!" However, what I can say is that that the system is quite different here.

First, there are no commercial tissue procurement agencies in the UK. All tissue donation for grafting is carried out within the National Health Service. That does not prevent dishonest behaviour of course: there has been one recent prosecution of an NHS employee who was found to have sold altruistically donated bone to a private hospital. However it would be difficult to

hide such activities from colleagues in a typical NHS tissue bank.

Second, there is a strong regulatory and licensing mechanism in the UK. The Human Tissue Act, 2004 and the Human Tissue (Scotland) Act 2006 both emphasise the ethical imperative of valid consent and screening for the possible presence of transmissible diseases is mandatory. Premises are inspected and licensed by the Human Tissue Authority. Severe penalties are specified for offences against these Acts.

Some of our members are also members of the British Association for Tissue Banking (BATB) and that Society has an ongoing study to identify any opportunities for fraudulent activities that might exist here. A number of recommendations to tighten the safeguards still further are under consideration and when completed will be posted on the BATB website.

The Conservation of “Biological Standards” Or Why bother freezing protists?

*John G Day & Thomas Pröschold, CCAP,
SAMS, Oban*

Microbial sciences have over the past few years advanced dramatically and we have an entire “tool box” of techniques that were twenty years ago closer to science fiction than science fact. We are now in an era of genomic, proteomic, metabolomic, and any other omics one can imagine, exploitation of microorganisms. This has rapidly generated new science, industries, products and services. It is therefore surprising that in many cases there has been little thought, emphasis, or resources allocated to the conservation of the starter organisms in such a state that guarantees their long-term genetic stability. It is

debatably even more surprising that much of the literature on biotechnological exploitation and, for that matter, genomic projects do not specify which strain has been studied, or whether they are pheno- or geno-typically stable. Taking an example from the protistan “world”, a survey of the applied phycological literature from 1994-2004, accessible through Web of Science (Thomson BIOSIS, Philadelphia), produced more than 200 citations on *Chlorella vulgaris* (an alga commonly used biotechnologically); however, less than 20 of these publications provided exact strain designations (Müller *et al.* 2005). Furthermore, a survey of current protistan genomic projects revealed that of the 95 projects listed, 37 used strains that were not available from service culture collections (Gachon *et al.* 2007). Many of these had no strain designation and were not in any official or even unofficial/private culture collection!

Clearly, microbial Biological Resource Centres (BRCs) have a key role to play in the maintenance and distribution of microbial resources. Amongst their key functions is that they: *provide consistency and quality, traceable source material and information.* They are, *de facto*, sources of “biological standards” and without these “standards” comparative taxonomic, physiological, ecotoxicological and *ex situ* ecological studies are impossible or, at best, problematic. The value of collections to the user community is widely recognized, not least in that they provide cultures that are often difficult or virtually impossible to re-isolate from their natural habitats, even when the original source is known and accessible. However, until relatively recently, at least for protists, there has been relatively little emphasis placed on phenotypic or genotypic stability of conserved organisms. The authors have had personal experience of apparently irreversible changes in materials that have been maintained for long periods of time by serial transfer e.g. irreversible cell size

shrinkage and loss of toxin production by diatoms. These problems have obvious scientific and biotechnological implications. A further issue of significant scientific importance is the need to maintain authentic strains i.e. live organisms derived from the type specimen (The originally described organism). Under both Botanical and Zoological Codes of Nomenclature (ICBN and ICZN), there is no requirement for the maintenance of live material. In fact, deposition of living organisms as type material is not permitted according to the codes. Type material has to be in metabolic inactive state (fixed material, photograph, drawing, or cryopreserved material). In the case of protists the type material is most likely to be a drawing, or at best a preserved dead specimen. At the CCAP we are instigating a programme of cryopreservation focused specifically on conserving the authentic strain holdings of the collection, which can be designated as type material (holo-, epi-, or neotype). The objective will be to ensure that wherever possible optimal approaches are employed that ensure high levels of post-thaw viability and genotypic stability. Where taxa are recalcitrant to cryopreservation we plan to bank frozen pellets of material that can be used in the future for genomic or other experimental approaches that do not require live specimens/ cultures. In addition, we plan to bank frozen extracted DNA from all these strains that will be available for both “in house” research and external workers. It is planned over the next five years to link these live and cryopreserved materials with a comprehensive web-based knowledge-base holding images, molecular, taxonomic, biogeographic and other data on individual strains. We propose that this system will form a model for other BRCs and will enhance the value of our holdings to the scientific community as a whole.

The punch line is that cryopreservation is vital to the underpinning of science,

academic and biotechnological. In addition, we believe in future, the user community will demand that their starting materials are derived from material with authenticated provenance that has been stored in a format that guarantees their genetic stability.

References:

Gachon CMM, Day JG, Campbell CN, Pröschold T, Saxon R and Küpper FC (in press) The Culture Collection of Algae and Protozoa (CCAP): a biological resource for protistan and cyanobacterial genomics. *Gene*

Müller J, Friedl T, Hepperle D, Lorenz M and Day JG (2005) Distinction of isolates among multiple strains of *Chlorella vulgaris* (Chlorophyta, Trebouxiophyceae) and testing conspecificity with Amplified Fragment Length Polymorphism and ITS RDNA sequences. *J. Phycol.* **41**, 1236-1247.

From the General Secretary

The forthcoming SLTB meeting in Derby will undoubtedly prove to be a stimulating and enjoyable scientific meeting. It also provides an opportunity for the geographically dispersed low-temperature biology community to meet, socialise, plan, develop new ideas and of course conduct the business of the SLTB. As you will note with this Newsletter is a call for nominations for membership of the SLTB Committee, namely for a replacement Treasurer and a general committee member. Our constitution (see <http://www.sltb.info/archive.html>) specifies that we must nominate and vote for the positions of Treasurer, General Secretary and Chairman. I would like to encourage members to agree to be nominated for these important positions in the SLTB. Please forward your nominations to me in hard-copy (see attached form) or by email jgd@sams.ac.uk as soon as is convenient and not later than Friday August 10th. Assuming more than one nomination is

received for each post, a postal ballot will be held prior to the AGM.

Proposed Constitutional Changes

As mentioned in the previous Newsletter, the committee wish to see some minor changes to the Constitution. In accordance with Article 20 these alterations/amendments will be formally raised and voted on at the next AGM and as part of the process I am informing the membership that the following Motions will be submitted for consideration and voted on at the AGM.

Motion 1:

It is proposed to delete the following sentence from Article 16 of the Constitution ...that the AGM should be held in “September each year or as soon as practicable thereafter”. This will increase the flexibility of when AGMs may be conducted to allow us, on occasion, to have joint meetings with other organisations.

Proposer: John G Day (General Secretary SLTB).

Motion 2:

It is proposed to delete the following sentence from Article 19 of the Constitution ... “in the United Kingdom”. This Article is about contacting / issuing “Notices” to members. As many of the members live outside the UK and we would always contact members on SLTB, this geographical limitation is irrelevant to the SLTB.

Proposer: John G Day (General Secretary SLTB).

Further motions for consideration at the AGM can be submitted by members to me by email jgd@sams.ac.uk at any time up to Mon 10th September, or in person at the AGM.

John G Day

New Committee Member Profile



Mark Curry, Senior Lecturer, Biological Sciences
University of Llincoln

My PhD work was done at Essex University on the role of cell surface saccharides in the development of preimplantation mouse embryos and in the epididymal maturation of mouse sperm. So my first experience of cryobiology was with freezing and thawing human sperm and early stage human embryos whilst working as an embryologist in an IVF clinic. However, my real introduction to cryobiology as a subject came some five years later with a postdoctoral position with Paul Watson at the Royal Veterinary College in London. With Paul I worked with livestock sperm developing techniques to measure basic biophysical cell properties such as cell volume and surface area, not straight forward problems for spermatozoa, and membrane water permeability coefficients in order to model cell behaviour during the freezing process. Our aim was to calculate theoretically optimal sperm freezing rates and to compare the results with the empirically derived optimal rates we had observed. This work continued during a period spent in the Physiology Department in Cambridge where I was also involved in some work with Sam Hill on the structure of the red cell aquaporin channel. My current post is split between teaching on the department's Animal Behaviour Science and Equine Science courses and research still focussed around semen preservation and AI, increasingly though horses are taking the place of sheep and pigs as my major subjects. This is actually my second stint on the committee of the SLTB having been society secretary 1993-96.

Society for Low Temperature Biology
Annual Scientific Meeting, AGM and Symposium

2nd Announcement & Call for Papers & Posters

***Validation, Safety and Ethical Issues Impacting the
Low Temperature Storage of Biological Resources***

12th – 14th September 2007

University of Derby

A symposium providing a cross-discipline forum to consider the role of validation, safety and ethical issues in the preservation of different types of living resources at low temperatures.

Plenary Speaker Glyn Stacey

UK, National Institute of Biological Standards & Control
“The Challenging Path from Stem Cells to Therapy”

Invited speakers: **Maureen Wood** (Aberdeen Fertility Centre, University of Aberdeen, UK) *“The Regulation of Human Gamete & Embryo Storage”*; **Gillian Lockwood** (The Midlands Fertility Clinic, UK) *“Cryobiology & Fertility Preservation: Time to Come in From the Cold”*; **Peter Whittaker** (Institute of Environment, Philosophy & Public Policy, University of Lancaster, UK) *“Human Stem Cells & their Storage: Some Ethical Issues”*; **Barry Fuller** (Royal Free Hospital, UK) *“Hypothermic Organ Storage for Transplantation, & the Human Tissue Act - The Devil in the Detail”*; **Joachim Keller** (Institute of Plant Genetics & Crop Plant Research, IPK, Germany) *“Cryopreservation for Plant Genebanks - A Matter Between High Expectations & Cautious Reservation”*; **Bill Holt** (Zoological Society of London, UK) *“Cryobiology, Wildlife Conservation & Reality”*; **Mathew Tomlinson** (Queen’s Medical Centre, University of Nottingham, UK) *“Managing Risks Associated with Cryopreservation”*; **Andreas Sputtek** (Universitaetsklinikum Hamburg-Eppendorf, Germany) *“Cryopreservation of Autologous Peripheral Blood Stem Cells for Patient Treatment -Theory & Practice”*; **David Smith & Matt Ryan** (Commonwealth Agricultural Bureaux International, UK) *“The Impacts of Implementation of OECD Biological Resource Centre Best Practice on Cold Storage of Micro-organisms”*; **Bart Panis** (Laboratory of Tropical Crop Improvement, KUL, Belgium) *“Plant Cryopreservation: Applications, Constraints & Prospects”*; **Zoe Hewitt** (Centre for Stem Cell Biology, University of Sheffield, UK) *“Moving Towards Therapy: “The Issues of Good Management Practice (GMP) & Vitrification of Stem Cells”*; **Robert Parker** (The Heart Valve Bank, Royal Brompton Hospital, London, UK) *“Validation of Cold Storage Approaches for Heart Valves”*; **John Day** (Culture Collection of Algae & Protozoa, Scottish Association for Marine Science, UK) *“COBRA’s Experience of Cryopreservation Technology Transfer”*; **Keith Harding** (Research Scientists, Damar, Fife, UK) *“Technical Aspects Concerning the Validation of Cryopreservation for the Conservation of Phytodiversity”* **Erica Benson** (Research Scientists, Damar, Fife, UK) *“From Research to Cryobank: A Translational Approach to Cryopreservation”*.

The meeting organizers invite contributed oral “Free Communications” and Poster Sessions covering all aspects of low temperature biology.

The Society for Low Temperature Biology Annual Scientific Meeting will also include a **Memorial Lecture for Professor Chris Polge, delivered by Professor Paul Watson**, (Royal Veterinary Hospital, London)

Full and progressively updated details of the conference, a call for papers and posters, exhibitor's information, conference costs, accommodation, booking and registration forms can be downloaded from: <http://www.sltdb.info>

DEADLINES

Abstracts: 1st July 2007 submit to Paul Lynch: p.t.lynch@derby.ac.uk

Registration/Booking Forms/Conference Cost Payment 1st July 2007
(For those delegates submitting abstracts and presenting posters/oral communications)

Registration/Booking Forms/Conference Cost Payment 17th August 2007
(For non-presenting delegates)

Registration/Booking Forms/Conference Cost Payment 3rd September 2007
(For delegates attending for one day and not requiring accommodation)

Becky Probart, Conference Office,

University of Derby, Kedleston Road, Derby, DE22 1GB

Phone 0044 (0)1332 591396; Fax 0044 (0)1332 622751

e-mail R.Probart@derby.ac.uk; www.derby.ac.uk/conferences

Travel & Local Information

Information about traveling to and within the city of Derby

<http://www.visitderby.co.uk/Map/>

Location information for University of Derby – Kedleston Road

<http://www.derby.ac.uk/about-the-university/how-to-find-us/derby>

Derby Tourist Information

<http://www.visitderby.co.uk/>

Kedleston Hall (Where the Conference Banquet will be held)

<http://www.nationaltrust.org.uk/main/w-vh/w-visits/w-findaplace/w-kedlestonhall/>

http://en.wikipedia.org/wiki/Kedleston_Hall

Derbyshire Tourist Information

<http://www.derbyshireuk.net/>

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

<http://www.visitderbyshire.co.uk/>

Conference Organizers

Host Institute

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From the Treasurer

Thanks to those who have paid and/or updated their annual subscription for 2007 and for those who may not have got around to it yet a quick reminder of what needs to be done. The rate is still £20 for standard membership and £15 for students, but if you are one of those who have not updated their standing order instructions since the rate was last increased you may still be paying less than this. If you are unsure please check and update your S.O. if necessary a downloadable mandate form is available from the society website <http://www.slbtb.info/forms.html> The gift aid form is also available at the same place so if you have not completed this form please consider doing so.

Shortly there will be the option of opening a PayPal account to pay your subscription for members outside the UK. You will need to use the internet to sign up for a free PayPal account (www.paypal.com) and then pay your subscription plus 1 GBP to cover the society's cost for the transaction. You will need an e-mail address for the society for this and this will be on the Society's web site shortly. Please note this address will only accept payments, for any other matters please contact a committee member directly using their e-mail addresses that are on the web site and included at the end of this newsletter.

Alternatively payments by cheque payable in GBP can be sent to:

Brian Grout – SLTB Treasurer
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Future Meetings

Cryo2007
44th Annual Meeting of the Society for Cryobiology
Lake Louise, Alberta Canada
July 29th - August 1st 2007
Further details: <http://www.cryo2007.org>

The Biodiversity Extinction Crisis, A Pacific and Australasian Response
Sydney Australia
July 10th – 13th 2007.
Further details:
<http://www.biodiversity2007.com>

21st Annual Meeting of the Society for Conservation Biology
Port Elizabeth Eastern Cape South Africa
July 1st – 5th 2007.
Further details:
<http://www.nmmu.ac.za/scb/>

SLTB – AGM 2008

The Society's 2008 annual meeting will be organized by Professor Brian Grout and will be in September in Copenhagen. Further details to follow in future Newsletters or e-mail bwg@life.ku.dk

Newsletter compiled by Mark Curry
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