

was fed to these tissues⁴. Furthermore, feeding ¹⁴C₂ to these tissues has indicated that organic acids and amino-acids are readily synthesized by a process of dark carbon dioxide fixation⁷. Paper chromatography of the neutral and basic amino-acid fraction⁴ revealed the presence of alanine-¹⁴C. Degradation⁸ of samples of alanine formed during lactate-1-¹⁴C feeding indicates that approximately 92 per cent of the radioactivity is located in the 1 position. These results are therefore consistent with an oxidation of lactate-1-¹⁴C to pyruvate-1-¹⁴C which would then yield alanine-1-¹⁴C by a transamination reaction. Pyruvate-¹⁴C is present in the organic acid fractions in large amounts, and mitochondria, isolated in sucrose-phosphate buffer⁹, readily form pyruvate-¹⁴C and ¹⁴CO₂ when supplied with lactate-1-¹⁴C.

More detailed experiments on lactate metabolism in these and other plant tissues are now in progress. This work was supported by National Research Council grant A-1747.

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CYTOLOGY

Chromosome Abnormality in Three Cases of Lymphatic Leukæmia in Cattle

In three cases of overt lymphatic leukæmia in cattle a very specific change in the chromosome complement has been found.

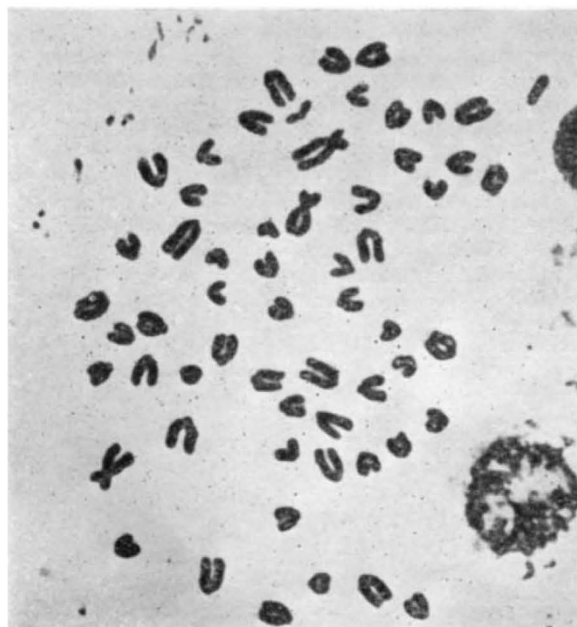


Fig. 1. The mitotic chromosomes of a leucocyte in one of the cases. ($\times c. 1,600$)

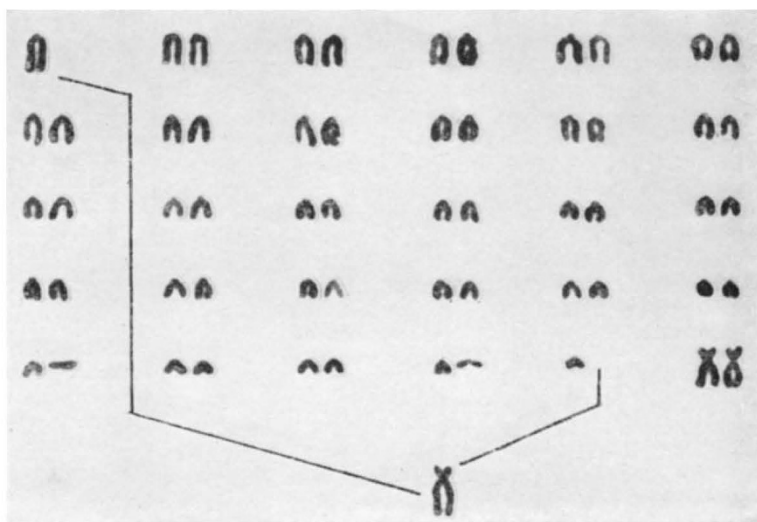


Fig. 2. The karyogram with the autosomes arranged as nearly as possible according to decreasing size. The lines show the origin of the abnormal chromosome

Sedimentation of the erythrocytes in the blood samples was obtained after centrifuging at 1,000 r.p.m. for about 15 min. Leucocytes and serum were removed and suspended in tissue culture medium Parker 199. Phyto-hæmagglutinin was added just before incubation. Even on the second day, many leucocytes were in mitosis. The cells were treated with colchicine and hypotonic fluid and were fixed in 9 parts 60 per cent acetic acid plus 1 part 0.1 N hydrochloric acid. After staining with acetorcein, manual squash preparations were made in the usual way.

More than 100 mitoses from every animal were analysed, and all were found to contain 59 chromosomes, with one diverging morphologically from the normal complement (Fig. 1). This chromosome had a subterminally situated centromere and presumably originated from a chromosome fusion or translocation, the real nature of which cannot as yet be established. The chromosome pairs affected are numbers 1 and 29, the largest and the smallest pair, a fact that has been confirmed by chromosome measurements (Fig. 2).

The same chromosome abnormality was found in a foetus from one of the cows. The foetus was about six months of age and looked normal. Mitoses obtained *in vivo* from the bone marrow and chromosomes of kidney cells after eight days incubation were examined.

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Electron Microscope Observations on Mitotic Chromosomes in Erythroblasts of the Newt, *Triturus cristatus cristatus*

THE structure of DNA is now known and the external form of mitotic chromosomes of higher organisms is fairly well characterized in the light microscope. However, the way in which chromosomes are constructed from DNA, histones and other proteins is not yet clearly understood, although there are many observations and several theories of chromosome structure¹⁻⁹. In chromosomes of newt erythroblasts we have found structures, intermediate in size between DNA molecule and chromosome, which may provide clues to the way these chromosomes are organized,