Fig. 6. Part of the ventral receptacle wall showing visceral muscle (vm) cut mainly in T.S. Each thick filament is surrounded by 12 thin filaments (⟶). Scale line = 0.5u.

seen to show (fig. 6) the thick and thin filaments of myosin and actin, respectively, typical of muscle. Close examination of the muscle cut in transverse section shows that each thick filament is surrounded by twelve thin filaments as shown in insect visceral muscle (Smith, Gupta and Smith 1966), as opposed to six thin filaments found in insect flight muscle and other 'skeletal' muscle (Smith 1961). It has been stated (Demerec 1950) that the coiled ventral receptacle lacks muscle fibers, but this investigation has shown that throughout its length there is a narrow but well developed layer of visceral muscle surrounding the tube. This may assist in the emission of stored sperm, and may allow temporal control of this process.

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Kuhn, D.T. Arizona State University, Tempe, Arizona. Another case of mass mutation.

A case of mass mutation was encountered in D. melanogaster at Arizona State University between September 1966 and October 1967. The mutations appeared in an Urbana laboratory strain heterozygous for In(3L)P, st. Many germ line and somatic mutations were observed during this one year period. Whole body mutations such as ebony, Minute, yellow^2 and white were encountered more than once. White eyed males were observed on four different occasions.

The mass mutation phenomenon disappeared just as rapidly as it had appeared. Spencer (1935) noted a similar disappearance of visible mutations during his eight year study in D. funebris and D. hydei. He found two mutating periods that were separated by a three year interval during which time not a single visible mutation was observed.

Three months prior to the disappearance of the mass mutation phenomenon, an attempt was made to gather quantitative data on the frequency of spontaneous sex-linked lethals produced in the strain showing the mass mutation. Samples were taken in July, August and September of 1967. A frequency of 0.51 percent (393 X-chromosomes tested) lethals was observed in July. During August the frequency was 0.48 percent (1032 X-chromosomes tested), while in September it dropped to 0.21 percent (935 X-chromosomes tested). The sudden decrease in frequency of sex-linked lethals from August to September paralleled the disappearance of all visible mutations. From September 1967 to the present no more visible mutations have been observed in this strain.

Even though the sample of X-chromosomes tested was small, it is very possible that the simultaneous disappearance of visible mutations and decrease in the frequency of sex-linked lethals were not coincidental. An inactivation or alteration of a gene by a virus-like particle (Mampell, 1946) could result in either a visible mutation (germ line or somatic) or a mutation that would be lethal to the organism. Therefore, it is suggested that this strain became infected with a virus-like particle that was responsible for high frequencies of visible and sex-linked lethal mutations. In September the postulated virus-like particle abandoned the strain and the mutation rates reverted to frequencies characteristic for the strain.

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