



Knowledge Fund Investment

Funded by

Nevada Governor's Office of

ECONOMIC DEVELOPMENT



The Road Ahead: Commercialization

DRI is known for scientific advancements and the Knowledge Fund has helped DRI to advance several areas of scientific discovery in the areas of water efficiency, public health and agriculture. Successes of DRI initiatives represented by the WaterStart Program, the Healthy Nevada Project, and TuBiomics have proven that environmental technologies hold great potential for translation to the commercial sector and ultimately for directly improving people's lives. To date, four spin-out organizations have formed as a result of Knowledge Fund investments.

DRI's focus this fiscal year with Knowledge Fund support is to ingrain commercialization into the applied environmental research workflow. The goal is to emplace a sustainable commercialization ecosystem where promising ideas are vetted early for marketplace potential and plans for developing these ideas are developed and executed. Core components of this program element include providing early access to commercialization expertise, leveraging federal programs that support commercialization research efforts (e.g., SBIR/STTR), and providing ongoing support for research faculty to participate in commercialization.

One such activity is the DRI commercialization fellowship, where DRI scientists with ideas that have potential go through a process that culls and hones their ideas to the point where a commercialization plan is developed and executed. The first fellowship cohort includes ten such concepts and is currently underway with the funding that DRI received from the Knowledge Fund for FY22.



University of Nevada, Reno



Learn more at researchworksformeveda.org



TuBiomics seeks to raise additional capital funds

One of the organizations to spin out of DRI is TuBiomics. The Knowledge Fund provided support for DRI's development of an organic antifungal chemical to solve white rot, a major problem for garlic growers in Nevada and California, and the spinout of TuBiomics in the second quarter of 2020. Since spinning out of DRI, TuBiomics has raised \$1.5M in venture capital, added 2 board members, and completed a \$2M commercial development agreement with the multinational crop protection organization TriCal, Inc. TuBiomics has identified a lead product candidate and is developing a pipeline of microbial chemistry solutions for agricultural applications. The company continues to work with DRI as it expands its product discovery process, as well as a state-of-the-art bioinformatics platform. The intellectual property developed in collaboration with DRI was fully licensed from the Nevada System of Higher Education in April 2021. TuBiomics plans another significant fund raise in the middle of 2022.



Healthy Nevada Project: Childhood trauma and genetics linked to increased obesity risk

Knowledge Fund support helped to launch the Health Nevada Project, the nation's first community-based, population health study, which now has more than 60,000 participants. The project is a collaboration with Renown and personal genomics company, Helix, and combines genetic, environmental, social, and clinical data to address individual and community health needs with the goal of improving health across the state and the nation.

New research from the Healthy Nevada Project found associations between genetics, obesity, and childhood trauma, linking social health determinants, genetics, and disease. The study, which was published in *Frontiers in Genetics* in March 2022, found that participants with specific genetic traits and who experience childhood traumas are more likely to suffer from adult obesity. The new study focuses on Adverse Childhood Experiences (ACEs), which are traumatic and unsafe events that children endure by the age of 18. Over 16,000 participants in the Healthy Nevada Project® answered a mental health survey, and more than 65 percent of these individuals self-reported at least one ACE occurrence. These 16,000 participants were cross-referenced with their genetic makeup, and clinical Body Mass Index (BMI) measures. According to the research team's findings, study participants who had experienced one or more types of ACE were 1.5 times more likely to become obese adults. Participants who experienced four or more ACEs were more than twice as likely to become severely obese.



WaterStart: Using technology to save water

The successful WaterStart program was launched in 2013 via a partnership between DRI, the Southern Nevada Water Authority, and the Governor's Office of Economic Development. WaterStart is a non-profit collective of globally recognized leaders who are adapting to change by scaling up new solutions to water challenges. After successfully spinning out of DRI in 2020, WaterStart has continued to grow and now includes water utilities and other large consumers of water across the globe, including the McDonald's Corporation.

WaterStart's technology priorities identified by a global membership continues to grow and includes priorities related to building resilient water treatment and delivery systems in the face of climate change. Over 40 pilot projects of new technologies demonstrating actual solutions to some of the most pressing challenges have been funded/facilitated by WaterStart. Since inception, WaterStart and its members have invested \$3.2 million in new solutions, which are estimated to have provided a return of over \$30 million. One of these technologies is Halogen, a NV-based company. Halogen has developed an innovative multi-parameter water quality sensor. Through WaterStart, Halogen has secured opportunities with the Southern Nevada Water Authority, Truckee Meadows Water Authority and is in discussions to deploy their technology with Anglian Water in the United Kingdom. Most recently, WaterStart, in partnership with SNWA, has secured funding to assist in the testing and evaluation of new cooling tower technologies in southern Nevada. Through this grant funding awarded by the Bureau of Reclamation, WaterStart will be publishing and disseminating the outcomes of testing various alternatives to traditional cooling tower systems among its global network.