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Professor Lena Gustafsson—Lavoisier Medallist, 2001

One of the memorable moments of ISBC XII was the investment of Professor Lena Gustafsson from Chalmers University in Göteborg, Sweden with the Lavoisier Medal, the Society's highest honour—to echo Macaulay, *oh, wherefore come ye forth in triumph from the north?*

The answer swiftly came in her inaugural lecture as Medallist entitled *Global Energy (Heat) Measurements in Functional Studies of Microbes* because she professed:

"It is probably correct to say that most biologists think of heat as a by-product of cellular function, with no further thoughts of the relation between particular cell activities and heat changes. This is also true for engineers running bioprocesses on a large scale to produce a biotechnologically derived product. In such processes, heat is a waste product that costs money to get rid of by cooling in order to maintain the process working optimally and to secure safety. However, useful and usually unexplored relations exist between cellular function and heat. If heat changes are measured accurately we gain valuable information about the system under study. This was already discovered and elegantly described by Lavoisier 200 years ago."

Lena Gustafsson is the sixth recipient of this Medal, which is presented at each ISBC conference to an internationally acknowledged, outstanding scientist of the calorimetric family, following a vote by the Society members. Her scientific career is tightly coupled, almost without slippage, to calorimetry, *L'elan vital*. In the early seventies her supervisor, Professor Birgitta Norkrans from Göteborg, introduced her to Professor Ingemar Wadsö of Lund University and to calorimetry—the troth was made! She entered the international calorimetry scene during the Berlin conference in 1976 and gave her first international paper the following year at the ISMAB meeting in London, both predecessors of the present ISBC conferences. Her seminal engagement in the *ad hoc* BERG (Biological Energetics Research Group) meetings, the bioenergetics equivalent to Plato's Symposium, saw her turn the design of her experiments from the qualitative, descriptive level to an accurate quantitative measurement, to incorporate different aspects of non-equilibrium thermodynamics into microbial energetics. In fact, all her papers are dedicated to microbiology, terrestrial as well as marine. In the calorimetric ones, she has most often used flow-type instruments connected to different forms and techniques of fermentors. Energy balances for the baker's yeast *Saccharomyces cerevisiae* and halotolerance of the yeast *Debaryomyces hansenii* are found among them as well as investigations on yeasts isolated from fish intestine. Some years ago, she recognised that, in Dylan's words, *the times they are a changing*, and with enthusiasm to accompany strong ambition she encompassed the relevant aspects of molecular biology in her research, as well as the principles of metabolic control analysis.

For nearly 20 years, Lena was scholar and then master at the University of Göteborg. She gained the B.Sc. degree in chemistry, oceanography and microbiology (1972), followed by a Ph.D. in microbiology (1980) with an investigation *On the mechanism of halotolerance*. She was teaching assistant, lecturer, research assistant, study counsellor, director of the Botanical Institute, later of the Department of Marine Microbiology, Vice Dean of the Faculty of Mathematics and

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Natural Science, and so much more—an increasing number of ever more important University positions. As Goethe wrote:

> Es bildet ein Talent sich in der Stille,
> Sich ein Charakter in dem Strom der Welt.
> (*Torquato Tasso* act 1, sc. 2).

This was recently (1999) recognised at the Chalmers University of Technology in Göteborg where she became Professor and Director of the Department of Molecular Biotechnology. Lena certainly has not followed the plea of an earlier Gustafsson, *I want to be alone* (Garbo)—she was and is Member of many boards, national as well as international. She was elected Chairman for the Board of the International Society of Biological Calorimetry and organised the ISBC VIII Conference in the delightful resort of Gullmarsstrand near Göteborg in 1992.

Lena Gustafsson is not only a severe scientific researcher and splendid university teacher of long experience; she has supervised five Ph.D. and three Technical Doctor theses already and now has eight *on-the-go*. Following Chekhov's exhortation, *by extraordinary, unceasing exertion*, she is, moreover, an effective organiser in research collaboration over a broad spectrum of topics from special fermentation processes to molecular biotechnology—with significant money-flow into her group and to those co-operating with her. There is a veritable nexus of affinities with many national and international strands between Göteborg and different European countries and as far away as South Africa. Along these conduits, like Hyblaen swarms of bees, have come numerous visitors to her group or to the various workshops, symposia and conferences she organised or co-organised in the conjoined field of microbiology and bioenergetics. It was a good choice of the ISBC members in 2001 to present the Lavoisier Medal to Professor Lena Gustafsson.

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