



8701 Brookville Rd.
Plymouth, MI 48170
www.advaitabio.com



Fast Facts

Founders:	Sorin Draghici
Date Founded:	2005
Employees:	6
Headquarters:	Plymouth, MI
Revenue:	N/A
University:	Wayne State University
Federal Funding Agency:	National Science Foundation
Initial Research Funding:	\$1.2M

Advaita's mission is to bridge the gap between the ability to collect biological data and the ability to interpret it through the use of advanced computational methods. The company develops bioinformatics software tools for the research and pharmaceutical industries.

Advaita's software platform, Pathway-Guide, is used for the analysis of data from high-throughput microarray and next-generation sequencing experiments. Pathway-Guide is the first tool in a new generation of pathway analysis technologies available on the market that incorporates the topology of the pathway into the analysis. This advanced analysis methodology not only provides more accurate results that correctly identify biologically meaningful pathways in a given disease, but also reduces the number of false-positive results.

The Story Behind the Company

The genesis of the technology and its initial development took place in the laboratory of Dr. Sorin Draghici, professor of computer science at Wayne State University. Dr. Draghici aimed to create a novel technology for the analysis of biological networks with significant transformative potential for a number of life-science related disciplines that could be used as a predictor of the effectiveness of a drug on a gene. Dr. Draghici and his research team hoped to create a technology that opened a window to view the impact of a drug on an entire organism, essentially creating a roadmap for the potential benefits and pitfalls of any potential drug.

The initial research and development was undertaken at Wayne State University with a \$1.2 million grant from the National Science Foundation.



4321 Roxbury Lane
Kalamazoo, MI 49008
www.axoniamedical.com

Fast Facts

Founders:	Harry Ledebur Douglas Smith
Date Founded:	2009
Employees:	2
Headquarters:	Kalamazoo, MI
Revenue:	N/A
University:	University of Pennsylvania
Federal Funding Agency:	Department of Defense National Institutes of Health
Initial Research Funding:	\$2.6M

Axonia Medical is pioneering a revolutionary approach to repair and restore damaged peripheral or central nervous systems using tissue-engineered nerve grafts (TENGS). By recapitulating the anatomy of the nervous system, TENGs act as living bridges for targeted repair of the nervous system, orchestrating a rapid, robust and complete regenerative response that promises improved restoration of sensory, motor and/or cognitive deficits. Axonia Medical's first focus is the development of TENGs for repair of peripheral nerve injury (PNI) with follow on products for spinal cord injury (SCI), traumatic brain injury (TBI) and stroke. In addition, Axonia Medical will pursue opportunities for use of TENGs as a direct neural interface for programmable machines and computers (e.g., advanced prosthetic limbs).

The Story Behind the Company

Axonia Medical leverages the ground-breaking discoveries by Dr. Douglas Smith at the University of Pennsylvania regarding the growth of nerve axons to produce 3-dimensional tissue-engineered nerve grafts that can repair and restore damaged regions of the nervous system. Dr. Smith is director of the Center for Brain Injury and Repair and professor of neurosurgery at U Penn's Perelman School of Medicine.

Axonia Medical was formed by Dr. Smith and the University of Pennsylvania through its UPstart Company Incubator. Axonia Medical holds an exclusive worldwide license to the relevant intellectual property owned by the University of Pennsylvania. The research that led to the technologies behind Axonia was supported with grants from the Department of Defense and the National Institutes of Health. The company is led by CEO Harry Ledebur, a molecular and cell biologist by training.



2800 Plymouth Road
Ann Arbor, MI 48109
www.lycera.com



Fast Facts

Founders:	Gary Glick
Date Founded:	2006
Employees:	25
Headquarters:	Ann Arbor, MI
Revenue:	N/A
University:	University of Michigan
Federal Funding Agency:	National Institutes of Health
Initial Research Funding:	\$3M

Lycera is pioneering innovative approaches to oral medicines for treating autoimmune diseases with high unmet medical need. The company is targeting two novel autoimmune pathways to develop new classes of small molecules to treat immune disorders such as rheumatoid arthritis, psoriasis and inflammatory bowel disease. Lycera's world-class team and biological insights in the immunology and inflammation arenas uniquely position the company to realize the promise of translating cutting-edge science into first-in-class oral therapies.

The Story Behind the Company

National Institutes of Health-funded research in the lab of Dr. Gary Glick, a biological chemistry professor at the University of Michigan, resulted in a drug discovery platform uniquely poised to identify and develop small molecules that regulate cell growth and survival. These molecules modulate a target that is central to bioenergetic processes within cells. This discovery spawned the creation of Lycera. The company's medicines that have emerged from these therapies will represent first-in-class agents to treat a broad range of conditions. These drugs are anticipated to have significant advantages over competitive products, including better efficacy, fewer side effects, ease of administration.



200 N. Ann Arbor St.
Saline, MI 48176
www.quantumsignal.com



Fast Facts

Founders:	Mitchell M. Rohde, William J. Williams
Date Founded:	1999
Employees:	40
Headquarters:	Saline, MI
Revenue:	N/A
University:	University of Michigan
Federal Funding Agency:	Department of Defense (Office of Naval Research)
Initial Research Funding:	\$500,000

Quantum Signal LLC (QS) is an advanced engineering company specializing in advanced signal processing and math-based engineering. Using state-of-the-art algorithms and software, the company develops customized solutions on behalf of other organizations and works to build improved products and offerings for their customers. QS' clients include a wide variety of public and private sector clients, including well-known organizations such as Ford, Panasonic, Sony, Whirlpool, Amway, Department of Defense, Department of State, and the United States Secret Service.

QS products and technology are in use worldwide, and appear in military mobile robotic systems, forensic and clinical laboratories, police stations, at retail point-of-sale, on gaming PCs, and in training classrooms.

The Story Behind the Company

In the 1990s, Dr. William (Bill) Williams, professor at the University of Michigan, Ann Arbor, conducted pioneering work in the advanced signal processing arena. During his research, Dr. Williams' discovered a specialized field of signal processing called Time Frequency Analysis (TFA). TFA provides a joint time-frequency representation of a signal. Using newly developed methods, one can often separate the components of a signal in ways that are difficult or impossible using time-series or spectral analysis.

Seeing the potential to apply these algorithms to solve a wide array of problems in industry, Dr. Williams and a UM graduate student, Dr. Mitchell Rohde, formed Quantum Signal. Licensing several key patents from UM, Dr. Williams and Dr. Rohde began working with clients and using the technology to solve difficult problems. They also began selling a software toolbox based on the technology. Eventually, the two began applying the techniques in the biometrics arena, and winning a NIST Advanced Technology Program (ATP) grant, developed a bigger team and set of technology that could be carried forward in a variety of projects.

Though TFA plays a minor role in QS' activities today, the early ideas, work, and technology gave birth to a robust engineering organization that has made a tremendous impact across many clients private and public. Without Dr. Williams' TFA work and the funding that supported it, QS have had little initial technology to gain a foothold with clients and likely would not exist today. The TFA work conducted by Dr. Williams at the University of Michigan was funded by the Office of Naval Research.