glycogen. We were interested in the molecular mechanisms leading to the regulation of its synthesis and degradation. In this framework, we focused our attention on the regulation of glycogen synthase, the main enzyme implicated in glycogen biosynthesis. To begin with, we purified this enzyme 1,500 fold, using high speed centrifugation and two types of chromatography (1): an ion-exchange (DEAE-Cellulose) chromatography and an affinity chromatography for glucose-6-phosphate, a potent stimulator of glycogen synthase. After electrophoresis and silver staining, the estimated molecular weight of the subunit of the purified enzyme is 85 kD.

Our second step was to investigate how the process of phosphorylation-dephosphorylation controls glycogen synthase activity. First we showed that the enzyme is inhibited by cAMP-dependent phosphorylation and can be found as a phosphoenzyme in an autoradiographic pattern. In addition, experiments making use of thin layer chromatography are currently in progress to demonstrate that the phosphorylation sites are located on serine residues. Finally, we studied the hormonal induction of glycogenosynthesis during the oogenesis of *Xenopus laevis*. First we demonstrated that insulin stimulates both glucose transport across the oocyte membrane and its incorporation into glycogen (as already observed by Hainaut *et al.*(2). Moreover, following insulin treatment, glycogen synthase is fully converted into its active form, while the phosphorylation rates are largely reduced, particularly among the proteins associated with a glycogen-rich preparation. These results confirm the previous data showing that the effect of insulin leads to a drastic decrease in cAMP levels via the inhibition of adenylate cyclase and the activation of membrane-bound phosphodiesterases.

(1) A. CARABAZA, J. ARINO, J.W. FOX, C. VILLAR-PALASI and J.J. GUINOVART (1990). *Biochem. J.* 268:401-407.

(2) P. HAINAUT, A. KOWALSKI, Y. LE MARCHAND-BRUSTEL, S. GIORGETTI, N. GAUTIER and VAN OBBERGHEN (1991). *Mol. Cell. Endocrinol.*75:133-139.

## 6 *SACCOSTREA CUCULLATA*(VON BORN, 1778) : FOOD AVAILABILITY IN A MANGROVE CREEK (GAZI, KENYA).

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In this study is checked whether morphological differences of the mangrove oyster *Saccostrea cucullata* (von Born, 1778) can be explained by its food supply. In the first part the theoretical amount of food available for *Saccostrea cucullata* in Gazi (Kenya) is determined, in the form of zooplankton, phytoplankton, particulate organic matter (POC and chlorophyll a) and dissolved organic carbon (DOC). By means of ANOVA we showed that there are few significant differences in the

amount of three of these four variables (zooplankton, phytoplankton, particulate organic matter) as a function of the tide. This means that any differences in food availability for *Saccostrea cucullata* are a result of the difference in immersion time, caused by the different heights above chart datum at which the oysters grow. Zooplankton and DOC seem to be abundant in Gazi bay, POC and total seston show the same amount as in other coastal areas, and phytoplankton and chlorophyll a are present in very low concentrations. Carbon isotope analysis showed that *Saccostrea cucullata* filters detritus from mangrove leaves and from seagrasses, but stomach analysis also gave certainty about intake of diatoms and dinoflagellates. The maximal daily ration of *Saccostrea cucullata* in Gazi creek appears to be highest for DOC, followed by POC and finally zooplankton and phytoplankton.
In the second part of this study we tested the hypothesis that the theoretical amount of available food, as derived from the height above chart datum, is related to the morphological differences of the oysters within the oyster culture in Gazi bay, expressed in lengths and dry weights of the organs. First we showed with ANOVA that formaline has almost no influence on the sizes and the weights of oyster organs. Our results also show that all measured organs are linearly correlated with the shell length, but that the height above chart datum does not show any linear correlation with the shell length.
One of the most important findings of this study is that there are no apparent differences in organ sizes of *Saccostrea cucullata* whether it is growing high or low above chart datum, while there is a large difference in potential feeding time, with always about the same food availability.

7 **BIOLOGICAL / ECOLOGICAL CHARACTERISTICS OF*STREPTOCEPHALUS PROBOSCIDEUS* (CRUSTACEA : ANOSTRACA) AND CONSEQUENCES FOR CYST-BASED APPLICATIONS.** *L. Brendonck* - Royal Belgian Institute of Natural Sciences (IRSNB), Brussels.

*Streptocephalus proboscideus*, a subtropical fairy shrimp species, can to date be successfully cultured under controlled conditions. The combination of adaptive life cycle traits such as the production of strongly resistant resting eggs (cysts), a high fecundity rate, rapid growth, early maturation, rapid hatching, and short generation time, makes this species attractive for applications not only in aquatic toxicology but also in aquaculture. To obtain monospecific cysts of constant and high quality, however, a culture system is required for their controlled production. The praxis of using resting stages which can be hatched at will, must be weighted against the limited ecological relevance of rain pool species as test organisms in aquatic toxicology, and against the variability in hatching response and hatching success of the cysts.