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# University of Dayton, Ohio (url: <http://www.udayton.edu/index.php>)

(url:  
<http://www.youtube.com/embed/8FjIMef0xw4>  
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## Flies, Microbes and Time of Death

**05.09.2011 | Science, Research** A University of Dayton biologist has received a National Institute of Justice grant to conduct research that could help crime scene investigators more accurately determine a time of death and make the difference between exoneration and a conviction.

Eric Benbow will begin his research this summer in Texas investigating how insects and microbes interact in body decomposition. The research can be applied to the field of forensic entomology — the use of insects to aid criminal investigations.

Using insect populations to determine a time of death often yields an estimate within a range of days. Benbow hopes his research will allow investigators to estimate within a range of hours.

"Crime scene investigators most often use the presence of insects — particularly blow flies — to establish a rough estimate of how long a person has been dead," Benbow said. "My research will look at how microbes influence the flies and if they change the amount of time it takes for blow flies to occupy the body."

The institute awarded \$476,348 to a team of researchers that includes Benbow; Jeffery Tomberlin and Aaron Tarone of Texas A&M University, department of entomology; and Tawni Crippen of the USDA-Agricultural Research Service. Benbow will receive about \$164,000 of the nearly half-million-dollar grant for his part of the study. It is the University of Dayton's first NIJ grant and first grant for forensics.

Two University of Dayton students are scheduled to assist Benbow with his research this summer. His work will be done outdoors in an "anthropological research facility" in Texas where the research team will exclude the colonization of blow flies to look exclusively at microbial communities.

"Very few people have tried to use microbial communities to determine a time of death," Benbow said. "But if we can understand their role in decomposition, we might be able to improve accuracy regarding a time of death. And comparing DNA samples of the microbes on the body with microbial communities in the surrounding environment, we may even be able to determine if a body has been moved, when it was moved, and where it was moved from."

The application of this research to the courtroom is clear: an accurate, scientific determination of when a person died and where the body has been can make the difference between exonerating suspects and convicting them, Benbow said.

His research is motivated in part by heavy criticism of the forensic sciences in recent years. The National Research Council in 2009 issued a report calling attention to a lack of sound scientific research in the forensic sciences and making several recommendations to improve it.

Benbow is among a team of researchers who are at the forefront of responding to the National Research Council report, with two articles published in 2011 on the future of forensic science research.

The articles, published in *The Annual Review of Entomology* and in *Trends in Ecology and Evolution*, recommend new research in understanding how the environment — such as temperature and microbial species — and genetic differences of blow fly populations can affect decomposition.

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