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Unreduced gametes involved in the genetic origin of peanut

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Castration of the Arachis sp. flower bud in the greenhouse of the Instituto de Botánica del Nordeste, Corrientes, Argentina. Photo by Alejandra V. García.

The cultivated peanut is a segmental allotetraploid species originated from a single allopolyploidization event. Information obtained from previous work revealed that the progenitors of *Arachis hypogaea* (AABB) are *A. duranensis* (AA) and *A. ipaënsis* (BB).

The development of diploid hybrids between these species, together with the chromosome number duplication and later crossing with *A. hypogaea*, supported the hypothesis of the origin of the crop. However, few researchers have obtained successful crosses by using *A. duranensis* as the female parent. Likewise, there is no information about the meiosis of hybrids to determine the mechanisms that gave rise to the polyploid crop.

New research in *Crop Science* reveals that it is possible to obtain hybrids between *A. duranensis* and *A. ipaënsis* through reciprocal crosses. In addition, analysis of pollen grains proves that hybrids are producers of unreduced ($2n$) gametes and that they arise by the presence of bridges, tripolar spindles and cytomixis, which lead to the formation of restitution nuclei in meiosis.

The ability of [*A. duranensis* × *A. ipaënsis*]^{2x} hybrids to produce $2n$ pollen constitutes relevant evidence to support the fact that the most probable mechanism for the origin of peanut was sexual polyploidization.

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García, A.V., Ortiz, A.M., Silvestri, M.C., Custodio, A.R., Moretzsohn, M.C., & Lavia, G.I. (2020). Occurrence of $2n$ microspore production in diploid interspecific hybrids between the wild parental species of peanut (*Arachis hypogaea* L., Leguminosae) and its relevance in the genetic origin of the cultigen. *Crop Science*, 60. <https://doi.org/10.1002/csc2.20233>

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