EDITORIAL

“Immunoblasts” and “Immunocytes”—An Attempt at a Functional Nomenclature

By William Dameshek

DURING the past twenty years, it has come to be realized that antibodies are produced in a cell complex which has become popularly known by the rather unwieldy term of “immunologically competent cells.” This complex consists not only of reticulum cells, which were the first to be generally considered as antibody producers, but of lymphocytes and plasmocytes as well. The role of the plasmocyte in the production of 7 S gamma globulins, which are readily detectable in the serum (i.e., humoral antibodies), is well substantiated. As for the lymphocyte, there is as yet very little evidence showing that this cell is either a secretory cell like the plasmocyte, or has a gamma globulin connected with it that can be detected by usual or unusual means. On the other hand, ample evidence is at hand indicating that lymphoid cells participate in the immunologic phenomena of delayed hypersensitivity and homograft rejection. The substance(s) in or around the lymphocytes responsible for the production of this type of cellular immunologic response have thus far eluded all investigational activity; it seems reasonably certain, however, that they are carried within the cells, and that their immunologic activity can be transferred by intact cells and not by plasma.

At a meeting devoted to the Cellular Aspects of Immunity, held in Prague in June 1959, a special committee gave the designation of “haemocytoblast” to a large, primitive-appearing cell which was prominent in the cellular proliferative response following stimulation by antigen. Since there is no evidence that this cell has anything to do with the production of nucleated red cells, granulocytes, megakaryocytes, or platelets, its designation by the generic term of “haemocytoblast” seems unwarranted. On the other hand, it is conceivable that such cells are the precursors of both lymphocytes and plasmocytes, although their morphology, both by light and electron microscopy, seems more lymphoid than otherwise. The exact type of immunologic proliferative response, whether plasmocytic or lymphocytic, may possibly be determined by the type of antigen presented to the initial reacting cell (whether reticulum cell or lymphocyte is not clear) and by the phase of immunity studied. Thus, with the delayed hypersensitivity and homograft rejection phenomena, there is a well-defined lymphocytosis around the involved tissue and with the production of humoral antibodies, plasmocytosis is striking. The data of Nossal and Mäkelä strongly suggest that the plasma cells which arise during the secondary immune response are derived from the large primitive cells alluded to above. For these cells, which seem to be the forerunners of the immunocompetent plasmocytes and lymphocytes, we propose the term “immunoblast.”

To recapitulate, the complex of cells concerned in the development of im-
immunity (fig. 1) may be said to consist of 1) the first cell to come in contact with antigen: this may be the histiocyte, derived from the reticuloendothelial system, whose chief function is probably phagocytic; or a cell which has the appearance of a small lymphocyte; 2) the immunoblast—a large primitive-appearing cell which is most likely the precursor of both the plasmocyte and the lymphocyte; 3) the lymphocyte; and 4) the plasmocyte. This complex of “immunologically competent cells” can be abbreviated to “immunocompetent cells” and even more briefly to “immunocytes.” In this proposed classification, the stem cell of the immunocyte complex is the “immunoblast.” The well-differentiated plasmocytes and lymphocytes, which are probably the “end organ” cells for the two chief types of immunity, i.e., the production of humoral antibodies and the delayed hypersensitivity phenomenon, may be thought of as active “immunocytes.” It is realized that such an attempt at functional nomenclature may be premature, but until further knowledge is developed, these terms may serve as shorthand or symbolic descriptions of certain cell types engaged in immune reactions. After all, what is language, if not symbolic shorthand?
"IMMUNOBLASTS" AND "IMMUNOCYTES"

REFERENCES


William Dameshek, M.D., Director, Blood Research Laboratories, New England Center Hospital, and Professor of Medicine, Tufts University School of Medicine, Boston, Mass.
Editorial: "Immunoblasts" and "Immunocytes"— An Attempt at a Functional Nomenclature

William Dameshek