longed dialysis or other procedures which may release bound micromolecules. In addition, the nature of the medium in which the cells were previously grown, the time permitted for incubation of the cells in the test medium, and the presence of substances or conditions which may specifically introduce the need for certain molecules to preserve balance can strongly influence nutritional requirements. This great versatility may reflect the ability of the mammalian cell to assume different metabolic states characteristic of specific types of differentiation. Under certain conditions, growth of single HeLa cells of the S3 clonal strain requires the presence of cholesterol at a level of 0.5 to 1 microgram per milliliter.

References and Notes

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E. S. G. Barron, Medical Biochemist

E. S. Guzman Barron, professor of biochemistry in the Department of Medicine at the University of Chicago, died 26 June 1957, at the age of 58. He leaves a host of friends in science, scattered throughout the world. He was educated in Peru, his native country, and completed his medical education at the University of San Marcos at Lima, in 1924. He then spent 2 years of study in Paris and Strassburg. In 1927 he came to the United States to work with the late Leonor Michaelis at the Johns Hopkins Medical School.

It was there that he began his distinguished work on the role of sulfhydryl compounds in biological systems—work that he continued throughout his career. This was also the period during which he made the original observation that nonrespiring cells, such as mammalian erythrocytes, can be converted to actively respiring cells by the addition of a suitable oxidation-reduction mediator, such as methylene blue.

In 1930 he came to the University of Chicago and became assistant professor in the Department of Medicine in 1931, associate professor in 1942, and professor in 1952. He was a member of the research staff of the Lasker Foundation for Medical Research at the University of Chicago.

During these 27 years, Barron made pioneering and consistently significant contributions to the problem of biological oxidations. Among these were studies on the mechanism of lactic acid oxidation by bacteria, the oxidation-reduction potential of the lactate-pyruvate system, the oxidation-reduction potentials of hemochromogens, and the key position of pyruvate in intermediary metabolism. His article in *Physiological Reviews,* in 1939, on cellular oxidation systems is a classic which well merits careful study today.

Except for the war years, when he engaged in research for the Office of Scientific Research and Development, Barron made continual contributions to what we now know about intermediary metabolism of foodstuffs. His biochemistry was ultimately oriented toward the metabolic behavior of tissues and the part that individual enzyme systems play in over-all metabolism.

During and after the war, Barron actively engaged in the study of the biochemical mechanism of radiation damage. In this work he was a proponent of the important part played by sulfhydryl groups and of their modification through radiation.

Although he did little formal teaching, he had a continuous flow of post-doctoral fellows in his laboratory—men from many fields of medical science and from many countries. His influence as a teacher of those who are today's investigators in the medical sciences was very great indeed. And, to all, he imparted the excitement of curiosity, the value of industrious documentation, and the importance of critical evaluation. His younger brother, Alberto Guzman Barron, was one of those who received inspiration aand biochemical training under his guidance; he now holds the chair of biochemistry and nutrition at the University of San Marcos at Lima.

Personally, Achito, as those of us who knew him affectionately called him, was serious and single-minded in all his scientific activities, but apart from these, he was gay and full of the joy of living.

He loved Woods Hole and always spent his summers there, where he was a trustee of the Marine Biological Laboratory. As he often stated, it was through his contacts at the Marine Biological Laboratory that he broadened his outlook and received inspiration for his winter's research activities.

In Peru, although he became an American citizen in 1939, he is recognized as one of the leading scientists of the country. There he has been honored by being made honorary professor of the University of San Marcos at Lima and by being awarded an honorary Doctor of Science degree, by the University of Trujillo, and the Order Del Sol.

I visited his laboratory on two occasions last spring and I found it a beehive of productive activity, with Achito the hardest worker of them all. It is tragic, indeed, that he is lost to science and to the scientific community at the height of his productivity. But still more to be regretted is the loss of his warm personality from the company of those who bore him great admiration and affection.

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