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March 1, 2021

The Honorable Anne M. Gobi  
Joint Committee on Higher Education Senate Chair  
24 Beacon Street  
Room 413-A – State House  
Boston, MA 02133

The Honorable David M. Rogers  
Joint Committee on Higher Education House Chair  
24 Beacon Street  
Room 43 – State House  
Boston, MA 02133

Charles D. Baker  
*Governor*

Mr. Michael D. Hurley  
Senate Clerk  
24 Beacon Street  
Room 335 – State House  
Boston, MA 02133

Karyn E. Polito  
*Lieutenant Governor*

Mr. Steven T. James  
House Clerk  
24 Beacon Street  
Room 145 – State House  
Boston, MA 02133

Mike Kennealy  
*Chairman*

Dan Rivera  
*President and CEO*

RE: Innovation Voucher Program Fund Annual Report

Dear Madam Chairwoman, Mr. Chairman, and Sirs:

Massachusetts Development Finance Agency (MassDevelopment) is pleased to submit this third annual report of the Innovation Voucher Program Fund (Fund) as required by M.G.L. Chapter 75, s.45C. The Fund was established as of July 1, 2017, and regulations were promulgated on November 16, 2018. The Commonwealth has allocated \$8 million to capitalize the Fund.

Across the five campuses of the University of Massachusetts (UMass), 90 Core Facilities enable faculty, students, and industry collaborators to access a broad array of equipment to enhance their R&D capabilities, address both basic and translational questions, deliver technologies and product candidates more rapidly, and become more competitive in

obtaining state, federal, foundation, and private funding. UMass may award vouchers to companies whose use of the Core Facilities will, as determined by UMass, further the goals of job creation, innovation and economic development. Vouchers may be issued for the cost of using Core Facilities to perform work that includes, but is not limited to, the construction of prototypes, testing, and market research.

The Innovation Voucher Program Fund is held and administered by MassDevelopment and its moneys shall be deployed to:

(A) reimburse UMass for vouchers that it may issue to eligible small corporations and startup companies for a portion of the cost of either or both of (1) their use of Core Facilities, or (2) their contract for work to be performed by UMass using the Core Facilities; and

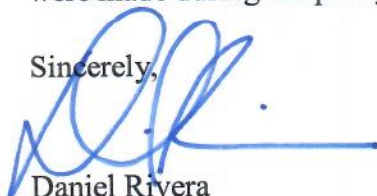
(B) reimburse MassDevelopment for its direct costs of administering the Fund.

UMass submitted its first invoice under the program in January 2019, which, as reported in the Program's first annual report dated March 1, 2019, covered disbursements of \$419,217.91 against 43 voucher requests made from Fund inception to February 28, 2019.

The second annual report submitted on March 1, 2020 demonstrated that from March 1, 2019 through February 29, 2020, four UMass campuses submitted 214 reimbursement requests against the vouchers issued to 109 companies for which total reimbursement of \$1,254,593.19 was approved.

The attached annual report summarizes the progress that MassDevelopment has made with respect to the Fund from March 1, 2020 to February 28, 2021. During this period, four UMass campuses submitted 234 reimbursement requests against the vouchers issued to 129 companies for which total reimbursement of \$1,683,480.81 was approved. UMass has reported the following details summarizing the vouchers against which disbursements were made during the past year.

Sincerely,



Daniel Rivera  
President and CEO

### University of Massachusetts, Amherst

The University of Massachusetts, Amherst awarded 104 vouchers to 56 companies requesting reimbursements totaling \$716,110.85. The following details each voucher:

1. **21st Biotech LLC** was awarded \$244.91 to make 3D-printed parts to build advanced wound care prototypes in an efficient and economical way.
2. **Aclarity, LLC** was awarded \$72,867.97 to use the WET Center for its electrochemical water purifier, freeing up much-needed capital to allocate towards other business necessities.
3. **ActivSignal, LLC** was awarded \$75,000 to undertake a project to validate a high-performing, reliable assay for Wastewater-Based Epidemiology (WBE), an essential tool for public health management during the COVID-19 pandemic and beyond.
4. **ACTnano, Inc.** was awarded \$375. The Fund allowed ACTnano, a global leader in protective nanocoatings for automotive and consumer electronics, to develop and test products with technical rigor. It also provided an opportunity for the company's engineers to acquire skills in operating multiple analytical instruments.
5. **Akita Innovations, LLC** was awarded \$450. The Fund allowed Akita Innovations, a materials development company that uses synthetic chemistry and advanced materials for products, including antifog coatings and coating fluids for optics and other materials, to affordably prepare a manuscript for publication that requires testing performed on equipment the company does not have in-house.
6. **AM 3D & CNC Fabrication LLC** was awarded \$194.81. The Fund allowed AM 3D & CNC Fabrication, a contract manufacturer with a specialty in prototyping, to implement solutions and deliver 3D-printed parts quickly and efficiently to its customers.
7. **American River Nutrition, Inc.** was awarded \$507.87. The Fund allowed American River Nutrition, a company whose mission is to deliver the highest-quality nutritional products based on sound scientific research, to have valuable analysis performed at a very reasonable cost on a new product that will increase its sales, profits, and workload leading to new hires.
8. **Aspen Products Group, Inc.** was awarded two vouchers totaling \$2,745. The Fund allowed Aspen Products, a developer of innovative materials technologies and products that support the production of clean energy, clean water, and clean air, to

efficiently scale up roll-to-roll membrane production from a batch to a continuous process.

9. **Avana Technologies, Inc.** was awarded \$379.65 to implement solutions and deliver 3D-printed parts quickly and efficiently to its initial customers without distracting from core R&D efforts.
10. **BioSafe R&D, LLC** was awarded three vouchers totaling \$97,912.37 to conduct critical research on its products and technology and to reallocate funds to other aspects of its business. BioSafe R&D has been able to greatly improve its marketing efforts using data provided from the project.
11. **CleanCrop Technologies LLC** was awarded six vouchers totaling \$4,970.09. The Fund allowed CleanCrop, an R&D-heavy startup trying to build the agrotechnology ecosystem in western Massachusetts, to access consulting and 3D printing/prototyping services to accelerate its R&D process with affordable, elite-level technical expertise that move the company closer to additional investment and commercialization.
12. **Clear Breath LLC** was awarded \$1,125 to gain exposure to both knowledgeable staff and excellent capabilities that it would not have been able to afford on its own. The voucher program enabled Clear Breath to implement solutions and deliver 3D-printed parts to its customers quickly and efficiently.
13. **Cofab Design LLC** was awarded \$8,316.41. The Fund allowed Cofab Design, a small design and engineering consultancy, to access flexible, technically sophisticated local partners and vendors and to quickly turn around projects and add considerable technical value to its work that it would be unable to sustain in-house.
14. **Dap Management** was awarded \$922.89 to access resources to rapidly improve its products at an affordable cost.
15. **Daughters Technologies, Inc.** was awarded two vouchers totaling \$1,921.96 to access affordable, high-quality services to help maintain and stabilize operations and staffing levels to help the company increase demand and grow its customer base.
16. **Diemat, Inc.** was awarded three vouchers totaling \$18,018.75. The Fund allowed Diemat, a small company that specializes in the development and manufacturing of innovative adhesive and sealing materials for the electronic packaging industry, to ramp up developmental research programs. Currently, its R&D center is focusing on

the fundamental research and characterization of polymer and Nano materials for the semiconductor and energy storage industries.

17. **Electro-Term, Inc.** was awarded two vouchers totaling \$1,817.50. The Fund allowed Electro-Term/Hollingsworth, a manufacturer of solderless terminals, wire harnesses, and cable assemblies, to cost-effectively and rapidly source parts for its tools and machines to remain competitive. In one case, the program allowed the company to meet a promise to one of its customers when it ran into a sourcing problem with an integral component part. Not only was the part able to be 3D printed at a lower cost, but the lead time was also far shorter than that of the original supplier.
18. **Embr Labs Inc.** was awarded \$8,604.50. The Fund allowed Embr Labs, a leader in thermal technology and creator of the Wave Bracelet, to form meaningful research partnerships and validate its technology to the highest scientific standards. The work supported by the voucher program will help the company reach a broader audience with its consumer product, apply for follow-on funding to continue scientific collaboration, and secure the investment needed to grow to a global scale.
19. **Empower Robotics Corporation** was awarded four vouchers totaling \$5,361.20. The Fund allowed Empower Robotics, a startup company that develops wearable support gear for heavy-industry workers, to access 3D printing capabilities to accelerate development by affordably and reliably providing different size options for test subjects.
20. **Enable Life Sciences LLC** was awarded three vouchers totaling \$3,054.92. The Fund allowed Enable Life Sciences, a company that offers a wide variety of technical capabilities including data-driven research for immune profiling and immune cell activation, to more cost-effectively and rapidly evaluate products leading to faster bench-to-market timelines.
21. **Ernest Pharmaceuticals, LLC** was awarded \$1,207.50 to access the resources and competitive pricing of the Animal Imaging core thus enabling Ernest to generate a critical mass of data and to secure additional funding to support the development of its microbial anti-cancer pipeline.
22. **Etesian Technologies, LLC** was awarded two vouchers totaling \$969.41. The Fund allowed Etesian Technologies, a developer of self-powered weather instruments, to access 3D-printing technology to develop prototypes to reduce the cost and labor involved in the manufacture of component parts for its customers.

23. **Felsuma, LLC** was awarded two vouchers totaling \$6,722.64. The Fund allowed Felsuma to accelerate product development including a first-of-its-kind, highly functional, reusable, non-damaging, attractive, customizable wall-mounting hook for which the company has been able to attract a corporation to discuss a licensing deal.
24. **Folia, Inc.** was awarded two vouchers totaling \$2,009.25 to characterize metallic nanoparticles, which it intends to utilize in a Federal Drug Administration Emergency Use Authorization registration, and to access unique technologies to create antiviral masks.
25. **Fornax Biotech LLC** was awarded \$41,623.82. The Fund allowed Fornax Biotech, a Worcester-based startup company focusing on developing advanced applications of Next-Generation Sequencing, to facilitate R&D in pharmaceuticals and systemically evaluate its proof-of-concept technologies.
26. **FTL Labs Corporation** was awarded four vouchers totaling \$2,326.88. The Fund allowed FTL Labs, a research, development, and management firm, to free up capital to develop more prototypes and meet critical project goals, which in turn has better positioned the company to pursue additional government funding solicitations.
27. **GALY CO.** was awarded two vouchers totaling \$28,896.75. The Fund allowed GALY, a startup biotech company with a proprietary method of sustainable cotton production, to expand its research endeavors towards rapidly growing the company.
28. **Gel4Med, Inc.** was awarded \$312.50. The Fund allowed Gel4Med, a smart materials company focusing on regenerative medicine, to analyze the purity on its short sequence protein samples and identify any residual solvents.
29. **Huck House LLC** was awarded two vouchers totaling \$2,168.59 to access excellent design and prototyping services for its sporting goods products.
30. **Hyalex Orthopaedics, Inc.** was awarded two vouchers totaling \$5,122. The Fund allowed Hyalex Orthopaedics, which is developing transformational synthetic cartilage technology and implant systems for diseased and damaged joints, to rapidly develop a unique test that has provided critical insight to the development of its product and to accelerate its R&D efforts.
31. **Hygeniks LLC** was awarded \$122.50. The Fund allowed Hygeniks, a value-added processor of components and systems for hygienic processes, to grow its portfolio of projects and accelerate product development.

32. **i20 Therapeutics, Inc.** was awarded \$720. The Fund allowed i20 Therapeutics, a company that has developed a disruptive ionic liquid technology enabling the oral delivery of peptides, proteins, and other injection-based drugs, to accelerate the development of next-generation formulations using computational modeling.
33. **Inkbit, LLC** was awarded \$550. The Fund allowed Inkbit Corporation, an additive manufacturer that uses machine vision and AI to deliver a multi-material jetting platform, to stretch its limited R&D budget to help it reach critical project goals and in turn seek follow-on funding.
34. **Innovative Wellness Systems Inc.** was awarded three vouchers totaling \$33,907.28. The Fund allowed Innovative Wellness Systems, an early-stage company developing solutions to solve global problems, to bring its solutions to market sooner by delivering 3D-printed critical parts with speed and efficiency.
35. **LaunchPad Medical, LLC** was awarded \$2,372.01 to access experienced professionals with deep domain expertise in the most cutting-edge 3D-printing techniques and methodologies to help develop a process for printing its biomaterial.
36. **Manus Robotics Inc.** was awarded \$52.45 to speed up its design process, thus enabling the company to get useful feedback from potential customers early on.
37. **Matterworks** was awarded two vouchers totaling \$6,599.85. The Fund allowed Matterworks, a company specializing in next-generation metabolomics tools, to conduct early, critical experiments to de-risk key technical assumptions of its technology.
38. **New Code Research** was awarded \$7,920. The Fund allowed New Code Research to assess which varieties of a natural plant-based remedy deliver optimal relief for a given medical indication (e.g. nausea, chronic pain, migraines) via computational chemistry-based analysis of over 750 pages of chemical testing data collected from laboratories across the country.
39. **New Equilibrium Biosciences, Inc.** was awarded two vouchers totaling \$18,360 to develop a novel machine-learning-based computational framework for investigating drug-target interaction. This framework allows the company to accurately predict the ensemble of complex and flexible biomolecules, which will enhance the company's capacity and capability for future drug discovery.
40. **Obaggo Recycling, LLC** was awarded two vouchers totaling \$9,123 to bring its product closer to commercialization. The company's innovation will help the

environment by diverting hundreds of tons of valuable plastics from the waste stream into the recycling stream, and create new jobs required for building and distributing its devices, as well as for sorting, transporting, and reprocessing the plastic material.

41. **Olive Barber** was awarded three vouchers totaling \$1,233.75. The Fund allowed Barber's small business access to a laser cutter to create the base for her artwork, enabling the business to become profitable and create artwork that is unique, hi-tech, and affordable.
42. **Optodot Corporation** was awarded six vouchers totaling \$12,507.26. The Fund allowed Optodot to quickly pivot after its contract coater suddenly closed in spring 2019, leaving the company without a pilot manufacturing partner in the face of impending deadlines from its commercial partners. The company seamlessly transitioned its development activities to UMass and met project objectives and timelines, running five different coating trials with an average of four different designs at each trial.
43. **Pioneer Valley Coral & Natural Science Institute Inc.** was awarded three vouchers totaling \$10,300.95. The Fund allowed Pioneer Valley Coral & Natural Science Institute to continue pursuing business development opportunities and has been key in accelerating product development in the Institute's new water-treatment company.
44. **RevBio Inc.** was awarded \$5,924.43. The Fund allowed RevBio Inc. to make significant research advances on a novel bone adhesive biomaterial technology, which it intends to commercialize for medical use.
45. **ReviveMed Inc.** was awarded \$15,000. The Fund allowed ReviveMed, a company using artificial intelligence and data from metabolites for drug discovery purposes, to collect metabolomics data for hundreds of patients suffering from fatty liver diseases. Fatty liver disease is affecting more than 100 million Americans and has no treatment; these data have enabled the company to find novel therapeutic targets for this disease, which are moving forward with pre-clinical validations.
46. **Revolution Biosciences, LLC** was awarded \$915.52. The Fund allowed Revolution Biosciences use of the UMass Mass Spectrometry Facility towards completing its in-vitro compound testing to help identify products to bring to market.
47. **Silicon Therapeutics LLC** was awarded four vouchers totaling \$28,736.20. The Fund allowed Silicon Therapeutics to: access the capabilities of the Massachusetts Green High Performance Computing Center; collect titration data from isotopically labeled proteins in the presence of small molecules; and to perform routine drug



discovery assays as well as in-depth characterization of small molecule protein interactions, allowing the company to significantly advance its drug discovery pipeline and develop novel and innovative methods in drug discovery.

48. **Skye Highlander Enterprises LLC** was awarded \$168.75 to investigate and prototype potential products that might otherwise have remained as concepts.
49. **Snack Shapes, LLC** was awarded \$150.75. The Fund allowed Snack Shapes, developer of Temgrams, a geometric puzzle-shaped snack, to access 3D-printing expertise and technologies in the development of its additive fabrication.
50. **SpiderCuff USA, LLC** was awarded two vouchers totaling \$51,767.40. The Fund allowed SpiderCuff, developer of a 21<sup>st</sup>-century handcuff, to extend its non-dilutive funding toward the development of a study aimed at developing a dataset that can be used to evaluate how effective its product is in helping people be safer and avoid injuries.
51. **TinyPilot LLC** was awarded two vouchers totaling \$5,233.31 to access expertise and resources in 3D printing to iterate and improve on its products rapidly and at low costs.
52. **Volo Aero MRO, Inc.** was awarded two vouchers totaling \$12,787.46. The Fund allowed Volo Aero, a provider of precision machine solutions to the aerospace industry, to implement solutions and deliver 3D-printed fixtures into its production processes quickly and efficiently.
53. **X2O Corp** was awarded \$16,858.30. The Fund allowed X2O, which provides a crowdsource approach to water-quality sensing, to advance the development of its early-stage technology while at the same time utilizing additional resources to hire interns to assist with its project.
54. **Xogen Mass Inc.** was awarded \$73,915.54 to gather excellent baseline data on utilizing its new technology to treat municipal wastewater.
55. **Yield10 Bioscience, Inc.** was awarded \$2,600 to expand its technology designed to identify unique chemical fingerprints of plants with improved seed yield through the analysis of plant tissue.
56. **ZwitterCo, Inc.** was awarded three vouchers totaling \$2,161. The Fund allowed ZwitterCo, a Massachusetts startup venture/small business developing membrane technology and products for filtration applications, to perform custom coating

processes and testing to deliver prototypes to specific industry customers in order to evaluate performance and cost of implementation.

### **University of Massachusetts, Boston**

The University of Massachusetts, Boston awarded eight vouchers to six companies requesting reimbursements totaling \$28,018.59. The following details each voucher:

1. **ACTnano, Inc.** was awarded \$177 to characterize material morphology and thickness of nanocoatings for waterproofing electronics applications.
2. **Edge Embossing, Inc.** was awarded \$1,567.50. The Fund allowed Edge Embossing, a manufacturer of microstructured thermoplastic parts for microfluidic applications, to perform measurements to detect thermal oxidation.
3. **GRO Biosciences Inc.** was awarded two vouchers totaling \$10,462.50. The Fund allowed GRO Biosciences to identify fragments from a V8 protease digest of purified insulin variants, to assist in developing best-in-class protein therapeutics for diabetes, growth disorders, and autoimmunity.
4. **New Equilibrium Biosciences, Inc.** was awarded \$1,443.75 to develop a hybrid computational-experimental platform that will empower the discovery and design of therapeutics targeting currently undrugged proteins.
5. **seqWell Inc.** was awarded \$1,670.34. The Fund allowed seqWell to use Flow Cytometry to aid in its efforts to revolutionize next-generation sequencing library prep to unlock the full potential of today's DNA sequencing instruments.
6. **Spectrus LLC** was awarded two vouchers totaling \$12,697.50 to evaluate tissue samples using quantitative proteomics with TMT labels, thus enabling the company to compare treatment conditions and collect replicate data for a drug-development project.

### **University of Massachusetts, Lowell**

The University of Massachusetts, Lowell awarded 94 vouchers to 46 companies requesting reimbursements totaling \$613,047.44. The following details each voucher:

1. **ACTnano, Inc.** was awarded three vouchers totaling \$10,951.89. The Fund allowed ACTnano, a company that develops nanocoatings for waterproofing electronics and fabrics and self-cleaning, anti-icing, and anti-fogging glass, to characterize coatings and to allow its engineers to acquire skills in operating multiple analytical equipment.

2. **Adaptive Surface Technologies, Inc.** was awarded \$1,677.94. The Fund allowed Adaptive Surface Technologies, an early-stage company with a focus on material science and coatings, to access discounted rates of testing and characterization, thus allowing the company to focus more of its financial resources towards hiring interns.
3. **Advanced Silicon Group, Inc.** was awarded three vouchers totaling \$23,986.32 to develop a silicon nanowire biosensor to measure protein concentrations.
4. **Akita Innovations LLC** was awarded two vouchers totaling \$2,343.19. The Fund allowed Akita Innovations, a company that engages in contract research and development for commercial and government customers, to facilitate its development of encapsulated oxidizers for production of biocidal energetics, functional adsorbents, and polymeric binders for the manufacture of insensitive energetics.
5. **AmberWave, Inc.** was awarded four vouchers totaling \$64,259.90. The Fund allowed AmberWave, a startup solar energy technology company, to access processing and analytical tools to develop thin, lightweight, and flexible, high-efficiency solar cell technology for use in commercial building rooftop solar energy applications and for use in military individual soldier portable power generation.
6. **American Battery Metals Corporation** was awarded \$4,026 to accelerate the analytical testing of its material samples generated in its process development laboratories and to increase its ability to meet project performance and timeline goals. Through these cost savings, the company has been able to hire an additional intern and purchase additional equipment to increase the scope of its technology development programs.
7. **AzzTek, LLC** was awarded two vouchers totaling \$3,911.63. The Fund allowed this hardware-centric company to access facilities, instruments, and resources to aid in its fabrication and characterization of electrical devices and/or device components with micro- and nano-scale features. This has allowed the company to get through several key manufacturing and clinical validation milestones.
8. **Bambu Vault LLC** was awarded three vouchers totaling \$4,407.63. The Fund allowed Bambu Vault, a company on the verge of commercialization, to perform structural characterization of organic dyes and characterization of the nanoparticles that are proprietary to its products.
9. **Cam Med LLC** was awarded two vouchers totaling \$3,384.24. The Fund allowed Cam Med, a company developing a product (Evopump) for subcutaneous drug

delivery, access to the facilities and equipment to assist in the characterization of Evopump, including plastic film imaging, microfluidic components and electrodes, and sterilization using gamma radiation.

10. **Caraway Therapeutics, Inc.** was awarded \$20,610 to generate data and access scientific expertise to compare the effect of different drug treatments on the transcriptome of HeLa cells of differing genotypes using an RNA sequencing approach.
11. **DialyFlux, LLC** was awarded two vouchers totaling \$19,248.75 to develop the design, fabrication, and testing of a micro-structured surface on a silicon wafer for the rapid separation of plasma from human blood with no moving parts and without centrifugation.
12. **Distal Solutions, Inc.** was awarded two vouchers totaling \$4,687.50. The Fund allowed Distal Solutions, a company developing a catheter-like drug delivery device for a targeted adeno-associated viral vector (AAV)-based gene therapy for sensorineural hearing loss, to expose the devices to a gamma sterilization cycle prior to testing to ensure that they are as close to the clinical embodiment of the device as possible, and to rapidly develop and test a series of prototypes in a cost-effective and time-efficient manner.
13. **Erbi Biosystems, Inc.** was awarded \$999.99 to make specialty sterilized tubing assemblies in small volume to support potential customers in new markets. This enables very fast design iterations and product testing to allow the company to refine the product and generate critical validation data during bioprocess development.
14. **Fluent BioSciences Inc.** was awarded two vouchers totaling \$63,216 to complete more than 20 next-generation sequencing runs at a discounted rate, during which the company's product has changed from a proof of principle into a pilot-ready reagent kit. The reduction in sequencing costs allowed the company to invest in additional R&D.
15. **Gel4Med, Inc.** was awarded two vouchers totaling \$3,086.26. The Fund allowed Gel4Med to access equipment, facilities, and services to study confocal, SEM, and TEM imaging of hydrogels and/or cell-gel constructs.
16. **Glycologix, LLC** was awarded \$4,158. The Fund allowed Glycologix, a company funded by a Small Business Innovation Reward from the NIH to pursue glycosaminoglycan replacement to address an unmet medical need in Interstitial Cystitis, to use the Nuclear Magnetic Resonance and Thermal Analysis and

Mechanical Properties Labs in self-service mode to run samples that will provide key data to advance the company's research.

17. **Glyscend, Inc.** was awarded two vouchers totaling \$4,369.13 to access advanced instrumentation needed for the company's ongoing synthesis, testing, and scale-up work on a therapeutic polymer for the treatment of metabolic diseases.
18. **Honeycomb Biotechnologies, Inc.** was awarded four vouchers totaling \$76,841.63. The Fund allowed Honeycomb Bio, which is aiming to expand single-cell opportunities to basic, translation, pre-clinical, and clinical research throughout the world using its HIVE technology, to access sequencing services to support R&D and product development. The savings realized using the facilities allowed the company to hire one additional person who would not have otherwise been supported by its budget. Furthermore, it anticipates that users/customers of its product may use the sequencing lab to process their samples seamlessly.
19. **i20 Therapeutics, Inc.** was awarded two vouchers totaling \$6,778.32. The Fund allowed i20 Therapeutics, a biotech startup synthesizing ionic liquids used to deliver small molecules and biologics orally, to characterize its ionic liquid formulations by nuclear magnetic resonance and LCMS for confirmation of synthesis, purity, and validation.
20. **JETCOOL Technologies Inc.** was awarded \$300. The Fund allowed JETCOOL to access critical microelectronics fabrication resources and capabilities to help the company demonstrate the fundamental groundwork for potentially transformative changes in how advanced semiconductors will be designed, will be built, and will perform.
21. **KemLab, Inc.** was awarded \$1,035. The Fund allowed KemLab to compare Etch Rates of various photo resists as coated-on silicon wafers, and to generate and gather molecular weight epoxy resin comparison data to help in its production and product development process to meet customer requirements.
22. **KnipBio, Inc.** was awarded \$14,899.28. The Fund allowed KnipBio to profile gut microbiome from salmon species by DNA isolation, library prep, and next-generation sequencing.
23. **Launchpad Medical, LLC** was awarded two vouchers totaling \$8,436.86. The Fund allowed LaunchPad Medical, a company developing and preparing to commercialize a novel, injectable, bioresorbable bone adhesive with instant adhesive strength, to

complete bench-top, animal, and biocompatibility studies per Federal Drug Administration regulations, in support of human clinical use.

24. **Lionano SE Inc.** was awarded three vouchers totaling \$4,400.11. The Fund allowed Lionano, a company developing advanced novel materials for lithium-ion batteries, to accelerate the development and characterization of its advanced solid-state battery materials portfolio.
25. **MicroContinuum, Inc.** was awarded \$4,378.50 to create a plasma-etching process in support of an ARPA-E and commercial project to develop a cost-effective waste-heat-to-electricity project.
26. **Microfluidics, Inc.** was awarded \$1,599 to develop a microfluidic channel prototype.
27. **Mioe Inc.** was awarded four vouchers totaling \$37,747.78. The Fund allowed Mioe, a company with the goal of fabricating a complete semiconductor laser device, to perform several fabrication steps in the Nano Fabrication Laboratory including photolithography, reactive ion etching, sputter deposition of refractory metals, and lift-off procedures to define metal contacts.
28. **Nanolab, Inc.** was awarded four vouchers totaling \$13,910.01. The Fund allowed NanoLab, a company developing carbon nanotube-based friction pads that can be used to support silicon wafers during processing to enable faster operations within an automated environment, to catalyze and grow these in a clean environment, then determine if they contaminate wafers touched by the pads. Using the UMass facilities allows the company to develop and test products in a clean room environment, which it would have otherwise had to install itself at considerable cost.
29. **Nanoland Materials Incorporation** was awarded \$1,273.50. The Fund allowed Nanoland Materials to access the instruments needed to measure and characterize the nanoparticle size distribution and morphology as the company moves closer to commercialization.
30. **NBD Nanotechnologies Inc.** was awarded two vouchers totaling \$4,454.44. The Fund allowed NBD Nano, a startup focusing on advanced smart functional coatings formulation, to characterize its polymers and monomers that the company synthesizes in-house. In order to expand NBD Nano's product portfolios and maintain current business opportunities, next generation materials need to be investigated and developed. Fundamentally, understanding structure-property relationships is core to advancing NBD Nano's smart functional coatings.

31. **Privo Technologies, LLC** was awarded \$2,313.48 to expand its research for healthcare products to be applied during tumor resection, thus allowing more treatment options for cancer patients.
32. **Pykus Therapeutics, Inc.** was awarded three vouchers totaling \$8,087.44. The Fund allowed Pykus Therapeutics, a company developing hydrogels for oral surgery, to synthesize and characterize polymeric materials to make hydrogels. At the same time, the company is exploring drug delivery with the hydrogels using equipment at the facilities.
33. **Radical Plastics, Inc.** was awarded two vouchers totaling \$5,335.50 to access equipment needed to test a prototype material (biodegradable mulch film), and to hire additional people. The company was able to optimize its first product's performance and provide a pilot product for the field testing by local farmers and universities this season.
34. **RevBio Inc.** was awarded \$2,802.64. The Fund allowed RevBio to access cutting-edge analytical tools and equipment thus enabling the company to perform rigorous material characterization studies of its bone-adhesive biomaterial. This research directly helped the company obtain regulatory approval to start two clinical studies, and paved the way for the eventual commercial approval of its first product.
35. **Riparian Pharmaceuticals, Inc.** was awarded \$3,432. The Fund allowed Riparian Pharmaceuticals, a small early-stage biotech company discovering new therapeutics for vascular disease, to perform two transcriptomic experiments to help it characterize the in vivo pharmacology of its lead compounds.
36. **Sensera, Inc.** was awarded \$2,152.50. The Fund allowed Sensera access to facilities and equipment to develop a GaN etch process to build Laser Diodes and to support other projects such as micro mirrors, implanted sensors, and pressure sensors.
37. **Spectral Sciences, Inc.** was awarded \$273 to characterize surfaces of specialized filters.
38. **Tarveda Therapeutics, Inc.** was awarded three vouchers totaling \$4,803 to perform analyses of Lutetium-containing compounds to positively impact its discovery of cancer therapeutics by allowing the company to progress its discovery platform from the data generated.
39. **Triaxia Health, Inc.** was awarded \$25,857.88 to bring an additional health system, Stanford Health, onto its platform and sequence an additional 96 patients' worth of

DNA and RNA. This has provided an important signal of Triaxia's viability as a company to potential investors, allowing the company to add five additional staff.

40. **Versatope Therapeutics, Inc.** was awarded five vouchers totaling \$12,238.69. The Fund allowed Versatope, a company engaged in the development of customized therapeutic delivery vehicles with broad applications in vaccine development, immunotherapy, and allergy treatment based upon outer membrane vesicles derived from probiotic bacteria, to leverage its capital to hire additional staff and expand its research and development activities. These activities will enable Versatope to reach proof-of-concept milestones sooner, and support its grant applications with the NIH and foundations for funding to help grow the company.
41. **Via Separations, Inc.** was awarded \$474.75. The Fund allowed Via Separations, a company that manufactures chemically resistant nano-filtration membranes for purifying chemicals in several industries and reducing the energy required in the process, to screen techniques for applicability to several key engineering challenges. The facilities provide quality assurance and control pilot products, allowing the company to understand and de-risk critical threats.
42. **Volta Labs, Inc.** was awarded \$5,083.50. The Fund allowed Volta Labs, an MIT Media Lab Spinoff focusing on automating complex biological workflows on a programmable chip, to perform next-generation sequencing runs. The runs will enable Volta Labs to continue the development of the platform, including testing for purification of nucleic acids, efficiency of library preparation, new application testing, contamination assessment, development of analysis tools, and validation of the process.
43. **VPT Rad** was awarded four vouchers totaling \$67,258.31 to use the Radiation Laboratory Fast Neutron Irradiator to qualify electronic components for space application.
44. **Vuronyx Technologies LLC** was awarded two vouchers totaling \$6,386.07 to characterize its carbon fibers and bio-based epoxies with various analytical techniques. The funding has allowed the company to continue developing proof-of-concept prototypes for potential new products.
45. **Young Biopharma, LLC** was awarded four vouchers totaling \$1,463.64 to use facilities and equipment to analyze the structures and determine the purity for organic compounds from its synthetic effort. The voucher program has positively impacted the company's discovery cancer therapeutics by allowing it to progress its discovery platform from the data received.



46. **ZS Genetics, Inc.** was awarded two vouchers totaling \$50,706.24 to access instrumentation and technical support for its early-stage medical diagnostics research.

**University of Massachusetts Medical School, Worcester**

The University of Massachusetts Medical School (UMMS) awarded 28 vouchers to 21 companies requesting reimbursements totaling \$326,303.93. The following details each voucher:

1. **Ally Therapeutics, Inc.** was awarded \$48,922.50. The Fund allowed Ally Therapeutics, a new Massachusetts-based, venture-backed preclinical biotech company dedicated to solving the immune response issues that limit the safety and efficacy of in vivo gene therapies, to access core facilities, such as the Mass Spectrometry Core and the Viral Vector Core (Gene Therapy Center) at UMass Medical School to advance its first therapeutic candidate large-animal proof-of-concept study.
2. **Ankaa Therapeutics, LLC** was awarded two vouchers totaling \$47,743.96 to screen for inhibitors to a drug target that plays a critical role in cancer biology. The protein is a member of the inhibitor of apoptosis family but to date no direct inhibitors have been discovered. These funds will enable Ankaa to develop chemistries to target the protein of interest but also perform initial testing. This work will form the basis for a personalized medicine strategy against this drug target.
3. **Applied Pathology Systems, LLC** was awarded \$900. The Fund allowed Applied Pathology Systems to expedite the delivery of its research project, and helped the company apply new technologies in its research at an affordable cost.
4. **Arbor Biotechnologies, Inc.** was awarded \$2,275 to explore a new sequencing technology to be able to develop a new method of identifying DNA transposition events on the PacBio sequencing platform.
5. **Boston Institute of Biotechnology, LLC** was awarded two vouchers totaling \$2,830 to access and train on FACS and flow cytometry for sorting and data analysis, which significantly shortens project timelines for its cell line development and characterization needs.
6. **Dyno Therapeutics, Inc.** was awarded two vouchers totaling \$8,450. The Fund allowed Dyno Therapeutics, a gene therapy company, to access PacBio sequencing to enhance its ability to characterize the library in each round of screening, powering its

pipeline to engineer capsids with improved properties, and increase its knowledge of the AAV capsid landscape.

7. **enEvolv, Inc.** was awarded \$2,835 to develop its core technology. The cost savings mean a faster technology pipeline, which in turn means hiring additional scientists. Deep sequencing experiments are central to the company's ability to learn from the experiments it is performing.
8. **Fornax Biotech LLC** was awarded \$10,245. The Fund allowed Fornax Biotech, a company focused on developing advanced applications of Next-Generation Sequencing to facilitate R&D in pharmaceuticals, to systemically evaluate its proof-of-concept technologies.
9. **Frontera Therapeutics, Inc.** was awarded three vouchers totaling \$75,000 to analyze additional samples and generate critical materials for AAV production using state-of-the-art facilities and equipment in the core facilities. The fast turnaround time will enable the company to obtain critical data quickly and expedite its research and development.
10. **Gel4Med, Inc.** was awarded \$7,202.85. The Fund allowed Gel4Med, a company in the process of developing a biomaterial technology, to meet many of the company's milestones.
11. **GO Therapeutics, Inc.** was awarded \$2,385. The Fund allowed GO Therapeutics to access flow cytometry services to develop its CAR-T therapeutics to grow the company by moving its discoveries from bench to bedside, thus ultimately benefiting patients.
12. **Levergen** was awarded \$26,205 to analyze additional samples using state-of-the-art facilities and equipment. The fast turnaround time will enable the company to obtain critical data quickly and expedite research and development.
13. **NA Biotech Corp** was awarded \$3,132 to study monoclonal antibody binding and functional activity using the FACS Core Facility, which can potentially contribute to the development of an anti-cancer therapeutic.
14. **Quench Bio, Inc.** was awarded \$24,997.50. The Fund allowed Quench Bio to run critical assays to advance small-molecule inhibitors of inflammatory cell death eventually useful for the treatment of patients suffering from inflammatory diseases such as rheumatoid arthritis and lupus.

15. **Riparian Pharmaceuticals, Inc.** was awarded two vouchers totaling \$27,375. The Fund allowed Riparian Pharmaceuticals to make significant progress in understanding the chemical biology of its first-in-class therapeutics program.
16. **Silicon Therapeutics LLC** was awarded \$11,186.99. The Fund allowed Silicon Therapeutics to use the Structure-based Drug Design core facility at UMass Medical School to extend its protein production capabilities and access expertise in the purification of challenging proteins. These proteins will be used to support the company's structural biology efforts, which are critical to its ability to perform accurate molecular dynamics simulations and significantly advance its drug discovery pipeline.
17. **Spring Bank Pharmaceuticals, Inc.** was awarded \$4,400. The Fund allowed Spring Bank, a company that has identified a lead, novel compound for its STING antagonist program, which will be eventually tested for autoimmune diseases, to complete preclinical studies using the Small Animal Imaging Core to study the effects of compounds on the palmitoylation status of STING using radioactive <sup>3</sup>H palmitate labeling.
18. **Syd Labs, Inc.** was awarded \$65.25 to use equipment to help grow its business, and help the company and its clients develop antibodies for therapeutic, diagnostic, and research use.
19. **Synteny Therapeutics, Inc.** was awarded \$767.63. The Fund allowed Synteny Therapeutics, a newly formed gene-therapy company developing a new class of viral vectors distinct from vectors derived from the related adeno-associated virus clades, to perform large-scale production volumes that reduce the cost of goods, thereby providing greater access for patients.
20. **Transcytos LLC** was awarded \$3,514.50. The Fund allowed Transcytos, a company that has developed a transfection technology for introducing biomolecules such as DNA, RNA, proteins, or a combination of these molecules into a variety of mammalian cells, to obtain quantitative data to validate its approach. The company has determined that flow cytometric analysis of cells transfected with biomolecules is critical to achieve this objective. The voucher program will allow Transcytos to perform a study large enough to generate sufficient data to reach the next level of growing its business beyond R&D to manufacturing and sales targeted to biomedical research applications.

21. **Yurogen BioSystems LLC** was awarded two vouchers totaling \$15,420.75 to access facilities and equipment to perform single B cell-based sorting and culture for monoclonal antibody discovery.