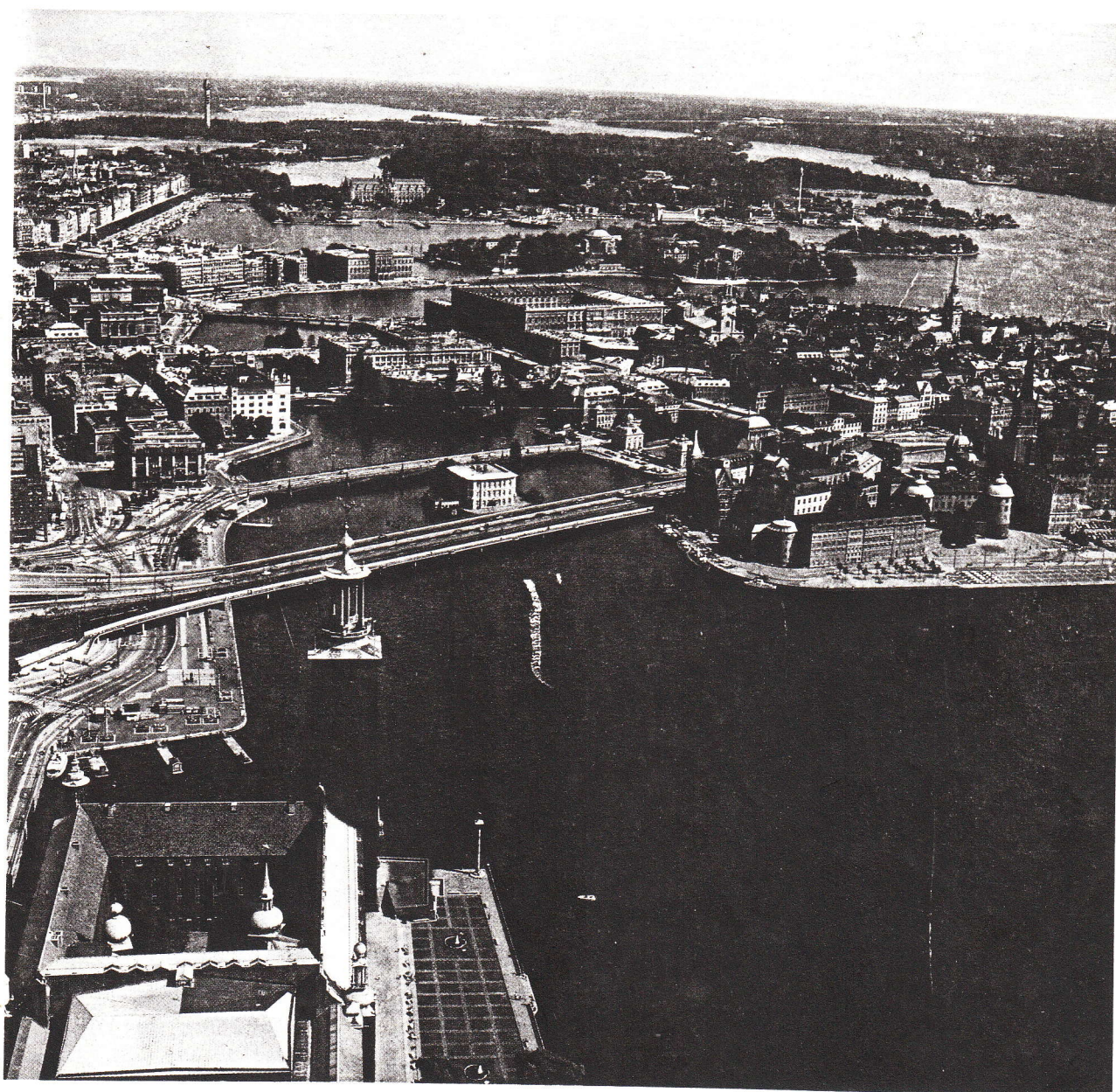


# *First International Congress on Pancreatic and Islet Transplantation*

**Program, abstracts and  
general information**



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## IMMUNOISOLATION OF PORCINE ISLETS OF LANGERHANS BY POLYURETHANE-SILICONE MACRO-CAPSULES.

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The immunological problems related to islets transplantation may be overcome by the immunoisolation of the graft, using micro- or macro-capsules. In both cases it is mandatory for the capsules to be biocompatible, impermeable to the immunocompetent cells and freely permeable to nutrients and hormones. We prepared macrocapsules using as biomaterial a blend of polyurethanes and silicone. The macrocapsules were obtained by plugging segments of tubes prepared by a spraying and phase inversion technique that produced a microporous structure, with a thin skin on the inside of the tube. The macrocapsules were evaluated as for permeability to glucose, insulin, albumin, immunoglobulines and white blood cells. In addition, the response to glucose of macroencapsulated islets of Langerhans purified from the adult pig pancreas was studied. Glucose and insulin diffusion from the macrocapsules to the incubation medium reached the plateau after 10 and 30 minutes respectively. Albumin, immunoglobulines and blood white cells remained inside the macrocapsules. Macroencapsulated porcine islets secreted  $3.7 \pm 1.6$  and  $5.3 \pm 1.4$  uU insulin/islet/min ( $P < 0.05$ ) in the presence respectively of 50 and 400 mg/dl glucose in KRB solution at 37 °C. The average increase of hormone release was 55% at the higher glucose concentration, a value similar to that one (60%) observed for freshly prepared, not encapsulated pig islets incubated at the same conditions. These results suggest the possibility of using polyurethane-silicone macrocapsules for allo- and xeno-transplantations of islets of Langerhans.