



LETTER FROM THE DIRECTOR

If you ask small business owners, most would agree that starting and running a business can be difficult. Now, imagine starting a business based on something that has never before been done. The challenges of constructing marketing and sales strategies, securing start-up capital and recruiting qualified employees are compounded exponentially when trying to launch a new product or service.

Oklahoma researchers are facing these challenges as they embark on complex endeavors such as finding cures for dreaded diseases, identifying new sources of energy and designing, developing and manufacturing new technologies. It can be a complex path from invention to marketplace. Fortunately, the Oklahoma Center for the Advancement of Science and Technology and its strategic partners, the Oklahoma Manufacturing Alliance (OMA) and i2E, are in place to help businesses and individuals navigate that path.

Whether a business is in the early stage of developing an idea and working with OCAST, in the production stage and working with OMA or in the commercialization stage and working with i2E, this unique partnership—with complementary missions—works in concert to support start-up and existing businesses that ultimately create jobs, increase per capita income and grow the state's economy.

OCAST works with entrepreneurs, researchers and companies that are early in the process by helping them fund research to prove their ideas, linking them to larger funding sources and introducing them to other researchers and resources to strengthen their ideas. In our 26-year history, we have funded more than 2,450 research projects and provided support to hundreds of Oklahoma-based companies. The investment we make in those businesses yields a high return to the state—from increasing tax revenue to improving the quality of life of people around the world.

OCAST and its strategic partners OMA and i2E have received national acclaim for innovation programs and services that have strengthened and diversified Oklahoma's economy and positioned our state for future growth opportunities.

Michael Carolina

C. Michael Carolina
Executive Director
OCAST

**INNOVATION.
COLLABORATION.
JOBS.**



2013 BY THE NUMBERS



67

Projects funded
by OCAST

**\$213.6
MILLION**

Direct impact on
gross sales at
participating companies

66

Student interns
supported by
OCAST funds

69

Inventors helped
by the Inventors
Assistance Service

\$22.40

For every dollar invested
by OCAST, \$22.40 was
generated by private
and federal investments,
additional employees,
increased productivity,
sales and licensing

2,455

OCAST has supported 2,455 Oklahoma projects throughout our 26 year history



PROPERLY DIAGNOSING CHILDHOOD DISORDERS

Moleculera

Few things are worse in life than seeing your child suffer from an illness. But imagine how it would feel if the doctors could not diagnose or, even worse, misdiagnosed your child, giving them unnecessary drugs.

Between two and three million children in the United States suffer from neurological symptoms such as motor tics, obsessive compulsive disorders, autism spectrum disorders and behavior disorders. Children experiencing these symptoms often are treated with neuropsychiatric drugs which impact the nervous system. Unfortunately, some of these children do not suffer from neurological disorders at all; they may be experiencing an autoimmune response to an infection, such as strep throat or Lyme disease, which can be treated with antibiotics, anti-inflammatory drugs and immune modulators. Until recently, there was no test to properly identify children suffering from this condition known as PANDAS.

Using licensed research developed by Dr. Madeline Cunningham at the University of Oklahoma Health Sciences Center, Moleculera Labs now offers a blood test to properly identify PANDAS in children all over the world, enabling their physicians to effectively treat them. With the support of OCAST through the Seed Capital Investment Fund, managed by i2E, Moleculera Labs was able to bring this test to market in 2013. In addition to helping children around the world, the tests will bring jobs and increased tax revenue to Oklahoma through the sale of the tests which is covered by most insurance providers. In the next five years, the company expects to grow from its current 5 employees to 50 employees. A requirement of the Seed Capital Investment Fund is that Oklahoma will receive more than its original investment, sustaining future investments.

FUELING OKLAHOMA'S ECONOMY

CleanNG

Despite the fact that up to 90 percent of the natural gas consumed in the United States is produced domestically, the movement to convert vehicles to clean-burning CNG has been slow. The cost to convert is a barrier and other restrictions associated with the tanks make conversion and adoption even more difficult.

The team at CleanNG first came across these problems when they were students at Oklahoma State University building a Formula One racecar. In order to raise money and attract investors, the team decided to make their racer run on CNG. Once building got underway, they quickly realized the tank was going to be a serious hindrance; it took up too much space, added significant weight and could not hold enough CNG to support the long races. So the team saw a business opportunity.

Consumer and commercial vehicles also are impacted by the size, weight and shape of fuel tanks. With support from OCAST, OMA and others, the CleanNG team has developed a tank using a carbon fiber nanomaterial that solves these issues.

The company is in the final stages of testing their tanks. Once in full production, CleanNG expects to grow their team to 25 full-time employees, keep all manufacturing in Oklahoma and estimates generating sales of \$50 million in the next five years.





CURING PANCREATIC CANCER COARE

The American Cancer Society estimated that in 2013 alone, 45,220 people in the United States would be diagnosed with pancreatic cancer. Of those, 38,460 are estimated to die from the disease. Pancreatic cancer is the fourth leading cause of cancer deaths with a median survival range of only six months after diagnosis.

The researchers at COARE Biotechnology are challenging these disheartening statistics with what they hope will eventually be a treatment, even a cure, for pancreatic cancer. The team at COARE has identified a protein they believe to be very influential in the growth and movement of cancer stem cells. They believe that blocking this protein will either prevent the tumor from forming or keep it from growing.

With help from OCAST's and i2E's Oklahoma SBIR Collaborative Resources (OSCR) program, the team at COARE was recently awarded a Phase I Small Business Innovation Research grant. Funding will enable researchers to test various treatments to target the protein, continue their research and move closer to bringing a treatment to market.

For additional information, visit
www.ocast.ok.gov.

PROTECTING OUR NATION

Tactical Electronics

When the unimaginable massacre happened in Aurora, Colorado, law enforcement officers inspected the booby-trapped apartment of the perpetrator. Entering an unknown territory, possibly riddled with explosives, could have been deadly. By using tools developed by an Oklahoma-based company, officers were able to inspect the premises from a safe distance, reducing the risk of injury or death.

Tactical Electronics invents, manufactures and sells tools and equipment used by law enforcement officers, military and counter-terrorism personnel around the globe. Tools include under-door cameras and video fiber scopes that can be inserted into suspicious packages.

Tactical Electronics recently received an Oklahoma Applied Research Support award from OCAST to develop their latest product. Without the support of OCAST, Tactical Electronics says it would not have been able to proceed with its image recognition software. The technology will have the ability to scan packages and within milliseconds, determine specific details of what is inside—from the type of battery used to the type of wires on the explosive device.

Tactical Electronics has hired students through the OCAST Intern Partnerships program to give them the opportunity to work side by side and learn from researchers in the development of life-protecting technology for law enforcement and first responders.



OCAST PROGRAMS

The following OCAST programs and strategic partners are available to help Oklahoma businesses and researchers prove their ideas, attract additional funding and take their products to market. For specific program requirements, funding levels, application deadlines or more information, contact OCAST or visit the OCAST website and sign-up for notifications.

OKLAHOMA APPLIED RESEARCH SUPPORT (OARS)

Cutting edge research leads to commercially successful products, processes and services. OARS funds R&D in all fields from medicine, agriculture and energy to manufacturing and aerospace.

- » PROJECTS FUNDED IN FY13: **23**
- » QUALIFIED PROJECTS UNFUNDED IN FY13: **19***

OKLAHOMA HEALTH RESEARCH

Oklahomans are developing treatments and conducting research to help people live longer, healthier lives. The Oklahoma Health Research program funds basic research projects related to human health.

- » PROJECTS FUNDED IN FY13: **29**
- » QUALIFIED PROJECTS UNFUNDED IN FY13: **111***

INTERN PARTNERSHIPS

Internships are vital to keeping talented undergraduate students in Oklahoma. Intern Partnerships supports R&D projects that involve Oklahoma businesses and Oklahoma institutions of higher education by providing funds to support internship positions.

- » STUDENT INTERNS PLACED IN FY13: **66**
- » QUALIFIED INTERN APPLICATIONS UNFUNDED IN FY13: **6***

OKLAHOMA SBIR COLLABORATIVE RESOURCES (OSCR)

The federal Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs have complex application processes that can be challenging for small business owners and

entrepreneurs. The OSCR program was created to improve the success rate of Oklahoma companies applying for the federal programs by providing proposal preparation advice, supporting proposal preparation costs, supporting critical "bridge" funding between Phase I and Phase II and offering technical assistance throughout the lifecycle of the project and through commercialization.

- » ASSISTED IN DEVELOPING MORE THAN **20** COMPETITIVE SBIR PROPOSALS
- » PROVIDED OSCR CONSULTATION SERVICES TO MORE THAN **100** ESTABLISHED AND EMERGING BUSINESSES

INVENTORS ASSISTANCE SERVICE (IAS)/NEW PRODUCT DEVELOPMENT CENTER (NPDC)

It's a long winding path from invention to marketplace. IAS navigates the process through education, information and referrals. Then the NPDC provides design, development, engineering and business support.

- » TRAINING MODULES CREATED TO NAVIGATE THE INVENTION AND PATENT PROCESS: **5**
- » PROJECTS PROVIDED ASSISTANCE THROUGH PATENT RESEARCH, MARKET ANALYSIS, PROTOTYPING OR DESIGN ASSISTANCE, PRODUCT DEVELOPMENT OR BUSINESS PLAN DEVELOPMENT IN FY13: **69**

OKLAHOMA MANUFACTURING ALLIANCE

Small- and medium-sized manufacturers must implement new technology and modernize in order to compete successfully in a global economy. The Alliance connects manufacturers to cost-effective resources, more efficient manufacturing processes and technologies to increase productivity and reduce costs.

- » JOBS CREATED OR RETAINED IN FY13: **2,498**
- » MANUFACTURERS ASSISTED IN FY13: **426**

OCAST PROJECTS OPERATED UNDER CONTRACT WITH i2E

i2E was created to respond to OCAST's statutory directive to commercialize technology and is a private not-for-profit Oklahoma corporation focused on wealth creation by growing the technology-based entrepreneurial economy within our state. i2E operates under contract with OCAST to administer the following programs.

OKLAHOMA TECHNOLOGY COMMERCIALIZATION CENTER

The Tech Center works with companies, inventors, entrepreneurs and researchers to turn technological innovations into business opportunities for Oklahoma.

- » PROJECTS SUPPORTED IN FY13: **30**
- » PRIVATE CAPITAL RAISED: **\$33,094,860**

TECHNOLOGY BUSINESS FINANCE PROGRAM (TBFP)

Financing a new business can be challenging. TBFP provides technology start-ups with pre-seed financing and early-stage risk capital to encourage investments from private sources.

- » ANNUALIZED PAYROLL REPORTED: **\$28.2 MILLION**
- » AVERAGE WAGE FOR TBFP FIRMS: **\$77,037**
- » PATENTS REPORTED IN FY13: **5**

TECHNOLOGY BUSINESS INCUBATOR

OCAST, in partnership with the Oklahoma Health Center Research Park, helps to provide services to meet the needs of Oklahoma technology-intensive start-up companies including biotechnology and biomedical firms.

- » PROJECTS SUPPORTED IN FY13: **20**

***Oklahomans and Oklahoma businesses have more ideas and qualified research projects than funding can support.**

OCAST SEED CAPITAL PROGRAM

OCAST invests in the private-sector Oklahoma Seed Capital Fund (OSCF). The OSCF was created to invest in Oklahoma high-tech companies that need capitalization to grow their businesses. The state dollars used to invest in this fund are matched with private sector co-investment at an amount greater than the state's investment. Successful participants often return more than the original investment to Oklahoma. Those repayments help sustain future investments in the OSCF.

- » AVERAGE ANNUAL WAGE: **\$98,319**
- » NEW JOBS ADDED IN FY13: **30**



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To learn more about OCAST,
watch our video here.