

- **Project Title:** Functions of SAUR genes in auxin response

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Department: Biology

Project Summary:

Auxin regulates many aspects of plant growth and development. The major natural auxin found in plant is Indole acetic acid (IAA). Auxin regulates plant growth and development through modulation of gene expression that is achieved through the degradation of a group of repressor proteins known as Aux/IAA proteins. There are 3 known gene families that are immediately induced by auxin. They are SAUR, Aux/IAA, and GH3. The SAUR gene family consists of over 70 genes that belong to several clusters depending on their sequence homology. While exact functions of SAUR genes are not known, depending on the predicted protein sequences, several possible functions have been suggested. In an attempt to study the functions of SAUR genes, we cloned several members of SAUR gene family (At5g10990, At1g75590, At1g19840, At4g34750, and At2g28085) from Arabidopsis. All these clones contain N-terminal calmodulin binding domains. Additionally, we constructed C-terminal myc tagged version of these genes and expressed in E. coli. Using in-vitro studies we demonstrated that these proteins are rapidly degraded in plant extracts. We have also generated transgenic Arabidopsis plants with SAUR-myc and SAUR-GUS gene constructs that can be used for in-vivo experiments. Moreover, truncated SAUR gene constructs (without calmodulin binding domain) were generated. Transgenic Arabidopsis plants with these constructs have been selected for further study.

Three undergraduate students were trained using the PEP funds allocated for this study. One of these students, Karly Raymer presented her work at the Annual Colloquium of the Department of Biology. Preliminary results from these studies will be used to prepare a NSF proposal in near future.

Presentations:

Raymer, K.C (2008) Functional analysis of a group of SAUR genes in Arabidopsis. Twelfth Annual Biology Student Colloquium, Texas State University.

External Grants Applied:

***Preliminary results will be used for a NSF grant proposal

Student Number: 3