



Polycomb Repressive Complex 2 Controls the Embryo-to-Seedling Phase Transition

Submitted by Emmanuel Lemoine on Thu, 02/12/2015 - 13:01

Titre Polycomb Repressive Complex 2 Controls the Embryo-to-Seedling Phase Transition

Type de publication Article de revue

Auteur Bouyer, Daniel [1], Roudier, Francois [2], Heese, Maren [3], Andersen, Ellen D [4], Gey, Delphine [5], Nowack, Moritz K [6], Goodrich, Justin [7], Renou, Jean-Pierre [8], Grini, Paul E [9], Colot, Vincent [10], Schnittger, Arp [11]

Editeur Public Library of Science

Type Article scientifique dans une revue à comité de lecture

Année 2011

Langue Anglais

Date 2011/03/10

Numéro 3

Volume 7

Titre de la revue PLoS Genet

Résumé en anglais

Epigenetic regulation of gene expression through modifications of histone tails is fundamental for growth and development of multicellular organisms. The trimethylation of lysine 27 of histone 3 (H3K27me3) is the landmark of Polycomb Repressive Complex2 (PRC2) function and is associated with gene repression. Here we present the development of a genetic system to generate homozygous null mutants of Arabidopsis PRC2. A first major finding is that H3K27me3 is globally lost in these mutants. Surprisingly, we found that initial body plant organization and embryo development is largely independent of PRC2 action, which is in sharp contrast to embryonic lethality of PRC2 mutants in animals. However, we show here that PRC2 is required to switch from embryonic to seedling phase, and mutant seeds showed enhanced dormancy and germination defects. Indeed, many genes controlling seed maturation and dormancy are marked by H3K27me3 and are upregulated upon loss of PRC2. The invention of seed dormancy of land plants is regarded as one of the major reasons for the evolutionary success of flowering plants, and the here-discovered key role of PRC2 during the developmental phase transition from embryo to seedling growth reveals the adaptation of conserved molecular mechanisms to carry out new functions.

URL de la notice <http://okina.univ-angers.fr/publications/ua7730> [12]

DOI [10.1371/journal.pgen.1002014](http://dx.doi.org/10.1371/journal.pgen.1002014) [13]

Lien vers le document <http://dx.doi.org/10.1371/journal.pgen.1002014> [13]

Liens

[1] [http://okina.univ-angers.fr/publications?f\[author\]=11849](http://okina.univ-angers.fr/publications?f[author]=11849)

[2] [http://okina.univ-angers.fr/publications?f\[author\]=11850](http://okina.univ-angers.fr/publications?f[author]=11850)

- [3] [http://okina.univ-angers.fr/publications?f\[author\]=11851](http://okina.univ-angers.fr/publications?f[author]=11851)
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=11852](http://okina.univ-angers.fr/publications?f[author]=11852)
- [5] [http://okina.univ-angers.fr/publications?f\[author\]=11853](http://okina.univ-angers.fr/publications?f[author]=11853)
- [6] [http://okina.univ-angers.fr/publications?f\[author\]=11854](http://okina.univ-angers.fr/publications?f[author]=11854)
- [7] [http://okina.univ-angers.fr/publications?f\[author\]=11855](http://okina.univ-angers.fr/publications?f[author]=11855)
- [8] [http://okina.univ-angers.fr/publications?f\[author\]=11747](http://okina.univ-angers.fr/publications?f[author]=11747)
- [9] [http://okina.univ-angers.fr/publications?f\[author\]=11856](http://okina.univ-angers.fr/publications?f[author]=11856)
- [10] [http://okina.univ-angers.fr/publications?f\[author\]=11857](http://okina.univ-angers.fr/publications?f[author]=11857)
- [11] [http://okina.univ-angers.fr/publications?f\[author\]=11858](http://okina.univ-angers.fr/publications?f[author]=11858)
- [12] <http://okina.univ-angers.fr/publications/ua7730>
- [13] <http://dx.doi.org/10.1371/journal.pgen.1002014>

Publié sur *Okina* (<http://okina.univ-angers.fr>)