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Effect of Preparation Procedures on Intensity of Radioautographic Labeling Is Studied

A report is available which summarizes research findings concerning the effects of tissue preparation and extractive procedures on the intensity of radioautographic labeling. The effects are presented in terms of mean grain count per cell in cells labeled with tritiated precursors of proteins or nucleic acids.

Ehrlich ascites tumor cells were labeled in vivo with one of three tritiated compounds: thymidine, cytidine, or leucine. After 30 minutes the cells were examined by radioautography. Carnoy's solution and methanol, the most frequently used fixatives in radioautography, proved to be reliable, each removing equal amounts of radioactivity from the cells. This fixative-soluble radioactivity presumably represents the fraction of precursor that has not been incorporated into nucleic acids or proteins.

Treatment with ribonuclease or cold perchloric acid removed all radioactivity from cells labeled with tritiated cytidine, but not from cells labeled with tritiated thymidine. Treatment with deoxyribonuclease removed radioactivity incorporated into deoxyribonucleic acid, but affected the ribonucleic acid label to a lesser extent.

A comparison of sections and smears from the same sample indicated that, in smears of tritiated leucine labeled cells, some of the grains found in the emulsion overlying the nucleus are not due to radioactivity in the nucleus. They result instead from radioactivity present in the thin coat of cytoplasm which lies between the nucleus and the emulsion.

Notes:

1. This information would be of interest to medical researchers and cytologists.
2. Additional information may be found in:
   (a) *Laboratory Investigations, Intern. Academy of Pathology,* vol. 12, no. 6, p. 648–656, 1963
   (b) *Cancer Research,* vol. 20, July 1960, p. 910–917
   (c) *Scientific American,* 209, August 1963
   (d) *Nature,* vol. 202, p. 4931, November 1964
3. Inquiries concerning this innovation may be directed to:

   Office of Industrial Cooperation
   Argonne National Laboratory
   9700 South Cass Avenue
   Argonne, Illinois 60439
   Reference: B67-10500
   Source: R. Baserga and W. E. Kisieleski
   Biological and Medical Research Division
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Patent status:

Inquiries about obtaining rights for commercial use of this innovation may be made to:

Mr. George H. Lee, Chief
Chicago Patent Group
U.S. Atomic Energy Commission
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