

# microbiology notes

Gathered at the 68th annual meeting  
of the American Society for Microbiology in Detroit.

## KIDNEY DESTRUCTION

### Leukocytes may aid bacteria

Lysosomes are sealed packages of cell-wall-dissolving enzymes which break open when the cell dies, speeding decomposition. Research at the Bureau of Laboratories of the District of Columbia Department of Public Health suggests that the lysosomes of some white blood cells aid in the tissue destruction characteristic of bacterial kidney disease.

Drs. W. S. Callahan and G. W. H. Schepers report that human leukocytes engulf the intestinal bacterium *Escherichia coli* in the test tube. The engulfed material damages the leukocytes but does not usually disrupt them or cause release of the lysosomes' enzymes. Changing the salt content of the medium, however, causes osmotic pressure to burst the dead or injured leukocytes and release the enzymes.

The researchers postulate that the same thing happens during acute pyelonephritis. Leukocytes in the outer layers of the kidneys engulf bacteria, migrate inwards to an area of changed osmotic conditions, burst and cause tissue damage. This tissue damage in turn releases even more lysosomal enzymes.

## SOIL MICROBES

### Elusive pseudo Q-forms captured, tamed

For several years soil microbiologists have been studying a super-abundant group of soil bacteria christened pseudo Q-forms. When they tried to extract the organisms from the soil and culture them, however, nothing happened.

Now Dr. Lester E. Casida Jr. of the Pennsylvania State University, University Park, reports that he has succeeded in getting a culture of the bacteria by diluting soil samples by a factor of about a billion, then feeding the microbes with a special mixture of proteins, vitamins and other nutrients.

Because it is suspected that the bacteria undergo changes when cultured, however, Dr. Casida has modified a reflecting microscope in order to study them in their natural habitat, the soil. The ecological significance of pseudo Q-forms, which are about 100 times more abundant than other common soil bacteria, is unknown.

## TRANSPLANTS

### Synthetic progesterone as immunosuppressant

A University of Michigan kidney transplant surgeon reports that a potent synthetic progesterone, medroxyprogesterone acetate (Provera), may be a valuable immunosuppressive agent in renal and other transplants.

Dr. Jeremiah G. Turcotte of Ann Arbor says the agent is particularly attractive because its use in humans for other purposes has shown it to be relatively nontoxic even in large doses. Provera is known to share some of the properties of the corticosteroids, for instance

prednisone. Prednisone is used as an immunosuppressant but like all corticosteroids it has serious side effects.

Dr. Turcotte says his research group has found that Provera prolongs survival of rabbit skin transplants to two or three times that of untreated controls. Dog kidney transplants also have been prolonged, and when Provera was given with Imuran, a proven immunosuppressant, dog kidney transplants survived an average of 125 days, the longest average survival on record. The Imuran-Provera combination is now being tried on humans; Dr. Turcotte says results so far are encouraging but not yet conclusive.

## LISTERIOSIS

### Chronic bacterial infections traced

Many bacterial infections recur in the face of energetic therapy. Dr. Antonina Brem of the University of Michigan, Ann Arbor, attributes some of this recurrence to L-form bacteria—still-viable bacteria whose cell walls have been destroyed, by penicillin for instance.

Studying *Listeria monocytogenes*, a cause of meningitis, septicemia, and spontaneous abortions, Dr. Brem concludes that the L-form of the organism is capable of living undetected for months in human tissues. It causes no disease but is capable of spontaneously regrowing its cell wall and becoming pathogenic again. A culturing technique developed by Dr. Brem may speed the detection of L-forms in hospital patients. They might then be destroyed with antibiotics like erythromycin or with sulfa drugs.

Dr. Brem notes that penicillin does not destroy *L. monocytogenes*, though it renders it harmless by dissolving its cell wall and converting it to the L-form.

## CANCER

### Viruses may repress contact inhibition

A strain of the rabbit fibroma virus, a tumor causing virus, has been observed apparently overcoming contact inhibition between cells. Cells synthesize deoxyribonucleic acid (DNA), and undergo cell division until cells come in contact with one another. This contact inhibits DNA synthesis and thus cell division. It also inhibits cell movement.

Dr. Wayne Tompkins of the University of Wisconsin, Madison, reports that fibroma virus is able to cause resumption of DNA synthesis in infected cells under contact inhibition. Shortly after derepression of DNA synthesis is observed, he says, the cells begin to migrate over one another, apparently having also lost their movement inhibition.

Dr. Tompkins says the virus may be able somehow to neutralize inhibition, resulting in loss of contact sensitivity and uncontrolled DNA synthesis. These are important characteristics of tumors. Dr. Tompkins suggests the mechanism as an answer to the question of how a tumor virus is capable of causing cancer by interfering with the regulation of cell growth.

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