Somatic Mutations of the Straw Locus in Drosophila

A PRELIMINARY study of X-ray induced somatic mutations of straw locus in *Drosophila melanogaster* has yielded several points of interest, and as it is unlikely that this investigation can be extended in the near future it seems desirable to record the results even in their present incomplete form.

Pupæ of flies homozygous for straw-3 were irradiated (by Dr. D. E. Lea) with 25,000 r. units. The somatic mutations were sought in the wings. As is well known, each cell of the wing epithelia in normal flies bears a single hair. In straw-3 these hairs are very small, thin and straggly, with an appearance of being incompletely chitinized. Somatic mutations of one of the straw genes to wild-type cause the formation of hairs of approximately normal length. In flies emerging two days after the treatment, 7 isolated mutated hairs were found in 30 wings. Taking the total number of hairs per wing as about 17,000, this gives a mutation rate of 0·5 per r. unit per 10^9 genes; this is some ten times less than the rates recorded by Timofeeff-Ressovsky for a series of genes most of which are known to be somewhat more mutable than the average.

The fact that the normal hairs occurred in single cells shows that the mutations took place in the resting stage following the last mitosis which occurs during wing development. It also demonstrates that the action of the $+^{stw\text{-}3}$ gene can be exerted as late in development as two days before emergence. It was noted, however, that the hairs in mutated cells were somewhat smaller than normal hairs. This might be explained either by an inadequate length of time during which the mutated could act, or by a certain lack of autonomy of the gene; the action of the $+^{stw\text{-}3}$ gene may be to cause the appearance of some substance lacking in stw-3 cells and some of this substance may leak away from the mutated cells into the surrounding tissue. It would be easy to distinguish between these two possibilities in flies in which the mutation had occurred earlier, but in the present experiment the younger pupæ were killed, and no mutations affecting more than a single cell were obtained.

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Sclerotiorine, a Chlorinated Metabolic Product of *Penicillium Sclerotiorum*, Van Beyma

A STRAIN of *Aspergillus Terreus* (Raistrick and Smith, 1936) yields two metabolic products containing chlorine: geodin ($C_{17}H_{12}O_7Cl_2$) and erdin ($C_{16}H_{10}O_6Cl_2$). These compounds, crystallizing in fine yellow needles, and melting with decomposition, are the first recorded instances of chlorinated metabolic products of the lower fungi. More recently, the isolation of griseofulvin ($C_{17}H_{17}O_6Cl$) and caldariomycin ($C_5H_8O_2Cl$) (Raistrick *et al.*, 1939; 1940)—chlorinated products of *Penicillium Griseofulvin* and *Caldariomyces Fumago*, respectively—has been described.

The subject of the present communication, to which we propose to give the name sclerotiorine ($C_{20}H_{20}O_5Cl$), closely resembles the above in crystalline structure, but melts without decomposition or the formation of a sublimate.

The strain of *Penicillium Sclerotiorum* used was obtained from the Centraalbureau voor Schimmel cultures, and shows, under certain well-defined conditions of temperature, mycelial pigmentation, ranging from yellow, through orange, to red, which colour is particularly apparent in the actual sclerotia.

Sclerotiorine, which is very slightly soluble in cold dilute Na_2CO_3 and $NaHCO_3$ solutions, is obtained in 2 per cent yield by petroleum ether extraction of the dried mycelium, grown on standard acid Czapek Dox medium at 25° C. in the dark. The compound crystallizes from alcohol in very fine hair-like yellow needles, melting sharply at 206–207° C., and yielding the following analytical results:

C, 64·09%; H, 5·43%; O, 21·00%; Cl, 9·47%; Methoxyl, nil mol. wt., 364.

$C_{20}H_{20}O_5Cl$ requires:

C, 63·92%; H, 5·33%; O, 21·30%; Cl, 9·45%; mol. wt., 376.

Sclerotiorine sublimes to microscopic needles in a high vacuum and gives various colour reactions with aqueous and alcoholic alkalis. With sodium hydroxide and ammonia it behaves as an indicator, red in alkali, yellow in acid, with an interesting clouding of the solution around the turning point.

The properties of the pigment are being further investigated.

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Nature of the Feulgen Reaction with Nucleic Acid

SEMMENS[1] has recently suggested that the Feulgen reaction with chromatin may be due to the purine components of the nucleic acids. The argument rests on his observations that piperidine and pyridine restored to the Feulgen solution its "original" colour, and that certain purines gave "positive" colour reactions.

We have made tests to show that the effect of piperidine and pyridine is not chemically equivalent to the Feulgen (or Schiff) reaction, but is simply due to their basicity the effect of which was pointed out by Feulgen in 1924. We have likewise tested three of the purines used by Semmens, and in no case did any colour develop. We conclude that the Feulgen reaction is specific for the potential aldehyde groups of chromatin. Details of our experiments will be published elsewhere.

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[1] Semmens, C. S., NATURE, **146**, 130 (1940).