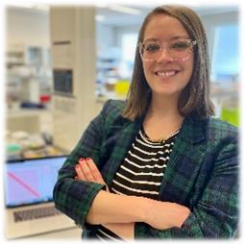
CONFÉRENCE



Sarah Carey

Senior Scientist at HudsonAlpha Institute for Biotechnology in Huntsville, Alabama, USA.

Ph.D. in Botany (2020) University of Florida in Gainesville, Florida

She was awarded a United States Department of Agriculture National Institute of Food and Agriculture (USDA NIFA) Postdoctoral Fellowship.

The evolution of heteromorphic sex chromosomes in Cannabaceae

Jeudi 5 décembre 2024 à 12 h 30

Pavillon Charles-Eugène Marchand, salle Hydro-Québec (1210)

Abstract:

The Cannabaceae family has a deep history regarding their dioecious flowers and sex chromosomes.

One century ago, the XY pair that controls the development of the sexes was identified in the hop *Humulus lupulus* var. *lupulus*, owing to the cytologically smaller Y chromosome relative to the X. Curiously, examinations across other species in *Humulus*, and in the sister genera *Cannabis*, uncovered varying cytological differences. In *Cannabis*, the Y chromosome is bigger than the X, while other varieties of *Humulus* remain homomorphic or have evolved a multiple sex chromosome system (e.g., XXYY).

Despite these early discoveries, we know little about the Cannabaceae sex chromosomes at the molecular level. This is largely due to the complexities of assembling XY pairs in genome references. Here we use a combination of Illumina, PacBio HiFi, and Dovetail Omni-C data to assemble near complete genome assemblies for XY males of *Cannabis* and *Humulus*, which allow us to examine the evolution of sex chromosomes in unprecedented detail.

We explore the dynamic patterns of gene gain and loss, as well as structural changes that have shaped the XY pairs. The diverse Cannabaceae sex chromosomes contain critical genes for flower development and producing key compounds like bitter acids and cannabinoids, and thus have played a vital role in the domestication and breeding of these species.

Hôte: Davoud Torkamaneh

Responsable**:** Juan Carlos Villarreal Aguilar et Davoud Torkamaneh

juan-carlos.villarreal-aguilar@bio.ulaval.ca et davoud.torkamaneh.1@ulaval.ca