

# The Role Of The Laboratory Rat In Nutrition Research

Long-term studies with laboratory rats are providing information that may help answer some of the mysteries of human nutrition, the U.S. Department of Agriculture reports.

Among the resulting benefits is the knowledge that animals with different genetic backgrounds respond differently to various kinds of diets, a research nutritionist with USDA's Agricultural Research Service said yesterday.

Mrs. Mary W. Marshall, in a talk before the 4th International Conference on Laboratory Animals held in Washington, D. C., described work with rats

in the ARS Human Nutrition Research Division as an effort to determine why — and to what extent — humans vary in their nutritional requirements.

Explaining that laboratory rats are used extensively in nutrition studies because of their similarity to humans in the way they metabolize and use food, Mrs. Marshall cited studies showing that the fat metabolism of two strains of rats differed even though both groups were fed the same diets. The response varied with the type of carbohydrate, fat, or cholesterol contained in the food. Parallel experiments dealt with res-

ponse to type of carbohydrate of five rat strains, two of which have been maintained in the Beltsville laboratory under identical conditions for more than 10 years.

Results of this and other research indicate that metabolic patterns may vary in rats of different strains as well as in individual rats within the same strain. Such variations, Mrs. Marshall said, may be due to a number of possible metabolic defects, most of them also found in some humans. For instance, an increasing number of individuals sensitive to carbohydrates

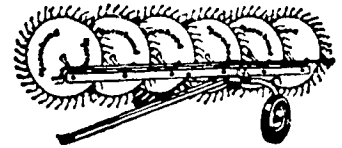
are being identified. These people whose fat and glucose metabolism is not normal, are said to have a "high risk" potential for atherosclerosis.

When animals are used to explain food needs of people, scientists have to know and study their specific inherited characteristics so as to properly interpret research results and establish a baseline upon which individual response to a particular diet can be measured.

Such characteristics as body size, body measurements, high or low levels of blood cholesterol, organ weights, liver composition, blood and body composition, incidence of kidney disease, and degree of voluntary activity, all vary with strain, age, and sex of animal.

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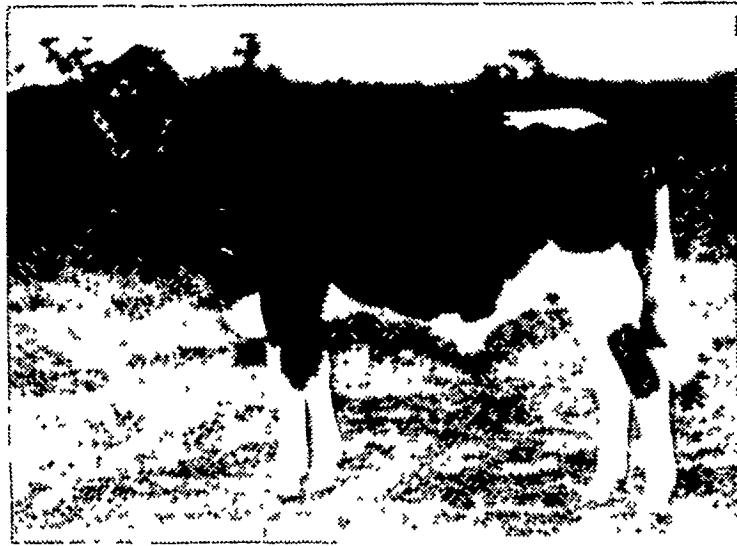
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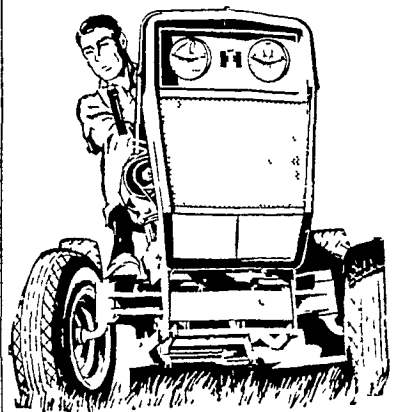
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