

2016 OARDC Director's Innovator of the Year Award

Daral Jackwood and Linda Michel

Daral Jackwood is a professor in the Food Animal Health Research Program and the founder, CEO and CSO of LARAD Inc. Linda Michel is a research associate in the Food Animal Health Research Program and project director for LARAD Inc. A startup company established in 2013 at the BioHio Research Park on The Ohio State University's Wooster campus, LARAD Inc. develops and commercializes proprietary virus-like particle (VLP) technology for the development of vaccines and diagnostics for infectious diseases of food-producing animals.



Photo by Ken Chamberlain

Jackwood and Michel are being recognized for the development and commercialization of VLP vaccines for the prevention of infectious bursal disease virus (IBDV) in poultry and other viral diseases of animals. IBD is one of the most significant immunosuppressive diseases of poultry, affecting nearly all poultry-producing regions around the world. Financial losses due to IBD result not only from high mortality but also from the dramatic decrease in the overall health of surviving birds.

LARAD's IBDV-VLP vaccine is unique, as no VLP vaccines for IBDV or any poultry diseases are currently commercially available. The annual market value for currently available inactivated-IBDV vaccines worldwide is approximately \$17 million. LARAD's VLP vaccines for IBDV have the potential to capture at least 55 percent of this international market by 2019. Additionally, LARAD plans to bring to market an Avian Reo Virus (ARV) vaccine. The market for currently available IBDV and ARV vaccines and diagnostic reagents is international. There



is also a market for custom-made IBDV and ARV vaccines used to keep up with mutating viruses. LARAD predicts that adding an ARV/IBDV-VLP vaccine to its product line will further increase the market share and nearly double the revenue projection, because the vaccines for ARV and IBDV are almost always administered together.

VLPs make ideal vaccines because they cannot cause disease, yet they still induce a strong immune response. VLPs can also be used as reagents in diagnostic kits that detect an animal's response to a specific viral infection on which the VLP is based. LARAD's VLP technology is most powerful when used to protect against viral diseases where the pathogen has a history of frequent mutations. The VLP vaccines can be rapidly re-engineered to keep pace with the viruses as they evolve. While conventional vaccines become less effective as viruses mutate, LARAD will be able to adapt its VLP vaccines to combat changing viruses. This customizability is a game-changing approach that has not been possible in the animal vaccine industry until now.

LARAD's plan is to build a portfolio of VLP technology based vaccines for food animals and companion animals. Growth in this area will be through internal research and development and, when necessary, licensing existing technology. The business model is designed around technology development and related diagnostic testing for its customer base of vaccine and biologics companies.

So far, LARAD has raised funds in the amount of \$870,742. Additionally, since its founding in 2013, the company has generated revenues of over \$150,000 from its molecular diagnostic services division. LARAD won the 2014 NorTech Innovation Award for Most Innovative Solution.

The OARDC Director's Innovator of the Year Award consists of a plaque and \$1,000 for each awardee, and \$3,500 added to the team's operating expense account.