

Doctoral thesis/dissertation Digest Form

Thesis/dissertation Title: A study of auxin-mediated control of chromatin structure in *Arabidopsis thaliana*

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Chromatin consists of euchromatin and heterochromatin that exhibit structural differences in the level of compaction. It is known that silent chromatin is represented by condensed chromatin structures, while transcriptionally active chromatin is represented by decondensed chromatin structures. In response to external cues, cells require changes in the chromatin state from highly condensed heterochromatic form to decondensed euchromatic form and vice versa in order to adapt to a new environment.

Here I report that auxin-defective mutants of *Arabidopsis thaliana* showed the reduced condensation of 180-bp repeats region around the centromeres, implying that auxin functions in promoting condensation of constitutive heterochromatin. Besides, the level of histone marks associated with chromatin structures significantly varied according to the strength of auxin signaling. This suggests the possibility that auxin controls chromatin structures through epigenetic modifications. I shall discuss the new pathway that regulates chromatin structures under the control of auxin signaling, and how it is involved in maintenance of genome integrity, thereby guaranteeing continuous plant growth.