

Dr. Oliver Smithies from the University of Wisconsin postulated how the ability to recognize foreignness and distinguish self from non self arose. He noted that only those animals which have a tolerance mechanism will be able to reject grafts. Immune mechanisms are advantageous in handling viruses. When a virus leaves an infected person it carries some of his cell membrane

with it. Now the host can react against the foreign cell membrane. Apparently self recognition is not confined to the animal kingdom. The lily has an arrangement so that if pollen from itself falls on the stylus fertilization does not occur. However if fertilization by foreign pollen does not occur within five days then self fertilization can occur.

PANEL III: IMMUNE RECOGNITION AND TRANS-PLANT TOLERANCE

Reporter - MABEL GREENE

This panel began by introduction of the speakers by Dr. N. A. Mitchison. Dr. Roberts, started his immunology with Sir Howard Florey in Oxford. Dr. Roberts has recently joined the staff of Memorial University and previously had been a member of the Department of Medicine in New York University.

Dr. Roberts began by showing slides of lymphocytes, and describing them as undistinguished cells smaller than a red blood cell which if cultured in pure preparation and then cultured with phytohemagglutination will develop into large pyronenophilic basophilic cells which are fundamental to the immunological responses. These large cells continue to move like small lymphocytes but in contrast to lymphocytes however they are somewhat inherent to each other. Both blood and thoracic duct lymphocytes unlike leukemic lymphocytes react in this way. Besides phytohemagglutination, other ways of stimulating small lymphocytes exist such as plant extracts, staphylococcal filtrate and antileukocytic serum. It has been shown that when the serum balanced RBC'S are injected into rabbits they cause stimulation of lymphocytes when added to a lymphocyte suspension. Likewise, homologous sera cause the same reaction. Further study has shown that lymphocytes from different donors mixed together in cultures will cause transformation.

Dr. Marshall discussed the tuberculin reaction in cultured lymphocytes. Lymphocytes from Mantoux positive individuals cultured with tuberculin are shown to increase in number by convect proliferation.

Practically speaking, these experiments indicate that when lymphocytes of a patient are faced with antigen from a donor, a small number respond by growing and dividing, the others being capable of responding to all sorts of other antigens. These cells grow big and it should be possible to actually remove them by filtrating or centrifuging. So, if you had a specifically inactivated population unable to react to that antigen you could then introduce the graft into this environment and it would not be rejected.

Dr. Mitchison then spoke on immunological tolerance and immunosuppressants. One type of interference is blocking the access of antigen to the immunologically competent cell. This is seen in blocking RH sensitization where introduction of antibody competes with the antigen for sites on the cell thereby limiting the amount of antigen picked up. A second type of interference is inhibition by haptene. A third type is absorption of the formed antibody by pneumococcal polysaccharide. The fourth and considered the most important group of immunosuppressive agents are the antimetabolic drugs which block multiplication of cells which follows the natural act of recognition. There are hazards with these drugs, however, because they act in a non specific manner and thus leave the individual open to infection. The newest type of immunosuppressive drug is antilymphocyte serum (ALS) which is believed to act by selective destruction of the cell which is the immediate target for antigen i.e. the cell which performs the initial act of recognition.

A distinction was made between induction of tolerance and induction of immunity - antigen which goes via macrophages tends to immunize; antigen which goes directly to lymphocytes tends to induce tolerance. Antibodies have an affinity for antigen by having two binding sites.

Dr. Cinader the final speaker explained that antibody formation consists of a very complex progression from an unaffected stem cell through cell-cell interaction moved on by humoral factors as those secreted by the thymus and finally a stage of commitment, ending up with a producing cell.

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