A direct measurement of the radiation sensitivity of normal mouse bone marrow cells. 


Research into the precursors of blood cell formation was transformed in the 1960s by two developments. First, there was the introduction of the spleen colony assay for primitive hematopoietic precursors in the mouse by Till and McCulloch in 1961, demonstrating the power of clonal analysis applied to precursor cells too rare to be examined directly. This development was soon followed, in the mid-1960s, by the successful adaptation of tissue culture methods to the clonal detection of granulocyte and macrophage precursors in the mouse by Pluznik and Sachs and by Bradley and Metcalf.

"By the time I began my graduate studies with McCulloch in 1968, many investigators were anxious to have culture techniques which would work with human material. In the previous year, Senn reported with McCulloch in 1968, many investigators were anxious to have culture techniques which would work with human material. In the previous year, Senn reported with McCulloch and Till the first success in culturing human hematopoietic precursors. The second was the use of conditioned medium from human blood leukocytes as the source of CSA. This step was not straightforward, since medium from normal leukocytes incubated alone in liquid culture had only weak or undetectable activity. However, medium cultured over a feeder layer of leukocytes immobilized in agar did work. Such "conditioned medium" was reported in our 1971 paper and became a standard constituent of our cultures. Later, phytohaemagglutinin was found to stimulate leukocytes to release activity in liquid culture, and more recently the original observations were explained by the finding by Hoang et al. that a stimulus to activity release can be extracted from the crude agar itself."

"The high frequency of citation of this paper along with the one by Pike and Robinson and similar studies in the same period by Chervenick and Boggs and by Paran and Sachs et al. reflects the fact that these studies initiated the era of application of clonal tissue culture to human hematopoietic precursors, demonstrated the existence of granulopoietic CSFs for both normal and leukemic human cells, and showed that leukemic cells could grow in culture and would therefore be amenable to direct study."