produced aerobically and anaerobically by mating types varies with the individual presumed unisexual polyploid. Both sexes 7 and 13 gave high yields, indicating that invertase is not the specific protein reported by Brock to take part in the sexual agglutination reaction of *Hansenula wingei*. It is to be expected that in addition to the extracellular enzyme, much invertase is bound to the surface of the cells (*6, 9*).

The isolates designated as code 3 and code 26, of opposite sex, are available from this laboratory. They may be used to demonstrate sexual agglutination and consequent easy harvesting of yeast cells from liquid media. The mating types are grown separately for a few days on YM slants, being transferred daily, and then grown for 48 to 96 hours in shaken flasks at about 28°C in 3 percent glucose or sucrose YM medium, or other liquid media suitable for yeast. The cultures are mixed and sexual agglutination immediately occurs, with rapid settling of the large clumps of agglutinated cells. Codes 3 and 26 are stable. They were transferred daily on YM slants, except for weekends, for 2 and 3 months, respectively, without monitoring, and at the end of this time they gave high yields of invertase (Table 1).

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10. The assistance of K. A. Burton and Jane Roberson is gratefully acknowledged.

16 November 1959

Mayaro Virus Isolated from a Trinidadian Mosquito, Mansonia venezuelensis

Abstract. A strain of Mayaro virus has been isolated in Trinidad from the mosquito *Mansonia venezuelensis*. This is the first record of isolation of this agent from naturally infected mosquitoes, caught in the wild.

Mayaro virus was first isolated in 1954 from the blood of a human being working in a forested area of southeastern Trinidad (*1*). The original report recorded the finding of this new agent during August and September in five persons widely scattered over the island. With the exception of the isolation reported here, there had been no further recoveries of this virus in Trinidad through September 1959. However, a survey conducted in 23 representative localities throughout the island has shown that 11 percent of a human population of 615 possess neutralizing antibodies for Mayaro, with localization in southeastern Trinidad, where rates as high as 48 percent were encountered (*2*).

Table 1. Biological properties of two strains of Mayaro virus and of Semliki Forest virus.

Pathogenicity for adult mice	Hemagglutinating antigen from mouse brain	Growth in chick embryo tissue culture
Semliki Forest		
Highly pathogenic by intracerebral route	Yes	Multiplication and cytopathogenic changes
Mayaro TRVL 4675		
Not pathogenic by intracerebral route	No*	No multiplication or cytopathogenic changes
Mayaro TRVL 15537		
Moderately pathogenic by intracerebral route	Yes	Multiplication but no cytopathogenic change

* No hemagglutinating antigen results from acetone-ether extraction of baby mouse brain, but an antigen can be prepared by the sucrose-acetone method.

Mayaro virus is also found in the Amazon valley of Brazil, where it is associated with human illness (*3*), and immunity surveys indicate its presence in the Rupununi savannah and Mazaruni River regions of British Guiana (*2*). We present in this report the first record of the occurrence of this agent in a naturally infected arthropod.

Limited laboratory evidence indicates that mosquitoes are capable of harboring the virus for at least 12 days, and that on one occasion virus was transmitted by the bite of *Aëdes scapularis* (*4*).

Mayaro virus was not recovered from arthropods in this laboratory during 1955 and 1956, although well over 200,000 specimens were ground and inoculated into baby mice. Prior to 1955 this agent would have escaped attention in the entomological work, since only adult mice were then used to receive the original arthropod inocula. Not until March 1957 were we successful in isolating this virus from naturally infected forest mosquitoes. The isolation reported here is the sole Mayaro isolation from mosquitoes, despite the fact that 401,578 mosquitoes were examined in the interval from March 1957 to October 1959.

Mayaro virus was isolated in baby mice inoculated on 28 March 1957 with a suspension from a pool of 49 *Mansonia venezuelensis* (TRVL 15537). These mosquitoes had been taken over a period of 12 working days, between 11 and 27 March, and stored daily as whole insects in sealed ampules at −60°C. They were collected while attempting to bite human beings on the forest floor at our Rio Grande Forest tree station about 7 miles north of Sangre Grande in northeastern Trinidad.

The virus was isolated from the brains of baby mice inoculated intracerebrally with a suspension of this *Mansonia* pool; the agent was established in baby mice and was shown to be filtrable. The virus was reisolated from the original mosquito suspension, both in baby mice and in hamster-kidney tissue culture.

This virus from *Mansonia* is indistinguishable from Mayaro virus (TRVL 4675) by complement-fixation, hemagglutination-inhibition, and neutralization test techniques. Several interesting biological differences among TRVL 4675, TRVL 15537, and Semliki Forest viruses are presented in Table 1 (*6*).

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18 November 1959

Effect of Kinetin on Paramecium caudatum under Varying Culture Conditions

Abstract. When kinetin (1 mg/liter) is added to hay infusion medium, the generation time of *Paramecium caudatum* is shortened immediately upon transfer of the protozoa from stock to isolation culture. Kinetin is particularly effective when culture conditions are suboptimal, perhaps because it substitutes for or supplies some factor which becomes limiting after transfer.

In a previous report, increased rates of cell division in *Paramecium caudatum* were reported after addition of low doses of kinetin (6-furfuryl amino purine) to the culture medium (*1*). In subsequent tests with a new clone of *Paramecium* and new preparations of