G76 Three Dimensional Polygonal Model Visualization of *Lucila sericata* From SEM and Stereomicroscopic Data

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After attending this presentation, participants will be able to understand how a true color, three dimensional polygonal model visualization of *Lucila sericata* can be produced from SEM and stereoscopic photomicrograph data.

This presentation will impact the forensic sciences community by providing a tool for better anatomical training methods of forensically important insect species.

Blow flies (Diptera: Calliphoridae) are a cosmopolitan group of insects and often the first to colonize human remains. Therefore, they are often collected as evidence. Analysis and prediction of their age often is interpreted as the period of insect activity (PIA). However, in order to utilize any insect collected from human remains as evidence, they must first be identified. Skills necessary for identifying these insects are gained primarily through courses taken while in college, graduate school, or workshops. Primary information utilized for identifying these insects is found in texts or research publications. These sources contain detailed taxonomic information about each of these species which enables their identification. However, few resources are available that provide three-dimensional imagery for teaching or identification purposes. For this reason, a highlydetailed three-dimensional polygonal model of the species has been created. The creation of an anatomical training tool that can be utilized by any age group would significantly increase the awareness of discipline-specific species. While utilizing two different diagnostic microscopes (i.e. scanning electron microscope (SEM) and dissecting microscope), a better understanding of the anatomical characteristics and landmarks can be understood. The issue becomes, who else can benefit from the data acquired? Usually the investigator is the only individual to benefit. From this stereoscopic data, an accurate three dimensional polygonal model was created using computer software forming the basis of the three dimensional investigational/visualization tool. By combinatorial investigation, a tool can now be utilized by everyone in the form of three-dimensions, true color, high-definition imagery and movies. This proposed model is the first investigational process utilizing both stereoscopic photomicrographs and SEM data to generate a specie-specific three- dimensional polygonal model. *Lucila sericata* is a green bottle fly that is common throughout the United States during the warmer months of the year and has been used in many studies to understand the biology and ecology of blow flies in general. Therefore, this species was selected for the study.

This study is also important because it allows forensic entomologists to better communicate blow fly anatomy to a wide array of sciences including but not limited to pathology. The end result, a three dimensional visualization of the blow fly, offers a compelling tool for teachers at all levels to introduce entomology in the classroom. This concept will continued to be investigated for a further detailed polygonal model, and to include other forensically significant species.

***Lucila sericata*, Visualization, SEM**

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