

EXECUTIVE SUMMARY [NON-CONFIDENTIAL, NON-TECHNICAL ABSTRACT FOR PUBLIC INFORMATION OR PROGRAM PROMOTION]: State in layman's terms the application's broad, long-term objectives and specific aims, making reference to the potential public benefits of the project relevant to California. Do not include proprietary or confidential information. This may be distributed before the funding decision has been finalized.

The proposed research project seeks to contribute to the understanding of what factors cause the process of cell and leaf senescence (death) to occur. The development of more general models of senescence are essential to identify common pathways through which all plants senesce. This project seeks to identify and examine the expression of a group of genes (WRKY genes) that have been shown to be involved with senescence in a wide array of economically important species. The forest herb *Podophyllum peltatum* (mayapple) initiates leaf senescence early in the season, well before conditions favorable to plant growth begin to deteriorate. Understanding why these leaves die when environmental conditions appear favorable for growth will contribute to the general understanding of cell death in plants. This understanding will be enhanced by information that clarifies the role of WRKY genes in this early season senescence pattern of mayapple. As such the project will contribute to an understanding of the physiological and environmental factors that trigger the initiation of the senescence process. Ultimately, the work will contribute to a growing body of data to develop a firm understanding of the factors that control plant life span and productivity.