

Hayhoe F G J & Quaglini D. Cytochemical demonstration and measurement of leucocyte alkaline phosphatase activity in normal and pathological states by a modified azo-dye coupling technique. *Brit. J. Haematol.* 4:375-89, 1958.
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This paper describes a cytochemical technique for demonstrating alkaline phosphatase in haemic cells and gives the results of applying a semiquantitative scoring method to assess positivity in neutrophil leucocytes in health and in leukaemias, leukaemoid reactions, lymphomas, metastasising malignancies, and miscellaneous blood diseases. [The SCJ® indicates that this paper has been cited over 160 times since 1961.]

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"I had used the Gomori methods for acid and alkaline phosphatase in blood and marrow cells between 1950 and 1955 with the somewhat erratic results many other investigators had found. When Kaplow published an azo-dye coupling procedure in 1955¹ that gave consistent and satisfactory results for alkaline phosphatase in his hands, I attempted to apply it in collaboration with Dennis Quaglini, then starting a PhD research project on haematological cytochemistry in my laboratory. The variability in constitution of commercial azo-dyes was such that we couldn't actually make Kaplow's method work very well in our laboratory using the available fast blue RR salt, but from a range of other diazonium salts tried, fast garnet G.B.C. gave excellent results. Using this simple modification

we explored the leucocyte alkaline phosphatase (LAP) score in 50 healthy subjects and in 102 patients with various diseases attending my haematology and lymphoma clinics. Patterns of LAP score in major disease groups were delineated—very low in CML, normal in non-Hodgkin's lymphoma, high in Hodgkin's disease, in infectious leucocytosis, in polycythaemia vera and myelofibrosis, and in disseminated carcinoma.

"The report seems likely to have been frequently cited because the modified technique described was found easy to use by others and perhaps because it contains data on many if not most of the disorders associated with abnormal LAP scores. It was the first of a series of about 20 papers and communications on cytochemistry of haemic cells which Dennis, Roger Flemans, and I were to produce in the period between 1958 and 1964 before Dennis returned to Italy. Among these works was a monograph on the cytology and cytochemistry of acute leukaemia² which probably played some part in encouraging the development of cytochemistry as a regular procedure in haematological diagnosis.

"Although the distance between Modena, in northern Italy, and Cambridge (even in East Anglia rather than Massachusetts) prevented regular subsequent collaboration in research, Dennis and I recently put together our experiences of 25 years in cytochemical practice in a monograph entitled *Haematological Cytochemistry*.³ We were encouraged and a little relieved to find that neither our own subsequent experience nor an exhaustive review of the literature led us to contradict or withdraw the findings of that original 1958 paper which forms the subject of this commentary."

1. Kaplow I S. A histochemical procedure for localizing and evaluating leukocyte alkaline phosphatase activity in smears of blood and marrow. *Blood* 10:1023-9, 1955.
2. Hayhoe F G J, Quaglini D & Doll R. *The cytology and cytochemistry of acute leukaemia: a study of 140 cases*. London: HMSO, 1964. 105 p.
3. Hayhoe F G J & Quaglini D. *Haematological cytochemistry*. Edinburgh: Churchill Livingstone, 1980. 336 p.