to question whether Andersson's cells are indeed K562 cells. The K562 cell line was originally established in our laboratory from a pleural effusion of a patient with chronic myelogenous leukaemia in terminal blastic crisis[3-5] and has been found to be a highly undifferentiated cell of the granulocytic series[5,6,10,11] with a consistent ultrastructural pattern[14]. It is the progenitor of all K562 sublines now in existence. The possibility of spontaneous changes through clonal evolution or of contamination with other cell lines and subsequent overgrowth or hybridisation cannot be discounted after the cells have been grown outside our laboratory for so many years. Characteristics lacking in the parent cell line may be present in a subline which acquired them at some stage after leaving our laboratory. In any event, the classification of the K562 cell line as an erythrocytic precursor is certainly premature for the evidence available. The presence or absence of glycophorin A in highly undifferentiated precursors such as the stem and differentiating cells has not yet been established and so it should not be considered solely as a marker of the erythrocytic series. Morphologically, the K562 blasts are probably closer to haemocytoblasts than pronormoblasts or proerythroblasts depending on the terminology used.

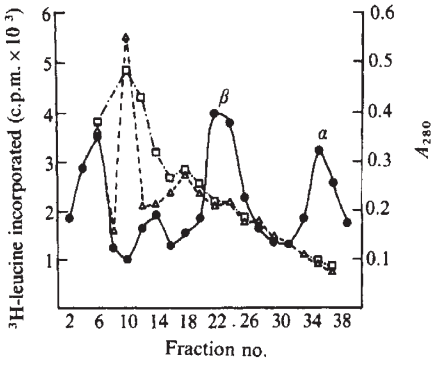

Fig. 1 Elution profile of globin chains on CM-cellulose-urea columns. Absorbance of globin chains from carrier human haemoglobin (●) is shown in comparison to the incorporation of ^{3}H-leucine into polypeptides obtained from control cells (□) and from K562 cells incubated in the presence of 1 mM sodium butyrate (△). After addition of label at 48 h cells were pelleted at 12 h of incubation and then washed in excess saline[15]. H_2O (1 ml) and carrier human haemoglobin was added. Globin was prepared by precipitation in acid acetone (1.2% HCl in acetone)[16]. The lyophilised globin was resolved into constituent polypeptides by chromatography on CM-cellulose columns in 8 M urea[17]. A phosphate gradient from 0.005 M to 0.03 M was used and 2.5-ml fractions collected. Aliquots (0.5 ml) were then used for scintillation counting.

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ANDERSSON *ET AL.* REPLY—Lozzio *et al.* challenge our conclusion that the K562 cell line has the capacity for erythroid differentiation and raise doubts that we have studied the authentic K562 line.

The cell line was originally obtained from Lozzio via W. Henle. A detailed account of its characteristics was given by Klein *et al.*[1]. The karyotype of our K562 cells is obviously identical to that originally described by Lozzio and Lozzio[2]. Contamination with mouse cells or with mouse/human hybrids can be excluded, as the cells have never been carried *in vivo*.

Concerning the erythroid versus granulocytic nature of the K562 cells, we have demonstrated that: (1) The surface glycoprotein pattern of K562 cells resembles that of normal erythrocytes[3] but is completely different from those of other haematopoietic cell lines[4,5] of the promyelocytic leukaemia line HL-60[6] and of granulocytes[7] and their benign and malignant precursors[8]. (2) Our K562 cells carry on their surface 1.1×10^6 glycophorin A molecules per cell[9] which are synthesised by the cells[10]. (Glycophorin A is the major sialoglycoprotein of human red cell membrane and is present only on erythroid cells in human bone marrow[11].) (3) K562 cells synthesise haemoglobin in the presence of sodium butyrate[12] as shown by the Lephene's benzidine and by radioimmunoassay indicating the presence of both the haem and the globin parts. Rutherford *et al.* recently reported that K562 cells synthesise embryonic and fetal haemoglobin in the presence of haemin[13]. The identities of the haemoglobins have recently been confirmed by peptide mapping (T. R. Rutherford, personal communication).

The different observations on phenotype of the K562 cells by us[12] and Rutherford *et al.*[13], as compared to those by Lozzio and Lozzio[2], are not easily explained. As the original K562 cell line was not initially cloned the possibility exists that we have been investigating selected subpopulations of the cell line endowed with different differentiation capacities. (This is also frequently seen in the Friend leukaemia system.) Therefore we suggest an interchange of our respective K562 cells for comparative studies.

Regardless of the real phenotype of the K562 cells, the establishment of this unique cell line by Lozzio *et al.* is highly creditable. This has provided an excellent model for human haematopoietic differentiation.

Note added in proof: Recently we obtained K562 cells (passage 239) directly from Lozzios' laboratory (courtesy of Dr R. A. Laine). These K562 cells have a strong surface expression of glycophorin A as shown by immunofluorescence and immunoprecipitation from surface labelled cells with specific antiglycophorin A antiserum.

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