

## Application for Federal Assistance

**ID:** 2975966  
**Applicant Name:** The University of Tennessee Health Science Center  
**Project Title:** UTHSC Scaling the University of Tennessee Proof-of-Concept Center  
**Project Period:** 10/01/2021 - 09/30/2024  
**Federal Funding Requested:** \$1,499,519.00  
**Non-Federal Funding Requested:** \$1,500,000.00  
**Fiscal Year of Funding Requested:** 2021  
**Federal Application Receipt Date:** 04/29/2021  
**Submitted for:** FY 2021 Build to Scale Program  
**Notice of Funding Opportunity Number:** EDA-HDQ-OIE-2021-2006827  
**CFDA Number:** 11.024

## Application Documents for Review

File Name	Description	Page
Form SF424A-V1.0.pdf	Budget Information - Non-Construction Programs from Grants.gov	2
Form CD511-V1.1.pdf	Certification Regarding Lobbying from Grants.gov	5
AttachmentForm_1_2-ATT2-UTRF_committment_letter1037977976.pdf	Attachment from Grants.gov	6
ProjectNarrativeAttachments_1_2-Attachments-UT_BUILD_TO_SCALE_FINAL_4_29_20211037977973.pdf	Attachment from Grants.gov	7
AttachmentForm_1_2-ATT1-EDGE_Letter_04_27_211037977967.pdf	Attachment from Grants.gov	17
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# BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006  
Expiration Date: 02/28/2022

## SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. Build to Scale	11.024	\$	\$	\$ 411,266.00	\$ 497,130.00	\$ 908,396.00
2. Build to Scale	11.024			578,777.00	499,980.00	1,078,757.00
3. Build to Scale	11.024			509,477.00	502,889.00	1,012,366.00
4.						
5. Totals		\$	\$	\$ 1,499,520.00	\$ 1,499,999.00	\$ 2,999,519.00

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### SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY				Total (5)
	(1)	(2)	(3)	(4)	
	Build to Scale	Build to Scale	Build to Scale		
<b>a. Personnel</b>	\$ 87,500.00	\$ 167,500.00	\$ 167,500.00	\$	\$ 422,500.00
<b>b. Fringe Benefits</b>	29,575.00	56,615.00	56,615.00		142,805.00
<b>c. Travel</b>	3,000.00	3,000.00	3,000.00		9,000.00
<b>d. Equipment</b>					
<b>e. Supplies</b>	5,500.00	3,000.00	3,000.00		11,500.00
<b>f. Contractual</b>	93,500.00	93,500.00	93,500.00		280,500.00
<b>g. Construction</b>					
<b>h. Other</b>	72,000.00	85,000.00	40,000.00		197,000.00
<b>i. Total Direct Charges (sum of 6a-6h)</b>	291,075.00	408,615.00	363,615.00		\$ 1,063,305.00
<b>j. Indirect Charges</b>	120,191.00	170,162.00	145,862.00		\$ 436,215.00
<b>k. TOTALS (sum of 6i and 6j)</b>	\$ 411,266.00	\$ 578,777.00	\$ 509,477.00	\$	\$ 1,499,520.00
<b>7. Program Income</b>	\$	\$	\$	\$	\$

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SECTION C - NON-FEDERAL RESOURCES					
(a) Grant Program		(b) Applicant	(c) State	(d) Other Sources	(e) TOTALS
8.	Build to Scale	\$ 497,130.00	\$	\$	\$ 497,130.00
9.	Build to Scale	499,980.00			499,980.00
10.	Build to Scale	502,889.00			502,889.00
11.					
12. TOTAL (sum of lines 8-11)		\$ 1,499,999.00	\$	\$	\$ 1,499,999.00

SECTION D - FORECASTED CASH NEEDS						
		Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	\$	411,266.00	\$ 102,817.00	\$ 102,817.00	\$ 102,816.00	\$ 102,816.00
14. Non-Federal	\$	497,130.00	124,282.00	124,282.00	124,283.00	124,283.00
15. TOTAL (sum of lines 13 and 14)		\$ 908,396.00	\$ 227,099.00	\$ 227,099.00	\$ 227,099.00	\$ 227,099.00

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT					
(a) Grant Program		FUTURE FUNDING PERIODS (YEARS)			
		(b) First	(c) Second	(d) Third	(e) Fourth
16.	Build to Scale	\$ 578,777.00	\$ 509,477.00	\$	\$
17.					
18.					
19.					
20. TOTAL (sum of lines 16 - 19)		\$ 578,777.00	\$ 509,477.00	\$	\$

SECTION F - OTHER BUDGET INFORMATION	
21. Direct Charges:	22. Indirect Charges:
23. Remarks:	

## CERTIFICATION REGARDING LOBBYING

Applicants should also review the instructions for certification included in the regulations before completing this form. Signature on this form provides for compliance with certification requirements under 15 CFR Part 28, 'New Restrictions on Lobbying.' The certifications shall be treated as a material representation of fact upon which reliance will be placed when the Department of Commerce determines to award the covered transaction, grant, or cooperative agreement.

## LOBBYING

As required by Section 1352, Title 31 of the U.S. Code, and implemented at 15 CFR Part 28, for persons entering into a grant, cooperative agreement or contract over \$100,000 or a loan or loan guarantee over \$150,000 as defined at 15 CFR Part 28, Sections 28.105 and 28.110, the applicant certifies that to the best of his or her knowledge and belief, that:

- (1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- (2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, 'Disclosure Form to Report Lobbying,' in accordance with its instructions.
- (3) The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure occurring on or before October 23, 1996, and of not less than \$11,000 and not more than \$110,000 for each such failure occurring after October 23, 1996.

As the duly authorized representative of the applicant, I hereby certify that the applicant will comply with the above applicable certification.

## \* NAME OF APPLICANT

The University of Tennessee Health Science Center

## \* AWARD NUMBER

## \* PROJECT NAME

Scaling the UTHSC Proof of Concept Center

Prefix:

\* First Name:

Middle Name:

\* Last Name:

Suffix:

\* Title: Director

\* SIGNATURE:

Brenda K. Murrell

\* DATE:

04/29/2021

Wednesday, April 28, 2021

H. Philip Paradise, Jr.  
Regional Director, EDA Atlanta Regional Office  
401 West Peachtree Street, NW, Suite 1820  
Atlanta, GA 30308-3510

RE: Support for the University of Tennessee Health Science Center  
UTHSC SCALING THE UNIVERSITY OF TENNESSEE PROOF-OF-CONCEPT CENTER  
FFO: EDA-HDQ-OIE-2021-B2S

Dear Director Paradise:

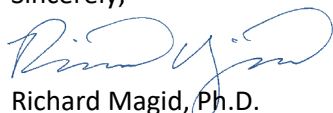
On behalf of the University of Tennessee Research Foundation, I am writing to express my enthusiastic support for the application from the University of Tennessee Health Science Center (UTHSC) for the EDA's Build To Scale program. With this EDA support, UTHSC will implement an on-campus BioBusiness Incubator to support technology-based economic development in the Memphis region. UTRF gladly accepts our roles in managing the Entrepreneur-in Residence (EIR) and overseeing the lease arrangements with incubator occupants. UTRF is committed to supporting research commercialization and economic development efforts across the state of Tennessee, we will use our management skills and talent resources to help meet the goals of the UBBI.

UTRF will commit my oversight and effort (10% in-kind contribution) towards the Entrepreneur-in-Residence and incubator leasing program. UTRF's contributions, as detailed in full in the proposal, are committed to the UBBI project, available as needed, and not conditioned, restricted or encumbered in any way, nor are they from federal resources.

The University of Tennessee Research Foundation is a non-profit 501(c)(3) organization that exists to promote the commercialization of UT intellectual property, encourage an entrepreneurial culture, contribute to state and regional economic development, and promote research and education to benefit the people of Tennessee and beyond.

We look forward to working with the Department of Commerce on this important initiative.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Richard Magid', written over a light blue horizontal line.

Richard Magid, Ph.D.  
Vice President, UT Research Foundation

## **Section 1: Project Description and Overview**

Academic medical centers are well designed to support groundbreaking research. Over the last five years, UTHSC established a new Proof-Of-Concept program that both de-risks technologies and validates the market for new product ideas. This successful program has greatly increased the flow of innovations from the medical research enterprise into new companies.

This B2S proposal supports innovation and commercialization in Memphis, Tennessee by scaling up the capacity of the Proof-of-Concept center and adding a life science incubator. Memphis contains a solid foundation of assets such as startup accelerators and early-stage venture capital funds, and has some technology transfer success to show for it. However, the local life science incubator is closing, creating an opportunity to jumpstart a community-based drug discovery, infectious disease and regenerative medicine program. This proposal establishes the University of Tennessee BioBusiness Incubator (UBBI) in partnership with the UT Research Foundation, rebuilds a destination for life science companies in Memphis and will readily translate into meaningful economic outcomes.

Memphis is an area facing significant economic and health challenges. Increasing new life science companies will doubly benefit Memphis and the mid-South region. First, high growth innovative startups will bring capital into the region and directly create jobs. Second, UTHSC is highly focused on research to understand the medical challenges facing the region's majority African-American population (such as diabetes, stroke, obesity, and poor pediatric health) so the technologies coming through this POC center will disproportionately provide solutions that benefit this group, generating positive economic feedback loops.

## **Section 2 – Ecosystem Resources and Assets**

Memphis is a mid-sized city (MSA population 1.3 million) located in Shelby County (FIPS code - 47157) in southwest Tennessee, on the border of Tennessee, Mississippi, and Arkansas. The majority African-American population (53% of Shelby County) faces significant economic challenges, with a median household income 14% below the national average (2015: \$46,200 vs. \$53,500-USA), and a poverty rate 28% greater than the rest of Tennessee and more than 50% above the national average (2015: 23% poverty vs. 18%-TN and 15%-USA).<sup>1</sup>

The Memphis population is also suffering broad health burdens, including diabetes, stroke, obesity, and poor pediatric health, as summarized in the table below.<sup>2</sup>

	SHELBY COUNTY, TN	UNITED STATES
<b>DIABETES</b>	9.7% of adults	8.1%
<b>STROKE</b>	60.1 annual deaths / 100,000 population	46.0 / 100,000
<b>OBESITY</b>	32.0% of adults	30.4%
<b>PRETERM BIRTHS</b>	15.8% of infants	12.1%

The interplay between medical health and economic health is complex, but it is certain that part of the region's solution for economic growth must be innovation in treating the population's chronic health woes. As the largest medical center in the region, the University of Tennessee Health Science Center is at the center of these efforts.

The targeted **region** for economic impact will be the Memphis Metropolitan Statistical Area, an eight-county region which is located in the southwestern corner of Tennessee and includes 8 counties in three states: Fayette, Shelby, and Tipton counties in TN; Desoto, Marshall, Tate, and Tunica Counties in MS; and Crittenden County in AR. The workforce for the MSA totals 632,600 with high concentrations of Computer and Mathematical Occupations; Life, Physical and Science Occupations; and Healthcare Support Occupations.<sup>3</sup> The MSA is a center for Bioscience

<sup>1</sup> Demographic and economic data from [www.census.gov](http://www.census.gov)

<sup>2</sup> Health data from the Community Health Status Indicators project of the US Centers for Disease Control

<sup>3</sup> Bureau of Labor Statistics, March 2019 Metropolitan and Nonmetropolitan Area Occupational Employment and Wage Estimates, Memphis TN-MS-AR, online at [https://www.bls.gov/oes/current/oes\\_32820.htm](https://www.bls.gov/oes/current/oes_32820.htm)

research through nationally known entities such as St. Jude Children’s Research Hospital (pediatric oncology), Methodist-Le Bonheur Children’s Hospital, Campbell Clinic (orthopedic treatment and research), the West Clinic (cancer treatment and research) and the University of Tennessee Center for Health Sciences. It is also home to the world’s second largest concentration of medical device manufacturers including Medtronic, Smith and Nephew, Wright Medical, and Microport Orthopedics, a global orthopedics company that selected Memphis as its global divisional headquarters when the company expanded to the United States.

Both UTHSC and UTRF are located in the Medical District of Memphis, a centrally located part of the city that also contains Regional One Hospital, Le Bonheur Children’s Hospital, Methodist University Hospital, the Southern College of Optometry, and the Memphis VA Medical Center. More than 16,000 health professionals work in the Medical District, along with 8,000 students training for health and research careers. Collectively, more than \$3 billion in health care is provided annually in the Medical District, both to the urban Memphis population and to rural patients that frequently travel 100-200 miles to Memphis for care. The volume and complexity of medical care provided to minorities and underserved groups in the Medical District is representative of the health challenges facing the region, but also demonstrates how medical and research professionals in Memphis are directly interacting with the populations that desperately need new solutions and will benefit the most from the translation of ideas into new products.

This application is consistent with the CEDS created in 2017 by the Memphis Area Association of Governments<sup>4</sup> under an EDA grant. The report provides background economic base assessment, targeted industry analysis, and strategic recommendations for regional economic development. In Part 2 of the Memphis CEDS, one of the Key Themes identified for regional economic development was the Research Base Not Translating into Business Development (Part 2, page 6). The report specifically notes that “basic research strength is not leading to commercialization at a rate that creates significant jobs in the regional economy”. This proposal targets this regional weakness as an immediate economic development opportunity.

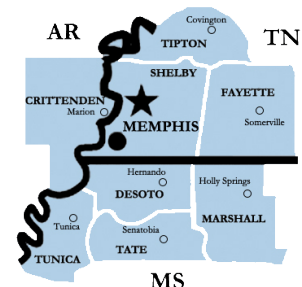
## **Section 2 – Project Participants and Regional Assets**

### **Section 2.1 – Project Participants**

University of Tennessee Health Science Center: The University of Tennessee Health Science Center comprises four campuses in Memphis, Knoxville, Chattanooga and Nashville spanning the State of Tennessee. The Vice Chancellor for Research, Dr. Steven Goodman, oversees all research activities across the UTHSC System. The largest campus is found in Memphis and is comprised of six Colleges: Medicine, Pharmacy, Dentistry, Nursing, Health Professions and Graduate Medical education. The Vice Chancellor for Research has led a process that has resulted in a comprehensive Operational Strategic Plan for Research (OSPR), which is a five-year blueprint of how we intend to become a national and global leader in research.

UTHSC’s has identified Research Areas of Excellence, with three Focus Areas for each, and Cross-Cutting Platforms to provide the technologies for success. The Areas of Excellence, representing current strengths and developing strengths are Cancer; Disorders of the Nervous System; Health Outcomes with a focus on Health Disparities; Obesity, Diabetes, and Vascular Disease; Precision Medicine; and Respiratory Disorders. A major principle for the entire strategic plan is that we will become a leader in research by developing meaningful partnerships and collaborations both within UTHSC and outside with industry and national and global academic institutions. Currently, UTHSC receives approximately \$120 million annually in extramural research grant awards. The goal is to increase this two-fold over the next ten years.

University of Tennessee Research Foundation: The University of Tennessee Research Foundation (UTRF) is the technology transfer arm of the University of Tennessee, with a mission to commercialize the inventions and discoveries being made by UT faculty, staff, and students. Through offices in Memphis and



<sup>4</sup> <https://maagov.org/economic-development/>



Knoxville, UTRF serves all the campuses and institutes of the UT system. The Memphis office of UTRF is dedicated to providing technology transfer service to UTHSC, and is staffed with professionals trained in the life sciences. Organized as a 501(c)(3) nonprofit corporation, UTRF has demonstrated its capacity and flexibility to engage in economic development projects that would have been difficult for the University to handle internally, such as the Cherokee Farms Innovation Campus in Knoxville and the West Tennessee Solar Farm east of Memphis. UTRF also stood up the Clinical Trials Network of Tennessee, a statewide partnership that is increasing the volume of clinical research at UTHSC and concomitantly bringing access to cutting edge treatments to patients.

In the past 5 years UTRF has launched 20 startups, completed more than 150 commercial licenses, and received more than 130 US patents. As typical for university spinouts, nearly all of these new companies are based locally. This group of startups has collectively raised more than \$25,000,000 in angel and venture capital, the majority of which originated from out-of-state investors, bringing considerable investment into the region and showing that the best Tennessee-based startups can compete nationally for investment capital. The startups also demonstrate how campus research is focused on regional health challenges, with these companies founded based on inventions in the fields of patient monitoring, diabetic eye care, and treatments for life threatening diseases.

## **Section 2.2 – Regional Assets**

Without a downstream entrepreneurial ecosystem to support technologies that have been validated and de-risked, the impact on the Memphis region would be minimal. Except for the life science incubator, Memphis contains a thriving ecosystem that is ready, willing, and able to take life science innovations to market.

*Accelerators:* Memphis has two strong organizations that run four startup accelerators based on the high-intensity cohort model. EPIcenter, the local Hub organization for entrepreneurship, runs the ZeroTo510 accelerator focused specifically on medical device startups bringing products to market under the 510(k) FDA approval pathway, and has been repeatedly named as one of the top accelerators in the nation. Start Co., a nationally recognized venture development organization that turns founders into skilled entrepreneurs, runs an additional three accelerators focused on business-to-business startups (Seed Hatchery), socially impactful nonprofit startups (Sky High), and women-led tech startups (Upstart).

*Investment Capital:* Bringing a medical device or therapeutic to market requires considerable capital. Although UTHSC-based startups have had success bringing in investment capital from outside the region, Memphis' two early-stage venture groups have been critical seed-stage investors in many UTHSC spinouts. MB Ventures and Innova Memphis each have multiple funds under management totaling more than \$100,000,000 in raised capital, and significant track records built over more than a decade of investing in Tennessee life science startups.

*Mentoring:* In addition to the mentor networks built by both ZeroTo510 and Start Co. to support their accelerator programs, a statewide life science mentorship program was recently established to connect seasoned mentors with enthusiastic startup founders. The Life Science Tennessee Statewide Mentor Network has provided a letter of support.

*Hospital Systems:* As discussed above in the description of the region, the Memphis Medical District contains multiple independent hospitals. Access to clinicians and hospital administrators is critical to the Customer Discovery process for new life science startups as the founders seek to validate their business model. These hospitals can also serve as the initial test sites for first generation prototypes and the initial customers for first generation products.

*Medical device industry:* Memphis is recognized as a world-leading area for medical device development. Major companies in the region include Medtronic, Smith & Nephew, Wright Medical, Microport, Bayer Healthcare, Olympus, and more. Executives from these companies are engaged with the ZeroTo510 and Life Science Tennessee mentor networks, and the companies themselves represent potential strategic partners for local medical device startups. The medical device industry are key members of the Greater Memphis Chamber, which has provided a letter of support.

*Memphis Institute of Regenerative Medicine (MIRM):* The goal of regenerative medicine is not the treatment of symptoms; rather, it is to stop disease progression and restore fully functional healthy organs. Humans face

deterioration or loss of tissues and organs based on trauma, chronic injuries, or aging. Repair and replacement of tissues and organs by means of regenerative medicine may well be the single most important driver for advancing medical care and economic development for decades to come. The Memphis Institute of Regenerative Medicine (MIRM) has brought together the expertise of the University of Tennessee Health Science Center (UTHSC), the University of Memphis (UofM), St. Jude Children's Research Hospital, and industry leaders (Revotek, Medtronic, Wright Medical, Smith and Nephew and FedEx) to perform basic, clinical, and translational research in the areas of stem cell biology, 3D bio-printing, and tissue engineering. The goal is to translate scientific discoveries into new organ repair and replacement therapies for people suffering from organ damage. For diseases like Covid-19, which damage key organs, regenerative medicine offers new approaches to cure those infected with the disease.

*Regional Biocontainment Laboratory (RBL)*: One of 13 NIAID funded regional biocontainment labs in the country, the UTHSC RBL is focused on research requiring [Biosafety Level 3 \(BSL-3\) containment](#). BSL-3 facilities are designed to safely and effectively study highly contagious materials. Prior to COVID-19 scientists at the UTHSC RBL were investigating multi-drug resistant tuberculosis, tularemia, streptococci, cholera, and Chlamydia. Since the start of the pandemic, even during the period where the outbreak was limited to China, the RBL has become a critical asset for COVID testing. COVID-19 projects underway include drug and vaccine candidate screening, PCR and antibody testing, PPE decontamination studies, and more.

## **Section 2.3 – Related EDA Support**

The EDA i6 grant awarded to UTHSC (UTHSC Proof of Concept Center, ED17HDQ0200037, 1/1/2017 – 9/30/2020) achieved its goals of advancing the culture of innovation and commercialization in Memphis by expanding the proof-of-concept programs at UTHSC. Over the grant period, more than 50 proof-of-concept awards were made under both the CORNET and Maturation programs, and the Entrepreneur-In-Residence held more than 250 meetings with aspiring academic entrepreneurs. Four new startup companies directly attributable to EDA i6 support were launched, and they have already raised more than \$1.5 million in private and non-dilutive capital, despite the challenging economic environment created by the COVID-19 pandemic during 2020.

UTHSC exceeded by 150% the number of projects funded through the POC Center. Total new licenses and new startups are currently underperforming our projections, very few investors and companies in 2020 have been willing to take on new projects that are not COVID-related. However, UTRF continues to support and market the intellectual property, and we believe that as the Project Warp Speed vaccine rollout spurs an economic bounce back in 2021 companies and investors' appetite for new projects will increase. As anticipated, our startups have participated in accelerator programs such as the NIH Innovation Corps program.

In the final report, the POC leadership team (Drs. Goodman and Magid) along with others at UTHSC, identified the next phase of the POC Center, the "UTHSC BioBusiness Incubator". The UBBI will provide on-campus space dedicated for startups and small companies affiliated with the university and will additionally provide access to UTHSC facilities such as core labs and equipment. ***This proposal is submitted to scale this work.***

Memphis Bioworks and the University of Tennessee Research Foundation, jointly with Tech2020 (who was not a part of the past i6 application or other applications) received a Seed Fund Support grant from EDA in 2014 to plan and launch the TennesSeed Proof of Concept Fund. The TennesSeed fund makes seed investments into new companies across Tennessee, in order to increase the flow of investment-ready companies for outside angel and venture groups. On a commercialization roadmap covering conception to market, the TennesSeed fund will sit immediately downstream of the POC Center and is complementary to this proposal.

UTHSC and Memphis Bioworks also received a Science and Research Park Development Grant in 2014 to complete an in-depth planning, feasibility, and marketing study for a UTHSC Biotechnology Research Park. The incubator is consistent with plans proposed in this work.

## **Section 3 – Proposed Solution**

### **Section 3.1 – Overall Purpose**

The purpose of the UTHSC Proof-of-Concept Center and this application to the B2S project grant is fourfold:

1. Boost the flow of medical inventions into the commercialization pipeline to create economic growth and bring needed medical solutions to market.
2. Initiate the UBBI program to serve life science companies in the community and that emerge from the POC.
3. Enhance the culture of innovation in healthcare and biotechnology at the UT Health Science Center and in the Mid-South region.
4. Increase the connectivity of the UTHSC research community by building partnerships with the local, national, and international entrepreneurial community.

### **Section 3.2 – Activities under the Build to Scale (B2S) Project Grant**

UTRF learned from the prior EDA i6 award how to effectively recruit and utilize Entrepreneurs-in-Residence (EIR) to support academic research teams seeking to translate their work into commercial products. This B2S proposal will allow UTRF to recruit an additional (EIR) with relevant background in infectious disease, biotechnology and regenerative medicine, core research areas at UTHSC and the region, to complement the current EIR's medical device and pharmaceutical experience.

The EIR will be a retired executive or exited entrepreneur with significant experience. S/he will rotate among multiple commercialization projects. The EIR will devote 25% FTE to B2S grant activities (500 hours/year), including assessing commercial viability of scientific discoveries, coaching, and advising on marketing, fundraising, and team composition. The new EIR position may be filled locally or remotely, we have seen that Zoom-based mentoring is effective and allows us to access a larger pool of EIR candidates, including UT alumni around the nation that wish to professionally re-engage with the school.

#### **University of Tennessee Health Science Center:**

**Background:** Developing interdisciplinary research teams that cross UTHSC departmental, college, and campus boundaries is a major theme of UTHSC's Operational Strategic Plan for Research. It is a key to strengthening UTHSC research efforts and building a research enterprise capable of addressing the challenges of the identified Areas of Excellence (Cancer; Disorders of the Nervous System; Health Outcomes with a focus on Health Disparities; Obesity, Diabetes, and Vascular Disease; Precision Medicine; and Respiratory Disorders). The Vice Chancellor for Research, Dr. Steve Goodman, has created the **Collaborative Research Network** to help stimulate the formation of these interdisciplinary teams. In 2016, he initiated the **CORNET** Awards that provide up to \$50,000 to successful peer reviewed projects led by faculty investigators from multiple colleges and departments at UTHSC. Representative challenges addressed in the initial CORNET awards were hospital acquired infections, Alzheimer's disease, and improving post-stroke quality of life. Of the investigators receiving CORNET awards, 60% have previously worked with the technology transfer office, demonstrating that this group of elite scientists is acutely interested in the translation of their research into products and treatments. As of March 2021, external funding related to CORNET Awards has reached \$28,623,359, an ROI of 12.67 for a ~\$2.3 million investment. In fiscal year 2020, IP disclosures from UTHSC (all campuses) hit a record of 66 new inventions disclosed, compared to just 38 new inventions in FY2016. Over the same period, annual IP agreements went from 6 new deals signed in 2016 to 21 new deals in 2020.

**Activities under the B2S Grant and beyond:** The second phase will be UT CORNET Awards focused on Obesity, Diabetes, and Vascular Disease. The \$100,000 being requested in this application, for CORNET awards over three years, will be matched by \$400,000, allowing us to award twelve CORNET awards over the three-year award period. These awards would be based upon a competitive review by a panel of experts composed of scientists, clinicians, and the Entrepreneurs-in-Residence.

Future phases of the **Collaborative Research Network (CORNET)** Awards will be the development of focused collaborations with other universities in the southeast United States. Towards this goal, the UTHSC Vice Chancellor for Research has been visiting other universities to begin the development of these research collaborations and the identification of Areas of Excellence and Focus Areas for each for these regional collaborations. The first such collaboration will be with the University of Arkansas Medical Sciences in the field of Substance Abuse, with other regional partnerships to follow in other Areas of Excellence. This model will be used

to establish meaningful collaborations with other universities in the southeast of the US. To stimulate collaborations in other areas of the United States and globally the Vice Chancellor for Research has hired an Associate Vice Chancellor for Research and Global Partnerships. These future phases are outside the scope of this B2S Challenge application, but are included to demonstrate UTHSC's commitment to building and sustaining interdisciplinary collaborate research teams focused on major health challenges.

#### University of Tennessee Research Foundation:

In 2008, UTRF established a grant program, the UTRF Maturation Awards, to fund small studies that would aid the commercialization of UT intellectual property. Faculty staff and students from all UT units are eligible to apply for up to \$15,000 of funding. The projects should be of no longer than 9 months duration, and the key objectives must be aligned with validating an invention/discovery or generating critical data for use in marketing by the UTRF technology transfer officer assigned to the that IP. Of the 48 awards made to UTHSC projects since 2008, 14 projects have been licensed after the completion of the Maturation project. An additional 6 projects were “fast-failed”, saving UTRF on patent costs and allowing the inventors to quickly move on to more productive projects. On average there have been 16-20 proposals submitted each year, with 3-4 projects receiving funding. All Maturation teams are required to meet monthly with an EIR during their project periods.

#### Changes Under the B2S POC Center:

UTRF has moved all of its Maturation work into the new POC Center, as planned in the previous i6 grant. The four phase process and criterion used in each phase (announcement, application, review, and reporting) remains in place as the POC is scaled, and will not be repeated here. This represents a financial commitment of \$60,000 per year (\$180,000 over the full project period). Entrepreneurs-in-Residence will be involved in all aspects of the Maturation program, including 3 key areas: project selection, project management, and process improvement.

Table 2: Entrepreneur-in-Residence roles

STAGE	EIR ROLE	ANTICIPATED IMPROVEMENT
PROJECT SELECTION	Member of the review team that scores proposals and selects projects for funding.	Higher fraction of projects proceeding from Maturation funding to private investment or industry licensing.
PROJECT MANAGEMENT	Oversight of funded projects.	Quicker completion of projects, fewer projects requesting time extensions or not completing aims/goals.
PROCESS IMPROVEMENT	Annual review of POC funding process and outcomes.	Identification of strengths and weaknesses in POC process to allow continuous improvement.

Another change being implemented via the POC Center is the creation of supplemental project funding, to be awarded upon recommendation of an EIR and approval by UTRF. This flexible funding (\$30,000 in total funds per year) will be directed into projects that are highest-potential, but with discrete and addressable challenges. This funding may be used to obtain external validation of key technical data, initiate prototype manufacturing, expand marketing efforts, or other uses in support of commercialization. If no recommendations are made by an EIR and approved by UTRF in a project year, the funding will be rolled over to the following year.

#### Allowable Spending Under a Maturation Award:

Flexibility in how awards may be spent by the project team optimally suits the varied nature of translational projects. Past projects have used POC support to engage engineering and prototyping support, synthesize lead compounds, purchase key equipment, run validation experiments, and even administer small clinical trials. The only restrictions that UTRF places on Maturation funding are that 100% of the award goes to the project (no indirect costs subtracted) and that it cannot support the PI's salary. As with the CORNET awards, projects that involve a UTHSC researcher and an external collaborator are eligible and encouraged.

#### The University of Tennessee BioBusiness Incubator (UBBI) and Support programming

This proposal is intended to scale the successful POC (detailed above) and bring forward a life science incubator in Memphis to replace the Bioworks incubator that was sold and is no longer available to the community. The

Bioworks incubator operated for 18 years and its high utilization suggests that there is a viable service to be provided, and UTHSC is ideally placed in the ecosystem to operate the incubator. The goal of the project is to establish a lab/office incubator for life science companies and bring UBBi to operation at sufficient capability that it can reach operational breakeven during the 3-year timeline of the grant. This would not normally be possible but for the fact that we have the existing tenants in the former Bioworks incubator that need space due to the facility's pending closure.

### **Facility**

The UTHSC has made a portion of a 30,000 s.f. on-campus building available to UBBi, very close to the previous incubator. The building was originally built out to be an incubator 15 years ago, but served as the headquarters of a pharmaceutical startup for a number of years. To convert this building back to a viable lab and office incubator, it necessitates only cosmetic upgrades to the space including paint, carpet, ceiling, vinyl flooring, and wall repair as well as recommissioning current space in part of the building. Phase II of incubator space would include limited tenant improvements to outfit and recommission 9,000 s.f. to meet the needs of ongoing ventures and funded startup companies in the older south part of the building, currently occupied by a non-research program (Office of Research Safety). For the purposes of this 3-year proposal, UBBi will utilize up to 19,000 sf. of the space, with the additional 11,000 s.f. of decommissioned space is planned to be renovated and made usable after the grant period.

### **Structure**

The entity structure planned for UBBi leverages UTRF experience in operating a Business Incubator in Knoxville, TN, as a partnership between UTHSC's Office of Research and UTRF to deliver incubator services. This places portions of the program, such as billing and financial management, and access control at UTRF, while UTHSC provides leadership, core staffing and management at the Office of Research. UTRF is included as a subcontractor in this grant and one of the first milestones in this plan is to develop a master agreement between UTRF and the Office of Research. Upon approval of an application for tenancy by UTHSC and UTRF, UTRF would enter into a lease agreement with that tenant, in a form pre-approved by UTHSC, and rent payments would flow from the tenant to UTRF then back to UTHSC to pay costs of the space rental.

### **Scope of Services**

Companies apply to be a part of the UBBi and will be accepted by an oversight board. Once accepted, the UBBi provides clients facilities that fit their company size and needs, access to various professionals, and services at discounted rates, although clients are welcome to seek out their own professional services. Pricing for incubator membership, facility costs, and certain services scale with size of company. Internet, copier, basic office, and custodial services will be available to all tenants. In addition, companies will be given UTHSC Affiliate status and may utilize campus services at internal prices (printing, library access, general, UTHSC Research Core service, Laboratory Animal Care Unit, veterinary care and expertise, statistical & bioinformatic support, etc.). In addition, selected personnel at these companies may be offered adjunct or other unpaid roles and appointments, giving them access to build new programs (and inspire new companies) with UTHSC research faculty. The tenant selection policy, lease agreement terms, business assistance policy, tenant records review, graduation policy and management process for all new tenants are already completed.

Our goal at UBBi will be to have the best entrepreneurship program targeted at growing research trends in infectious disease and regenerative medicine, core research investments at UTHSC. For both MIRM and the RBL, our goal is to leverage as much programming as possible from our entrepreneurial support ecosystem. However, UBBi must develop its own programming (accelerators, Mentors, business model canvas) targeted at therapeutic development and regenerative medicine and this work is in the proposed budget.

### **Section 4 – Partnerships**

The two primary entities that are engaged in this project are UTHSC and UTRF, as detailed in Section 2. This proposal is intended to bring forth viable technologies from the lab, screen and strengthen quality, then help the companies formed to progress down the path to commercialization. The local and Statewide ecosystem helps, but early-stage work takes hands on experience. To be successful, the following personal are critical to the success of this work.

**UTHSC:** Steven R. Goodman, PhD is currently Vice Chancellor for Research for UTHSC. Over his first 10 months in this role, he has led the writing of the UTHSC Operational Strategic Plan for Research, the Research Space Allocation Plan, Business Plans for all Institutional Research Cores, and has participated in discussions on development of a Bioincubator and Research Park at UTHSC. In his prior role as VR for Research at SUNY Upstate Medical University his entrepreneurial activity included hiring an Associate VP for Industry Relations coming from Bristol Myers Squibb; establishing a Tech Transfer Office (TTO) and hiring its Director from the TTO at Cornell; establishing a process and patent committee to handle New Technology Disclosures; and co-Chairing the Board for our new BioAccelerator called the Central New York BioAccelerator (CNY BAC), and hiring its Executive Director. The new CNY BAC which he helped design houses startup companies.

Steven J. Bares, PhD, MBA – is Associate Vice Chancellor for research and Entrepreneurship at UTHSC. In this role, Dr. Bares will be responsible for supervising the UBBI incubator. He will work closely with Dr. Goodman to complete activities day to day for incubator plan with expanded emphasis on collaboration between venture capital, local entrepreneurial ecosystem, academia and private industry to promote life science entrepreneurship. In this role, Dr Bares will be responsible for metrics/data tracking within the incubator. Prior to this role at UTHSC, he was President and Executive Director of the Memphis Bioworks Foundation from 2001 to 2019, a broad-based public/private partnership focusing on the growth of biomedical research and commercialization of life science technologies.

**UTRF:** Richard Magid is Vice President of UTRF and Director of Technology Transfer for the UT Health Science Center. Richard was trained as a biomedical engineer (MIT, Georgia Tech) prior to entering the field of technology transfer in 2007. He has been the primary licensing agent for over 50 transactions, including a dozen new startup companies. Richard also is the instructor for an annual graduate course titled “Entrepreneurship for Biomedical and Pharmaceutical Scientists” which prepares students for non-academic career possibilities by introducing them to the fundamentals of business and entrepreneurship in the life science industry.

## **Section 5 – Measurable Goals and Feasibility**

The project goals and milestones for this project are summarized in the table below.

<b>MILESTONE</b>	<b>TIMELINE</b>
<b>Develop Entrepreneur-in-Residence resource for UTHSC and initiate UBBI program</b>	
EIR Recruitment and contracting	Months 1-2
Promotion of EIR availability to UTHSC researchers	Month 2
Complete Master agreement between UTRF and the Office of Research	Month 2
Form advisory board and approve the tenant selection policy, lease agreement terms, business assistance policy, tenant records review, graduation policy and management process for all new tenants	Month 2
Identify partner vendors needed to serve needs of new companies, including both local, national and low-cost online sources.	Month 2
Ongoing review of EIR personnel and activities	Months 6-36
<b>Initiate Scaled-up investment in high-potential POC Projects - Cycle 1 and prepare for first tenants</b>	
Solicitation of CORNET proposals	Month 3
Awards made to 6 CORNET projects	Month 4
Prepare Target tenant list of potential tenants and establish a sales plan for each contact to let them know of the new incubator facility and timeline.	Month 4
Solicitation of Maturation proposals	Month 5
Form partnership with service providers to deliver existing programming to tenant companies, including accelerator, training and grant writing programs	Month 5
Awards made to 4 Maturation projects	Month 6
Interim progress review of CORNET and Maturation projects	Month 10

Add specific programming to target research spinoffs in regenerative medicine and infectious disease	Month 10
Establish first 10,000 s.f. phase of the incubator with required signage, security, and light tenant improvements	Month 10
Final reports due from CORNET and Maturation projects	Month 16
Maturation Phase II award	Month 17
<b>Program Assessment and prepare for UBBi expansion</b>	
Interim Assessment	Month 18
Complete phase II incubator expansion in targeted space	Month 18
<b>UTHSC investment in high-potential POC Projects - Cycle 2</b>	
Solicitation of CORNET proposals	Month 19
Awards made to 6 CORNET projects	Month 20
Solicitation of Maturation proposals	Month 21
Awards made to 4 Maturation projects	Month 22
Interim progress review of CORNET and Maturation projects	Month 26
Final reports due from CORNET and Maturation projects	Month 32
Maturation Phase II award	Month 33
<b>Program Assessment</b>	
Final Assessment	Month 36

### Tracking Program Outcomes

All POC funding recipients are required to provide an end-of-project report with key metrics and outcomes:

<b>Scientific/Engineering outcomes</b>	Technical validation attained
	Significant problems encountered/overcome
	Variation from expected results
<b>Project Accomplishments</b>	New patent applications or registered copyrights
	Additional outside funding raised
	Industry/commercial contacts made

UTRF will track and report on additional formal technology transfer metrics, including new invention disclosures, completed licenses, startups launched, jobs created, investment capital raised, and SBIR/STTR grants applied for and received. These commercialization metrics are routinely collected by UTRF for other purposes, and will track the progress of POC supported technologies for as long as each project remains active. This includes EIR activities, including number of EIR candidates interviewed, researchers engaged by EIRs, technologies evaluated, and other EIR activities.

Incubators are measured by percent occupancy, the program P/L and the outcomes of the companies the incubator serves. Best practices are documented by INBIA<sup>5</sup>. UBBi will focus on metrics/data tracking within the incubator to include # of potential tenants contacted, # of actual tenants, # of jobs created by tenants during occupancy period, Occupant FTE on entry and departure, Capital (private and non-dilutive) raised by tenants, new product launches, and patents filed.

### Anticipated Project Impact

Incubators produces jobs and economic impact. Based on the projected occupancy and tenant mix, UBBi is expected to help create **97 jobs** and attract **\$14 M** in private investment over the **3-year** duration of the grant. Over a nine-year cycle, these life science companies would grow a factor of 250% or so (**to 250 jobs**) assuming that one or two companies in this period successfully grow to scale. In this same scenario, the private investment will be at

<sup>5</sup> (see [https://inbia.org/wp-content/uploads/2017/08/Metrics\\_FINAL.pdf](https://inbia.org/wp-content/uploads/2017/08/Metrics_FINAL.pdf))

least **\$30M** if medical device companies or higher (**\$100M**) if the emerging companies are developing vaccines or therapeutics or products in regenerative medicine. Programming at UBBI will be uniquely focused on medical devices (a strength in Memphis), infectious diseases, pediatric oncology and regenerative medicine, all with the potential of attracting significant capital and producing hundreds of jobs. In addition to growing jobs, UBBI helps to retain existing jobs and we estimate that there will be over **90 retained jobs** that result from UBBI over the next 5 years.

### **Impact to End of Grant Period**

Through two cycles for the CORNET and Maturation program, we anticipate that 100-120 projects will be reviewed, and 20 projects will be funded (12 CORNET, 8 Maturation).

Historically, 30-40% of the Maturation projects have been commercially licensed following award completion. However, with active EIR involvement in project selection and project management, we project an increased success rate, hopefully at least 50%. This projects to 10-12 new commercial licenses. Based on UTRF's past experience this will be a mix of startups and out-licenses to existing companies, with nearly all startups being local to Memphis. We are forecasting that 50% of licenses will be to startups, or 5-6 new startup companies through the end of the grant period. Startups will be strongly encouraged to apply for entry into the Memphis startup accelerators (detailed above), for mentorship through the Life Science Tennessee mentor network, or to participate in an I-Corps program (NIH or NSF as appropriate).

### **Impact Beyond Grant Period**

Life Science startups require considerably more investment capital than tech startups, typically at least \$1,000,000 for their first two years and an additional \$3-5 million through the next few years. Startups are small (2-4 founding employees) initially, and only grow once the second round of funding is obtained. Assuming a typically mortality rate for new startups, we project that the 5-6 new startups discussed above will raise \$2-4 million in investment and create 10-20 jobs within 2 years of the end of the grant period, and will have raised \$10-20 million in investment and created 25-50 jobs within 5 years.

### **Section 6 – Sustainability**

When UTRF licenses intellectual property, under UT policy 40% of profits (license revenue less patent expenses) goes to the inventors and the remaining 60% is split between the University and UTRF. A typical UTRF license to a startup will include equity and royalties, while a license to an existing company will carry royalties and fees. All income, regardless of source, is treated identically under UT policy, and will be available for support of the CORNET, Maturation, and EIR programs beyond the grant period.

This project establishes a lab/office incubator for life science companies and is anticipated to reach operational breakeven during the 3-year timeline of the grant. Key to the sustainability of this proposal is the pent-up demand of tenants. There are a number of viable ventures that need space as the Bioworks incubator tenants MUST have space plans defined in 2021. The schedule proposed meets the need of existing tenants and will give UBBI the best chance of meeting the needs of these tenants.

The single driver of success for UBBI's sustainability comes down to the number of viable ventures formed with entrepreneurs and new management teams willing to take the risk of a new venture, startup capital required for any scalable life science business to develop a product or service, and technologies that form the defensible basis of the venture. There is significant research in the state and life science incubators are not readily available. Planned events at UBBI are intended to build, attract and create that entrepreneurial spark and numerous programs within the office of Research. Networking with existing investors, both independently and through capital networking events in the local ecosystem, are intended to expand the pool of angel and investor capital. Monthly networking event that helps new entrepreneurs seeking capital meet and present to investors is planned at UBBI.





ECONOMIC DEVELOPMENT  
**GROWTH ENGINE**  
FOR MEMPHIS & SHELBY COUNTY

100 PEABODY PLACE, SUITE 1100  
MEMPHIS, TENNESSEE 38103-3652  
(901) 341-2100  
[www.growth-engine.org](http://www.growth-engine.org)

April 27, 2021

H. Philip Paradice, Jr.

**Regional Director**

401 West Peachtree Street, NW, Suite 1820

Atlanta, GA 30308-3510

RE: Support for the University of Tennessee Health Science Center  
B2S Venture Scale Proposal - FFO # Number EDA-HDQ-OIE-2021-B2S

Dear Mr. Paradice:

As President of EDGE, the economic development organization for the City of Memphis and for Shelby County, I am writing to my express support of the University of Tennessee Health Science Center's B2S Venture application under the 2021 Build to Scale Program. The proposed increase in the Proof-of-Concept Center's capacity and the addition of the life science incubator will increase the translation of medical research into new products and services, spurring startup creation and economic growth in the Memphis region.

EDGE works to accelerate the economic health of the Memphis region. Two of the major strategies supported by the EDGE are increasing entrepreneurship and growing Memphis' life science sector. EDGE actively supports local business via a range of available programs and services, and we would enthusiastically extend our support to new startups and the resulting high-paying jobs launched out of UTHSC Research.

Sincerely,

A handwritten signature in blue ink, reading "Reid Dulberger".

Reid Dulberger

**Reid Dulberger**

President & CEO

Chief Economic Development Officer, Memphis/Shelby County

[RDulberger@growth-engine.org](mailto:RDulberger@growth-engine.org)

April 29, 2021

Jay Williams  
U.S. Assistant Secretary of Commerce for Economic Development  
U.S. Department of Commerce 1401 Constitution Avenue, NW Suite 71014  
Washington, DC 20230

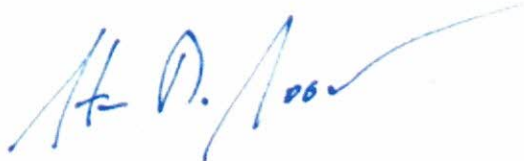
Dear Assistant Secretary Williams:

As Vice Chancellor for Research of the University of Tennessee Health Science Center, I am very pleased to support the proposed UTHSC SCALING THE UNIVERSITY OF TENNESSEE PROOF-OF-CONCEPT CENTER (FFO: EDA-HDQ-OIE-2021-B2S).

The University of Tennessee Health Science Center is a public, statewide, academic health system, with a mission to bring the benefits of the health sciences to the achievement and maintenance of human health, with a focus on the citizens of Tennessee and the region, by pursuing an integrated program of education, research, clinical care, and public service.

UTHSC will provide \$497,130 in year one, \$499,980 in year two and \$502,889 in year three of the award in direct support, including 30% effort from the Vice Chancellor for Research (600 hours/year) valued at a total of \$436,000 over three years. Additionally, there will be an investment of \$250,000 per year towards the deployment of the CORNET award for a three-year total of \$750,000 of in-kind investment. Finally, there will be an investment of \$314,000 over three years towards facility and operational improvements to the tenant space to make the incubator building more appropriate for the work of the tenants. The value of our total contributions will reach \$1,500,000 over a 3-year period. UTHSC hereby affirms that our commitments are (1) committed to the project, (2) available as needed, (3) not conditioned, restricted, or encumbered in any way, and (4) not from any federal sources.

Sincerely,



Steven R. Goodman, PhD  
Vice Chancellor for Research  
University of Tennessee Health Science Center

## ATTACHMENTS FORM

**Instructions:** On this form, you will attach the various files that make up your grant application. Please consult with the appropriate Agency Guidelines for more information about each needed file. Please remember that any files you attach must be in the document format and named as specified in the Guidelines.

**Important:** Please attach your files in the proper sequence. See the appropriate Agency Guidelines for details.

1) Please attach Attachment 1	EDGE_Letter_04_27_21103797796	Add Attachment	Delete Attachment	View Attachment
2) Please attach Attachment 2	UTRF_commitment_letter103797	Add Attachment	Delete Attachment	View Attachment
3) Please attach Attachment 3	UTHSC_Letter_of_Commitment103	Add Attachment	Delete Attachment	View Attachment
4) Please attach Attachment 4	UTHSC_Rate_Agreement_20211037	Add Attachment	Delete Attachment	View Attachment
5) Please attach Attachment 5		Add Attachment	Delete Attachment	View Attachment
6) Please attach Attachment 6		Add Attachment	Delete Attachment	View Attachment
7) Please attach Attachment 7		Add Attachment	Delete Attachment	View Attachment
8) Please attach Attachment 8		Add Attachment	Delete Attachment	View Attachment
9) Please attach Attachment 9		Add Attachment	Delete Attachment	View Attachment
10) Please attach Attachment 10		Add Attachment	Delete Attachment	View Attachment
11) Please attach Attachment 11		Add Attachment	Delete Attachment	View Attachment
12) Please attach Attachment 12		Add Attachment	Delete Attachment	View Attachment
13) Please attach Attachment 13		Add Attachment	Delete Attachment	View Attachment
14) Please attach Attachment 14		Add Attachment	Delete Attachment	View Attachment
15) Please attach Attachment 15		Add Attachment	Delete Attachment	View Attachment

## Application for Federal Assistance SF-424

\* 1. Type of Submission:

- ☐ Preapplication  
☒ Application  
☐ Changed/Corrected Application

\* 2. Type of Application:

- ☒ New  
☐ Continuation  
☐ Revision

\* If Revision, select appropriate letter(s):

\* Other (Specify):

\* 3. Date Received:

04/29/2021

4. Applicant Identifier:

5a. Federal Entity Identifier:

5b. Federal Award Identifier:

### State Use Only:

6. Date Received by State:

7. State Application Identifier:

TN

### 8. APPLICANT INFORMATION:

\* a. Legal Name:

The University of Tennessee Health Science Center

\* b. Employer/Taxpayer Identification Number (EIN/TIN):

626001636

\* c. Organizational DUNS:

941884009

### d. Address:

\* Street1:

62 S. Dunlap, Suite 300

Street2:

\* City:

Memphis

County/Parish:

Shelby

\* State:

TN: Tennessee

Province:

\* Country:

USA: UNITED STATES

\* Zip / Postal Code:

38163-0001

### e. Organizational Unit:

Department Name:

Vice Chancellor for Research

Division Name:

Office of Research

### f. Name and contact information of person to be contacted on matters involving this application:

Prefix:

\* First Name:

Sarah

Middle Name:

J.

\* Last Name:

White

Suffix:

Title:

Associate Vice Chancellor

Organizational Affiliation:

The University of Tennessee Health Science Center

\* Telephone Number:

9014484889

Fax Number:

9104457775

\* Email:

egrants@uthsc.edu

## Application for Federal Assistance SF-424

### \* 9. Type of Applicant 1: Select Applicant Type:

H: Public/State Controlled Institution of Higher Education

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

\* Other (specify):

### \* 10. Name of Federal Agency:

Department of Commerce

### 11. Catalog of Federal Domestic Assistance Number:

11.024

CFDA Title:

BUILD TO SCALE

### \* 12. Funding Opportunity Number:

EDA-HDQ-OIE-2021-2006827

\* Title:

2021 Build to Scale Program

### 13. Competition Identification Number:

Title:

### 14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment

Delete Attachment

View Attachment

### \* 15. Descriptive Title of Applicant's Project:

UTHSC Scaling the University of Tennessee Proof-of-Concept Center

Attach supporting documents as specified in agency instructions.

Add Attachments

Delete Attachments

View Attachments

**Application for Federal Assistance SF-424****16. Congressional Districts Of:**\* a. Applicant \* b. Program/Project 

Attach an additional list of Program/Project Congressional Districts if needed.

**17. Proposed Project:**\* a. Start Date: \* b. End Date: **18. Estimated Funding (\$):**

* a. Federal	<input type="text" value="1,499,519.00"/>
* b. Applicant	<input type="text" value="1,500,000.00"/>
* c. State	<input type="text" value="0.00"/>
* d. Local	<input type="text" value="0.00"/>
* e. Other	<input type="text" value="0.00"/>
* f. Program Income	<input type="text" value="0.00"/>
* g. TOTAL	<input type="text" value="2,999,519.00"/>

**\* 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

- ☐ a. This application was made available to the State under the Executive Order 12372 Process for review on .
- ☒ b. Program is subject to E.O. 12372 but has not been selected by the State for review.
- ☐ c. Program is not covered by E.O. 12372.

**\* 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**☐ Yes ☒ No

If "Yes", provide explanation and attach

**21. \*By signing this application, I certify (1) to the statements contained in the list of certifications\*\* and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances\*\* and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ \*\* I AGREE

\*\* The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

**Authorized Representative:**

Prefix:  \* First Name:

Middle Name:

\* Last Name:

Suffix:

\* Title: \* Telephone Number:  Fax Number: \* Email: \* Signature of Authorized Representative:  \* Date Signed:

## Budget Narrative File(s)

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\* **Mandatory Budget Narrative Filename:**

Add Mandatory Budget Narrative

Delete Mandatory Budget Narrative

View Mandatory Budget Narrative

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To add more Budget Narrative attachments, please use the attachment buttons below.

Add Optional Budget Narrative

Delete Optional Budget Narrative

View Optional Budget Narrative

# DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

OMB Number: 4040-0013

Expiration Date: 02/28/2022

<b>1. * Type of Federal Action:</b> <input type="checkbox"/> a. contract <input checked="" type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance	<b>2. * Status of Federal Action:</b> <input checked="" type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award	<b>3. * Report Type:</b> <input checked="" type="checkbox"/> a. initial filing <input type="checkbox"/> b. material change
--	--	--

**4. Name and Address of Reporting Entity:**  
☒ Prime    ☐ SubAwardee  
 \* Name   
 \* Street 1     Street 2   
 \* City     State     Zip   
 Congressional District, if known:

**5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:**

<b>6. * Federal Department/Agency:</b> <input style="width: 380px;" type="text" value="Department of Commerce"/>	<b>7. * Federal Program Name/Description:</b> <input style="width: 380px;" type="text" value="BUILD TO SCALE"/> CFDA Number, if applicable: <input style="width: 100px;" type="text" value="11.024"/>
---	---

<b>8. Federal Action Number, if known:</b> <input style="width: 380px;" type="text"/>	<b>9. Award Amount, if known:</b> \$ <input style="width: 150px;" type="text"/>
--	--

**10. a. Name and Address of Lobbying Registrant:**  
 Prefix  \* First Name  Middle Name   
 \* Last Name  Suffix   
 \* Street 1     Street 2   
 \* City     State     Zip

**b. Individual Performing Services** (including address if different from No. 10a)  
 Prefix  \* First Name  Middle Name   
 \* Last Name  Suffix   
 \* Street 1     Street 2   
 \* City     State     Zip

**11.** Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

**\* Signature:**   

<b>*Name:</b> Prefix <input style="width: 60px;" type="text" value="Mrs"/>	* First Name <input style="width: 180px;" type="text" value="Brenda"/>	Middle Name <input style="width: 150px;" type="text" value="K."/>
* Last Name <input style="width: 330px;" type="text" value="Murrell"/>	Suffix <input style="width: 80px;" type="text"/>	

Title: <input style="width: 250px;" type="text" value="Director"/>	Telephone No.: <input style="width: 150px;" type="text" value="9014484889"/>	Date: <input style="width: 150px;" type="text" value="04/29/2021"/>
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Standard Form - LLL (Rev. 7-97)



**COLLEGES AND UNIVERSITIES RATE AGREEMENT**

EIN: 1626001636B3

DATE:03/18/2021

ORGANIZATION:

FILING REF.: The preceding  
agreement was dated  
01/13/2015University of Tennessee Health Science  
Center

62 South Dunlap Street, Room 300

Memphis, TN 38163

The rates approved in this agreement are for use on grants, contracts and other agreements with the Federal Government, subject to the conditions in Section III.

**SECTION I: Facilities And Administrative Cost Rates**

RATE TYPES:      FIXED                      FINAL                      PROV. (PROVISIONAL)                      PRED. (PREDETERMINED)

EFFECTIVE PERIOD

<u>TYPE</u>	<u>FROM</u>	<u>TO</u>	<u>RATE (%)</u>	<u>LOCATION</u>	<u>APPLICABLE TO</u>
PRED.	07/01/2018	06/30/2021	52.00	On Campus	Organized Research
PRED.	07/01/2021	06/30/2023	54.00	On Campus	Organized Research
PRED.	07/01/2018	06/30/2021	45.00	On Campus	Instruction
PRED.	07/01/2021	06/30/2023	47.50	On Campus	Instruction
PRED.	07/01/2018	06/30/2021	40.00	On Campus	Other Sponsored Activities
PRED.	07/01/2021	06/30/2023	43.00	On Campus	Other Sponsored Activities
PRED.	07/01/2018	06/30/2023	26.00	Off Campus	All Programs
PROV.	07/01/2023	Until Amended			Use same rates and conditions as those cited for fiscal year ending June 30, 2023.

ORGANIZATION: University of Tennessee Health Science Center

AGREEMENT DATE: 3/18/2021

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\*BASE

Modified total direct costs, consisting of all direct salaries and wages, applicable fringe benefits, materials and supplies, services, travel and up to the first \$25,000 of each subaward (regardless of the period of performance of the subawards under the award). Modified total direct costs shall exclude equipment, capital expenditures, charges for patient care, rental costs, tuition remission, scholarships and fellowships, participant support costs and the portion of each subaward in excess of \$25,000. Other items may only be excluded when necessary to avoid a serious inequity in the distribution of indirect costs, and with the approval of the cognizant agency for indirect costs.

ORGANIZATION: University of Tennessee Health Science Center

AGREEMENT DATE: 3/18/2021

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## **SECTION II: SPECIAL REMARKS**

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### TREATMENT OF FRINGE BENEFITS:

The fringe benefits are specifically identified to each employee and are charged individually as direct costs. The directly claimed fringe benefits are listed below.

### TREATMENT OF PAID ABSENCES

Vacation, holiday, sick leave pay and other paid absences are included in salaries and wages and are claimed on grants, contracts and other agreements as part of the normal cost for salaries and wages. Separate claims are not made for the cost of these paid absences.

OFF-SITE DEFINITION: The off-site rate will apply for all activities: a) Performed in facilities not owned by the organization and where these facility costs are not included in the indirect cost pools; or b) Where rent is directly allocated/charged to the project(s). Grants or contracts will not be subject to more than one indirect cost rate. If more than 50% of a project is performed off-site, the off-site rate will apply to the entire project.

#### Fringe Benefits:

FICA

Medicare

Unemployment

401K

Health Insurance

Worker's Compensation

State Retirement Plan

Optional Retirement Plan

Life Insurance

Terminal Leave

Employee Tuition Remission

Your next proposal based on actual costs for the fiscal year ending 06/30/2022 is due in our office by 12/31/2022.

ORGANIZATION: University of Tennessee Health Science Center

AGREEMENT DATE: 3/18/2021

**SECTION III: GENERAL****A. LIMITATIONS:**

The rates in this Agreement are subject to any statutory or administrative limitations and apply to a given grant, contract or other agreement only to the extent that funds are available. Acceptance of the rates is subject to the following conditions: (1) Only costs incurred by the organization were included in its facilities and administrative cost pools as finally accepted: such costs are legal obligations of the organization and are allowable under the governing cost principles; (2) The same costs that have been treated as facilities and administrative costs are not claimed as direct costs; (3) Similar types of costs have been accorded consistent accounting treatment; and (4) The information provided by the organization which was used to establish the rates is not later found to be materially incomplete or inaccurate by the Federal Government. In such situations the rate(s) would be subject to renegotiation at the discretion of the Federal Government.

**B. ACCOUNTING CHANGES:**

This Agreement is based on the accounting system purported by the organization to be in effect during the Agreement period. Changes to the method of accounting for costs which affect the amount of reimbursement resulting from the use of this Agreement require prior approval of the authorized representative of the cognizant agency. Such changes include, but are not limited to, changes in the charging of a particular type of cost from facilities and administrative to direct. Failure to obtain approval may result in cost disallowances.

**C. FIXED RATES:**

If a fixed rate is in this Agreement, it is based on an estimate of the costs for the period covered by the rate. When the actual costs for this period are determined, an adjustment will be made to a rate of a future year(s) to compensate for the difference between the costs used to establish the fixed rate and actual costs.

**D. USE BY OTHER FEDERAL AGENCIES:**

The rates in this Agreement were approved in accordance with the authority in Title 2 of the Code of Federal Regulations, Part 200 (2 CFR 200), and should be applied to grants, contracts and other agreements covered by 2 CFR 200, subject to any limitations in A above. The organization may provide copies of the Agreement to other Federal Agencies to give them early notification of the Agreement.

**E. OTHER:**

If any Federal contract, grant or other agreement is reimbursing facilities and administrative costs by a means other than the approved rate(s) in this Agreement, the organization should (1) credit such costs to the affected programs, and (2) apply the approved rate(s) to the appropriate base to identify the proper amount of facilities and administrative costs allocable to these programs.

BY THE INSTITUTION:

University of Tennessee Health Science Center

DocuSigned by:

64F12EDA98B0463...  
(SIGNATURE)

Anthony A. Ferrara

(NAME)

Senior Vice Chancellor for Finance &amp; Administration / Chief Financial Officer

(TITLE)

3/30/2021 | 09:25:44 PDT

(DATE)

ON BEHALF OF THE FEDERAL GOVERNMENT:

DEPARTMENT OF HEALTH AND HUMAN SERVICES

(AGENCY)

Darryl W. Mayes -S

Digitally signed by Darryl W. Mayes -S  
DN: c=US, o=U.S. Government, ou=HHS, ou=PSC,  
ou=People, 0.9.2342.19200300.100.1.1=2000131669,  
cn=Darryl W. Mayes -S  
Date: 2021.03.30 07:42:50 -0400

(SIGNATURE)

Darryl W. Mayes

(NAME)

Deputy Director, Cost Allocation Services

(TITLE)

3/18/2021

(DATE) 7158

HHS REPRESENTATIVE:

Steven Zuraf

Telephone:

(301) 492-4855

### ***Budget Justification***

**Personnel Salary and Fringe Benefits:** The budget will fund positions at the University of Tennessee Health Science Center to staff the UBBI and UT Research Foundation (UTRF) via a sub-agreement for personnel to oversee the processes outlined in the proposal.

**Steven R. Goodman, PhD** is currently Vice Chancellor for Research for UTHSC and will serve as Lead PI. Dr. Goodman will be responsible for the overall implementation of the UBBI project including ultimate oversight of all personnel, sub-grantees and subcontractors involved in the project. He will be responsible for ensuring that planned activities are accomplished as described in the proposal, and he will be responsible for seeing that all required reports (both financial and programmatic) are submitted accurately and on schedule. Dr. Goodman will allocate 30% of his time (salary and fringe) as an in-kind investment to ensure that all aspects of the grant are executed, including the deployment of the CORNET award and UTHSC's deployment of \$750,000 of in-kind investment over the three years of the award. He will also be responsible for oversight of the new programs that integrate tenants into the Research enterprise. Additional matching funds will be provided to support the upgrade and maintenance of the incubator building that makes it attractive to tenants (including UTHSC's \$314,000) of in-kind investment.

	Salary	Fringe Benefits	Total
Year 1	\$ 106,476	\$ 35,988	\$ 142,464
Year 2	\$ 108,606	\$ 36,708	\$ 145,314
Year 3	\$ 110,779	\$ 37,443	\$ 148,222
		Federal share	\$ -
		30% cost share	\$ 436,000

**Steven J. Bares, PhD, MBA** – is Associate Vice Chancellor for Research and Entrepreneurship at UTHSC and will serve as the PI. In this role, Dr. Bares will be responsible for managing the day-to-day operations the UBBI and will supervise its personnel. He will work closely with Dr. Goodman to complete the strategic plan for the UBBI placing an emphasis on expanding collaborations between venture capital, local entrepreneurial ecosystem, academia and private industry to promote life science entrepreneurship. In this role, Dr Bares will also be responsible for metrics/data tracking within the incubator to include # of potential tenants contacted, # of actual tenants, # of jobs created by tenants during occupancy period, Occupant FTE on entry and departure, Capital (private and non-dilutive) raised by tenants, new product launches and patents filed (among others).

	Salary	Fringe Benefits	Total
Year 1	\$ 87,500	\$ 29,575	\$ 117,075
Year 2	\$ 87,500	\$ 29,575	\$ 117,075
Year 3	\$ 87,500	\$ 29,575	\$ 117,075
	50% effort	Federal share	\$ 351,225
		Cost share	\$ -

**UBBI Facility Director - salary \$80,000:** The UBBI Facility Director will serve as a full-time resource at the incubator to address tenant questions and needs, perform tours, ensure daily operation, and to serve as a conduit to UT facilities should repairs need to be made.

	Salary	Fringe Benefits	Total
Year 1		\$ -	\$ -
Year 2	\$ 80,000	\$ 27,040	\$ 107,040
Year 3	\$ 80,000	\$ 27,040	\$ 107,040
	100% effort	Federal share	\$ 214,080
		Cost share	\$ -

**Fringe Benefits:** for UTHSC fringe benefits are individualized the standard budgeting rate of 33.8% has been applied to base salaries.

**Travel:** for UTHSC will include out-of-town trips for key personnel involved in the project such as the National Incubator Association (NBIA) annual conference for best practices and recruitment trips to prospective tenants if outside the area, and to support tenant companies. Travel expenses with comply with [www.gsa.gov](http://www.gsa.gov) guidelines and are estimated at \$3,000 per year.

**Equipment:** None

**Supplies** for UTHSC Personnel are included in the amount budgeted for the entire incubator, estimated based on tenant mix. This is documented in the attached operating manual but includes, paper, envelopes, staples, pen, pencils, folders, whiteboard materials and other routine items used in the office environment. The budget over 3 years is estimated at \$11,500.

**Contractual Expenses:** A subagreement will be developed for UTRF under this proposal. Richard Magid – UTRF Vice President, will supervise the maintenance of the Entrepreneur-in-Residence program, oversight of the incubator leasing arrangements, and overall UBBi management.

**Entrepreneur-in-Residence:** \$3,000/month to support a second EIR at a 25% effort committed to mentorship of entrepreneurs and other commercialization assistance. The EIR will be an executive or entrepreneur with leadership experience in biotech and regenerative medicine. Total Project EIR grant funds \$108,000. UTRF is supporting one additional EIR with its own funds at the same level.

**Accounting Services:** \$2,000/month to support UTRF accounting services relating to incubator leasing, prototyping, and outsourced compound testing. Will be delivered by a qualified UTRF accounting assistant with oversight by UTRF's budget director. Total project Accounting Service grant funds \$72,000.

**Commercialization Support:** \$23,000/yr in funding for project commercialization, to obtain external validation of key technical data, initiate prototype manufacturing, expand marketing efforts, or other uses in support of commercialization. UTRF is supporting \$60,000/yr in Maturation funding from its own funds. Total Commercialization Support grant funds \$69,000.

#### UTRF Subcontract Budget Table

BUDGET ITEM	PROJECT FUNDS
Richard Magid	\$0
EIR Services	\$108,000
Accounting Services	\$72,000

Commercialization Support	\$69,000
Total Subcontract Direct	\$249,000
Subcontract Indirect (@10%)	\$24,900
Total	\$273,900

UTRF has been closely involved with UTHSC in the planning for the UBBI and has been involved in the preparation of every aspect of this proposal.

UTRF operates an incubator in Knoxville under a similar arrangement with University of TN Knoxville.

**Construction:** None

**Other Direct Cost:**

**Proof-of-Concept Funds:** We request \$100,000 in Proof-of-Concept funds to augment the matching funds provided by UTHSC to add capacity to the Proof-of-Concept Center.

**Course Development:** A contract for specialized consulting to develop and help to implement programming support for therapeutic/regenerative medicine entrepreneurship training will also be negotiated under applicable federal procurement guidelines. The consulting services contract is budgeted at the end of year 1 at \$15,000 and \$10,000 in year 2.

**UTHSC Indirect Costs:** The DHHS approved research indirect cost rate of 54% is applied to all Modified Direct Costs and to the first \$25,000 of each sub-grant agreement. UTHSC Indirect Costs total for all years is: \$433,383.

**TOTAL BUDGET REQUEST:** \$ 1,499,520

**UTHSC Match** = \$1,499,999

The UTHSC Match is comprised of:

1. Dr. Goodman's 30% effort (\$436,000) described above.
2. UTHSC deployment of \$750,000 of Proof-of-Concept awards. Grants will be based upon a competitive review by a panel of experts composed of scientists, clinicians, and the Entrepreneurs-in-Residence.
3. \$314,000 of In-kind contributions of renovation and maintenance costs of the new incubator.

To convert this building back to a viable lab and office incubator, it necessitates only cosmetic upgrades to the space including paint, carpet, ceiling, vinyl flooring, and wall repair as well as recommissioning currently decommissioned space and equipment in the old part of the building. For the purposes of this 3-year proposal, UBBI will utilize up to 19,000 sf. of the space, with the additional 11,000 s.f. of decommissioned space is planned to be usable in year 4 or later, after the grant period is completed.

#### **Costs of Renovations**

The initial UBBI occupants will use the available vacant (10,000 s.f.) laboratory and office space at Van Vleet that is ready for occupancy, only cleanup signage, security, and access services will be needed to

make the space operational. The initial expenses, calculated at approximately \$8/s.f. will all be accomplished using UTHSC internal resources and employees.

The Phase II expansion of UBBi in year 2 will require some limited renovations to outfit 9,000 s.f. in the older south part of the building to meet the needs of ongoing ventures and funded startup companies. These tenant improvements are estimated at \$30/s.f. however, the exact nature of the upgrades will depend on the nature of the tenants moving into the space.

All costs (\$314,000) associated with upgrades to the building are part of the match provided by UTHSC.

#### STAFFING PLAN

Name/Title	Annual Salary	Total Amount Charged to Project Year 1	Total Amount Charged to Project Year 2	Total Amount Charged to Project Year 3	Percentage of Dedicated Time	Total Federal Share	Total Non-Federal Share (Match)
Dr. Steven R. Goodman Vice Chancellor for Research	\$354,935 (base salary)	\$142,464 (base salary + fringe)	\$145,314 (base salary + fringe)	\$148,222 (base salary + fringe)	30%	0	\$436,000
Dr. Steven J. Bares Associate Vice Chancellor for Research and Entrepreneurship	\$175,000 (base salary)	\$117,075 (base salary + fringe)	\$117,075 (base salary + fringe)	\$117,075 (base salary + fringe)	50%	\$351,225	0
UBBi Facility Director	\$80,000 (base salary)	0	\$107,040 (base salary + fringe)	\$107,040 (base salary + fringe)	100%	\$214,080	0



## Project Narrative File(s)

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**\* Mandatory Project Narrative File Filename:**

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To add more Project Narrative File attachments, please use the attachment buttons below.