LYMPHOCYTE CHEMOTAXIS UNDER AGAROSE, CELL INTERACTIONS. A.O. Anderson and J.T. Warren*. U.S. Army Med. Res. Inst. Infect. Dis., Frederick, Md.

Directed migration of thoracic duct lymphocytes (TDL) toward endotoxin-activated serum (EAS) was studied using a system which permitted simultaneous measurement of migration distances and cellular orientation. Orientation histograms with a modal class centering on 180° indicated chemotaxis (CTX). However, the accuracy of orientation toward EAS diminished with distance from the gradient source. Since a 1000-fold dilution of EAS did not ablate CTX, it was unlikely that the distance-related breakdown in orientation was concentration-dependent. Direct examination of lymphocyte migration patterns in Zigmond chambers provided a possible explanation for these observations. Slow-moving (3-5 μm/min) Ig-positive cells (S) in TDL appeared to attract the fast-moving (7-12 μm/min) Ig-negative cells (F). The latter cells turned and migrated toward an S when they passed within a 30-50-μm radius. In the presence of an EAS gradient, F resumed migrating toward the gradient after contacting S; when no gradient was present F oscillated from S to S in a random pattern. This migratory behavior produced a chemotropism index of 0.45 for CTX and 0.12 for random migration ($P < 0.01$). The fact that Ig-negative lymphocytes deviate from direct CTX because they are attracted to the Ig-positive cells which lie in their path, may be of fundamental importance to concepts of immune cell interaction.