

# ADVANCED DIAMOND TECHNOLOGIES, INC.

*We solve hard problems*

48 East Belmont Dr.  
Romeoville, IL 60446  
[www.thindiamond.com](http://www.thindiamond.com)



## **Fast Facts**

Founders:	Orlando Auciello John Carlisle Neil Kane
Date Founded:	2003
Employees:	20
Headquarters:	Romeoville, IL
Revenue:	N/A
University:	Argonne National Laboratory managed by UChicago Argonne, LLC
Federal Funding Agency:	Department of Energy
Initial Research Funding:	\$8M

Advanced Diamond Technologies (ADT) harnesses the superlative properties of nature's perfect material by turning natural gas into diamond in a highly controlled, reproducible process for a variety of industrial, electronic and medical applications. ADT offers several families of high performance UNCD<sup>®</sup> (ultra-nanocrystalline diamond) products that take advantage of the unsurpassed properties of diamond. ADT is the world leader in developing and applying diamond films for electronic, mechanical, industrial and biomedical applications.

## **The Story Behind the Company**

The research of senior scientists Dr. John Carlisle and Dr. Orlando Auciello in the Materials Science Division at Argonne National Laboratory (ANL), led to the discovery of the UNCD<sup>®</sup> thin film technology that ultimately spawned ADT. Argonne National Laboratory is managed by UChicago Argonne, LLC.

Their work was part of a 10-year Department of Energy-funded basic materials science research program in advanced diamond materials. The program, funded at a level of approximately \$800,000 per year, enabled the development of the materials science and resulting inventions that became the basis of UNCD technology. Argonne collaborated with external parties to form a venture company based on UNCD technology and licensed a portfolio of inventions and patents to ADT to form the startup company. Parallel research and product development continued and was funded by various parties.



*Pioneering Optical Solutions for Colon Cancer Screening*

1801 Maple Ave.  
Evanston, IL 60201

[www.americanbiooptics.com](http://www.americanbiooptics.com)



## **Fast Facts**

Founders:	Vadim Backman Andrew Cittadine Michael Goldberg Hemant Roy
Date Founded:	2006
Employees:	5
Headquarters:	Evanston, IL
Revenue:	N/A
University:	Northwestern University
Federal Funding Agency:	National Institutes of Health
Initial Research Funding:	\$2M

American BioOptics LLC (ABO) is a medical device company founded to commercialize a novel optical technology platform for cancer screening and detection. This technology shines light inside the colon and analyzes how the reflected light interacts with the lining of the colon. This interaction provides unique insight into abnormalities in healthy appearing tissue that are too small to be seen with an endoscope or microscope. Based on a patented discovery at Northwestern University and NorthShore University HealthSystem, this technology is now harnessed in a commercial-ready mobile instrumentation system and highly sensitive, easy-to-use, minimally invasive test for screening for colorectal cancer (CRC).

## **The Story Behind the Company**

In 2002, ABO's founding scientific and clinical team at Northwestern University and the Research Institute of Evanston Northwestern Healthcare (now NorthShore University Health System, an affiliate of the University of Chicago Pritzker School of Medicine) began development of the company's optical backscattering technologies. This early work, supported by the National Institutes of Health, focused on the development of the company's optical backscattering technology system and optical probes in the Biomedical Engineering Department at Northwestern. The research included significant early investigation at Evanston Northwestern Healthcare of optical biomarkers in animal models and later in human subjects to predict patients likely to be at risk of colon cancer.



*Extending coating life.*

495 County Road 1300 N

Champaign, IL 61822

[www.autonomicmaterials.com/](http://www.autonomicmaterials.com/)



## **Fast Facts**

Founders:	Dinesh Ahluwalia, Paul Braun, Jeff Moore, Joseph Rule, Nancy Sottos, Scott White
Date Founded:	2005
Employees:	8
Headquarters:	Champaign, IL
Revenue:	N/A
University:	University of Illinois at Urbana-Champaign
Federal Funding Agency:	Department of Defense (Air Force Office of Scientific Research) National Science Foundation
Initial Research Funding:	\$1.06M

Autonomic Materials (AMI) is focused on developing and commercializing breakthrough low-cost, self-healing polymer systems for high performance coatings and structural composites. This platform technology can be readily incorporated into existing coatings of virtually all types, greatly extending useful lifetimes in a number of industrial applications.

AMI's innovations translate to increased value for coatings producers and users alike. Recoating intervals are lengthened, minimizing labor costs and equipment downtime. Additionally, by extending coating lifetimes, environmental impact is minimized.

## **The Story Behind the Company**

Dr. Scott White, professor of aerospace engineering at the University of Illinois, founded Autonomic Materials in 2005. Dr. White is also the leader of the Autonomous Materials Systems (AMS) group at University of Illinois' world-renowned Beckman Institute. This multidisciplinary research team has been developing breakthrough technologies in the area of self-healing materials for a decade. It is the AMS group's innovative technology platform that Autonomic Materials is currently bringing to the global coatings market to enable the production of SMART coatings. UI Professors Nancy Sottos, Jeff Moore, and Paul Braun were also involved in the research that led to the formation of Autonomic Materials.

The research that led to the founding of AMI was funded by the Air Force Office of Scientific Research and the National Science Foundation.

835 South Wolcott Ave., Suite E306, 3rd Fl. (MC937)  
Chicago, IL 60612  
<http://cellbiologics.com/>



### **Fast Facts**

Founders:	Asrar Malik Xiao-Pei Gao
Date Founded:	2011
Employees:	7
Headquarters:	Chicago, IL
Revenue:	N/A
University:	University of Illinois at Chicago
Federal Funding Agency:	National Institutes of Health (National Heart Lung and Blood Institute)
Initial Research Funding:	\$2.6M

Cell Biologics provides genetically modified (knockout or transgenic) or normal mouse primary endothelial cells, mouse leukocytes, mouse bone marrow cells, and other mouse primary cell types for customized solutions to specific research problems. The company offers more than 120 high-quality and ready-to-use mouse primary cell types derived from genetically modified mice and more than 70 high-quality and ready-to-use mouse primary cell types derived from several different wild type mice.

Cell Biologics is dedicated to the rapid development of significant basic and clinical research on the endothelium by saving investigators time, money, and laboratory costs in the production of consistent normal and genetically modified cells in a timely and reproducible manner.

### **The Story Behind the Company**

The products being developed and offered by Cell Biologics are based on research conducted at the University of Illinois at Chicago by Professors Asrar Malik and Xiao-Pei Gao on endothelial cells. Long-term research on lung biology using endothelial cells has led to the development of a novel method of isolation, purification, and culturing of these cells from rats to be used in many different types of subsequent experiments to test various aspects of lung function. These methods have been further modified to be useful for other cells types including epithelial cells, leukocytes, bone marrow cells, stem cells, fibroblasts, smooth muscle cells, cardiomyocytes, hepatocytes, plenocytes, and central nervous system neurons, and using different types of animal donors.

The initial research and development that led to Cell Biologics was undertaken as part of a \$24 million program project grant awarded to investigators at the University of Illinois at Chicago by the National Heart Lung and Blood Institute, part of the National Institutes of Health.



*Redefining the field of tissue repair.*

1440 Davey Road  
Woodridge, IL 60517  
[www.cellhabitats.com](http://www.cellhabitats.com)



### **Fast Facts**

Founders:	Tejal Desai Paul Goldspink Brenda Russell
Date Founded:	2005
Employees:	2
Headquarters:	Woodridge, IL
Revenue:	N/A
University:	University of Illinois at Chicago
Federal Funding Agency:	National Institutes of Health (National Heart Lung and Blood Institute)
Initial Research Funding:	\$6.4M

Cell Habitats, Inc. is redefining the field of tissue repair by using biological and physical cues to prompt the body's own stem cells to restore normal function to damaged or diseased tissue. Cell Habitats' novel approach is accomplished by injecting regenerods, micro-sized devices that mimic biological material, attract the body's own stem cells, and act as a substitute cellular habitat that promotes endogenous stem cell growth. This innovation could potentially improve outcomes in the treatment of heart muscle disease. It also serves as a platform for the repair of bone, cartilage, muscle and nerve tissues.

### **The Story Behind the Company**

The products being developed by Cell Habitats are based on research conducted at the University of Illinois at Chicago by Professors Brenda Russell, Tejal Desai (now at the University of California, San Francisco), and Paul Goldspink (now at the Medical College of Wisconsin) on tissue engineering and how three-dimensional cellular interactions affect cellular functions, such as proliferation. The research into the mechanisms of these three-dimensional interactions led to the development of novel microd structures that increase cell proliferation and can regenerate cardiac muscle in rodents that have suffered from a myocardial infarction. These microd structures are being developed by Cell Habitats as a platform technology for tissue regeneration, first in cardiac muscle and then in other tissues.

Initial research and development was funded by grants totaling approximately \$6.4 million from the National Heart Lung and Blood Institute, part of the National Institutes of Health.





*Technology through innovation*

590 Territorial Drive, Unit B,  
Bolingbrook, IL 60440

[www.epir.com/](http://www.epir.com/)



### **Fast Facts**

Founders:	Siva Sivananthan
Date Founded:	1998
Employees:	60
Headquarters:	Bolingbrook, IL
Revenue:	N/A
University:	University of Illinois at Chicago
Federal Funding Agency:	Department of Defense (DAPRA) National Science Foundation Department of Energy
Initial Research Funding:	\$13.5M

EPIR Technologies, Inc. is a rapidly growing high-tech company that serves the defense and civilian sectors, specializing in optoelectronic materials and sensors.

The company's products in infrared materials have revolutionized the mercury cadmium telluride (MCT) based infrared materials technology space and provide much needed components for the production of infrared sensors and imagers at a reduced cost for major defense contractors and commercial manufacturers alike.

The same technology that formed the basis for EPIR's breakthrough successes in infrared imaging technology now forms the foundation for EPIR's development of a revolutionary new photovoltaic cell. EPIR's solar energy product line will include ultra-high efficiency tandem solar cells, novel coatings and modules that will make major reductions in the cost per watt of photovoltaic solar power.

### **The Story Behind the Company**

As director of the University of Illinois at Chicago (UIC) Microphysics Laboratory, Dr. Siva Sivananthan has worked for over 20 years on the research and development of semiconductors in infrared and night vision technology and solar cells. Sivananthan pioneered the molecular beam epitaxy (MBE) growth, characterization and fabrication of single-crystal II-VI materials on silicon. This laid the groundwork for the process used by EPIR Technologies to manufacture MBE-grown CdTe on silicon for defense infrared night vision applications and the development of ultra-high efficiency photovoltaic solar cells.

The foundational research behind EPIR was performed by Dr. Sivananthan at UIC under several grants and contracts from the Department of Defense, Department of Energy and National Science Foundation.



708 Kristin Court  
Westmont, IL 60559  
[www.immersivetouch.com/](http://www.immersivetouch.com/)



### **Fast Facts**

Founders:	Pat Banerjee
Date Founded:	2005
Employees:	12
Headquarters:	Westmont, IL
Revenue:	N/A
University:	University of Illinois at Chicago
Federal Funding Agency:	National Institutes of Health (National Institute of Biomedical Imaging and Bioengineering), Department of Commerce (National Institute of Standards and Technology)
Initial Research Funding:	\$500,000

ImmersiveTouch is a leader in simulation based surgical training and exploration. ImmersiveTouch simulators 'immerse' surgeons in a digitally replicated operating environment with high-fidelity 3D virtual anatomies and haptic instrument replicates.

ImmersiveTouch™-SENSIMMER® is the first system that integrates a haptic device with a head and hand tracking system and a high resolution high pixel-density stereoscopic display. Its ergonomic design provides a comfortable working volume in the space of a standard desktop. Most surgeons who have interacted with the simulator ImmersiveTouch has developed say that it is like performing real surgery.

### **The Story Behind the Company**

While at the University of Illinois at Chicago (UIC), Professor Pat Banerjee and his colleagues pioneered the development of a multi-sensorial computer interface that is able to simultaneously incorporate vision, touch, and hearing into its system. Force and audio feedbacks as well as high resolution images recreate an augmented reality environment that incorporates the user's hands with the virtual 3D computer generated models in real time. The novel system they developed and went on to commercialize as Immersive Touch is a device that produces images with high resolution and high pixel density.

Banerjee's initial research was funded by grants from the National Institute of Standards and Technology and the National Institute of Biomedical Imaging and Bioengineering, part of the National Institutes of Health.



8045 Lamon Ave. Suite 140  
Skokie, IL 60077-5318  
[www.polyera.com](http://www.polyera.com)



### **Fast Facts**

Founders:	Karen Cindrich, Anthonio Facchetti, Philippe Inagaki, Tobin Marks, Mark Morales, Jean Pfau, Ed Zschau
Date Founded:	2006
Employees:	50
Headquarters:	Skokie, IL
Revenue:	N/A
University:	Northwestern University
Federal Funding Agency:	Department of Defense (DARPA, Office of Naval Research), NASA, National Science Foundation
Initial Research Funding:	Approx. \$1M

Polyera is focused on creating breakthrough organic materials and providing customized technologies for the commercialization of novel printed and flexible electronic products.

Polyera is a leading supplier of high-performance semiconductor materials and inks for organic transistors, photovoltaics, and circuit applications. Polyera provides novel functional materials (semiconductors, dielectrics, interfacials, passivation layers) and the corresponding formulated inks to enable the next-generation of solution-processed, flexible, potentially inexpensive opto-electronic devices. These semiconductor-based products can be printed on flexible, light-weight substrates such as plastics, in contrast with traditional rigid substrates. This allows for the manufacturing of electronics, such as flat panel displays or solar panels, with radically new product designs such as displays that can fold or roll-up. In addition, flexibility provides robustness to impact since flexible things don't break easily when they get hit.

Since founding, the company has received over \$30M in private funding.

### **The Story Behind the Company**

Northwestern University professors Tobin Marks' and Antonio Facchetti's expertise in synthesis of organic polymers with unique n-type and p-type electronic properties made these ideal vehicles to fabricate organic conducting materials with semiconductor properties. They demonstrated functioning semiconductor circuits and devices could be fabricated with these organic conductors, in place of traditional metallic based systems, employing established printing technologies.

This accomplishment provided an opportunity to manufacture electronic devices on flexible materials and ultimately led to the creation of Polyera.

Marks' and Facchetti's initial research and development was conducted at Northwestern University with support from the Department of Defense, NASA and the National Science Foundation.



# ToleroGenics, Inc.

20 North Wacker Drive  
Chicago, IL 60606

## **Fast Facts**

Founders:	Bellur Prabhakar
Date Founded:	2007
Employees:	2
Headquarters:	Chicago, IL
Revenue:	N/A
University:	University of Illinois at Chicago
Federal Funding Agency:	National Institutes of Health (National Institute of Allergy and Infectious Disease)
Initial Research Funding:	\$4.7M



ToleroGenics, Inc. is an early stage biotechnology company focused on developing novel pharmaceutical approaches to treating autoimmune diseases. ToleroGenics is exploring treatments to reverse the spread of autoimmune disease through GM-CSF, which prevents the full maturation of dendritic cells that induce an autoimmune response in T cells. Their first product in development is a bi-specific antibody for treating Type I diabetes.

## **The Story Behind the Company**

ToleroGenics is a result of research conducted by University of Illinois at Chicago professors Bellur Prabhakar, Mark Holterman, Chenthamarakshan Vasu and Matthew Meriggioli on the role of GM-CSF stimulated T-regulatory cells in suppressing autoimmunity. The research into the mechanisms that underlie this suppression led to the development of a bi-specific antibody with specificities for the T-cell surface protein CTLA-4 and an alloantigen important in the development of type 1 diabetes, which suppresses the development of type 1 diabetes. This bi-specific antibody forms the basis of the lead product being developed by ToleroGenics.

Initial research and development was undertaken as part of a series of grants awarded to professors Prabhakar, Vasu and Holterman totaling approximately \$4.7 million by the National Institute of Allergy and Infectious Disease, part of the National Institutes of Health.



2201 W Campbell Park Dr., STE 15  
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[www.wisegeneusa.com](http://www.wisegeneusa.com)



### **Fast Facts**

Founders:	N/A
Date Founded:	2012
Employees:	2
Headquarters:	Chicago, IL
Revenue:	N/A
University:	University of Chicago
Federal Funding Agency:	National Institutes of Health (Institute for General Medical Sciences)
Initial Research Funding:	\$2.13M

WiseGene's mission is to develop, manufacture, and deliver research tools for novel genomic sequencing and detection technology. By working closely with professor Chuan He's laboratory at the University of Chicago, WiseGene will continuously in-license, develop and commercialize novel genomic sequencing reagents and methodology in epigenetics.

### **The Story Behind the Company**

Wisegene was founded based on groundbreaking genetic research conducted by a team of scientists from the University of Chicago, the Ludwig Institute for Cancer Research, the University of California, San Diego and Emory University. The research team, led by Dr. Chuan He of the University of Chicago, developed and tested a technique that allows scientists to read DNA, letter by letter, and detect precisely where modifications are found in particular tissues or cell types. The team used the technique to map 5-methylcytosine (5-mC) and 5-hydroxymethylcytosine (5-hmC) in DNA from human and mouse embryonic stem cells, revealing new information about their patterns of distribution. These studies have revealed that these DNA modifications play major roles in fundamental life processes such as cell differentiation, cancer and brain function.

Dr. He's work at the University of Chicago has been supported since 2005 by numerous grants from the National Institute for General Medical Sciences, part of the National Institutes of Health.