TABLE 3

PENETRANCE OF $tu^{50j}$ WHEN REARED ON VITAMIN- AND AMINO ACID-FREE MEDIUM INOCULATED WITH VARIOUS YEASTS AND INCUBATED AT 24° C

| Yeast | Percentage of *tu* | Total No. counted |
|---|---|---|
| *Saccharomyces cerevisiae* (Control on agar-cornmeal media) | 4.7 | 12,521 |
| *Hansenula anomala* | 4.3 | 2246 |
| *Pichia membranaefaciens* | 2.1 | 2381 |
| *Candida sorbosa* | 1.9 | 2976 |
| *Nadsonia fulvescens* | 1.4 | 1443 |
| *Debaromyces globosus* | 1.3 | 1394 |
| *Hansenula saturnus* | 1.2 | 1603 |
| *Torulopsis utilis* | 1.1 | 1675 |
| *Rhodotorula gracilis* | 0 | 490 |
| *R. glutinis* | 0 | 310 |
| *Geotrichium* | 0 | 5 |

are raised on various yeasts that do not require vitamins or amino acids. One can state with assurance that $tu^{50j}$ reared on *Torulopsis utilis* has less penetrance than when reared on *Hansenula anomala*. There is a significant difference between two yeasts in the same genus, *H. anomala* and *H. saturnus*, with respect to the penetrance of $tu^{50j}$. It may be the presence or absence of certain chemical factors in the yeast that influences $tu^{50j}$ in production of tumors.

The number of flies produced per vial was greater with *S. cerevisiae* than with other yeasts on the minimal medium. Among the yeasts that can grow in the absence of vitamins and amino acids there is little difference with respect to total number of flies produced, except for *Rhodotorula* and *Geotrichium*. On these 2 yeasts the total number of flies was reduced, and *D. melanogaster* had difficulty in reaching adulthood.

Although wild *D. melanogaster* are attracted to the odor of fermenting substances, they can live on the nonfermenting yeast *Pichia membranaefaciens*, and also exclusively on any one of 8 other yeasts.

The above-described method of rearing *D. melanogaster* on a minimal medium, in which the yeast supplies all the essential nutritive substances, is useful in study of gene action and nutrition. The penetrance of $tu^{50j}$ varies with the yeast used for nutrition. What are the chemical differences between the yeasts that give rise to this variation? Will other genes show variable gene penetrance and expressivity when the fly is grown exclusively on the minimal medium and with yeasts which require no vitamins or amino acids?

### References


1. BURDETTE, W. J. *Texas Repts. Biol. Med.*, **8**, 123 (1950).
2. BEGG, M., and ROBERTSON, F. W. *J. Exptl. Biol.*, **26**, 380 (1950).


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## Prolongation of Blood Clotting Time in the Dormant Hamster[1]


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It has been shown (*1*) that in ground squirrels of the species *Citellus columbianus* and *C. parryi ablusis* the time necessary for the blood to clot is prolonged when they are in a dormant state. These squirrels both hibernate during the cold winter months and estivate during the summer months. It was considered desirable to know whether prolongation of blood clotting time was peculiar to them or whether it occurred in other mammals, particularly those that hibernate but do not estivate.

TABLE 1

| Active | | | | Dormant | | | |
|---|---|---|---|---|---|---|---|
| No. animals tested | Clotting times | | | No. animals tested | Clotting times | | |
| | Max | Min | Av | | Max | Min | Av |
| 11 | 10′17″ | 2′03″ | 4′52″ | 4 | 156′00″ | 14′00″* | 50′45″ |

* Hamster was breathing rapidly and was not in "deep" hibernation.

The golden hamster of the species *Mesocricetus* (*Cricetus*) *auratus* was chosen as a convenient animal for experimentation, since it can be induced to assume dormancy in the laboratory if the temperature of its surroundings is lowered. The clotting times of the blood of both active and dormant hamsters were determined by using Lee and White's technique. Since superficial blood vessels are small in these mammals, it was necessary to obtain blood samples by cardiac punctures. The results of the experiment are shown in Table 1.

It is apparent from these data that prolongation of blood clotting time is not restricted to dormant ground squirrels but also occurs in dormant hamsters.

It was pointed out in (*1*) that the prolongation of clotting time in ground squirrels is apparently an adaptation to the dormant state, for then the blood flows very slowly and some mechanism is therefore necessary to prevent the formation of thromboses. This same interpretation may also apply in the case of the torpid hamster, whose heart rate and blood flow are similarly reduced It may very well be that this lengthening of the clotting time of the blood is characteristic of those mammals that periodically assume a state of dormancy.

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### Reference


1. SVIHLA, A., BOWMAN, H., and RITENOUR, R. *Science*, **114**, 298 (1951).


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