OPENING A NEW ECONOMIC FRONTIER

Academic scientists and engineers are taking their discoveries and inventions outside the laboratory and into the world of commerce.

By Debra Levy Martinelli
PHOTOS BY ROBERT TAYLOR

Many of us have experienced that fleeting moment of recognition laced with regret when we have thought, “Darn, I should have invested in that when I had the chance.” Maybe the golden opportunity was a small company testing a new drug, a part-time inventor looking for funding for a doo-dad that would ease our daily lives, or even a dilapidated house in the middle of nowhere, around which eventually sprung a thriving community. The one that got away, we lament; the chance that will never come again.

Never say never.

continued
Our ancestors who settled the Oklahoma plains never did. They followed their dream and staked their claim for free land when the land runs opened the territory. Years later, rich oil and gas reserves were discovered in Oklahoma’s red clay, and vast fields were developed by pioneers whose vision and hard work helped shape the state’s economy—names like Kerr, McGee, Noble, Getty and Phillips.

Today Oklahoma’s economy is no longer exclusively dependent on natural resources. Abundant opportunities to again transform the state are still be found in its own backyard through the University of Oklahoma’s Office of Technology Development.

Since 1998, the OTD has worked with the University’s faculty and researchers to market their scientific discoveries and advances to Oklahoma businesses. The development and transfer of intellectual property technology from the academic environment to the private sector is a winning proposition for all involved and could forever change the state’s economic landscape.

W. Arthur “Skip” Porter came to OU in 1998 as vice president for Technology Development and dean of the College of Engineering and as the state’s first Secretary of Technology Development. He brought with him the rare combination of razor-sharp business acumen and academic credentials. When recruited by OU, the 17-year Texas A&M faculty member was serving as president and CEO of the Houston Advanced Research Center, a nonprofit, university-linked organization that fosters scientific research and technology development and scholarly imagination. On his watch, OU has licensed 68 technologies and created 16 start-up companies that have generated more than $9 million in license income and more than $12 million in equity. In fiscal year 2004 alone, 33 patent applications were filed and six patents were issued.

Shortly after the Office of Technology Development was created, Oklahoma voters approved State Questions 680 and 681, which helped clear the way for higher education institutions and their researchers to form business partnerships with private industry. The resulting environment, Porter believes, has brought Oklahoma to a fork in the road.

“This is a defining moment in the development of our state,” he contends. “We have an opportunity to shape our own economic destiny by investing in creating our own talent and our own technology as well as the infrastructure and support systems that keep them here. OU has geared up to realize the results of its faculty’s research directly into the Oklahoma economy. Research growth leads to economic growth, which in turn leads to the creation of higher paying jobs that will enable the state’s young people to stay in Oklahoma.”

How can this transformation be accomplished? The same way our forefathers did it with land, oil and gas: by seizing the moment and never wavering, Porter says.

While Porter has ultimate oversight for OTD, he has entrusted the nuts and bolts of day-to-day operations to a small but crackerjack team led by his long-time colleague, executive director Dan Davis, a CPA who worked with Porter at both Texas A&M and the Houston Advanced Research Center before joining him at OU in 2001.

The eight-member OTD team covers all three OU campuses—Norman, Oklahoma City and Tulsa—developing relationships with researchers and explaining to them the benefits of commercialization of their projects.

“Ours is a unique structure for a university,” Davis explains. “Typically, the technology transfer office reports either to the university’s chief business officer or the vice president for research. That can work fine, because it takes the technology created as a result of the research and markets it, but it requires trading off the
value of the intellectual property to get the research. Here at OU, we’re focused on commercialization—getting value from the technology that’s developed here—which, in turn, increases the research.

“Here at OU, we’re focused on commercialization—getting value from the technology that’s developed here—which, in turn, increases the research. Our goal is to create companies or find Oklahoma companies that can benefit from our technology. Either way, we’re creating jobs and economic value for the state,” he adds. “The OTD has created 16 companies and the university has equity in 12 of them. The companies have generated $60 million in capital and more than 120 jobs. That might not sound like a lot of jobs, but they pay twice the median household income in Oklahoma.”

When OU researchers have developed a process or product that lends itself to transfer to the marketplace, OTD’s first task is to explain to them the value of turning a scientific innovation into something that can both benefit humanity and, to put it bluntly, make money for the researcher, the University and the state. Davis says some researchers are dubious about the commercial aspect. “There are two kinds of researchers at public institutions: those who think their discoveries should be free for anyone to use—the public paid for it, therefore the public owns it—and those who are interested in the commercialization of their discoveries. They see a problem and they want to solve it, but they don’t realize there may be people all over the world with the same problem, and they’ve just found the solution for all of them,” Davis explains.

But even those who hold the latter view may need to be convinced that commercialization is both possible and sustainable. “They get more excited about technology transfer as they begin to see results,” he says. “They must have confidence that you know what you’re doing and that you’re not wasting their time.”

OU’s royalty distribution structure favors the inventors, who receive 35 percent of gross revenues for their commercialized intellectual property. Another 31 percent of net revenues go to a “growth fund” to help researchers move their inventions forward.

Like inventors, potential Oklahoma investors often need to be convinced of the benefits of the new technology. “Their initial reaction is first curiosity and then lethargy,” says Porter. “If they can’t see it or drive by it, they don’t want to invest in it.”

He understands that perspective but is working diligently to change it. “While financial investment in technology may not reap immediate rewards, it’s absolutely a winning proposition for everyone. Investors need to act quickly to get in on the ground level, but then exercise patience when it comes to seeing a return on their investments,” he says.

How does he plan to convince investors that developments in science, medicine and technology are the way to make money? “We make one of these early ventures a big success,” Porter says. “Then investors will be clamoring to get in on the next deal. We won’t have to call them anymore. They’ll call us.”

That call could be right around the corner. Through the OTD, OU and its researchers have had some stunning successes in transferring scientific discoveries and advances to the private sector. Here is how it works:

First, explains Davis, the researcher fills out a disclosure form that identifies the discovery, the date it was made and the inventors. If there are multiple inventors, the disclosure form also describes each person’s contribution. Multiple inventors agree on the split when the disclosure is made. That’s really impor-
companies created from technology de-
organization.

muster on both counts, the next step is to
similar existing discoveries and market
mining what may have already been
published or disclosed at academic gath-
erings or even on a researcher’s Web
page. This process helps determine
whether the inventor has exclusive rights
to the invention.

Once the form is on file, the OTD
staff conducts a patent search to identify
similar existing discoveries and market
research to determine whether the inven-
tion has commercial potential. If it passes
muster on both counts, the next step is to
create a company based on the technol-
ogy or, alternatively, licensing the tech-
nology to sell to an existing for-profit
organization.

Some of the most promising start-up
companies created from technology de-
veloped at OU are:

- **Southwest Nanotechnologies**, also known as SWeNT, produces high-
  quality single-wall carbon nanotubes, a product whose conductivity,
  strength and mechanical properties is expected to lead to such extraordinary
  scientific advances as medical tools used to
conduct molecular-scale surgery, targeting specific
  cancer cells or even repairing DNA. The company’s lead researcher,
  OU chemical engineering professor Daniel Resasco,
also has pioneered a process that should dramatically lower the
price of mass producing single-wall nanotubes.

- **Inoveon Inc.**, a new biopharmaceutical
  company formed from research conducted at
OU’s Health Sciences Center, is exploring new
treatments for inflammatory and thrombotic
disorders, specifically deep vein thrombosis and ischemia reperfusion injury in organ
transplantation.

- **Weather Decision Technologies Inc.**, an alliance between OU’s Center for Analysis
  and Prediction of Storms and the Oklahoma
  Climatological Survey, provides high-
  resolution weather information content. The
  company partners with utility and energy
  entities for internal business decision
  support, television broadcasting companies
  for weather prediction and forecasting
  systems and Internet applications for Doppler
  radar data display.

- **Inoveon Inc.**, a company founded by
  three members of the OU Health Sciences
  Center faculty, is developing technology
to monitor diabetic retinopathy, the leading
cause of preventable blindness worldwide.

- **Surbec Environmental L. I. C.**, formed
  by a group of OU College of Engineering
  faculty, develops advanced technologies to
  correct soil and groundwater situations in a
  faster and less expensive manner than
  traditional approaches can provide. Its
  successes include a core “super soap”
technology that has been used to conduct
some 20 environmental cleanups around
the country and overseas.

- **Ekips Technologies Inc.**, an Oklahoma
  start-up company headed by electrical and
  computer engineering professor Patrick
  McCann, uses patented laser fabrication
technologies to develop and manufacture
mid-infrared and ultraviolet lasers and laser
systems designed to measure specific
chemical compounds. The company
recently was awarded a $750,000 National
Institutes of Health grant to support clinical
studies for obtaining FDA approval of its
Ekips® Breathmeter®, a laser-based breath analysis
instrument designed to aid in the diagnosis
and treatment of asthma and other
respiratory conditions.

- **Scrub Oak Technologies Inc.**, is adapting
technology developed by OU College of
Engineering faculty for highway and
industrial applications of an electronically
monitored “shock absorber” for bridges.
The device, which compensates for the
pounding bridges get from heavy traffic,
could extend the lives of thousands of
aging highway bridges throughout the
country.

And there are many more prospects on
OU’s list. Start-up companies are be-
ing created for 178 other technologies as
varied as a high-quality, water-repellent
and environmentally friendly cotton fab-
ric, a revolutionary aircraft instrument
landing system, an integrated mobile and
wireless system for law enforcement
agency use and an implantable coil for
hearing aid devices.

Porter insists that a major benefit of
retaining all of this cutting-edge tech-
ology in Oklahoma is keeping our
best and brightest young people in the
state, where they can live, work and
raise their families.

“The formula is simple: find, attract
and keep top talent and provide an
environment that supports taking the
risks of creating and controlling one’s
own economic destiny,” he says. “Working together, Oklahomans are
making it happen.”

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