

**PRESS RELEASE  
WINNERS ANNOUNCED  
1990/1410H KING FAISAL INTERNATIONAL PRIZE  
IN  
MEDICINE**

**Topic: SCHISTOSOMIASIS**

The King Faisal International Prize in medicine was awarded for research in schistosomiasis. This disease which is caused by three main species of parasitic worms, afflicts over 200 million among a population of 1.5 billion people in more than 70 countries. The number exposed to infection is continually increasing as a result of irrigation and other water resource development.

The prevention and treatment of schistosomiasis have been based, so far, largely on the application of chemicals to destroy snails that spread the parasites and drugs to treat people who are infected together with the provision of safe water supplies. The development of vaccines to protect those exposed to the infective stages of the parasites would offer an important new weapon in the international fight against this disease. In recent years major discoveries have been made in our understanding of the mechanisms by which the human body develops immunity against the schistosomes, as well as the ways in which the parasites attempt to protect themselves against the body's defenses. Such knowledge is essential for the rational design of effective vaccines.

Two scientists have made outstanding contributions to knowledge in this field resulting in significant progress towards the goal of anti-schistosomal vaccines. The Prize has therefore been awarded jointly to:

**Professor Andre Capron.  
and  
Dr. Anthony Edward Butterworth.**

Professor Capron, of French nationality, was born in 1930. He received degrees in Medicine (1958) and Science (1959) from the University of Lille. After graduation he carried out his earliest research at the Pasteur Institute in

Madagascar. Returning to France in 1961, he commenced his major series of studies on immunology with special emphasis on parasitic diseases, becoming first Associate, then (in 1970) full Professor of Immunology and Parasite Biology in the Faculty of Medicine of the University of Lille. He has also been the Director of the Centre for Parasite Immunology and Biology (CNRS-INSERM) and the Pasteur Institute of Lille since 1975.

Professor Capron's team was pioneers in the identification of protective antigens by the use of monoclonal antibodies and mono-specific antisera produced by immunizing animals. One of the first protective antigens identified, GP38, proved to have carbohydrate epitopes which could not be produced by genetic engineering. Instead, an anti-idiotypic vaccine was produced which was effective in protecting experimental animals. This type of vaccine has limitations for human use, however, and therefore current work on this antigen concentrates on the chemical purification of these epitopes. Another antigen, P28, does have peptide epitopes and here genetic engineering has been most successful. The recombinant forms of P28 induce significant levels of protection in a range of laboratory animals including baboons. Experiments are also under way in Professor Capron's unit using chemically synthesized peptides based on the known sequence of P28 to construct immunogenic peptides which can be used in place of the whole P28 molecule.

Professor Capron has discovered many new forms of antibody-dependent cell-mediated immune reactions which were effective in protection against infection with *Schistosoma mansoni*. These were of great interest to immunologists in general since they participate in many types of immune responses to pathogens and allergens.

Professor Capron who has produced several hundred publications has held numerous prestigious positions on both national and international research and advisory scientific committees, and has received many awards from scientific organizations in recognition of his achievements. He is a member of the Academie des Sciences de France and is a corresponding Member of the Academie Royale de Medecine de Belgique.

Dr. Butterworth, a British national who was born in 1945, is a member of the External Staff of the Medical Research Council and an Honorary Reader in Medical Parasitology in the Department of Pathology, University of Cambridge. An Honors graduate in Natural Sciences (1966) and Medicine

(1969) of Cambridge University and St. Mary's Hospital Medical School, London. Dr. Butterworth's outstanding contributions were the elucidation of the important role of eosinophils in human immunity to *S. mansoni* and the gaining of profound insights into eosinophil biology. The biological function of the eosinophil, long known to be associated with helminth infections, has always been a puzzle. Butterworth's highly original research in Kenya, first on baboons and later in man, established a clear role for eosinophils in collaborating with IgG antibodies in the killing of the immature stages of *S. mansoni*. Much was also discovered about the various subpopulations of eosinophils, about how they become activated by various cytokines and how killing of the parasites is affected. This work suggested that a major biological function of the eosinophil may be to protect against helminth infection.