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## **The Role of SUMO and Coilin in the Cajal Body**

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### **ABSTRACT**

Our lab is solely based on learning about the molecular biology of the cell nucleus using basic model organism such as plants and flies. We focus on the study of the Cajal Body (CB) and specifically, we are interested to know how nuclear bodies can be formed without a membrane. The CB and the nucleolus are conserved nuclear bodies in all eukaryotic cells. CBs contain multiple proteins and RNA species involved in many pathways such as splicing, ribosome biogenesis and telomere maintenance.

Coilin is one of the main proteins in the nucleus and it is known to be required for CB formation. Thus, the purpose of my project is study the formation of the Cajal body in plants using a collection of mutants in *Arabidopsis thaliana*. Previous studies suggest that the Small Ubiquitin-like Modifier (SUMO) is an important player in the formation of these and other nuclear bodies. SUMO is a small peptide that binds to multiple targets in the cell regulating growth, development and stress response in eukaryotes.

This summer, I screened SUMO mutant plants containing the fluorescent protein coilin in order to study the CB phenotype in these mutants. Also, I examined transgenic plants overexpressing SUMO and coilin proteins with different fluorescent markers. In conclusion, my work will help to understand the mechanism(s) of nuclear body formation and the basic biology of the CB in the cell.

**Key words:** Nuclear bodies, Cajal bodies, SUMO, Coilin.

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