BO HELLMAN

It is difficult to point out qualities that make a scientist successful. Bo Hellman apparently has a number of such qualities and indeed he is a respected and internatinally recognized scientist. In many scientific communities throughout the world the name Bo Hellman seems to be like a talisman and his collegues have on numerous occasions experienced how they can benefit from using it.

The scientific era of Bo Hellmans life started in Uppsala in the early 1950s

with morphological studies of the thymus. After having read Helmut Ferners book "Das Inselsystem des Pancreas" he became obsessed with the pancreatic islets and the causes of diabetes and has ever since devoted his time to studies of the physiological and pathological functions of the islets of Langerhans. In 1959 he presented his pioneering thesis "Quantitative studies on the islets of Langerhans", a systematic mapping of the islet organ. Unlike most morphologists at that time Bo Hellman had fully realized the quantitative and statistical aspects of morphology. During the next few years Bo Hellman continued his studies essentially by light-microscopic techniques. The discovery of two types of α-cells with the silver impregnation method was done during this period. However, there was also a gradual change of methodology from histology to histochemistry, biochemistry and cell physiology. For Bo Hellman morphology had no value of its own it was just a tool among others in his search for understanding of islet function. The first in vitro experiments were performed with fish islets which were used for studies of one of the most central issues in β-cell physiology; glucose metabolism. Whereas sufficient amounts of tissue could be obtained for the relatively unsensitive biochemical techniques of that time, the large fish islets were far from ideal since they contained a heterogenous population of cells. A step forward was taken when the first mammalian islets were isolated. The relatively large and β-cell rich islets from the ob/ob mouse proved particularly useful. However, the ob/ob mouse islets were orders of magnitude smaller than fish islets and in vitro techniques sensitive enough did simply not exist. Therefore, a great deal of methodological development had to take place.

In 1966 Bo Hellman was appointed professor of Histology in Umeå, a new university with excellent opportunities for the first generation of scientists to do what they desired. Bo soon built up a group of young enthusiasts and they started to study the β-cells using newly developed in vitro techniques. After only a few years the Umeå group had gained a leading position in experimental diabetes research. Fundamental studies on the mechanism of recognition of insulin secretagogues such as carbohydrates, amino acids, sulphonylureas, hormones and thiol reagents were made. The techniques involved studies of insulin secretion, secretagogue oxidation, utilization, transport and binding and measurements of metabolite concentrations in the β-cells. The Minkowsky award in 1970 was no surprise just a natural consequense of Bo Hellmans impressive achievments.

After 10 years in Umeå Bo Hellman returned to Uppsala as the head of his old department now renamed Medical Cell Biology. Already in Umeå attention had been paied to the stimulus-secretion coupling of the β-cell in particular $Ca^{2+}$ fluxes. After the return to Uppsala the $Ca^{2+}$-metabolism of the β-cell became Bo Hellman´s major interest. As always Bo was filled with immense and very conta-

gious enthusiasm and soon he was surrounded by a new group leavened with thoughts of β-cell calcium. Regulation of the $Ca^{2+}$ initiating the discharge of insulin was now the subject of study. Initially the investigations relied on measurements of $^{45}Ca$ uptake and efflux from pancreatic islets. However, Bo Hellman has always realized the importance of approaching research problems from different angles and the methodological arsenal has therefore rapidly expanded. Today it involves measurements of total and ionized $Ca^{2+}$, the use of calcium analogues and antagonists, studies of the calcium metabolism of the β-cell organelles both in situ and after isolation of the organelles and measurements of net ion fluxes by the use of metallochromic indicators. Exciting results have emerged regarding the delicate interplay between the plasma membrane and the β-cell organelles in the regulation of the cytoplasmic calcium initiating insulin discharge. The creative mind of Bo Hellmans is a solid guarantee for a continued exciting development during many years to come.

On June 19, 1980 Bo Hellman celibrated his fiftieth birthday. To honour him on this occasion a "Bo Hellman symposium on the pancreatic β-cell" was held on June 3. Present and former research studens, collegues and friends gathered to pay him their tribute. This volume contains the scientific contributions presented in the same order as during the symposium.

Erik Gylfe

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