

College of Veterinary Medicine

Temesgen Samuel

**Associate
Professor**

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EDUCATION/TRAINING

| Institution and Location | Degree | Graduation Year | Major |
|---|-----------------|-----------------|--------------------------------|
| Addis Ababa University, Ethiopia | DVM | 1990 | Veterinary Medicine |
| Hannover School of Veterinary Medicine, Germany | PhD | 1998 | Cell Mol Biol |
| Erlangen-Nuremberg University, Germany | Staff-Scientist | 1999 | Cell Mol Biol, Cancer Research |
| Burnham Institute for Medical Research, USA | Post- doctoral | 2002 | Cell Mol Biol, Cancer Research |

TEACHING

- Molecular Biology, Microbiology
- Diagnostic Methods
- Disease Mechanisms, Molecular Pathogenesis

RESEARCH INTERESTS

- Enhancing the efficacy of anti-cancer therapy. The efficacy of cancer therapy is severely compromised due to serious side effects and resistance. Our laboratory is interested in improving the outcomes of cancer therapy through:
 - a. Understanding of the molecular responses in cells exposed to clinically-used targeted or broad-acting therapeutic agents. We characterize the activation of critical signalling mechanisms when neoplastic epithelial or stromal cells are exposed to therapeutic drugs.
 - b. Designing rational combination strategies that will improve the therapeutic index of clinically used drugs. We test natural compounds and novel agents for their enhancing activities when combined with known anti-neoplastic agents. The overarching goal of our research interest in this area is to rationalize the use of combination therapy in cancer management. We employ molecular and cell biology techniques as well as in vitro cell line and in vivo preclinical models to address these questions.
 - c. Strategies using nanomaterial- or biomimetic vehicles for drug delivery. In collaboration with Material Sciences Engineering department faculty, we formulate and test bio-derived nanomaterials for delivery of drugs that would otherwise be unstable for example in the upper digestive tract or would not reach distal organs such as the large bowel.
- Development of molecular tools and novel methods for the detection of pathogens. Projects in this area are focused on developing rapid and sensitive strategies to detect pathogens that cause major foodborne diseases. Specifically, we work on establishing molecular and nanotechnology-based tools

to reduce the time length for pathogen identification after an outbreak or overt disease.

RECENT PUBLICATIONS

- Mohamed A, Reddy GP, **Samuel T**, Mansour M, Woubit A. Clostridium difficile (Cd) in Shelter Dogs: Rationale for Screening of Pets Slated for Adoption. SOJ Vet Sci 2(1): 1-6, 2016.
- Diane Render, **Temesgen Samuel**, Howard King, Madan Vig, Shaik Jeelani, Ramapuram Jayachandra Babu, and Vijaya Rangari. Biomaterial-Derived Calcium Carbonate Nanoparticles for Enteric Drug Delivery. Journal of Nanomaterials, Volume 2016 (2016), Article ID 3170248 (Open Access, <http://dx.doi.org/10.1155/2016/3170248>).
- Boniface Tiimob, Vitus Apalangya, **Temesgen Samuel**, Shaik Jeelani, Vijaya Rangari. Synthesis, Characterization and In vitro Cytotoxicity Assessment of Eggshell-derived β -CaSiO₃ Nano Biomaterial. British Journal of Applied Science & Technology, 8(2), 180 -192, 2015.
- Nguyen, G; Abo-Samaha, MI; Reddy, G; Abdelrahman, M; **Samuel, T**; Adesiyun, A; Abdela, W. Improved detection of Campylobacter jejuni, Listeria monocytogenes and Salmonella Typhimurium from raw meat products using conventional and newly developed TaqMan assays. International Journal of Poultry Science Volume 14, Number 7, 364-375, 2015.
- Fadlalla, K; Elgendy, R; Gilbreath, E; Pondugula, SR; Yehualaeshet, T; Mansour, M; Serbessa, T; Manne, U and **Samuel, T**. 3-(2-Bromoethyl)-indole inhibits growth of cancer cells and NF-kB activation, Oncology Reports, 2015, 34(1): 495-503.
- Pondugula SR, Flannery PC, Abbott KL, Coleman ES, Mani S, **Samuel T**, Xie W. Diindolylmethane, a naturally occurring compound, induces CYP3A4 and MDR1 gene expression by activating human PXR. Toxicol Lett. 232(3):580-9, 2015.
- Caitlin Hellmich Trebelhorn, John C. Dennis, Satya Pondugula, **Temesgen Samuel**, Elaine Coleman, Patrick Flannery, Edward Morrison, and Mahmoud Mansour. Plant-based Omega-3 stearidonic acid (SDA) enhances antitumor activity of doxorubicin (DOX) in human prostate cancer cell lines. Journal of Cancer Research & Therapy, *J Cancer Res Ther* 2014, 2(9):132-143.
- **Samuel, T.**; Fadlalla, K.; Gales, D.; Putcha, B.K.D.; and Manne, U. Variable NF-kB pathway responses in colon cancer cells treated with chemotherapeutic drugs. BMC Cancer, 14;14:599, 2014. doi: 10.1186/1471-2407-14-599.
- Render, D.; Fadlalla, K.; Rangari, V.; **Samuel, T.**; and Jeelani, S. Bio-based calcium carbonate (CaCO₃) nanoparticles for drug delivery applications. Int. J. of Biomedical Nanoscience and Nanotechnology, 2014, 3(3), 221 - 235.
- Roberson, M.; Rangari, V.; Jeelani, S.; **Samuel, T.**; and Yates, C. Synthesis and characterization of silver, zinc oxide and hybrid silver/zinc oxide nanoparticles for antimicrobial applications. Nanolife, 4 (1), 1440003, 2014.
- Apalangya, V.; Tiimob, B.; **Samuel, T.**; Rangari, V.; and Jeelani, S. Development of antimicrobial water filtration hybrid material from bio source calcium carbonate and silver nanoparticles. Appl Surface Sci, 295, 108-114, 2014.
- Delesa EK, Yohannes A, Alemayehu M, **Samuel T.**, Yehualaeshet T. Calves' sex ratio in naturally and artificially bred cattle in central Ethiopia. Theriogenology. 2014 Aug; 82(3):433-9.
- Abdalla, M.; Harding, H.; **Samuel, T.**; Jayne, J.; and Aglan, H. Development of gelatin films with designed antimicrobial peptide and silver nanoparticles. Int J Biomat Res Engineer, 1(2), 13-29, 2013.
- Williams, A.; Crawford, L.; Tiwari, A.; **Samuel, T.**; and Wirtu, G. Lipid metabolism in mammary neoplasia and potential therapeutic targets. VRI Cell Signaling, 1(2), 2013.
- Yehualaeshet, T.; Graham, M.; Montgomery, M.; Habtemariam, T.; **Samuel, T.**; and Woubit, A. Effects of temperature on the viability, growth and gene profile of Yersinia pseudotuberculosis and Yersinia enterocolitica inoculated in milk. Food Control 2013, 34, 589-595.
- Woubit, A.; Yehualaeshet, T.; Roberts, S.; Graham, M.; Kim, M.; and **Samuel, T.** Customizable PCR-microplate array for differential identification of multiple pathogens. J Food Protect 2013, 76(11):1948-1957, NIHMSID # 648316.

- Gales, D.; Clark, C.; Manne, U., and **Samuel, T.** The chemokine CXCL8 in carcinogenesis and drug response. *ISRN Oncol.* 2013; 2013:859154. PMID: PMC3810054.
- Bovell, L.C., Putcha, B.D., **Samuel, T.**, and Manne, U. Clinical implications of microRNAs in cancer. *Biotech Histochem.* 2013; 88(7):388-96. PMID: PMC23647010.
- Khazal, K.; **Samuel, T.**; Hill, D.; Grubbs, C. Effect of *Withania somnifera* root extract on carcinogen-induced mammary tumors in mice. *Anticancer Res* 2013; 33(4):1519-1523.

SERVICE ACTIVITIES

- Committee services at University or College levels: Radiation Safety Committee, Pathobiology Department Research Committee, IBSC Admissions, CVMANH Educational Policies Committee, Faculty Search Committee ad hoc member (active), Faculty Senate Grievance Committee, Adhoc Reviewer for several journals
- SVM microbiology diagnostic laboratory mycological diagnostic support
- Haiti Diagnostic Laboratory capacity building project team member
- Tuskegee Youth Haven children program teaching and service volunteer
- Director, Tuskegee University Shared Instrumentation Core Facility
- Salk Mobile Science Lab volunteer, 2003-2006