

Dr. Jennifer Thomas

Research Interests

Currently, my lab concentrates on studies with Human Papillomavirus (HPV), the causative agent of warts. There are over 100 known HPV types that infect genital and non-genital sites on the body. Those that infect genital sites are further divided into low risk and high risk types; infection with low risk types results in lesions on the external genitalia and high risk types are associated with anogenital cancers, most commonly cervical cancer. Utilizing cells grown in tissue culture, my students have examined the impact of the HPV viral proteins, E6 and E7, on aspects of tumorigenesis including metastases, angiogenesis, chemotherapy resistance, and telomerase activation. Most recently, we have begun to look at the impact of HPV expression on immune system molecules.

My research group has also focused on the incidence of methicillin-resistant *Staphylococcus aureus* (MRSA) in community settings. Although common in hospital settings for decades, infection with MRSA has now become a concern in environments such as university locker rooms and dormitories. Clinically, MRSA is associated with sometimes intractable skin infections that have the potential to become systemic and even lethal. We have identified and characterized MRSA isolates on campus, including their mechanism of resistance and their ability to produce virulence factors. We utilize common microbiology culturing and molecular biology techniques, such as PCR, for our studies.

Publications

Shariat, B.M., Freidmund, J. A., Wright, S.M., Murphree, C.S., and J.T. Thomas. 2007. *Borrelia* Infection Rates in Winter Ticks (*Dermacentor albipictus*) Removed from White-Tailed Deer (*Odocoileus virginianus*) in Cheatham County, Tennessee. *Journal of the Tennessee Academy of Sciences*. 82(3-4):57-61.

Published Abstracts

[Students listed from 2004 until present also presented their research on campus as part of their senior research experience. This includes a poster presentation at the School of Sciences Undergraduate Research Symposium (SURS) in the fall and an oral presentation at the Belmont Undergraduate Research Symposium (BURS) in the spring.]

Everhart, B. D. and J. T. Thomas. Interferon Regulatory Factor-3 Levels are Decreased in Cell Lines Expressing Human Papillomavirus.

2011. *Tennessee Academy of Sciences Spring 2011 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation-**1st place winner in Cellular/Microbiology Section**)

2010. *Tennessee Academy of Sciences 120th Meeting*. Cookeville, Tennessee. (Student poster presentation-**3rd place winner in Microbiology section**)

Rix, J. E. and J. T. Thomas. Effect of Human Papillomavirus on Levels of TLR-9 in Cervical Carcinoma Cell Lines.

2011. *Tennessee Academy of Sciences Spring 2011 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation)

2010. *Tennessee Academy of Sciences 120th Meeting*. Cookeville, Tennessee. (Student poster presentation)

Ouellette, A. C., Panvini, A. D., and J. T. Thomas. The Antimicrobial Effects of Herbs and Spices on Gram-Positive and Gram-Negative Bacteria.

2011. *Tennessee Academy of Sciences Spring 2011 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation-**3rd place winner in Cellular/Microbiology Section**)

2010. *Tennessee Academy of Sciences 120th Meeting*. Cookeville, Tennessee. (Student poster presentation)

- Smothers, E. L. and J. T. Thomas. Analysis of Integrin Protein Levels in Cervical Cell Lines Expressing Human Papillomavirus.
2011. *Tennessee Academy of Sciences Spring 2011 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation-**2nd place winner in Cellular/Microbiology Section**)
2010. *Tennessee Academy of Sciences 120th Meeting*. Cookeville, Tennessee. (Student poster presentation)
- Turner, M. C. and J. T. Thomas. Selectin Expression Not Detected in Human Papillomavirus Positive and Negative Cervical Cell Lines.
2011. *Tennessee Academy of Sciences Spring 2011 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation)
2010. *Tennessee Academy of Sciences 120th Meeting*. Cookeville, Tennessee. (Student poster presentation)
- Castro, A. M. and J. T. Thomas. Characterization of Methicillin-Resistant *Staphylococcus aureus* Isolates from Community Dormitory Showers at Belmont University.
2010. *Tennessee Academy of Sciences Spring 2010 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation)
2009. *Tennessee Academy of Sciences 119th Meeting*. Knoxville, Tennessee. (Student poster presentation-**2nd place winner for Microbiology Section**)
- Moe, B. R. and J. T. Thomas. Presence of Panton-Valentine Leukocidin in Community Associated Methicillin-Resistant *Staphylococcus aureus* Isolates on Belmont University's Campus.
2009. *Tennessee Academy of Sciences Spring 2009 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation)
2008. *Tennessee Academy of Sciences 118th Meeting*. Nashville, Tennessee. (Student poster presentation)
- Schlarman, M. A. and J. T. Thomas. Presence of PBP2A Protein in Methicillin-Resistant *Staphylococcus aureus* Isolates Containing the mecA Gene.
2009. *Tennessee Academy of Sciences Spring 2009 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation-**1st place winner for Microbiology Immunology Section**)
2008. *Tennessee Academy of Sciences 118th Meeting*. Nashville, Tennessee. (Student poster presentation)
- Walsh, A. L. and J. T. Thomas. Presence of mecA Gene in Methicillin-Resistant Isolates of *Staphylococcus aureus*.
2009. *Tennessee Academy of Sciences Spring 2009 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation)
2008. *Tennessee Academy of Sciences 118th Meeting*. Nashville, Tennessee. (Student poster presentation)
- Williams, A. L. and J. T. Thomas. Incidence of Methicillin-Resistant *Staphylococcus aureus* in Belmont University Dormitories.
2009. *Tennessee Academy of Sciences Spring 2009 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation-**2nd place winner for Microbiology Immunology Section**)
2008. *Tennessee Academy of Sciences 118th Meeting*. Nashville, Tennessee. (Student poster presentation)
- Carter, D. S., Thomas, J. T., Schmitz, J. M., McCracken, V. J., Dimmett, R. A., and R. G. Lorenz. T-Cell Cytokines Associated with Inflammatory Bowel Disease in mdr Knockout and Chimera Models.
2008. *Tennessee Academy of Sciences Spring 2008 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation-**1st place winner for Microbiology Immunology Section**)
2007. *Tennessee Academy of Sciences 117th Meeting*. Clarksville, Tennessee. (Student poster presentation-**2nd place winner for Health and Medical Sciences Section**)

- Myers, B. and J. T. Thomas. Occurrence of Methicillin-Resistant *Staphylococcus aureus* in Belmont University Athletic Facilities.
2008. *Tennessee Academy of Sciences Spring 2008 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation)
2007. *Tennessee Academy of Sciences 117th Meeting*. Clarksville, Tennessee. (Student poster presentation)
- Verdier, K. M. and J. T. Thomas. Occurrence of Methicillin-Resistant *Staphylococcus aureus* in Hospitals and Restaurants.
2008. *Tennessee Academy of Sciences Spring 2008 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation)
2007. *Tennessee Academy of Sciences 117th Meeting*. Clarksville, Tennessee. (Student poster presentation)
- Engberg, M. M. and J. T. Thomas. 2007. Knee Injuries and Estrogen Level in Female Athletes. *Tennessee Academy of Sciences Spring 2007 Middle Tennessee Collegiate Division*. Nashville, Tennessee. (Student oral presentation-**1st place winner for session**)
- Gardenhire, D. and J. Thomas. 2006. Telomerase Activation in HPV-associated and Unassociated Cervical Cancer Cells. *Tennessee Academy of Science Spring 2006 Collegiate Meeting*, Nashville, Tennessee. (Student oral presentation-**1st place winner for session**)
- Goodman, B., Thomas, J. T., Fuller, C. M., and D. J. Benos. 2006. Expression of ASIC2 mRNA in Brain Tumors. *20th National Conference on Undergraduate Research*, Asheville, North Carolina. (Student oral presentation)
- Wicks, K. M., Panvini, A. D., and J. T. Thomas. 2006. Analysis of Photosynthetic Rates and Protein Ribulose 1,5-bisphosphate carboxylase (Rubisco) in Exotic and Native Plants. (*SURS and BURS only*)
- Smith, L. and J. T. Thomas. 2005. Analysis of Adhesion Molecules in Cell Lines that Express Human Papillomavirus Proteins E6 and E7. (*SURS and BURS only*)
- Bennett, J. E. and J. T. Thomas. 2004. Analysis of E-cadherin and Alpha-catenin Levels in Human Papillomavirus Expressing Cells. (*BURS only*)
- Fullerton, M. and J. T. Thomas. 2004. Detection of the Major Vault Protein and Vault Poly ADP-ribosyl Polymerase in High- and Low-risk Human Papillomavirus cells. *Tennessee Academy of Science Spring 2004 Collegiate Meeting*, Nashville, Tennessee. (Student oral presentation-**1st place winner for session**)
- Wicke, J. M. and J. T. Thomas. 2004. Placental Growth Factor and Endostatin Production in Cell Lines Expressing High Risk and Low Risk Human Papillomaviruses. (*BURS only*)
- McLaughlin, E., Grammer, R., Thomas, J., and S. Murphree. 2002. Detection of *Borrelia Lonestari* in *Amblyomma Americanum* Ticks of Sumner County, Tennessee. *Tennessee Academy of Science Spring 2002 Collegiate Meeting*, Clarksville, Tennessee. (Student oral presentation)