Executive Summary

Investigators at Prairie View A&M University (PVAMU) have developed a system to integrate education and veterinary advice with modern technology to increase access to information, improve animal care, and reduce costs to limited-resource farmers/caretakers. The current resource is focused on goats, as these are primarily raised by smaller farms or individuals. The management and development of **"VetLink for Goats"** requires a multidisciplinary team; thus, Dr. Paul M. Johnson (PI), has teamed with Dr. Oluwagbemiga Ojumu (EL), a PVAMU College of Business Professor and Mr. Brett L. Cornwell (Mentor), Executive Director, Technology Commercialization Texas A&M University. The varied expertise will enable the initial steps of commercialization of a product that could impact a community in need as well as advance veterinary care and generate new data streams.

Team Point of Contacts

EL   **Oluwagbemiga Ojumu, Ph.D.**
            P.O. Box MS 2300
            Prairie View, TX 77446
            oajumu@pvamu.edu
            (936)261-9209

PI   **Paul M. Johnson, Ph.D.**
            P.O. Box 519 MS 2008
            Prairie View TX 77446
            pmjohnson@pvamu.edu
            (936) 261-5029

Mentor **Brett L. Cornwell, MBA**
            800 Raymond Stotzer Parkway, Suite 2020
            College Station, TX 77845
            (979) 845-9699
            cornwell@tcgrp.us

Relevant current/previous NIFA awards

1. **Award NO:** 2013-38821-21412
   Title of Project Establishing a Novel Livestock Diagnostic Information Delivery System
   NIFA Program: 1890 Capacity Building Grant Program

2. **Award NO:** 2017-38821-26423
   Title of Project Establishing a Novel Livestock Diagnostic Information Delivery System II
   NIFA Program: 1890 Capacity Building Grant Program

Potential Commercial Impact

Problem/Need to be Addressed

The agricultural community is quite diverse, and while bovine and poultry industries are dominated by large corporations, many food animals are still raised by smaller, independent farmers. The goat industry is one such market. Many small goat farmers lack the resources and reach of large corporation, yet they still have needs for veterinary care. Further, goats are

commonly raised by youth in agricultural project and competitions led by organizations like the Future Farmers of America (FFA). These limited-resource farmers and individuals would greatly benefit from a medical information database/app that would enable them to learn about common health ailments and enable better decisions in regards to medical care. The limited access to veterinary services in remote areas combined with travelling long distances to obtain veterinary services creates a demand for a "triage" tool of sorts that can enable the user to determine if the cost and time of the trip to the vet is needed. **VetLink for Goats** will provide an on demand service that can alleviate the gap between the current and desired service, to an underserved clientele, small farmers, and individuals preparing animals for livestock competitions.

Initial Market Analysis

The overall livestock monitoring market is expected to be worth USD $952.7 million by 2022, growing at a Compound Annual Growth Rate (CAGR) of 18.01% between 2016 and 2022. In 2016, the market for production animal therapeutics and diagnostics was valued at nearly $24.1 billion. The market is expected to show growth through 2021, reaching $27.3 billion or a 2.5% CAGR. Driving this market segment will be the demand, by consumers, for safe and healthy meat products, and a growing industry in developing markets. The primary industry in rural America is still agriculture, raising goats is gradually finding its presence in these farming communities. Although the demand for goat meat is gradually rising. In 2014 USA imported **43,188 million pounds** of goat meat for a total value of **$94.7 million**, compared to 2,994 million pounds in 1990 for a total value of **$1.9 million**. The knowledge base detailing effective and efficient means to care for these animals is not keeping pace with the demand. **VetLink for Goats** will be able to help satisfy the quest for user-friendly, timely, and practical solutions to problems being experienced or anticipated.

Presently, there are 7,859 local FFA chapters in the US territories. The national FFA Organization is an integral part of agricultural education and the inclusion of the younger generations means the use of technology and smart media is on the rise. Texas has the largest youth livestock program in the nation; 47,452 youths participate in the livestock show every year. In 2015, there were 12,292 market goats shown and 1,072 breeding goats shown at the various county livestock shows. This demonstrates a local clientele base that would be interested in this particular tool. As the FFA also encourages and guides the development of multiple food species, the organization and those similar to it could also provide and direct future expansion of the app/website to other animals.

The initial implementation of this project will focus on individuals raising goats as a hobby and or smaller producers in remote locations; both of which would desire a connection to quality and timely veterinary information. Telemedicine is at the forefront of medical ventures today, and legislation is opening up the door to allow for more opportunities for medical consultation, diagnosis and treatment to happen remotely. The veterinary industry, like the medical industry, has a large population that is far from veterinary clinics. While the current version is designed as an informational service, the app does include a communication feature that would allow for the transmission of photos & videos to a central server that could be manned by veterinary experts with proper disclosures. A remote telemedicine app would enable information to be sent/gathered at an expedited rate, saving costs and improving care by reducing time of travel.

Further, users of the app will generate data and contribute to a database that will gather information that is important, such as locations of users, commonly asked questions/diseases, needs of individuals, etc. This data would be valuable both to science and to business. The app could also act as a sentinel, as it could organize and identify dangerous and contagious diseases

enabling early action and intervention and provide that feedback to authorities and enable warning systems to the locally affected.

Commercialization plans for the innovation

Dr. Johnson's interest in the betterment of veterinary health conditions in lower-income families spurred this project, which initially started out as a website. The product can help limited resourced animal producers overcome two main challenges: (1) difficult/timely transportation of sick animals with acute/contagious conditions (2) challenges of increased financial burdens/veterinary care. Even though no advertisement of the website has been done, simple searches have yielded over 500 visitors to the site in just during July of 2017. A video clip on Hoof Trimming goats has had over 4,000 hits. Thus, we believe there is considerable potential and need for this product and app development will only further drive the access and use. The team will add a complementary blog and further improve the capability of the mobile app.

Smart devices are increasingly being utilized across various industries. VetLink for Goats will add to the technologically resource available for the agricultural industry. Through the App, the researchers involved in the project foresee the target market (the animal producers) will use smart devices to submit information about a sick animal to a server in real time. The need and use of this product will increase, as the technologically savvy future farmers, take their place in leading the agricultural pursuits in society.

With a beta-app already functional, the team is ready to meet with the potential client base before tweaking or further adapting the product. We envision the website and app to have both free and paid portions. Free items/information would draw potential clients, and paid portions would provide access to exclusive material and/or advice. Regardless of the free/paid portion that is access, user data will be collected. This data may prove to be profitable in and of itself. Advertisers are an additional sources of revenue and include professional organizations, veterinary clinics, veterinary services, pharmaceutical and device corporations, etc.

Both the website and app must be marketed and expanded through memberships and networks. The product can serve as an educational tool; thus, universities and continuing education industries may be interested in partnering. The livestock management and healthcare information will be valuable to members of organizations such as the FFA. Marketing the app/website to educational and organizational platforms will increase its potential and gain a broad base of users, which can direct future product development.

Initial efforts have focused on goats, as PVAMU is home to the International Goat Research Center and houses a wealth of images and knowledge on the veterinary issues surrounding goats. The team envisions future efforts to focus on other underserved agricultural species, such as swine, after the initial app launch; however, future directions would be driven by the results of the market research.