



Acorn Innovation Fund Report (FY25 Cohort)

The Innovation Commercialization Seed Fund, also known as the Acorn Innovation Fund, is enabled by the Legislature: “shall be used to advance the goals of job growth creation, innovation and economic development which may include, but shall not be limited to, the construction of prototypes, testing, market research and other steps necessary to bring the invention or concept to market in the commonwealth.” The Acorn Innovation Fund supports principal investigators (faculty, graduate students and post-doctoral students) at Massachusetts research institutions (universities and medical centers) who seek to demonstrate the viability of their technology and advance them towards commercial use. Awards can be used to: 1) further develop a prototype, 2) gather additional data to demonstrate proof of concept, or 3) obtain data to compare the technology to existing technologies and show its competitive advantages. Several past Acorn Innovation grant winners have gone on to spinning out startups based on their inventions and have raised outside capital.

Here is the program summary re applications, reviewers and results for the past 8 years. Note: During 2021, MassVentures ran the Acorn program for both the FY21 and FY22 Cohorts on behalf of the Massachusetts Technology Transfer Center (MTTC) which was then housed at University of Massachusetts.

Acorn Stats for the past 8 years:

Year	Total Applications	UMass Applications	MA Applications	Winners	Proposal Reviewers
2025	35	12	23	10	47
2024	33	11	22	6	39
2023	22	8	14	12	34
2022	37	8	29	12	55
2021	35	14	21	13	69
2020	24	12	12	13	23
2019	53	18	35	14	16
2017	49	29	20	10	20

MassVentures has been actively working to increase the UMass applications by working with the UMass’s and the Executive Office of Economic Development.



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FY25 Details:

Ten grants of \$36,000 each, for a total of \$360,000, were awarded to faculty researchers from UMass Chan Medical School; the University of Massachusetts at Amherst; Massachusetts Institute of Technology; Northeastern University, Tufts University; and WPI to assist them in testing the viability of their technologies and potentially bringing their research to market.

Selected by a group of 47 external industry expert reviewers from the field of 35 applicants, the recipients were chosen based on their written proposal and a 3 minute video submitted by each applicant, demonstrating their project's technical merit, commercial viability, project plan and strength of team. Eight of the projects selected are therapeutics, diagnostics or life sciences categories like cellular agriculture, such as hypoxia resistant first-in-class small molecules that reprogram electron flow in the mitochondrial electron transport chain, to innovative biochemical-based cell regulation techniques that accelerate granulation rates and sustain granule formation and a pet food ingredient based on cultivated insect cells (CICs), representing a marriage between the two leading alternative protein sources for pet food. Two of the projects are advanced materials or sensor and AI physical sciences based such as technology that transforms wet organic waste into a negative-emission mineral which can directly reduce the embodied carbon of the construction and waste management industries or an advanced spectrofluorometer employing machine learning for early detection of Harmful Algal Blooms.

FY25 recipients of the MassVentures Acorn Innovation Fund awards are as follows:

Jessica Spinelli PhD; UMass Chan Medical School

Novel molecular tools to reprogram the electron transport chain - Developed first-in-class small molecules that reprogram electron flow in the mitochondrial electron transport chain. These molecules deliver electrons to fumarate, instead of oxygen, enabling mitochondrial function without oxygen present. Treating mice with these novel compounds makes them resistant to hypoxia such as happens during heart attack or stroke.

Chul Park PhD and Joseph Gikonyo PhD; University of Massachusetts Amherst

Bioengineered Granulation to Catalyze Sustainable and Carbon-neutral Wastewater Treatment Worldwide - Microbial granulation can play a crucial role in densifying and decarbonizing wastewater treatment and promote greater access to wastewater treatment worldwide. Yet, granulation is not a spontaneous process and is challenging to sustain. Their technology involves



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innovative biochemical-based cell regulation techniques that accelerate granulation rates and sustain granule formation.

Gregory Pazour PhD; UMass Chan Medical School

TACSTD2 Therapy for Polycystic Kidney Disease - Polycystic kidney disease is a leading cause of kidney failure, but treatment options are limited to an expensive mediocre drug. They propose to develop therapy using antibody drug conjugates to deliver anti-proliferative drugs to cystic epithelium. This is expected to reduce cyst expansion and prevent the progression to kidney failure.

S Thayumanavan PhD and Ryan Lu PhD Candidate; University of Massachusetts Amherst

Combating Resistance of NSCLC via Extracellular Protein Degradation by PolyTACs - They have created a new approach to specifically degrade membrane proteins in cancer cells. This ability provides a unique therapeutic opportunity for non-small cell lung cancer, which currently suffers from poor prognosis due to resistance development.

Yubing Sun PhD and Beatriz Martinez-Martin Graduate Student; University of Massachusetts Amherst

Advanced brain organoid models for neurological drug discovery and toxicology - They have developed a micro-engineered device (US patent pending) for generating regionalized neural organoids, stem cell-derived 3D models that mimic human brain structures and functions. They aim to use this technology to develop multiple disease models for preclinical drug discovery and environmental toxin screening.

Qinmin Zheng PhD and Andrew Whittle, Sc.D; Massachusetts Institute of Technology

Novel Spectrofluorometer and Machine Learning for Online Early Detection of Harmful Algal Blooms - They are developing REMORA, an advanced spectrofluorometer employing machine learning for early detection of Harmful Algal Blooms. Using a unique flow-cell design with fiber optic light delivery, it enables superior detection and discrimination of algal groups. REMORA offers accurate, cost-effective, in-situ monitoring for proactive water quality management.

Leanne Chukoskie PhD and Sundararaman Rengarajan PhD Candidate; Northeastern University

A sensor-integrated and gamified decision support tool to minimize blood glucose variability - Sugar Slay is an app-based decision support tool for adolescents and young adults with Type 1



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Diabetes. The app uses sensors and gamified supports to help users discover their individual glucose management trends and build stronger habits to minimize glucose variability and maximize independent diabetes management and healthy lifestyle choices.

Carolyn Lee-Parsons PhD and Lauren Cole-Osborn PhD; Northeastern University

Elite CRISPR-edited Periwinkle Plants for Production of Chemotherapeutics - The Madagascar Periwinkle plant is the only source of the chemotherapeutic vincristine. To enhance supply of vincristine, they will use CRISPR to generate gene-edited plants with elevated concentrations of the precursors to vincristine. They have proof-of-concept data and a pending patent for building their prototype as the next step.

David Kaplan PhD; Tufts University

Cultivated Insect Cells for Pet Food Ingredients - Farmed animal products present challenges for pet food manufacturers with regards to environmental sustainability goals, food safety, and supply chain resiliency. Their proposed innovation is a pet food ingredient based on cultivated insect cells (CICs), representing a marriage between the two leading alternative protein sources for pet food.

Andrew Teixeira PhD and David Kenney Research Fellow; WPI

Unlocking Carbon-Negative Concrete with Municipal Solid Waste - Cement and concrete are the central focus for industrial decarbonization efforts. Their unique technology transforms wet organic waste into a negative-emission mineral which can directly reduce the embodied carbon of the construction and waste management industries. Waste allows for a distributed production of a drop-in concrete additive for widespread adoption.

About

The Acorn Innovation Grant is funded by the Commonwealth's Innovation Commercialization Seed Fund. Applications for awards are solicited annually in the fall. For more information: <https://www.mass-ventures.com/mvcapital/acorn>.

MassVentures is the Commonwealth's strategic venture capital team. MassVentures finds, funds, and fosters early-stage deep tech startups and academic spinouts that fuel economic growth across the Commonwealth. www.mass-ventures.com

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