Best Poster Awardee – Masters Student Category

Saroj Lohani came all the way from the lap of the Himalayas, from Nepal, a beautiful country rich in biodiversity. He joined East Tennessee State University in the fall of 2016 as a graduate student. Currently, Saroj is researching salicylic acid-mediated defense signaling in the plant. His research is focused on elucidating the role of SIP68, a SABP2 interacting protein, in biotic and abiotic stress signaling in the plant. Saroj has been fascinated by science from early childhood. Any field related to plants, microbes, and molecular biology always fascinated him. His research interest lie especially in developing resistance crops and producing phytochemicals with therapeutic properties. He strongly believes that science with plants has the potential to help feed an ever-growing human population.

Award Poster Title:
Characterization of SIP68 for its Role in SA Mediated Stress Signaling in Plant

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SIP68 is an SABP2-interacting protein identified in a yeast two-hybrid screen. SABP2 is an important plant protein which catalyzes the conversion of methyl salicylate to salicylic acid. Salicylic acid is one of the important plant hormones that provides defense at both local as well as distal uninfected plant organs known as systemic acquired resistance. SIP68 was characterized as UDP-glucosyltransferase (UGT). Since SABP2 has a role in plant defense and UGT's are involved in many important plant processes, there is the possibility of a role for SIP68 in plant biotic and abiotic stress signaling. Full length SIP68 was cloned and expressed in *Pichia pastoris*. The recombinant affinity purified SIP68 glucosylates flavonols (kaempferol, quercetin, gossypetin, fisetin), flavanones (hesperetin, naringenin), flavones (apigenin, luteolin), and isoflavones (4-acetone-7 Hydroxy-6-methoxy-isoflavone) with varying degree. The highest activity was detected with kaempferol followed by quercetin. However, SA was not a substrate for glucosyltransferase activity of SIP68. Our aim is to assess the role of SIP68 in abiotic and biotic stress signaling in the plant. One of the approaches is to alter the expression of SIP68 in the plant using CRISPR-Cas9 gene editing system. Transgenic plants with altered SIP68 expression will be analyzed for their response to pathogen infection (biotic) and environmental stresses (abiotic). We also aim to localize SIP68 inside tobacco cells using the enhanced Green Fluorescent Protein (eGFP) fusion. This research will help us to add another clue in understanding the plant defense as well as localization of our protein of interest inside the plant cell.