

Public Abstract

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Title: Centromere Function and Evolution in Maize (*Zea mays*)

After a chromosome is replicated, one copy must be distributed to each of the newly forming cells. The centromere is the part of the chromosome where fibers attach and pull to the poles. Although the function of centromeres is very similar in many different species, the DNA at the centromere is rapidly changing and is quite different, even among related species. I have demonstrated that in maize the DNA sequence alone is not sufficient to form centromeres. To do this, I characterized the centromere structure of an individual maize chromosome. Then, I showed that the centromere could be inactivated but the DNA structure was unaltered. I also found cases where centromere DNA was located on chromosome arms but not functioning as a centromere. Therefore, instead of sequence, other features of the centromere are responsible for its maintenance.