



OCAST Business Plan

Fiscal Year 2022



OKLAHOMA
Center for the
Advancement of
Science and
Technology

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Approved by the OSTRaD Board of Directors on _____.

Board of Directors

Oklahoma Center for the Advancement of Science and Technology (OCAST) is a state agency governed by the Oklahoma Science and Technology Research and Development (OSTRaD) Board of Directors (Title 74, Section 5060.6 and Amended by Senate Bill 487). This nine-member board of directors consists of the Secretary of Science and Innovation who serves as the chair, four members appointed by the Governor, two members appointed by the President Pro Tempore of the Senate and two members appointed by the Speaker of the House of Representatives. Members generally serve four-year terms.

Elizabeth Hutt Pollard (chair)

Secretary of Science and Innovation

Blayne Arthur

Secretary

Oklahoma Department of Agriculture, Food and Forestry

Dr. Sean Bauman

President and CEO

IMMY

Norman

Dr. Jeff McCormack

Chief Academic Officer

Oklahoma Christian University

Edmond

Tom Kupiec, Ph.D.

President and CEO

ARL Bio Pharma Inc., DNA Solutions Inc., The Kupiec Group

Oklahoma City

Zachary R. Miles, J.D.

Senior Associate Vice President for Technology and Economic Development

Oklahoma State University

Stillwater

Purpose

OCAST was established in 1987 as the state's agency for technology-based economic development. OCAST's mandate is to "grow and diversify Oklahoma's economy and provide new and higher quality jobs for Oklahomans" by encouraging "... the development of new products, new processes and whole new industries in Oklahoma." (O.S. 74, Sections 5060.1a and 5060.2A)

Mission

To foster innovation in existing and developing businesses by:

- Supporting basic and applied research
- Facilitating technology transfer between research laboratories and businesses
- Providing seed capital for innovative firms in the development of new products or services
- Helping Oklahoma's small and medium-sized manufacturing firms become more competitive through increased productivity and modernization (O.S. 74, Section 5060.3)

Vision

OCAST's vision is continued growth and vitality through facilitating collaboration between state government, universities, start-up companies and established large-scale firms to develop an entrepreneurial environment that supports technology-based economic development. In pursuit of this vision and in carrying out its mission, the agency funds cutting-edge science and technology through processes that are recognized nationally and internationally for excellence, objectivity and economic impact. OCAST's strategy includes science and technology areas such as biosciences, information technology, sensors and electronics, advanced materials and energy sources and systems. Achieving this vision will result in continued growth of advanced technology companies in the state thereby increasing Oklahoma's global competitiveness, job growth, per capita income and an improved quality of life for Oklahomans.

Matrix of OCAST Goals and Science and Innovation (S&I) Strategic Plan

S&I Strategic Plan Recommendations		OCAST Goals		
		Increase the impact of OCAST's programs and services	Increase public awareness of OCAST's impact on Oklahoma	Identify process improvement opportunities to increase the efficiency of OCAST programs, accounting routines and policies and procedures
1	Establish the Office of Science and Innovation			
2	Identify Strategic Industries for Large Scale, Focused Investments and Partnerships			
3	Establish Centers of Excellence in Research			
4	Create Superclusters of Innovation and Support Systems			
5	Establish a Federally Funded Research Lab			
6	Invest in Education, Workforce Development, and Internship Programs			
7	Secure Public and Private Financing to Fund Recommendations			

OCAST Key Performance Indicators

1. Increase in state, federal and private R&D expenditures
2. Growth in the number of venture-backed deals in high-tech startups and existing small to medium high-tech companies
3. Growth in the total amount of federal and private research dollars in the key strategic investment areas of aerospace and autonomous systems, biotechnology/life sciences and energy diversification
4. Increase in total amount of private, state and federal growth funding to high-tech startups and existing small to medium high-tech companies
5. Total number of R&D contracts between startups and existing small to medium high-tech companies and Oklahoma research institutions
6. Total number of jobs created, average salary compensation by high-tech startups and existing small to medium high-tech companies
7. Total amount of capital raised by high-tech startups and existing small to medium high-tech companies
8. Increase in the total number of patents
9. Total amount of entrepreneurial investment and product/process/service commercialization
10. Increase in the number of new industries participating in the OCAST Intern Partnership program

Programs

OCAST programs and services are designed to encourage and enable Oklahoma researchers, entrepreneurs and small businesses to accomplish research and development, technology commercialization and technology application. Ideally, clients return to OCAST programs as often as necessary for assistance. The programs focus on three key technology areas where Oklahoma already has established significant infrastructure and know-how and where a top 10 ranking can be achieved. These three areas are aerospace and autonomous systems, biotechnology/life sciences and energy diversification. Programs in the OCAST technology portfolio include:

Intern Partnerships – cumulative ROI 78:1

The Intern Partnerships program helps retain Oklahoma's best and brightest students by connecting undergraduate and graduate students involved in STEM disciplines with Oklahoma companies to complete innovative projects that benefit the career path of the student and at the same time addresses real innovation needs of the company. OCAST provides funding that is matched by the industry partner for a STEM student to support the pursuit of an innovative solution to the company's technology needs. The Intern program:

- Allows businesses to gain access to funding for a skilled intern to help accomplish research and development.
- Provides students with hands-on experience outside of the classroom.
- Helps develop Oklahoma's next generation of scientists and engineers.
- Encourages industry-university collaboration.

- Helps students to be better prepared for STEM careers in Oklahoma.
- Encourages undergraduates to pursue graduate education and training.

Oklahoma Applied Research Support – cumulative ROI 22:1

The Oklahoma Applied Research Support (OARS) program funds projects for one to three years from technology areas based upon technical merit, potential for market success and commitment of resources. Funding is available for both proof-of-concept and accelerated projects. The program requires a minimum of one-dollar matching support for each state dollar awarded. Eligible applicants are Oklahoma businesses, universities, colleges or nonprofit research organizations that have industrial partners. The accelerated component of this program requires that eligible projects involve collaboration between private industry and research institutions for the purpose of finding solutions to industry's innovation needs.

Oklahoma Health Research – cumulative ROI 22:1

The Health Research program competitively awards research funding for one- to three-year basic research projects related to human health. Eligible applicants are Oklahoma commercial enterprises, nonprofit research organizations, universities and colleges. These awards enable researchers to gain expertise and produce data needed to obtain larger grants from other sources, including federal agencies and public and private funding organizations, and to develop patents which in the long-term can lead to commercialization. Researchers also benefit from OCAST's annual Health Research Conference which focuses on ways to assist the commercial development of new products and services resulting from health research projects.

Health Research Fellowship is a component of the Health Research program intended to help increase the number and quality of postdoctoral researchers in Oklahoma. The HRF was created within existing program statutes at the direction of the Health Research Advisory Committee as a response to the increasing demand for postdoctoral researchers. This need was identified by Oklahoma research institutions and the bioscience industry who urged the advisory committee to provide some assistance in resolving the shortage of these early-stage researchers in the state.

Oklahoma Plant Science Research – cumulative ROI 12:1

The Plant Science program competitively awards funds for basic, proof-of-concept and accelerated research related to plant science for one- to two-year periods based on scientific merit, commitment of resources and, in the case of applied research, the potential for market success. Eligible applicants are Oklahoma commercial enterprises, nonprofit research organizations, universities and colleges, nonprofit research organizations and commercial enterprises. The applied and proof-of-concept research awards require a minimum of one-dollar matching support for each dollar awarded.

Small Business Research Assistance – cumulative ROI 44:1

Through the federal Small Business Innovation Research (SBIR) program, federal agencies provide seed support for product feasibility studies and prototype development that is lacking in the private investment community. The federal Small Business Technology

Transfer (STTR) program accomplishes this purpose and forges research collaborations between small firms and universities or nonprofit research institutions. Both the SBIR and STTR programs encourage transfer of technology into federal agency programs and private sector applications. OCAST's program offers technical assistance through the University of Oklahoma's Oklahoma Catalyst Programs to improve the quality of proposals through proposal development workshops, external expert proposal reviews, client referrals, collaboration building and partnership with i2E's commercialization support services. The program offers companies guidance in accessing additional OCAST support and other resources as appropriate to their respective stage of development. This program is managed for OCAST through a contract with the University of Oklahoma and supported by the university's Tom Love Innovation Hub.

Inventors Assistance Service – cumulative ROI 16:1

The program assists the independent inventor in navigating the process from idea to marketplace. IAS helps inventors move toward the manufacturing, marketing and distribution of their products by providing assistance and information or referring inventors to appropriate service providers who will help them deal with specific steps in the invention process. The program provides inventors with a streamlined process to help move their innovation forward. Qualified inventors nearly ready for commercialization receive help with activities such as materials testing, market assessment, engineering resources and prototype development. This program is managed for OCAST through a contract with Oklahoma State University supported by the university's New Product Development Center (NPDC).

Technology Business Finance – cumulative ROI 53:1

This program is designed to promote promising innovation and to support efforts to commercialize that innovation in Oklahoma by providing early stage financing to start-up companies, well-established firms and manufacturers. The program requires a match and includes payback provisions which helps sustain the program and provide financing to additional companies. This program is managed for OCAST through a contract with i2E Inc.

Seed Capital – cumulative ROI 28:1

Through its Seed Capital program, OCAST provides funding to innovative Oklahoma companies to incentivize co-investment. The statute and the related constitutional amendment allow the state to take an equity or debt position with firms – an authority that is unique to OCAST as a state agency. Required co-investment with the private sector as the majority investor leverages the agency's investment. OCAST invests through the Oklahoma Seed Capital Fund LLC, a for-profit subsidiary of i2E Inc.

The Seed Capital program also includes a concept component intended to address the needs of companies requiring a smaller seed capital investment for early-stage projects which may develop into larger seed capital investment opportunities if necessary as the company continues to grow in Oklahoma.

Oklahoma Technology Commercialization Center – cumulative ROI 12:1

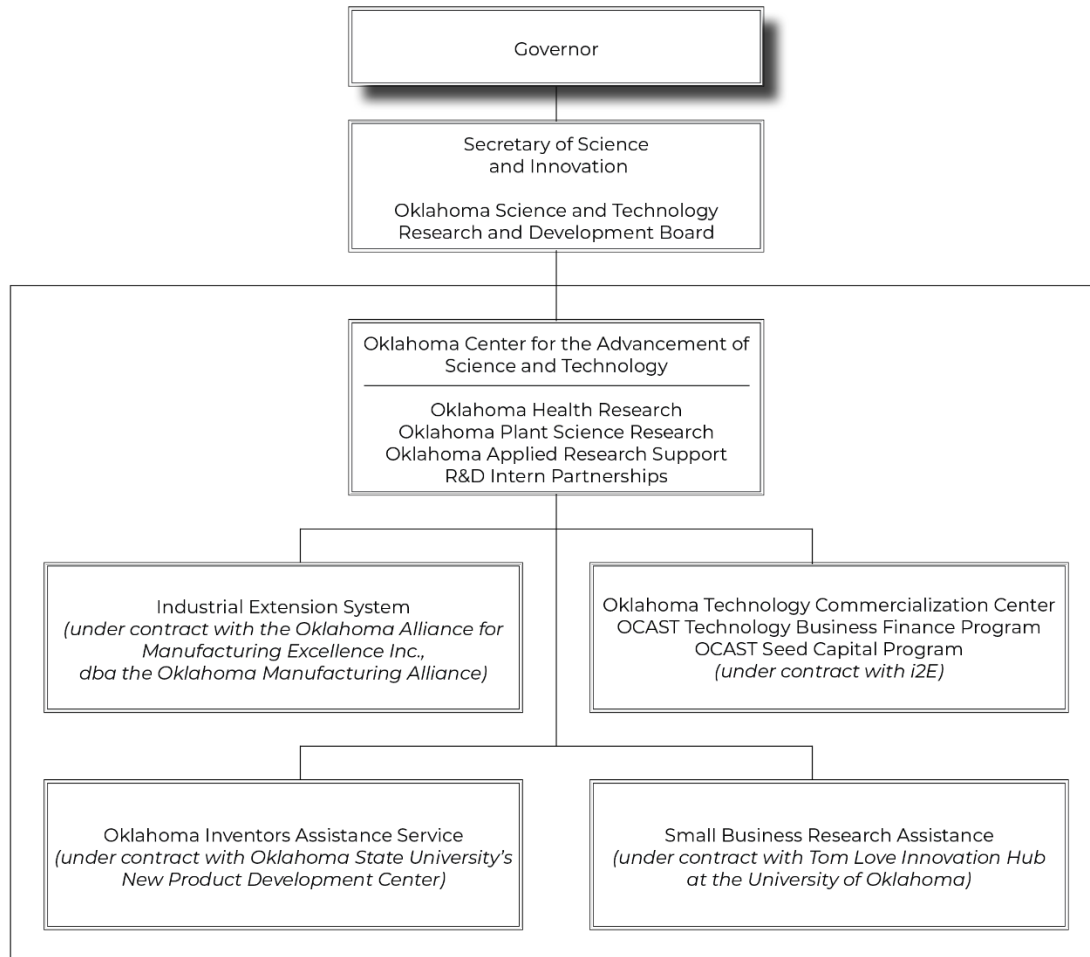
OCAST currently contracts with i2E, a private nonprofit organization, to operate the OTCC program that assists entrepreneurs, early-stage technology companies and firms seeking to commercialize new technologies. The program focuses on assessing needs, guiding clients through the commercialization process and linking them to a comprehensive network of technology sources (including Oklahoma universities) and commercialization services. The program also provides specialized business development services, access to early-stage risk financing and help in transferring technology to the marketplace.

Industrial Extension System – cumulative ROI 132:1

The Oklahoma Alliance for Manufacturing Excellence Inc., dba the Oklahoma Manufacturing Alliance, is a private, nonprofit organization that manages the IES program through contracts with OCAST and the Manufacturing Extension Program (MEP) of the U.S. Department of Commerce, National Institutes of Standards and Technology (NIST). Together these programs provide leadership and assistance to Oklahoma's small- and medium-sized manufacturers to help them become progressively more successful in their marketplace and more efficient and innovative in their operation. Through a network of manufacturing extension agents and applications engineers, the IES and NIST MEP provide real, hands-on resources for improving productivity, increasing sales and reducing costs. Using federal, state, local and private funds, the Oklahoma Manufacturing Alliance contracts with local organizations to field regional manufacturing extension agents who deliver to Oklahoma manufacturers services in technology application, workforce training, financing, market assessment and business principles. Applications engineers, sponsored also in part by Oklahoma State University, provide technical assistance to manufacturers in rural and urban areas where engineering resources may be limited. These locally accessible applications engineers assist with mechanical designs, plant layouts and a variety of other technical issues.

Governance and Operations

OCAST Structure



Oklahoma Innovation Model (OIM)

OCAST and its partner organizations in the Oklahoma Innovation Model administer programs and services with proven resources and capabilities to address the needs of industry in Oklahoma while also enabling and accelerating the translation of ideas from the laboratory to the marketplace. As the lead organization, OCAST provides high visibility and statewide recognition to the OIM and allows all research institutions, economic development partners and private industry to contribute to accelerating innovation and growing and diversifying Oklahoma's economy.



Management Philosophy

OCAST's management functions as a team, the success of which depends heavily upon the knowledge, skills, cooperation, contribution and commitment of each member. The teamwork philosophy extends to OCAST's interactions with other agencies, organizations and stakeholders.

OCAST works closely with the business and financial sector to stimulate innovation in existing and developing Oklahoma businesses. Therefore, in accordance with statute, all staff positions are unclassified, governed and compensated in a manner that compares to similar positions in the private sector and, as listed below, are exempt from the Oklahoma Personnel Act. Following is a list of approved positions:

Executive Director – Directs the administrative affairs and general management of OCAST. Develops and directs implementation of strategic plans and policy related to OCAST's mission. Presents and communicates with governor, legislative subcommittees and legislative leadership regarding OCAST's annual budget request and any pending statutory changes relevant to OCAST. Communicates regularly with local, state and national leaders and organizations about OCAST and the importance of scientific research and the growth of knowledge-based businesses to Oklahoma's economy. The executive director is accountable to the OSTRaD Board. Unclassified / Annual salary of \$130,000 effective December 1, 2013

Director, Administration and Finance – Responsible for the general administration of the administration and finance division including developing appropriation requests and operating budgets; developing, implementing and administering administrative procedures for accounting, purchasing and office administration; maintaining all official records of the board and agency. The director of administration and finance is accountable to the executive director in the handling of the agency's general administrative affairs and finances including the disposition of highly confidential proprietary material submitted by applicants. Unclassified / \$70,000 - \$90,000

Director, Programs – Responsible for the general administration of the programs division including the development, administration, evaluation and revision of research funding programs, technology development and transfer activities and management of confidential proprietary material submitted by applicants. Directs the staffing of program operations, advisory committees, development and revision of program specifications, rules, regulations and division budget and appropriation requests. The director of programs is accountable to the executive director. Unclassified / \$70,000 - \$90,000

Director, Government Relations and Strategic Initiatives – At the direction of the executive director, directs the design, development and implementation of agency legislative goals and strategies for securing desired legislative and executive action and coordinates legislative activities with all OCAST divisions. Proposes and drafts legislation relevant to new OCAST programs. Serves as key strategic advisor to executive director. Coordinates with OCAST staff to identify and document OCAST programs and services requiring assistance and support of the legislature and governor. Directs special projects assigned by the executive director. Directs research studies and reporting on various topics regarding technology-based economic development. Represents agency and organizes and facilitates OCAST communication with public officials including local, state and national organizations. Unclassified / \$70,000 - \$90,000

Associate Director – Responsible for designing, implementing, operating and evaluating division programs and activities, as assigned. Recommends new programs and activities related to the OCAST mission. A senior level technical strategist with a global perspective of all programs to build collaborative efforts across academia, industry and government. Supervises employees, as assigned. Responsible for the general administration of the division in the absence of the director. Associate directors are accountable to supervising directors and to the executive director for the correct disposition of highly confidential and proprietary material submitted by applicants for OCAST funding and assistance. Unclassified / \$55,000 - \$75,000

Finance and Business Manager – Responsible for performing accounting activities, purchasing, preparing analysis of expenditures and monthly reports of operations, financial statements, schedules and financial statistical data; ensuring purchasing complies with state law, OCAST procedures and best practices; recommending and implementing approved changes in purchasing practices. This position reports to the director, administration and finance. Unclassified / \$55,000 - \$75,000

Public Information and Rural Outreach Manager – Develops and disseminates agency newsletters, brochures, advertisements, commercials, graphic designs, copy layouts and other agency informational releases as required by law or as needed to meet statutory mission of informing the public. This position is responsible for maintaining a functional agency digital mailing list, library of agency related literature including media coverage, in-house publications, audio and video recordings, photographs and serves as an agency photojournalist. This position fields and directs responses to all media-related inquiries. This employee is in the key position to maintain a modern web site with fresh information to keep Oklahomans informed of science and technology that is underway in the state. Produces and maintains social media activity. This position reports to the director, government relations and strategic initiatives. May supervise employees, as assigned. Unclassified / \$55,000 - \$75,000

Programs Officer IV – Supervises the planning, coordination or direction of a component of the agency or program(s) established to accomplish a basic goal or mission of the agency. May supervise one or more employees and/or contractors. Represents OCAST at conferences, meetings and hearings related to OCAST's administrative operations. Unclassified / \$50,000 - \$70,000

Programs Officer III – Under minimal supervision, plans, coordinates or directs a component of the agency or program(s) established to accomplish a basic goal or mission of the agency. May supervise one or more employees and/or contractors. Represents OCAST at conferences, meetings and hearings related to OCAST's administrative operations. Unclassified / \$45,000 - \$65,000

Accountant I – Under direct supervision, processes invoices and payroll, tracks award payments in database, troubleshoots issues within the Oklahoma Grant Exchange (OGX grant software), enters time and leave in master spreadsheet and reconciles against PeopleSoft. Provides reports to programs division concerning contract status, expiration dates and issues with payments. De-obligates funds in awards tracking and maintains a spreadsheet with monthly contracts and purchase orders to de-obligate in PeopleSoft. Maintains accounting records and files documenting financial transactions. Prepares analyses of expenditures and monthly reports of operations. Works with private sector clients and vendors in resolving invoicing and payment issues. This position is also the coordinator for health insurance and retirement. Unclassified / \$35,000 - \$55,000

Assistant to the Executive Director – Under minimal supervision, assists the executive director in managing the administrative affairs of OCAST. Serves as secretary to the board and agency liaison with the governor's office and the secretary of state. Organizes activities and information associated with OCAST's five-year and annual planning processes, assists with agency projects and organizes the executive director's time, confidential files and

correspondence. The assistant to the executive director is accountable to the executive director in performing all duties. Unclassified / \$35,000 - \$55,000

Office Manager – Serves as information technology liaison upon request and in this role reports IT issues to the Office of Management and Enterprise Services and follows up with OMES on problem resolution. Fixed asset manager: tags new assets, tracks and reports on assets in inventory and sends assets to surplus property when no longer needed or useful. Prepares purchase orders from purchase requests and logs incoming purchase requisitions. Assists staff with phone issues and responsible for archiving. Processes end-of-month reports and checks for aging of warrants and contacts warrant holders when necessary. Fleet management coordinator: responsible for scheduling, maintaining and reporting on the agency's leased vehicles. Maintains vendor payee information, enters time and leave into PeopleSoft, responsible for maintenance issues of agency equipment such as copier, mailing machine, shredder, fax, and serves as backup to Executive Assistant to the executive director. Unclassified / \$35,000 - \$55,000

Professional Service Contracts

OCAST uses professional service contracts to supplement capabilities and maintain low administrative costs. Functions exist which, due to statutory or program requirements of highly specialized and diverse expertise or infrequency, are more effectively and efficiently performed by contract.

Some, though not all, specific professional services contracts can be anticipated at the outset of the fiscal year. As of the date of submission of this business plan, the staff intends to execute the following professional services contracts in FY 2022:

- Finley & Cook for annual audit services, in an amount not to exceed \$29,500
- Office of Attorney General for legal services, one-half time for one year, in an amount not to exceed \$62,625
- Contract with SHI and Agate Software Inc. for ongoing enhancements of the electronic application system, known as OGX, to support the Programs Division processes, award payment processes, data management and reporting needs in an amount not to exceed \$38,180
- Contract with Office of Management and Enterprise Services for information technology services including personal computer support, network support and support for electronic application system not to exceed \$37,556
- Continue contracting with the Oklahoma Alliance for Manufacturing Excellence Inc. to operate the Industrial Extension System program in an amount not to exceed a base amount of \$905,148 plus an additional \$278,852
- Continue contracting with Oklahoma State University to operate the Inventors Assistance Service in an amount not to exceed a base amount of \$287,152 plus an additional \$104,853 and \$28,000 to be carried forward from the FY 2021 contract
- Continue contracting with i2E Inc. to operate the Technology Business Finance Program in an amount not to exceed the appropriated carryover funds in the amount of \$170,000 and repayments, reclaims and carryover funds currently in the program as of June 30, 2021. Any reclaims and repayments received between July 1, 2021 and June 30, 2022 will be available in FY 2022

- Continue contracting with i2E Inc. to operate the Oklahoma Technology Commercialization Center in an amount not to exceed a base amount of \$1,393,186 plus approximately \$25,000 to be carried forward from the FY 2021 contract
- Continue contracting with University of Oklahoma for the Tom Love Innovation Hub in the amount of \$282,000 to manage the SBRA program
- Contract with i2E Inc. to manage the Oklahoma Seed Capital Fund. Effective July 1, 2018, the management fee for the 2018-3 Series is based on funds under management (adjusted cash balance plus total capital receivable plus the value of investments at cost) as of July 1 of each year. The management fee will be 2.5 percent of the first \$50 million under management, plus 2 percent of any amount over \$50 million under management. This is estimated to be approximately \$ 807,040.46 for FY2022. These management fees will come from the FY 2022 Seed Capital Fund appropriation of \$2,759,308.
 - Series 2007-1 of the fund is closed to new investments with its only activity consisting of monitoring existing portfolio companies and managing fund expenses. There is no management fee for Series 2007-1, however the total funds under management balance at July 1, 2021 is estimated to be \$2,059,182.07.
 - The management fee for Series 2008-2 and Series 2018-3 of the fund shall be set at 2.5% of the funds under management balance, up to \$50 million. At the point when the funds under management balance exceeds \$50 million, the management fee percentage shall be reduced to 2.0% on any balances over \$50 million. As used herein, "funds under management balance" is defined as the sum of the following: (i) the adjusted cash balance pursuant to the Series 2008-2 and Series 2018-3 balance sheets as of each July 1st of the calendar year ("Series 2008-2 and 2018-3 Balance Sheets"), plus (ii) the value of the Series 2008-2 and Series 2018-3 investment portfolio at cost pursuant to the Series 2008-2 and 2018-3 balance sheets; plus (iii) the amount of fund receivables pursuant to the Series 2008-2 and 2018-3 balance sheets. The final dollar amount of the management fee shall be mutually agreed to by the managing member and OCAST and documented in the annual OCAST fiscal year agreement.
 - Based upon the projected funds under management balance at July 1, 2021, of \$12,789,326.49, the management fee for Series 2008-2 in FY 2022 will be **\$319,733.16**.
 - Based upon the projected 2018-3 funds under management balance at July 1, 2021 of \$32,281,622.20, the management fee for Series 2018-3 in FY2022 will be **\$807,040.56**.
 - Total funds under management in the Oklahoma Seed Capital Fund as of May 31, 2021 is **\$47,130,130.76**, of this **\$45,070,948.69** (Series 2008-2 + Series 2018-3 funds under management) is used to determine the FY2022 management fee. The total management fee for the Oklahoma Seed Capital Fund in FY2022 will be **\$1,126,773.72**.

	OSCF#1	OSCF#2	OSCF#3	Totals
Net Cash (Est.@ 6/30)	69,059.82	886,136.49	21,772,328.20	22,727,524.51
Capital Receivable (FY22)	-	-	2,759,308.00	2,759,308.00
Portfolio at Cost (Est.@ 6/30)	1,990,122.25	11,903,190.00	7,749,986.00	21,643,298.25
Total Fund Values	2,059,182.07	12,789,326.49	32,281,622.20	47,130,130.76

Standing Advisory Committees

OCAST receives support and assistance from advisory committees for its programs – Oklahoma Health Research, Oklahoma Plant Science Research, Oklahoma Applied Research Support and Small Business Research Assistance. Research-related standing committees

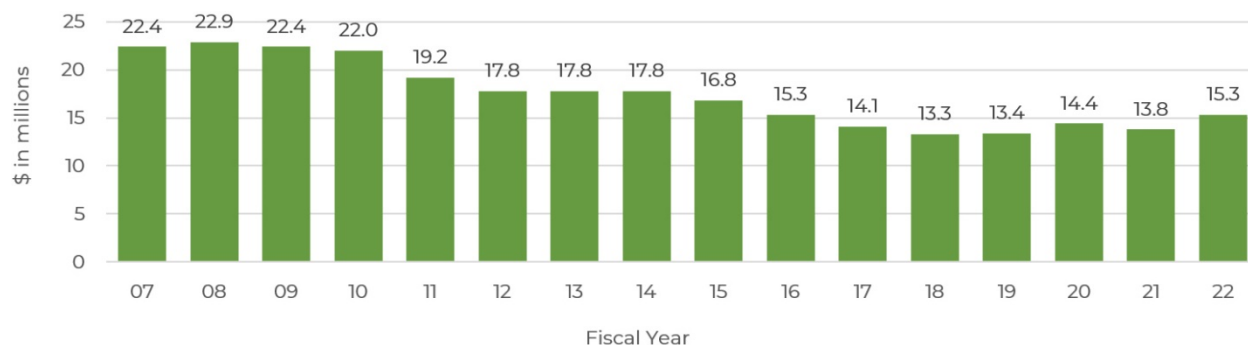
must consist of representatives of the “business, higher education and research communities” (74 O.S., Section 5060.9[a]) and at least one-third of the members of each committee must be researchers. Committees are approved annually by the board. The Seed Capital Investment advisory committee is created to assist OCAST in evaluating potential investments with the Seed Capital Revolving Fund (74 O.S., Section 5060.21).

Finance

OCAST's programs, activities and general operations are financed primarily through state general revenue appropriated funds. OCAST's enabling statute authorizes the use of three funds: the General Administration and Data Processing Fund, the Research Support Revolving Fund and the Seed Capital Revolving Fund. Each of the three funds is authorized to accept state general revenue appropriations, grants, gifts and donations. The Seed Capital Revolving Fund is authorized to accept loan repayments and investment proceeds. In addition, the Office of Management and Enterprise Services has approved the creation of the Technology Business Finance Program Fund to separately account for the funds available for the Technology Business Finance Program. Each fund is authorized to finance specific activities of the agency.

House Bill 2900 appropriated \$15,296,642 to OCAST. A portion of OCAST's annual state appropriation, \$7,618,617, is transferred to the Research Support Revolving Fund for operation of OCAST award programs, and \$2,759,308 is transferred to the Seed Capital Revolving Fund for FY 2022. The revolving funds have no fiscal year limitations. All of the agency's expenditures must be confirmed by Oklahoma's Office of Management and Enterprise Services to be consistent with an annual budget work program approved by that office.

Appropriation History – FY 2007 to FY 2022



Planning

Regional Benchmarks and Comparisons

Programs under the guidance of the Oklahoma Center for the Advancement of Science and Technology are designed to increase investment in the research and development of new technologies that will ultimately bring value to the state of Oklahoma and help grow and diversify the state's economy.

Since 2015, Oklahoma has consistently ranked in the top 20 on total investment in research and development (R&D) activities by state. In that span, the state has invested an average of

\$30.6 million per year in R&D (amount reflects OCAST and other state agencies such as Department of Transportation).

However, as a share of state GDP R&D performance, Oklahoma lags most states. At 0.81% of state GDP, Oklahoma ranked 41st nationally. Among its surrounding states, Oklahoma outperformed Arkansas and Louisiana, which ranked 45th and 50th respectively. This is an important indicator because it represents the extent to which R&D plays a role in a state's economy.

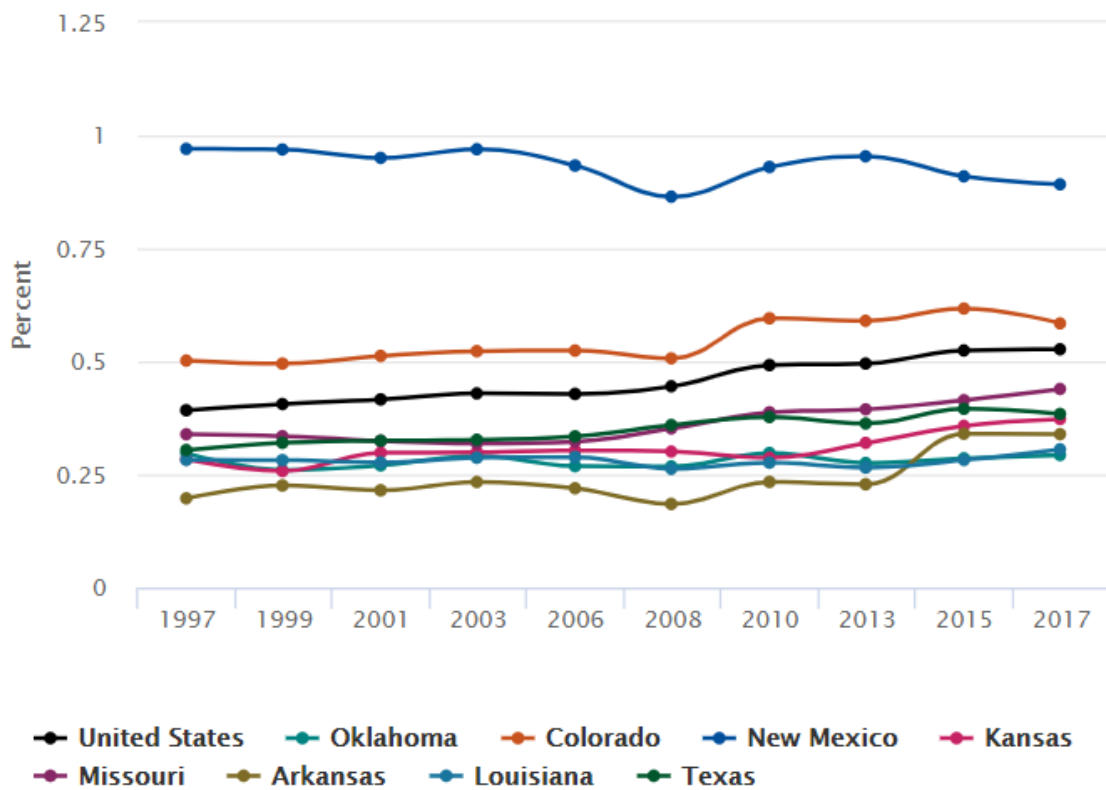
Utility patents (patents that cover the creation of a new or improved – and useful – product, process or machine which give its inventor exclusive commercial rights to it for 20 years) granted in the state of Oklahoma between 1963 and 2015 peaked in 1966 at 937 and have trended downward over time. A total of 608 utility patents were issued in the state in 2019. Relative to its surrounding states and the U.S., Oklahoma's patent activity is lagging; all other states analyzed experienced an increase in patents over the period and the nation as a whole saw an increase of 2.1% annually.

OCAST National and International Recognition

1. **U.S. Department of Commerce Economic Development Administration Technology Transfer and Commercialization:** Their Role in Economic Development recognizes OCAST as a best-practice model for technology transfer and commercialization.
2. **NGA Center for Best Practices – A Governor's Guide to Strengthening State Entrepreneurship Policy:** The National Governors Association identifies the OCAST-sponsored Oklahoma Technology Commercialization Center as a model for helping companies, inventors, researchers and entrepreneurs to turn technological innovations into business opportunities.
3. **NGA Center for Best Practices Providing Ideas That Work:** The National Governors Association recognizes OCAST as a best-practice model for developing its Technology Business Finance Program and the Intern Partnerships program.
4. **SRI International Benchmarking OCAST and Identifying Strategic Implications for the Future:** The Oklahoma legislature commissioned a joint interim study on OCAST performance in February 2000. A key finding from the SRI International report was: "OCAST's evaluation methods and indicators are state-of-the-art and are on par with the best evaluation methodologies used by other states."
5. **Preliminary Recommendations Entrepreneurial Assistance Workshop:** The OCAST-funded Oklahoma Technology Commercialization Center identified as a best-practice model and recognized by Arizona in their development of a roadmap for bioscience, research, commercialization and economic impact.
6. **Australia's Northern Territory Government** – in developing its economic strategy – identified OCAST as a model for advancing its economy through science and technology.
7. **BusinessWeek Online and special publication of Forbes:** a) Oklahoma identified nationally as "hotbed" in two sectors, biotechnology and nanotechnology; b) OCAST role is noted.
8. ***The World is Flat, A Brief History of the Twenty-First Century* by Thomas L. Friedman:** National best seller notes OCAST as a model for nurturing innovation in the global economy.

9. *Office of Technology Policy Pacesetter*: Oklahoma recognized for having a best-practice model for supporting science and technology.
10. *Georgia Tech School of Public Policy*: OCAST identified as a model for developing performance measures for its science and technology programs.
11. *Biotechnology Entrepreneurship Leading, Managing and Commercializing Innovative Technologies* edited by Craig Shimasaki, Ph.D.: OCAST provides the example for state government-supported grants and funding programs (pp 252-253)

S-33: Employed Science, Engineering, and Health Doctorate Holders as a Percentage of the Workforce

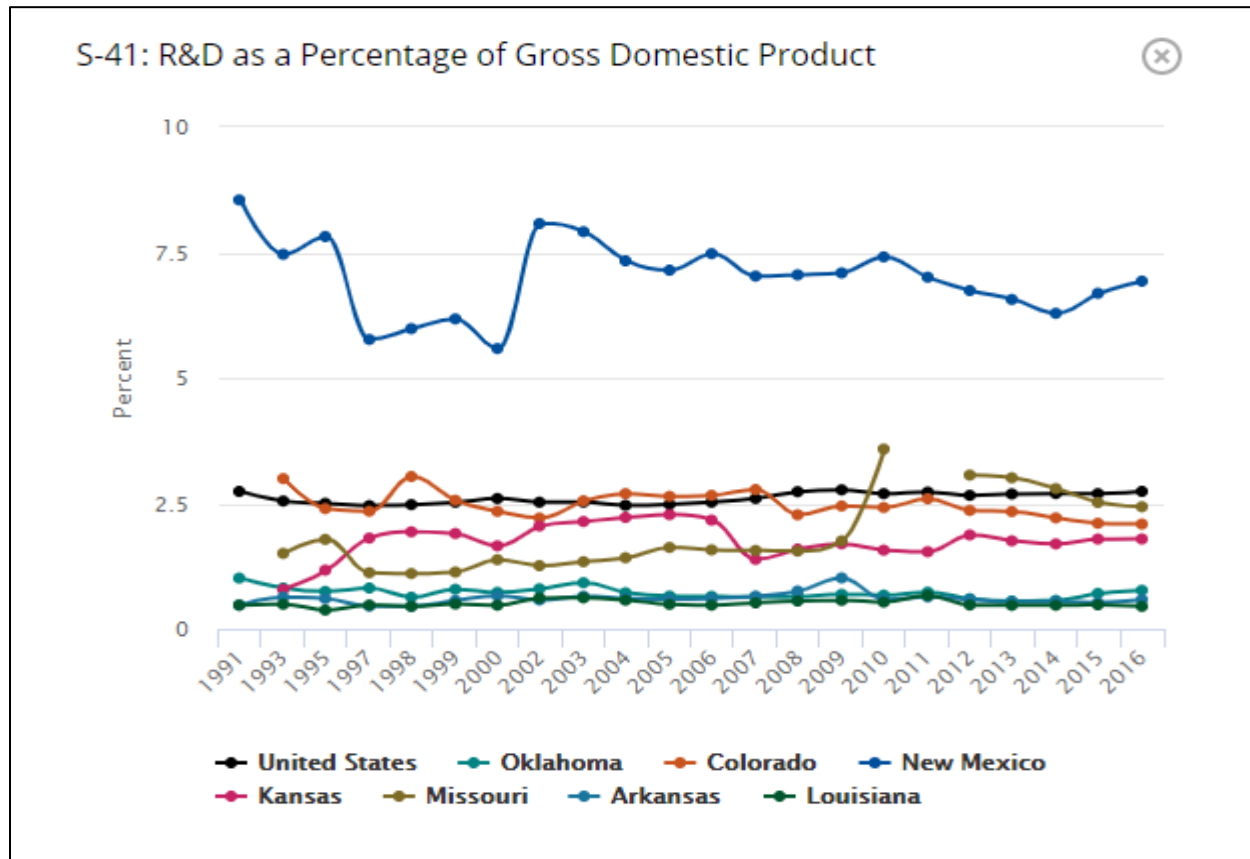


2017:

- United States: 0.53%
- Oklahoma: 0.29%
- Colorado: 0.58%
- New Mexico: 0.89%
- Kansas: 0.37%
- Missouri: 0.44%
- Arkansas: 0.34%
- Louisiana: 0.31%

Notes: Employed science, engineering and health doctorate holders are classified by employment location. Workforce represents the employed component of the civilian labor force and is reported as annual data not seasonally adjusted. The national workforce total reported for the United States includes Puerto Rico.

Source: National Center for Science and Engineering Statistics, National Science Foundation, Survey of Doctorate Recipients (various years), data as of February 2019; U.S. Department of Labor, Bureau of Labor Statistics, Local Area Unemployment Statistics (various years), data as of March 2019.



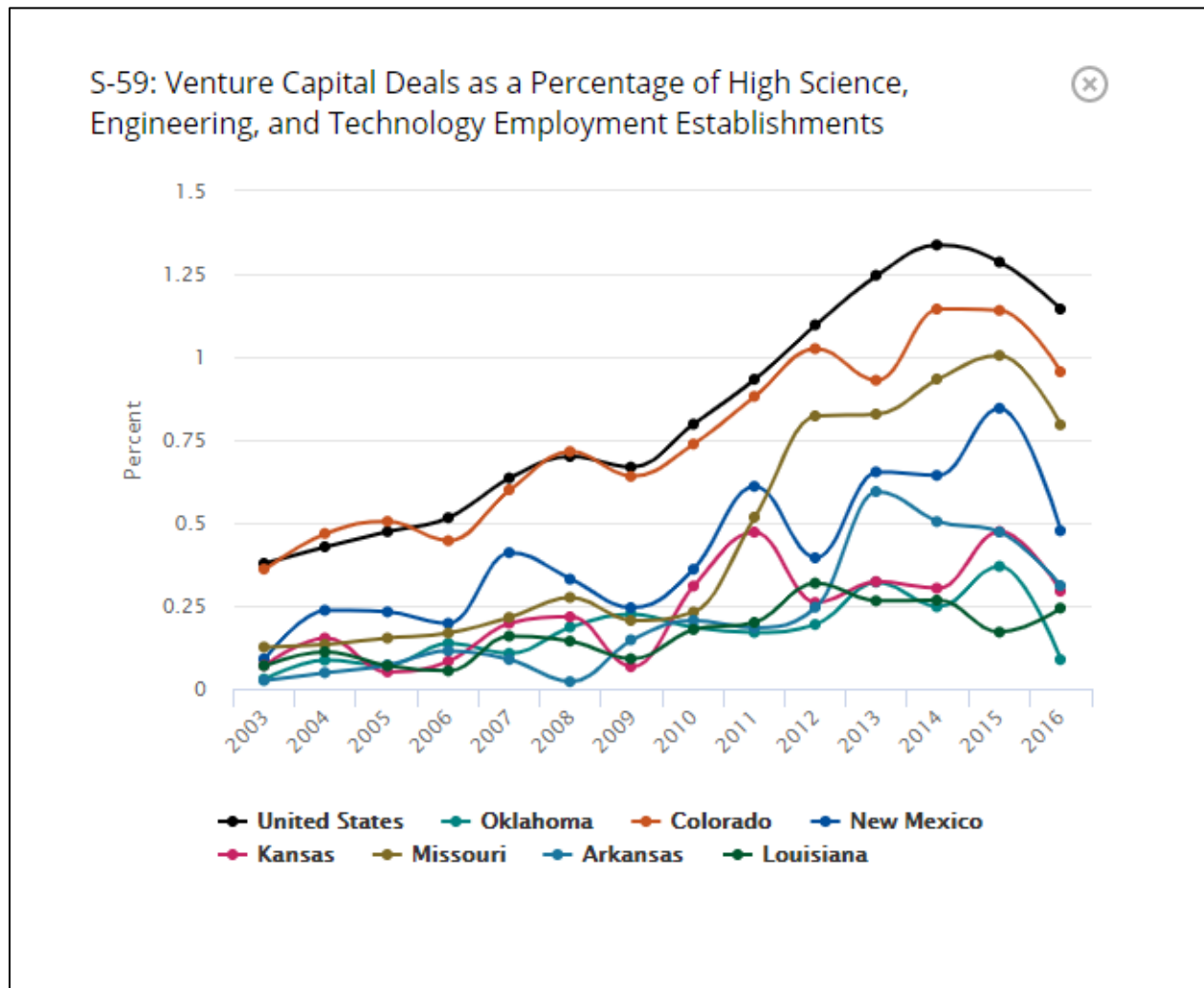
2016:

- United States: 2.74%
- Oklahoma: 0.77%
- Colorado: 2.09%
- New Mexico: 6.93%
- Kansas: 1.79%
- Missouri: 2.43%
- Arkansas: 0.58%
- Louisiana: 0.45%

Notes: R&D includes research and development performed by federal agencies, businesses, universities, other nonprofit organizations, federally funded research and development centers and state agencies. U.S. total R&D reported here includes U.S. territories, as well as R&D for which the location could not be determined. The national

GDP total for the United States includes Puerto Rico for all years in which data are available.

Source: National Center for Science and Engineering Statistics, National Science Foundation, National Patterns of R&D Resources (various years), data as of March 2019; U.S. Bureau of Economic Analysis, Gross Domestic Product data (various years), data as of May 2019; Government of Puerto Rico, Office of the Governor, Gross Domestic Product data (various years), data as of May 2019.



2016:

- United States: 1.14%
- Oklahoma: 0.09%
- Colorado: 0.96%
- New Mexico: 0.48%
- Kansas: 0.29%
- Missouri: 0.80%
- Arkansas: 0.31%
- Louisiana: 0.24%

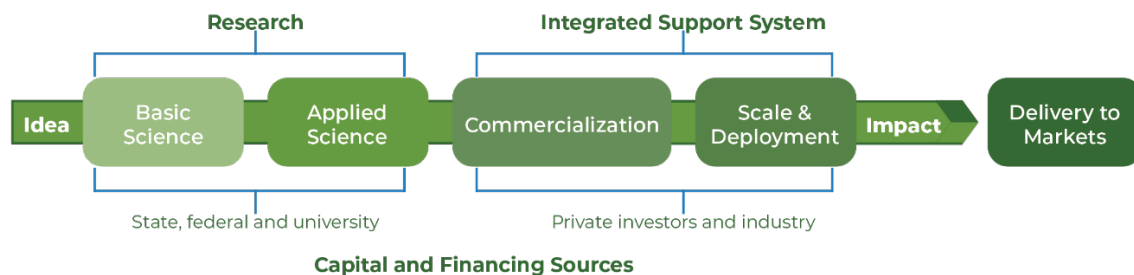
Notes: The national total for venture capital for the United States includes U.S. territories. The national total for establishments in high-technology industries for the United States does not include U.S. territories.

Source: PitchBook, Venture capital and private equity database, data as of October 2018; U.S. Census Bureau, special tabulations of the Business Information Tracking Series (various years), data as of April 2019.

Program and Service Planning

The programs and services under the guidance of OCAST are designed to increase investment in the research, development and deployment of new technologies which will ultimately bring value to Oklahoma and help grow and diversify the state's economy.

Concept to Commercialization - the Oklahoma Innovation Pipeline



OCAST was established in 1987 as Oklahoma's technology-based economic development agency and is the only agency focused on the development, transfer and commercialization of innovation. OCAST is tasked with creating, managing and growing the innovation pipeline for Oklahoma. Tasked with the statutory requirement to fund eight programs and client services on a modest annual budget the lack of adequate and reliable funding have limited the agency's full impact to address the high demand for its programs. OCAST is positioned to lead the charge in creating large-scale high paying, high tech jobs for Oklahomans and in developing and commercializing research on a consistent and scalable basis. OCAST will continue its goal to be more strategic, focused and dynamic. To this end, OCAST is implementing actions that include but are not limited to:

- Updating the OARS program to better address industry innovation needs in the key technology areas of aerospace and autonomous systems, biotechnology/life sciences, and energy diversification.
- Evaluating each program and service to determine its effectiveness in supporting the movement of concept to commercialization as well as high-tech industry growth.
- Insuring programs and services are supportive of the recommendations and goals of the state's 2021-2026 Science and Innovation Strategic Plan.
- Focusing on building new industry partnerships while continuing to reinforce existing ones.
- Crafting a business canvas for OCAST so it may more easily interact with industry and present a better business case for potential in-kind and financial support from the private sector.

- Readying programs and services to better assist transfer of results from centers of excellence, innovation superclusters and federally funded research lab(s), once established, to the private sector.
- Enabling small high-tech companies and research institutions to better collaborate to speed to the marketplace products and services that create jobs and economic impact.

Five-Year Appropriation History

Activities	FY 2018	FY 2019	FY 2020	FY 2021	FY 2022
General Administration	\$718,500	\$670,151	\$689,939	\$649,229	\$651,628
Program Services + IT Support	1,214,564	1,354,799	1,019,189	900,487	996,410
Technology Information Services	242,574	278,329	287,645	340,821	771,086
Health Research/Fellowship	2,502,809	2,352,518	2,244,700	2,450,669	2,499,566
Applied Research	2,502,810	2,352,518	2,244,705	2,450,669	2,702,200
Intern Partnerships	403,985	430,000	568,081	400,448	616,346
Plant Science Research	0	0	648,526	733,494	1,048,817
Industrial Extension Services - OMA	942,862	942,862	942,862	905,148	1,184,000
Technology Commercialization – i2E	1,493,186	1,493,186	1,493,186	1,393,186	1,393,186
Small Business Research Assistance – OU iHub	80,000	250,000	—	250,000	282,000
Inventors Assistance – OSU NPDC	299,117	299,117	299,117	287,152	391,995
Technology Business Finance Program – i2E	0	0	1,000,000	0	0
Seed Capital Fund – i2E	2,933,448	2,933,448	2,933,448	3,035,239	2,759,308
TOTAL FUNDING	<u>\$13,333,855</u>	<u>\$13,356,927</u>	<u>\$14,371,398</u>	<u>\$13,796,542</u>	<u>\$15,296,542</u>
General Administration %	5.39%	5.02%	4.80%	4.71%	4.26%

Appropriation and Distribution

Sources and Uses of Funds

FY 2022

SOURCES:

Revenue for OCAST Operations:

A) Projected FY 2021 Cash Balance	2,233,124	
B) NPDC Contract Balance to carryover for FY 2022 contract	28,000	
C) Projected OTCC Contract Balance to carryover to FY 2022 contract	25,000	
D) FY 2022 State Appropriation Revenues	15,296,542	
E) CARES Economic Development Program (OPCIE)	150,000	
TOTAL SOURCES (A-E)		\$17,732,666

USES:

Projected Expenditures:

A) Administration	651,628	
B) Technology Information Services	771,086	
C) Program Services + IT	996,410	
D) Programs:		
Health Research	2,785,881	
Health Fellowship	300,000	
Applied Research	3,288,755	
Intern Partnerships	616,346	
Plant Science Research	1,048,817	
Inventors Assistance – OSU NPDC	391,995	
Small Business Research Assistance – OU iHub	282,000	
Industrial Extension Service – OMA	1,184,000	
Technology Commercialization – i2E	1,393,186	
Technology Business Finance Program Revolving Fund – i2E	628,498	
E) Seed Capital Revolving Fund – i2E	2,759,308	
F) CARES Economic Development Program (OPCIE)	150,000	
TOTAL USES (A-F)		\$17,247,910

Estimated Cash Balance 6/30/2022

\$484,756

Out-year Program Obligations

For FY 2023 estimate

3,409,797

For FY 2024 estimate

1,208,930

Total Out-Year Program Obligations

\$4,618,727

Covered by Cash Currently Available (Less \$500,000 Reserve)

(\$15,244)

Future Appropriated Funds Needed to Cover Out-Year Obligations*

\$4,633,971

This methodology is standard practice in the OCAST award structure of first-year contracts plus two out-year contracts to complete research milestones and to comply with the State Purchasing requirements.

The appropriation for FY 2022 includes \$1.5 Million in the Research and Support Revolving Fund to be used for Applied Research and Development for Industry Innovation. The \$1.5 Million is one-time funds and not part of the base appropriation.

FY 2022 Appropriation Allocation – \$15,296,542

