CONFÉRENCE

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The evolution of plant sex chromosomes: advances in identifying and understanding these complex regions of genomes

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Abstract*:*

Sex chromosomes have evolved hundreds, if not thousands, of independent times across Eukaryotes. Some of the earliest examples identified in plants are in the beer hop *Humulus lupulus* var. *lupulus*, owing to the cytologically heteromorphic XY pair. However, in most dioecious species, a genetic basis has yet to be discovered, largely due to a lack of obvious cytological differences between the sex chromosomes. Moreover, even when the sex chromosomes have been identified, due to their fast rates of molecular evolution, enrichment of repeat sequence, and often drastic structural variations, they remain the most poorly assembled parts of genomes. Here we will discuss our progress on identifying and assembling highly-contiguous, fully-phased sex chromosomes for a range of systems, including the haploid UV chromosomes in the moss *Ceratodon purpureus*, the ZW chromosomes in *Amborella trichopoda*, and the XY chromosomes of *Humulus lupulus*. Using these assemblies, we address the origins of sex chromosomes within these groups, gene gain in the non-recombining region, and other patterns of molecular evolution. These advances in sex chromosome identification and assembly will help us to unlock the extent of diversity that exists across the many independent evolutions, as well as to better identify genes associated with sex-specific development.

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