

## 植物胚乳发育的表观遗传学调控

张美善<sup>1,2</sup>, 刘宝<sup>2\*</sup>\*

<sup>1</sup>吉林农业大学农学院, 长春 130118;

<sup>2</sup>东北师范大学分子表观遗传学教育部重点实验室, 长春 130024

## Epigenetic Regulation in Plant Endosperm Development

Meishan Zhang<sup>1,2</sup>, Bao Liu<sup>2\*</sup>\*

<sup>1</sup>Department of Agronomy, Jilin Agricultural University, Changchun 130118, China

<sup>2</sup>Key Laboratory of Molecular Epigenetics of Ministry of Education, Northeast Normal University, Changchun 130024, China

摘要

参考文献

相关文章

Download: [PDF](#) (355KB) [HTML](#) 1KB Export: [BibTeX](#) or [EndNote](#) (RIS) [Supporting Info](#)

**摘要** 被子植物的种子发育从双受精开始, 产生二倍体的胚和三倍体的胚乳。在种子发育和萌发过程中, 胚乳向胚组织提供营养物质, 因此胚乳对胚和种子的正常生长发育至关重要。开花植物发生基因组印迹的主要器官是胚乳。印迹基因的表达受表观遗传学机制的调控, 包括DNA甲基化和组蛋白H3K27甲基化修饰以及依赖于PolIV的siRNAs (p4-siRNAs)调控。基因组印迹的表观遗传学调控对胚乳的正常发育和种子育性具有不可或缺的重要作用。最新研究显示, 胚乳的整个基因组DNA甲基化水平降低, 而且去甲基化作用可能源于雌配子体的中央细胞。该文综述了种子发育的表观遗传学调控机制, 包括基因组印迹机制以及胚乳基因组DNA甲基化变化研究的最新进展。

**关键词:** DNA甲基化 胚乳发育 表观遗传调控 印迹

**Abstract:** In angiosperms, seed development initiates from double fertilization, which produces a diploid embryo and a triploid endosperm. The endosperm, a terminally differentiated tissue that nourishes the embryo during seed development and germination, is the prominent tissue of imprinting in plants. Proper endosperm development is crucial for normal embryo and seed development. The expression of imprinted genes is regulated by epigenetic mechanisms, including DNA methylation, H3K27 trimethylation and PolIV-dependent siRNA (p4-siRNA). Such epigenetic regulation of imprinting is vital to proper endosperm development and seed viability. Recent studies show that endosperm DNA methylation is reduced genome-wide, which likely originates from demethylation in the central cell nucleus of the female gametophyte. This review focuses on the latest research advances in the epigenetic regulation in plant seed development, including the mechanism of plant genomic imprinting and dynamics of the genome-wide demethylation in endosperm.

**Keywords:** DNA methylation endosperm development epigenetic regulation imprinting

Received 2011-09-07; published 2012-03-16

Fund:

国家自然科学基金

Corresponding Authors: 刘宝 Email: baoliu@nenu.edu.cn

引用本文:

张美善, 刘宝, 植物胚乳发育的表观遗传学调控[J] 植物学报, 2012, V47(2): 101-110

Meishan Zhang, Bao Liu, Epigenetic Regulation in Plant Endosperm Development[J], 2012, V47(2): 101-110

链接本文:

<http://www.chinbullbotany.com//CN/10.3724/SP.J.1259.2012.00101> 或 <http://www.chinbullbotany.com//CN/Y2012/V47/I2/101>

### Service

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [Email Alert](#)
- ▶ [RSS](#)

### 作者相关文章

- ▶ [张美善](#)
- ▶ [刘宝](#)