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CAMBRIDGE SOCIETY FOR THE APPLICATION and

APPRECIATION of RESEARCH

For forthcoming lectures, see <http://talks.cam.ac.uk/show/index/5366>

## "Mother Nature Knows Best"

Making heat-stable vaccines

(based upon work with thermo-stable life forms)

Dr Bruce Roser

Cambridge Biostability Limited, NIAB, Cambridge

7.30 p.m., Monday 6<sup>th</sup> November, 2006

The Wolfson Lecture Theatre, Churchill College, Storey's Way, Cambridge

### Dr Roser Writes:

Solid phase stabilisation of biologicals in water soluble dry glasses is now well established. The mechanism of this stabilisation will be discussed. Surprisingly, this technology is not useful in practice as reconstitution of dry vaccines in the field is highly undesirable. CBL converts the extreme stability of glassy actives to an instantly injectable stable liquid by producing the glass as microspheres and suspending them in an anhydrous liquid which is inert, non-solvent and biocompatible.

The ideal liquids are either inert fluorocarbons or metabolisable oils, both of which already have regulatory approvals for human use and both of which are inherently thermo-stable themselves. By using mixed glasses produced in a standard spray dryer, highly polished glass microspheres of pre-determined density can be made in industrial quantities which are perfectly density matched with the suspending liquid.

These stable suspensions are both chemically and physically stable over at least three years at 37°C and undamaged by temperatures from -20 to +70°C. The 9 commercial vaccines so far collaboratively produced in this form are fully immunogenic and engender protective immunity equivalent to fresh vaccine but are resistant to freezing damage and never need refrigeration.

To deliver vaccines instantly and without medical training we have developed several inexpensive combined-storage-and-delivery devices that are safely usable by novices. These permit dispersed stockpiling of stable vaccines with no requirement for a logistical infrastructure to maintain thermally unstable inventory.

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*Italics denote an affiliation other than the University of Cambridge.*

*The CSAR Council is chosen to represent leading scientists and technologies from academe and industry*

## About the Speaker:

Dr Roser graduated in Medicine at the University of Sydney. Following a brief spell in hospital practice he has spent over 30 years in medical research. He obtained a Ph.D. with the Pathology Department in Sydney. He had postdoc appointments in the Trudeau Institute in New York, at the University of California, Berkeley, the Sir William Dunn School of Pathology, Oxford University and the Institute of Animal Physiology at Babraham, Cambridge.

In 1984 he made the initial observations of the remarkable stabilising activity of the simple sugar trehalose. He founded the Quadrant group of companies to research the trehalose phenomenon and to exploit it commercially. Work over the next 12 years led to about 20 further patents. In 1996 he returned to academia at Anglia Ruskin University and with encouragement from the WHO, developed mixed glass stabilisers and technology for producing permanently stable liquid vaccines together with novel disposable injectors. Fourteen new patents developed at Cambridge Biostability Ltd cover the technology portfolio to store and immediately inject stable vaccines

## The Organising Secretary adds.....

I am also looking for a **Vote of Thanks** for Dr Roser's lecture! If you are interested, please contact me ([richard.freeman@genericsgroup.com](mailto:richard.freeman@genericsgroup.com) or by leaving a message on 01799 5325 948) if you would like to volunteer (make sure I have your contact details).

It has been suggested that I recruit Chairs and VoTs to a greater extent from amongst our membership – so here's your chance!

## The Autumn Colours Visit:

Elizabeth has arranged a visit to the Manor House at Hemingford Grey, for **Saturday November 4<sup>th</sup>**. Do come along! The cost will be **£5 apiece** (£4 for pensioners!) and will include a tour of the house. Some of us will convene in the local tavern (The Cock) beforehand for lunch. The visit will start at **2 p.m.**

“This moated house is surrounded by four acres of garden renowned for its collection of over 200 old roses and a collection of irises containing many famous Dykes medal winners, most of them dating from the 1950s. There are hidden corners in the garden so visitors find themselves coming to unexpected parts which are unanticipated from the first impression gained by looking down into it from the public footpath along the towpath beside the river Great Ouse.” (from their website)

Please let Elizabeth know on 01223 525681 if you wish to attend, or write to her at 29 Mawson Road, Cambridge CB1 2DZ, or email her [elizaplatts@yahoo.co.uk](mailto:elizaplatts@yahoo.co.uk)



Best Regards

Richard Freeman, CSAR Organising Secretary

**Coffee available**, as usual, in the foyer outside the lecture theatre from ~7.00 p.m.