

CHROMOANAGENESIS IN PLANTS FOR CROP IMPROVEMENT AND EVOLUTION

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Role of chromosomal structural rearrangements in creation of variability has been discussed widely over the years. During the past decade, advances in plant genome sequencing and bioinformatics tools led to the detection of more complex types of chromosome rearrangements that arise due to a single catastrophic event. Chromoanagenesis is the term used to describe these catastrophic events and it was initially found in cancer cells, and subsequently observed in a variety of other systems, including plants. Chromoanagenesis is induced by different interconnected mechanisms like micronucleation, breakage-fusion-bridge (BFB) cycles, and closed chain translocation. In this review we discuss the genesis, types, features, mechanisms and role of chromoanagenesis in plants for crop improvement and evolution.

Key words: Chromosomes, Chromoanagenesis, Micronucleus, Chromosome rearrangement.

ХРОМОАНАГЕНЕЗ У РОСЛИНАХ ДЛЯ ПОЛІПШЕННЯ ТА ЕВОЛЮЦІЇ СІЛЬСЬКОГОСПОДАРСЬКИХ КУЛЬТУР

Роль хромосомних структурних перебудов у створенні мінливості широко обговорюється впродовж багатьох років. Упродовж останнього десятиліття прогрес у розробці інструментів для секвенування геному рослин та біоінформатики привів до виявлення більш складних типів хромосомних перебудов, які виникають внаслідок однієї катастрофічної події. Хромоанагенез — це термін, який використовується для опису цих катастрофічних подій; спочатку він був виявлений в ракових клітинах, а згодом спостерігався в багатьох інших системах, зокрема, в рослинах. Хромоанагенез індукується різними взаємопов'язаними механізмами, такими як

мікронуклеація, цикли розриву-злиття-містка (BFB) і транслокація замкненої частини ланцюжка. У цьому огляді ми обговорюємо генезис, типи, особливості, механізми та роль хромоанагенезу в рослинах для поліпшення та еволюції сільськогосподарських культур.

Ключові слова: хромосоми, хромоанагенез, мікроядро, перебудова хромосом.

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Received September 04, 2023

Received November 14, 2023

Accepted January 18, 2025