

1. A heritable somatic mutation in the structure of the endosperm in Zea mays L.

Strain No. 103 of our dent variety M-1 has been inbred for 5 years by artificial self-fertilization. In 1938 one selfed plant of inbred 103 developed two different types of kernels on its ear. The kernels appeared to be dent and flint respectively. This unusual ear was 14 cm. long and the flint type kernels were restricted to the upper 6.5 cm. while the kernels on the rest of the ear were of the parental dent type. Kernels from the middle of the flinty as well as of the denty portion of the ear were planted separately and their plants self-fertilized. On the plants which developed from the flinty kernels, ears with the flinty kernel type formed. Some of these ears developed kernels on which a small starchy circle was visible in the upper portion. In the second generation after self-fertilization, plants formed ears which showed segregations for dent and flint kernels. From the kernels of the denty part of the originally mutated ear; plants were obtained on which after selfing, only kernels of the denty type appeared.

From our investigations it follows that before or during the formation of the embryo sack cells in the mutated portion of the ear, a gene mutation from the dent to the flint type occurred. The mother cell in the embryo sack, as well as the two polar nuclei must have had genes for the flinty type of kernel while the pollen on the same plant must have had genes for the denty type of kernel.