gonorrhea

and sugar composition, and we are beginning to believe that many serological groups of *N. gonorrhoeae* may exist. If this is true, it might explain why recovery from a gonococcal infection does not confer immunological protection against reinfection. Antibodies produced by the human body to one serotype may be ineffective against all others. A vaccine made from a single gonococcal serotype would not therefore be universally effective."

At first glance, it may appear that the LPS discovery is an alternative explanation to the pili story for virulence in gonococci; that is, without the complete LPS molecule, the ability of the organism to infect is lost. However, a choice of hypotheses is not necessary here since both in fact may be true. Infectivity may depend upon some synergistic or cooperative effect between the two substances; for instance, the pili may be needed for the initial adhesion, whereupon the complete LPS molecule is necessary to the continuation of the infective process.

At present, Dr. Perry is collecting LPS's from different gonococci grown in both their T1 and T4 forms and is determining their structures. The results to date indicate that all the LPS's from the various sources have essentially the same corelipid structure, whether derived from T1 or T4 cells. If, as the preliminary results suggest, the core-sugar complex is immunologically common among all gonococci and differs from other *Neisseria* species, then it will represent a promising material for use as a vaccine and as a specific diagnostic agent.

Drs. Diena and Ashton have been investigating the various LPS's and purified polysaccharide portions (the LPS without the lipid and core) for use as diagnostic reagents and vaccines. Mice immunized with LPS from a particular gonococcal sample (or isolate) have been shown to develop a strong resistance to infection by this same gonococcus isolate, and there are indications that this protection extends to some degree towards gonococci from other sources as well. This is a promising result.

Since the core region of all the gonococcal LPS's appears to have the same structure, artificial immunizing agents made in the laboratory by joining the core molecule to various largesize protein carriers are now being tested as vaccines. Anticore antibodies produced by these agents should be effective against the whole range of gonococci.

As well, the gonococcus LPS and polysaccharide portions could conceivably be used as a rapid skin test for the disease. As in the pili case, the test depends upon the fact that infected people usually have antibodies to the various gonococcal antigenic sites. If the polysaccharide antigen is injected under the skin, an immunological response occurs and a red spot or inflammation appears in the area in a matter of hours. Tests with animals infected with gonococcus have in fact shown the possibility of a rapid diagnosis of gonorrhea based on this method. Another variation of the test is to coat an inert carrier such as Bentonite or alumina with the polysaccharide antigen and mix it with a sample of test blood; if the disease is present, clumping should occur due to antibody bridges being formed between the particles. Similarly, if the antigen is linked to red blood cells of sheep, infected serum should cause a clumping of the cells. Other methods involve tagging the antigen with a fluorescent dye or radioactive compound, particularly where very minute quantities of antibody are to be measured.

Dr. Perry anticipates that there may be a problem involved in setting up a vaccination program against gonorrhea, considering the social implications of the disease. But in certain areas of Canada and other parts of the world where the disease incidence is high, the immunoprophylactic approach would be very practical and perhaps the only way of halting the spread of the disease. However, a rapid and accurate diagnostic method would be unequivocally praised by everyone, particularly by physicians and other public health people on the front lines of defence against the disease. **Wayne Campbell**

Dr. B.B. Diena of Health and Welfare Canada's Laboratory Centre for Disease Control studies a sample of N. gonorrhoeae under a light microscope. • Le Dr B.B. Diena, du Laboratoire de lutte contre la maladie, du Ministère de la santé et du bien-être social, étudie un échantillon de N. gonorrhoeae au microscope.

