Northeastern University
Center for Research Innovation

IMPACT

THE 2024 IMPACT REPORT

Purposeful Execution. Profound Impact.

Equation, formula, algorithym or protocol – all great discovery starts with a plan. Having a clear strategy with inspiration and motivation, while embracing change to explore new ideas, experiment with different approaches, and think outside the box was the plan that the CRI implemented this past year. Fueled by inspiration and bold thinking to ignite fresh ideas, the CRI brought this vision to life with passion and purpose, achieving impactful results that truly make a difference.

This report is interactive. Items and elements throughout this document that are highlighted with an underline or a ▶ are clickable hyperlinks or work as document navigation.

OUR MISSION

The CRI pairs solution-oriented research with real-world needs for the enrichment of society through the protection, acceleration, and commercialization of Northeastern innovations.

OUR PROCESS

The CRI is at the forefront of preserving and advancing Northeastern’s technological innovation. The CRI proactively discovers groundbreaking innovations and secures them with commercially viable patents. Additionally, the CRI actively supports the growth of startups and forges strong industry partnerships to ensure innovations are not only protected but also effectively licensed. This strategic approach enables Northeastern to bring cutting-edge products to market, driving technological progress and fostering a thriving ecosystem of innovation.

A MESSAGE FROM THE EXECUTIVE DIRECTOR

Anyone who knows me knows that I love execution, so the theme Purposeful Execution, Profound Impact resonates deeply. When I reflect upon the meaning of Purposeful Execution, I think of how important it is to have a crystal-clear vision of one's goals and desired outcomes. This clarity of vision helps determine priorities and pinpoint advantageous actions. Clear goals engender buy-in, and when an individual, or a team, or a community invests in a goal, execution begins to happen with purpose. As people sense the meaningfulness of their actions, they create Profound Impact through concentrated diligence.

For the CRI, Profound Impact means transforming Northeastern's lab-generated discoveries into products and services that better the lives of individuals, communities, and landscapes on a daily basis. We devote our time and expertise to bringing research to life, and when we succeed, and witness impact beyond what was initially imagined, the sense of satisfaction is profound.

As the theme indicates, FY24 was a year of focus driven impact. Researchers disclosed a remarkable number of inventions leading to a remarkable number of patent applications. This is where the path to world-shifting innovation begins, as one of our prolific inventors, Dr. Sri Sridhar notes: "An idea that you did not act upon with an invention disclosure might as well never have occurred." Through the Spark Fund, we invested $600,000 in a record 12 technologies to accelerate development and commercial viability. We launched a pilot program to provide critical services supporting our entrepreneurial faculty and their early-stage ventures. This program includes pairing founders with Entrepreneurial Consultants, seasoned executives who provide intensive, tailored guidance on all business aspects. The program incorporates grant writing assistance from a specialized firm, which has already helped two ventures secure $275,000 each in non-dilutive federal funding. We have inspired inventorship and entrepreneurship across the ecosystem with the steady growth of Northeastern's chapter of the National Academy of Inventors. The chapter marked a memorable moment when celebrating its inaugural "Inventor of the Year" faculty and student awardees, Drs. Meni Wanunu and Daniel Braconnier, during the annual meeting. Groundbreaking marketing efforts have broadened our commercialization reach through a series of video interviews with researchers, communicating the essence and impact of their innovations as well as capturing the passion that fuels their relentless discovery. These are but a sampling of the successes executing purposefully delivered over the last fiscal year.

Looking forward to FY25, we will continue to amplify our venture support programs. Technologies fresh from the lab are generally far from commercial readiness and are risky for established industry partners to adopt. Ventures are one of the most efficient and cost-effective ways to bring these pioneering technologies to market. Northeastern possesses a vibrant spirit of entrepreneurship as evidenced by the 50+ ventures coming out of the CRI over the past 5 years, and now it is important to shift attention toward accelerating these ventures through key milestones. We will achieve these aims by increasing our pool of Entrepreneurial Consultants; offering a robust educational program designed specifically for upskilling faculty founders on the fundamentals of entrepreneurship; expanding the utilization of grant writing services and tools for refining investor engagement; and recruiting skilled executives capable of shepherding our ventures to swift market entry. We will also continue to develop our ambitious initiative, Tech Transfer Venture Consortium, of building a network comprised of universities, government, and industry partners focused on accelerating research translation via the sharing of best practices, identifying opportunities for collaboration, educating aspiring entrepreneurs, showcasing ventures, and extending networks.

When I look to the future, I see an agile, fast-moving, exciting place to be. I see more community. I see more inventors, more ventures, more industry partnerships – all engaging with CRI. I see Northeastern celebrating its internationally recognized inventors and the hard-won patents that signal immense ingenuity. I see Northeastern celebrating life-bettering products and services, proving just how important fundamental research and thriving entrepreneurship is. Celebrating transformative research and transformed lives, that is the profound impact I envision and what we, the CRI, purposefully work toward.

Jennifer Boyle-Lynch
Executive Director

New Inventors

146

Invention Disclosures

127

20%
INCREASE
OVER FY 23

Patents Granted

62

15%
INCREASE
OVER FY 23

322
SPANNING 5 YEARS

PROTECTING INGENUITY

Protecting discovery to drive social and economic growth

Light bulb moments strike at unexpected times and unexpected places, but the path for protecting creative insights and transforming them into viable products that better our lives remains consistent and unchanged: inventors disclose their innovations to the CRI and the CRI purposefully guides them through the patenting process.

INTELLECTUAL PROPERTY

Our metrics were very good this year, especially on the front end with invention disclosures, patent applications and issued patents.

Jennifer Boyle-Lynch
Executive Director

VOICES




from the team

What contributes to our success?

Absolute accuracy is paramount when dealing with patent applications as errors risk losing protection for the ingenious research of Northeastern faculty. The Intellectual Property and Compliance team's obsessive attention to detail ensures that Northeastern's patent portfolio remains secure and attractive to industry partners eager to commercialize Northeastern innovations.

What motivates our quest for impact?

We are motivated by our faculty, staff, and students who are fueling innovation and creativity and fostering economic growth. We get to see the entire lifecycle of Northeastern innovation, from disclosure to patenting to commercialization, and we want to help protect the University's creativity and secure competitive advantages that stimulate economic and social impact.

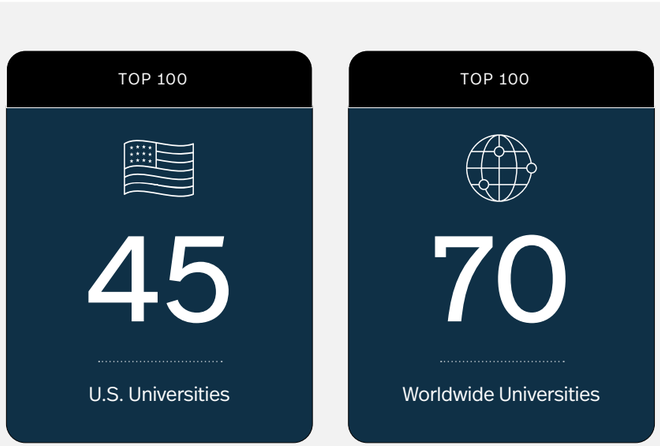
What we are most proud of for FY24?

The Intellectual Property and Compliance team has transformed the way we approach disclosure review with an added emphasis on inventions with federal or other funding support. We are working more closely with NU-RES to review each funding agreement and to understand the related IP terms or obligations. In doing so, we are further protecting our IP assets and providing actionable information for the Commercialization team. In addition, we value the engagement of our students in supporting protection activities and administrative responsibilities. This involvement facilitates valuable real-world experience for Northeastern students and enhances their prospects in professions related to intellectual property and beyond.

INTELLECTUAL PROPERTY

Institutional Accolades | 2023

Patents reflect the depth and breadth of novelty and ingenuity. The National Academy of Inventors (NAI) annually ranks institutions granted U.S. Utility Patents both nationally and globally, recognizing the immense difficulty of unearthing and implementing breakthrough discoveries. For 9 consecutive years, Northeastern has ranked among the Top 100.



CRI Joins the Bayh-Dole Coalition

1980 brought a revolution in technology transfer. It marked the passage of the Bayh-Dole Act that gave universities, small businesses, and nonprofits ownership of inventions supported by government funding. Bayh-Dole incentivized these organizations to transform lab-based discoveries into world-shaping products and services, and today, the Bayh-Dole Coalition protects, advocates for, and celebrates the seismic impact of this farsighted policy.

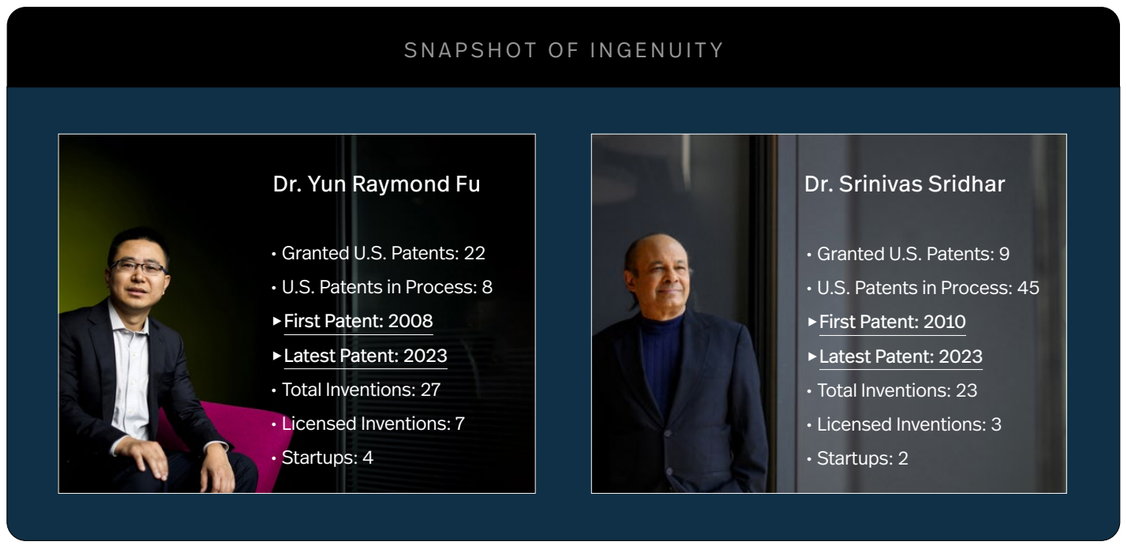
Expanding the Team

Monika Kasprzak, CRI's new Patent Administration Manager

Monika manages Northeastern's expansive patent portfolio and ensures compliance with intellectual property regulations. By working closely with inventors, co-applicants, and outside law firms, Monika protects Northeastern innovation and positions groundbreaking technologies for economic, social, and environmental impact. Her expertise and dedication are instrumental in guiding inventors through the disclosure process and navigating the complexities of grants and licensing.

Prolific Northeastern Researchers Honored by the National Academy of Inventors

The National Academy of Inventors (NAI), a global organization that serves to recognize the inventiveness and societal impact of academic inventors and to inspire and empower future innovators, announced its Class of 2023 NAI Fellows and Northeastern has the honor of recognizing two of its own: Dr. Yun Raymond Fu and Dr. Srinivas Sridhar. ▸Read the full story



INTELLECTUAL PROPERTY

Issued Patents

College of Engineering

Akram Alshawabkeh
- 11,753,321

Joseph Ayers
- 11,766,030

Sidi Bencherif
- 11,846,630
- 11,850,325

Cristian Cassella
- 11,761,825
- 11,784,623

Guohao Dai
- 11,884,765

Salvatore D'Oro
- 11,832,103
- 11,956,763

Adam Ekenseair
- 11,701,031

Jerome Hajjar
- 11,766,030

Vincent Harris
- 11,705,637

Yi Hong
- 11,884,765

Bradley Lehman
- 11,768,252

Tommaso Melodia
- 11,826,119
- 11,831,569
- 11,832,103
- 11,949,544
- 11,956,763
- 11,969,266

Amy Mueller
- 11,766,030

Zhenyun Qian
- 11,927,538

Francesco Restuccia
- 11,832,103
- 11,949,544
- 11,956,763
- 11,969,266

Matteo Rinaldi
- 11,761,825
- 11,927,538

Nikolai Slavov
- 11,719,703

Milica Stojanovic
- 11,766,030

Ming Su
- 11,846,630

Nian X. Sun
- 11,701,031
- 11,968,905

Edmund Yeh
- 11,962,463

Hongli Zhu
- 11,926,965

College of Science

Peter Bex
- 11,701,046

Neel Joshi
- 11,850,268
- 11,859,173

Swastik Kar
- 11,832,535

Sanjeev Mukerjee
- 11,969,713

Mark Patterson
- 11,766,030

Srinivas Sridhar
- 11,701,046

Meni Wanunu
- 11,703,476
- 11,933,778
- 11,994,508

Bouvé College of Health Sciences

Roger Giese
- 11,866,779

Tania Konry
- 11,921,109

Diomedes Logothetis
- 11,952,370

Alexandros Makriyannis
- 11,964,956

Ganesh Thakur
- 11,952,370
- 11,964,956

D'Amore-McKim School of Business

Marc Meyer
- 11,766,030

Khoury College of Computer Science

Albert-Laszlo Barabasi
- 11,881,314

CONTRACTS

Inter-institutional Agreements

18

Non-disclosure Agreements

19

110

SPANNING 5 YEARS

STREAMLINING

AGREEMENTS

Employing adaptive frameworks to accelerate connection

Characterized by speed, responsiveness, accuracy, and adaptability, the CRI contracts team works proactively wtih industry and venture partners interested in licensing technologies and collaborating with the University. The team’s purposeful approach to drafting, negotiating, and executing agreements ensures that Northeastern innovations reach the marketplace swiftly while benefiting all parties fairly.

CONTRACTS

We want to focus on prioritizing the portfolio and being able to move it through the pipeline.

Jennifer Boyle-Lynch
Executive Director

VOICES






from the team

What contributes to our success?

Our success is rooted in strategic analysis, efficient workflow implementation, proactive stakeholder engagement, and systematic documentation. By analyzing our processes and breaking down the contract management system into phases, we improve the efficiency of drafting, negotiating, and finalizing deals. This streamlined approach enables us to handle internal tasks more productively, allowing us to allocate more time to address the questions about intellectual property that we receive.

What motivates our quest for impact?

Our motivation is to ensure that our information management and contract negotiation processes lead to tangible results. By evolving Northeastern's intellectual property portfolio and setting strong precedents for the future, we create lasting value. We are driven by the goal of maximizing the benefit Northeastern derives from each contract while simultaneously providing exceptional support to our licensees and collaborators. This balancing act not only enhances our partnerships but also solidifies Northeastern's reputation for excellence and innovation.

What we are most proud of for FY24?

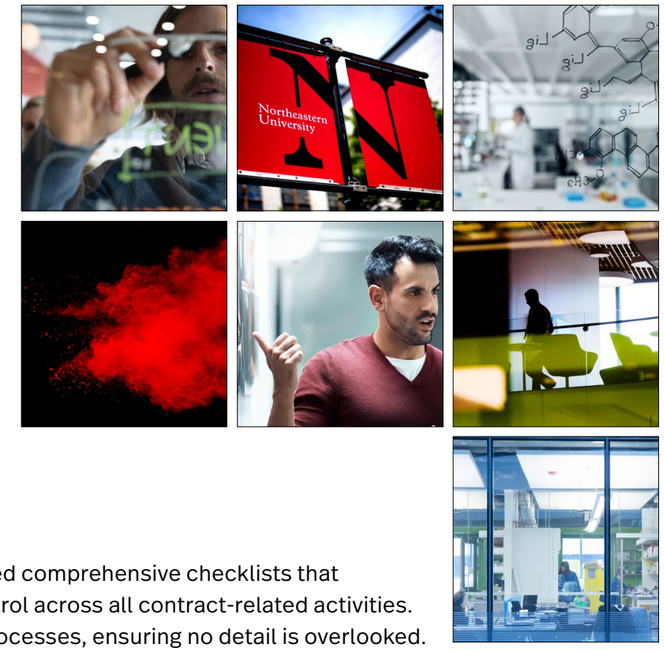
We are particularly proud to have developed a comprehensive contract management framework. When our team was created over a year ago, we began work by carefully analyzing the agreement portfolio and developing processes around the patterns we observed. As a result, we drafted, negotiated, and executed a record number of agreements in a record amount of time in FY24. We not only eliminated the backlog, but our streamlined contract management steps have also been fully embraced by our teammates, allowing us to finalize negotiations more effectively.

CONTRACTS

Streamlining Processes through Comprehensive Workflows

This year, our department developed and implemented detailed policies and procedures to enhance efficiency and clarity in our operations. We introduced step-by-step workflows that clearly outline the responsibilities of each internal team, timelines, required external inputs, and the escalation process when necessary. These workflows are segmented into key phases, including:

- Intake
- Prep Work (ensuring data integrity and compliance)
- Contract Drafting
- Negotiation
- Execution
- Post-Execution Duties (covering internal and external results, benefits, and consequences)
- Triggered Obligations



To support these workflows, we created comprehensive checklists that reinforce consistency and quality control across all contract-related activities. These checklists are integral to our processes, ensuring no detail is overlooked.

Additionally, we established an extensive template contract library, allowing for efficient drafting tailored to various scenarios. To maintain consistency in messaging, we drafted a series of memos on critical topics such as Option Fee Distribution, Inbound-Outbound Faculty Transfers, and License Termination Workflows.

COMMERCIALIZATION

Technologies Licensed

37

Options & Licenses

13

58

SPANNING 5 YEARS

PINPOINTING OPPORTUNITY

Identifying convergent possibilities to benefit lives and landscapes

Lab-based discoveries are incipient technologies. Like clay in the hands of a potter, they represent unformed potential. Through the purposeful action of CRI's commercialization experts, these discoveries are transformed into products and services having a profound impact on our lives, institutions, and environments. Being well-versed in multiple skills, CRI's commercialization team determines optimal commercial applications and designs plans for bringing such applications to fruition through industry partnerships, licensing and supporting faculty founded spinouts.

COMMERCIALIZATION

VOICES
from the team

Most importantly, we want society to benefit from the cutting-edge research that's being done at the university.

Jennifer Boyle-Lynch
Executive Director

What contributes to our success?

Listening is an essential practice of the Commercialization team. To effectively support our faculty and researchers, we need to understand the areas where they require support and where we can help to provide the greatest amount of impact. Similarly, we must listen to the needs of industry so that we can effectively leverage our IP portfolio and research expertise to help solve critical challenges. We also rely on strong communication and teamwork. The work we do involves numerous stakeholders both internal and external to Northeastern. Effective communication and working in a collaborative manner are essential to accomplishing our objectives of advancing research to market for the benefit of society.

What is the most challenging aspect of our work?

Having the necessary patience is one of the most challenging aspects of Commercialization. We want to see Northeastern technologies impact people's lives as soon as possible, but the road to get there is often long with twists and turns. While we all have a desire for immediate impact, we must take a longer view and think about the things that we can impact in the shorter term that will ultimately lead to the success of bringing these innovations forward in the future.

What motivates our quest for impact?

Seeing the amazing work and innovation taking place across Northeastern's research community is truly inspiring. We have a front row seat watching our faculty and students develop technology to address the world's most critical challenges. Knowing that we play a significant role in helping advance these innovations toward their intended purpose is incredibly motivating.

COMMERCIALIZATION

CRI Congratulates the First Graduating Class of Commercialization Specialists & Welcomes New Cohort

Commercialization Specialists are Northeastern PhD students who acquire professional experience in technology transfer and directly apply their scientific understanding to facilitate the commercialization of Northeastern innovation. Ryan Murray, Nicole Cavanaugh, and Fausto Capelluto were founding members of this groundbreaking program, and their contributions helped shape the program and fuel its early success. CRI's next wave of Specialists consists of 3 PhD candidates who are eager to advance their educational and professional experience: Jane Lee (Bioengineering), Wesley Roberts (Physics), and John Wilkins (Computer Science).

Jane Lee

Wesley Roberts

John Wilkins

We are thrilled to continue to expand this program and benefit from the positive impact of our Specialists. We are equally excited to provide them with a unique opportunity to gain experience and grow their knowledge and skill sets across the areas of intellectual property and commercialization.

Mark Saulich
Associate Director of Commercialization

COMMERCIALIZATION

Targeted Funding Accelerates Outcomes: CRI's Spark Fund

The Spark Fund helps Northeastern researchers bridge the gap between promising lab results and commercially viable prototypes. Spark Fund $50,000, 1-year competitive awards accelerate vanguard technologies from all fields, advancing them through prototyping, validation, and industry input.

Spark Fund Lifetime

38
TECHNOLOGIES AWARDED

$2.7m
INVESTED IN TECHNOLOGY ADVANCEMENT

12 Record Number of Awards Granted

Spring 2023 Awardees

Rebecca Carrier | College of Engineering
▸Improving Bioavailability in Oral Drug Delivery

Eno Ebong | College of Engineering
▸A Novel Approach to Fighting Atherosclerosis

Randall Erb | College of Engineering
▸Broadening the Aperture for Accessible Markets for Thermoformable Ceramics

Leigh Plant | Bouvé College of Health Sciences
▸Developing Custom Treatment Strategies for Muscular Dystrophy Ailments

Dori Woods | College of Science
▸Uncovering New Cellular Functions with Compartmentalized Cell Biology

Yi Zheng | College of Engineering
▸Revolutionizing Cooling Technology with Passive-Cooling Paint

Fall 2023 Awardees

Leanne Chukoskie | Bouvé College of Health Sciences
▸Game-Changing Diabetes Management Sensor for Adolescents and Teens

Sara Hashmi | College of Engineering
▸Optimizing Microfluidic Flow

Alexander Ivanov | College of Science
▸Next-Generation Chromatography Columns Enable Molecular Analysis of Smaller Sample Sizes

Jason Radford | Social Design Lab
▸Reshaping Authentic Social Listening with the True Voice Project

Aarti Sathyanarayana | Bouvé College of Health Sciences & Khoury College of Computer Sciences
▸Pioneering New App for Mental Health Care

Ke Zhang | College of Science
▸Transforming Treatment for Myotonic Dystrophy Type 1 (MD1)

Funding Awarded

$600k

Fall 2023 Awardee Roundtable

▸Transformative Innovations, Impactful Stories, and Collaborative Futures

Spark Fund awardees share their innovative solutions to pressing problems, outline avenues for potential partnership, explore commercial applications, and provide firsthand advice for future Spark Fund applicants.

COMMERCIALIZATION

The Power of Everyday Solutions

One day, Dr. Yi Zheng spied a recycling bin overflowing with printer paper. Now, he is Founder of the startup, Planck Energies. How does an Associate Professor at Northeastern University go from an everyday occurrence to "tech entrepreneur?" One possible answer is that Zheng has a problem he is perpetually trying to solve, and he is trying to solve it with the most mundane materials possible. Oh, and he might have received assistance from Northeastern's Center for Research Innovation (CRI).

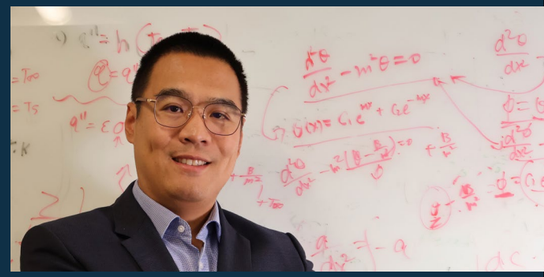
Zheng's problem is one that faces us all: climate change. The beauty of Zheng's problem-solving methodology is that he seeks everyday solutions. In this case, he took printing paper, stuck it in a blender and started experimenting with the paste.

By adding hydroxyapatite, Zheng created a non-toxic, reusable, self-cleaning material capable of reflecting sunlight, drawing out heat, shedding water, and retarding fire. He dubbed the material "cooling paper" and began testing its viability as a rooftop cooling system.

When applied, the paper reduced internal building temperature by as much as 10° Fahrenheit. By redirecting 99% of sunlight and absorbing heat generated by bodies, machines, etc., Zheng's innovation generated a 5-25% reduction in energy consumption. With US households spending $29B annually on cooling, he immediately perceived the benefits. Furthermore, he deduced the technology could save lives where infrastructure does not allow for expensive, energy intensive cooling. "The lack of reliable cooling technology represents a great risk to human well-being. With heat waves on the rise, finding a more viable cooling approach is of paramount importance," Zheng declares.

An NSF CAREER Award of $500,000 supported this research, and when data demonstrated the discovery's significance, additional opportunities appeared. CRI secured patent protection and awarded Zheng $100,000 through its technology accelerator, the Spark Fund. Collaborating with 3M, Zheng realized the most effective pathway was not roofing, but a paint-based additive. Testing has shown easy integration into contemporary paints while retaining performance advantages that exceed industry standards.

The technology is licensed to Planck Energies, and CRI provides guidance on market entry, team formation, and fundraising through its venture accelerator. Successfully utilizing these resources, Planck hired its first engineer and won an NSF SBIR Phase I Award of $275,000.



Dr. Yi Zheng

Moving an idea from conception to commercial product is absolutely rewarding. Technology transfer is a complicated enterprise, and seeing it come to fruition is inspiring.

Jennifer Boyle-Lynch
Executive Director

VENTURES

Capital Raised

$21m

Ventures Launched

10

66%
INCREASE
OVER FY 23

52

SPANNING 5 YEARS

ENTERPRISING
PROGRESS

Practicing edge-entrepreneurship to disrupt outmoded market solutions

Laboratory research, by nature, is on the edge of the known. The innovations discovered here are extremely early-stage and require extensive time and money to transform them into viable, everyday solutions. One of the most effective ways to traverse this risky journey is for Northeastern faculty and PhD students to launch a venture. These fledgling ventures require intensive support and the CRI venture team is there, step-by-step, providing tailored guidance, critical resources, and timely connections. With the ability to pivot and dynamically respond to ever-evolving needs, the CRI venture team purposefully helps faculty founders transform decades of research into tangible impact.

VENTURES

VOICES

from the team

In the coming year we plan to expand our venture programming, making it more comprehensive and agile to serve all founder types and verticals.

Jennifer Boyle-Lynch
Executive Director

What motivates our quest for impact?

Northeastern is brimming with technologies and venture teams with so much potential. The abundance of fundamental research that is ready to be translated into societal and economic impact is inspiring. The CRI's Venture team is motivated by the passion and enthusiasm of our scientific community and their desire to transform years, or sometimes decades, of research into tangible products and services that address critical social, economic, and environmental needs.

What are we excited about?

There is an abundance of educational materials for emerging entrepreneurs, but we, the CRI's Venture team, work with a unique subset of enterprising professionals: academic researchers. These academic entrepreneurs seek to ensure their inventions make an impact through new venture creation while sustaining incredible careers in research. Our team is actively addressing a longstanding deficit in entrepreneurship education for these founders. In the coming year, we will develop and test an on-demand educational program tailored to the needs and schedules of researchers, helping them acquire the entrepreneurial skills to successfully launch their new ventures.

What we are most proud of for FY24?

FY24 was a good year of learning, piloting programming, and supporting our spinouts. To expand our horizons regarding frameworks for spinout support, we created a network of institutions, called the Technology Transfer Venture Consortium (TTVC), to pool the knowledge, resources, and efforts of organizations committed to the commercialization of research through venture creation. The Consortium comprised 5 institutional participants and included a venture showcase, Venturium. The success of TTVC and Venturium has inspired us to apply for federal funding to permanently establish and expand this promising network. In addition, several ventures that had taken advantage of CRI programming were externally validated. For example, Fourier participated in the NSIN Emerge Accelerator 12-week program, received a MassCEC Catalyst award of $75K and was invited to participate in a MassChallenge cohort; Ada IQ received an SBIR Phase I award of $275k and was selected to participate in TechStar's 13-week accelerator; and, pacDNA recruited an enthusiastic external CEO in collaboration with the venture capital firm, Portal Innovations.

VENTURES

VENTURIUM'24

Networking Strengths, Sharing Connections, Amplifying Impact

CRI's Venture Team spearheaded an ambitious pilot program to build a network comprised of universities, government, and industry partners focused on accelerating commercialization and venture development. This network, the Tech Transfer Venture Consortium (TTVC), engaged 5 institutions and featured a venture showcase, Venturium, connecting promising ventures with keen investors.

TTVC Members

Kentucky Commercialization Ventures
Northeastern University
Rutgers University
University North Carolina – Chapel Hill
University of Pennsylvania

TTVC

20

Ventures Showcased

Northeastern Ventures Showcased

- **Ada IQ**
  Transforming product design with AI-powered insights for a more intuitive consumer experience
- **MyAtlas**
  Pioneering mental wellness through personalized recommendations powered by digital phenotyping technology
- **pacDNA**
  Revolutionizing oligonucleotide therapeutics with their Brushield™ platform, unlocking new frontiers in drug delivery
- **Fourier**
  Leading the way in thermal management with advanced thermoformable technical ceramic matrix composites

VENTURES

CRI's Spinout Academy

Creating space where Northeastern's scientific and academic founders can connect and learn from experts and one another about pertinent topics and best practices for building and sustaining thriving ventures.

Spinout Academy Events

▸Northeastern's Entrepreneurial Ecosystem - Insights on Incubators and Accelerators

Marita McGinn, Director of the MassRobotics Accelerator, and Nate Aune, Founder of Appsembler, provided firsthand and practical insights into effectively navigating the world of incubators and accelerators.

▸Northeastern Non-dilutive Funding and Support for Research Commercialization and Spinouts

Taking advantage of Northeastern's internal opportunities to accelerate and support commercialization efforts.

▸Build and Leverage your Extended Team

Ways to help scientific spinout founders effectively work with and leverage their extended team of startup service providers such as bankers, lawyers, and operational space managers.

Panelists
Joe Collura, Head of Business Development, Portal Innovations
Laurie Burlingame, Partner, Morgan Lewis
Manasa Gummalla, Vice President - Startup Banking, JP Morgan

▸Managing Burnout and the Importance of Founder's Mental Health

Wellness professionals speak about how scientific and academic founders can discover practical strategies to navigate burnout and prioritize mental well-being while still driving entrepreneurial success.

Panelists
Tracy Fink, Founder and Leadership Coach, The Tortoise Institute
Monika Holod, Founder, OMA Mind
Carlos Rodarte, Co-founder and CEO, Veriteos Health

Purposeful Partnering for Multiplying Impact

The CRI has partnered with Portal Innovations, a leading life sciences venture capital firm, to take Northeastern's faculty led spinouts to the next level. Through this partnership, spinouts gain access to critical lab space, strategic scientific and go-to-market guidance, and a global network of investors. Portal's goal of "prosperous execution" makes them a perfect partner for advancing CRI ventures.
▸Read the full story

VENTURES

CRI Supported Venture Wins: Accelerators, Funding, and Recognition

Accelerators

Ada IQ | 13-week Techstars Boston Accelerator

Techstars accelerators surround companies with the best mentors and an unrivaled network of corporate partners, investors, and alumni, providing funding and fundraising opportunities, workshops and curated resources, and countless moments where ventures learn from peers

Fourier | 12-week National Security Innovation Network (NSIN) Emerge Accelerator

The Emerge Accelerator connects DoD mission partners with emerging technology teams and startups at the nation's top research universities

Funding

Ada IQ | $275,000 SBIR Phase I Award, National Science Foundation
Planck Energies | $275,000 SBIR Phase I Award, National Science Foundation

The NSF SBIR program provides non-dilutive funds for use-inspired research and development of unproven, leading-edge, technology innovations that address societal challenges

Fourier | $75,000 Catalyst Award, MassCEC and MassVentures

Designed to demonstrate the feasibility of transforming new ideas from the research stage to commercially viable technologies to increase industry and investor interest

Recognition

AiWover | People's Choice Award in Digital Tools, Equalize Startups Annual Virtual Pitch Competition

Equalize Startups is a pitch competition and platform for coaching and promoting women academic inventors as they navigate the startup ecosystem and gain valuable connections

Scipher Medicine | Impact/100 List, MIT's The Engine and Norrsken VC

Annual list of the world's 100 most promising impact startups

Prominent Northeastern Presence at The Eddies, Mass Innovation Network's Venture Showcase

Named after prolific disruptor Thomas Eddison and the go-against-the-current water feature, The Eddies is a venture accelerator competition that has spurred the growth of companies like Staples, iRobot, Keurig, and Ben & Jerry's. With $10,000 and 7 months of non-equity, high-impact programming on the line, startups are keen to secure a spot on the podium.

Winners

- **Tatum Robotics**

  Anthropomorphic robotic system for tactile sign languages - the primary, and often only, communication method for millions of DeafBlind individuals

- **Venova Technologies**

  A novel non-hormonal female contraceptive device designed to be long-acting and side-effect-free

Finalists

- **Perzeption**

  Rapid, self-administered, AI-guided, vision diagnostics that eliminates the need for clinic visits

- **Zepsor**

  Zero-power sensors that know when to use battery thereby keeping vital systems running longer

Spinouts

Venture	Faculty Founder
Alycorn Biosciences	Sunny Zhou, COS
Calafate Bio	Dori Woods, COS
Concordance Therapeutics	Benjamin Woolston, COE
Donum Therapeutics	Kim Lewis, COS
Harris Advanced Microwave Magnetics	Vincent Harris, COE
MixedLCmediA	Alexander Ivanov, COS
My Atlas	Aarti Sathyanarayana, BCHS/KCCS
Neureosense Diagnostics	Emily Zimmerman, BCHS
Think Analog	Aatmesh Shrivastava, COE

VENTURES

The Power of Everyday Solutions

Picture this: an advanced tech manufacturing plant inspecting the factory floor to ensure flawless operations, a ‘grab and go’ convenience store at the airport offering seamless touchless transactions and no wait times, and an online gaming company rendering and streaming real-time graphics that captivate users. What ties these diverse scenarios together? These scenarios are all enabled by cutting-edge technologies such as computer vision, video analytics, machine learning, and, most importantly – edge computing.

Edge computing is a groundbreaking computing and networking paradigm that brings computation, machine learning, and data storage capabilities closer to the network edge, where data is generated. This paradigm increases bandwidth and reduces latency while enhancing autonomy and security for a broad range of commercial applications.

In the computing and networking industries where speed, volume, security, and privacy are paramount, Mirlo Systems emerges as a beacon of innovation. This Northeastern spin-out is reshaping the landscape with a revolutionary data-centric platform that places data storage, computation, and learning at just the right place to deliver the performance needed for your application.

A New Type of Edge Computing Platform

Mirlo Systems leverages edge computing to process various types of data close to its origin, leading to unprecedented processing speed and volume gains.

The revolutionary edge-computing platform is the brainchild of Professor Edmund Yeh and his team, who have seamlessly integrated efficient, high-performance edge computing with advanced data caching and forwarding for various high-impact applications.

Research relevant to Mirlo Systems began nearly a decade ago, in 2014. Over the last ten years, the team has built its in-depth knowledge and expertise concerning the architecture, theory, algorithms, software, interfaces, and implementation underlying the commercialization effort to bring its platform to market.

The team is currently working to validate the platform by innovatively addressing several challenges to enable a more refined and powerful edge computing solution.

Dr. Edmund Yeh

I have always been fascinated by how mathematics and science can be utilized to improve people’s lives. Electrical and computer engineering provides a great pathway for achieving this, and we hope that our technology will have a strong positive impact on many.

Professor Edmund Yeh
Executive Director

MARKETING & PROGRAMS

ILLUMINATING VALUE

Cultivating expertise to empower and celebrate transformative innovation

Innovation is not confined just to the labs at Northeastern, it is part of the culture, and the CRI's marketing team is a matchless exemplar. Consistently developing new communication techniques and programming platforms, CRI experts establish trust, create connections, share opportunity, inspire innovation, and celebrate achievement.

Website Visitors

14k

Newsletter Open Rate

38%

2X INDUSTRY AVERAGE

LinkedIn

124,300 | Impressions

19% | Follower Growth Rate

85% | Increase in Followers Over FY23

YouTube

2,200 | Views

62 | Hours of Watch Time

37% | Increase in Subscribers Over FY23

Instagram

8,200 | Accounts Reached

582 | Content Interactions

MARKETING & PROGRAMS

VOICES

from the team

We have a very a strong team that is empowered to make things better and see opportunities in doing things differently.

Jennifer Boyle-Lynch
Executive Director

What contributes to our success?

The Marketing and Programs department excels through a combination of meticulous planning and agile execution. We creatively explore diverse tactics to achieve optimal outcomes, maximizing the department's benefits while adhering to a limited budget. Our team embodies versatility, mastering a wide range of marketing skills to effectively implement our strategic plan. This multifaceted approach ensures we remain dynamic and responsive, consistently driving the department's success.

What we are most proud of for FY24?

The CRI has emerged as a trailblazer in video content creation. Marketing has developed a series of educational videos promoting research and innovations at Northeastern, an area where few universities have ventured. This deliberate emphasis on dynamic visual communication marks a pivotal evolution in our strategic content dissemination, fostering a more impactful and lasting connection with our audience.

Whats next?

The Marketing and Programs department launched the CRI Academy, a comprehensive series of training videos designed to foster a robust culture of licensing, compliance, and venture initiatives at Northeastern. CRI Academy aims to educate over 1,000 research-active faculty, supporting 350 research scientists, PhD students, and the spinout community. CRI Academy will play a pivotal role in translating dynamic faculty research into real-world results, thereby enhancing the impact and reach of Northeastern's groundbreaking work.

CRI Academy ▸Enroll now

MARKETING & PROGRAMS

Spotlighting Researchers, Compelling Interest

CRI's spotlight video series sits down with faculty and students to learn about the world-shaping research happening at Northeastern – delving into the inspiration motivating discovery, intended applications, and envisioned impact of this crucial research.

Faculty

- Pioneering Drug Delivery and the Quest for Safer Medicines
  Mansoor Amiji, Pharmaceutical Sciences | Bouvé College of Health Sciences
- Crafting the Future: Material Innovation in Tech Advancement
  Yunume Fitchorova, Advanced Magnetic Materials | Kostas Research Institute
- Teaching Computers to Understand Infant Behavior: AI and Early Diagnosis
  Sarah Ostadabbas, Electrical and Computer Engineering | College of Engineering
- Advancing Technology for Human-Centered Design and Manufacturing
  Mohsen Moghaddam, Mechanical and Industrial Engineering | College of Engineering
- Revolutionizing Energy: Sanjeev Mukerjee on Transforming Energy Efficiency
  Sanjeev Mukerjee, Chemistry and Chemical Biology | College of Science
- Every cell has the same DNA, but exhibits a distinct role & function – How? Unlocking RNA's Secrets
  Sara Rouhanifard, Bionengineering | College of Engineering
- Pushing the Boundaries of Robot Perception: Insights from Leading AI Researchers
  Lawson Wong, Generalizable Robotics and Artificial Intelligence | Khoury College of Computer Sciences
- Applications of Content Delivery and Edge Computation in Diverse Sectors
  Edmund Yeh, Electrical and Computer Engineering | College of Engineering
- Innovating for a Sustainable Future: Engineering Energy Solutions
  Yi Zheng, Mechanical and Industrial Engineering | College of Engineering
- Research on Infant Feeding – How it Affects Speech Development in Children
  Emily Zimmerman, Communication Sciences and Disorders | Bouvé College of Health Sciences

Students

- Towards Proactive Mental Health: Harnessing Data and Technology
  Ohida Binte Amin, Machine Learning and AI for Digital Health | Khoury College of Computer Sciences
- Pushing the Boundaries of Robot Perception: Insights from Leading AI Researchers
  Shuo Jiang, Robotics and Machine Learning | Khoury College of Computer Sciences
- Advancing Pediatric Research in the SMILE Lab
  Naomi Rajput, Behavioral Neuroscience | College of Science
- Bridging Academia and Industry: Autism and Diabetes Management Research
  Sundar Rengarajan, human cognition and movement | Bouvé College of Health Sciences

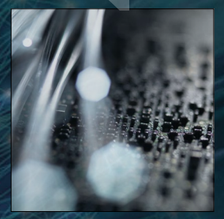
MARKETING & PROGRAMS

National Academy of Inventors, Northeastern Chapter

Seeding Inventiveness, Entrepreneurship, and Impact

Northeastern's chapter of the National Academy of Inventors (NAI) serves to empower inventorship and entrepreneurship across the innovation ecosystem by recognizing, inspiring, educating, and connecting members of the academic and industrial communities.

Chapter affiliation is open to all faculty who hold one or more granted patents, and students of any academic level or area of study.


▸Chapter Meetings

Deep Dive into Innovation

October 2023

Speakers
Luis Brito, Vice President, Delivery Platform | Beam Therapeutics
Deirdre Sanders, Principal | Hamilton Brook Smith Reynolds

▸Annual Meeting

January 2024

Keynote Speaker
Steve Johnson, Senior Fellow & Advisor | Institute for Experiential AI

Speakers
A.J. Tibbetts, Partner | Greenberg Traurig
Tucker Marion, Associate Professor, Entrepreneurship & Innovation | Northeastern

▸Recognizing and Inspiring our Community of Unparalleled Inventors

April 2024

Speakers
Shawn P. Williams, Battery Thesis Lead | Re:Build Manufacturing
David R. Widom, Managing Partner | ETHOS Legal
Vincent Harris, Distinguished Professor and William Lincoln Smith Chair Professor, Electrical and Computer Engineering | Northeastern

Panel Moderator
Randall Erb, Professor, Mechanical and Industrial Engineering | Northeastern







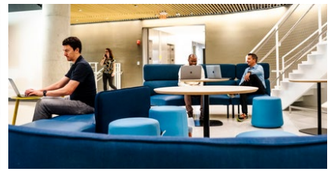
MARKETING & PROGRAMS

Inspiring Innovation through Recognition

Part of the mission of Northeastern's NAI chapter is to inspire innovation within the university's community. One way to achieve this aim is to recognize the exemplars of innovation among us. This year marked the inauguration of such recognition by awarding the chapter's first Innovator of the Year awards during the Annual Meeting.

Innovator of the Year awards are bestowed upon one faculty and one student who exhibits exceptional inventiveness. Awardees have advanced theoretical and practical understanding and have gained deeper insight into significant problems. They have devised keen solutions that generate benefit within their field of expertise and across multiple spheres of life. Awardees also give back to the community by cultivating a spirit of innovation. They actively teach, mentor, and motivate others how to think, and to solve, disruptively.






Innovator of the Year Awardees

Faculty Awardee: Dr. Meni Wanunu

Dr. Meni Wanunu is Professor of Physics (COS) and Bioengineering (COE), Co-Director of the Kostas Advanced Nano-Characterization Facility, and Principal Investigator for the Wanunu Lab. Wanunu is a leader in the development of next-generation DNA, RNA, and protein sequencing methods. Combining optical and electrical measurements, he can isolate and measure single molecules on the nanoscale with extreme sensitivity and precision. The ability to investigate molecules at this level of detail opens new horizons in research, diagnostics, and drug discovery, potentially leading to the development of safer and more efficacious treatment options for patients. Wanunu's penchant for innovation is evidenced by his research output, entrepreneurial drive, and commitment to give back. He has 13 issued patents and 4 pending; 31 technologies in total, 2 of which are licensed, 2 have options, and others have serious industry interest. He is commercializing his research through Marathon Bio, the company he co-founded. As a professor, advisor, and mentor, Dr. Wanunu continually passes the habits and practices of an innovator on to future generations.

Student Awardee: Dr. Daniel Braconnier

Daniel Braconnier is a recent graduate of the College of Engineering, receiving his PhD in Mechanical Engineering with a specialization in Materials Science under the advisement of Dr. Randall Erb. He is now a Postdoctoral Associate at MIT's Digital Learning Laboratory. Daniel's PhD research showcased an aptitude for innovation. His work focused on 3D printed thermally conductive composite materials that resulted in a patent filing and three impact papers. Daniel's novel composite materials out-perform leading commercial products, and he remains actively involved in bringing this technology to market.


INGENUITY

MARKETING & PROGRAMS

Leading the Industry: CRI Engagements & Events

Intellectual Property

Navigating Pharma Science: IP Strategies & Commercial Insights | CRI Webinar

In a dynamic and rapidly evolving industry such as pharmaceuticals, understanding the intricacies of intellectual property (IP) is crucial for success. For this CRI webinar, Lin Hymel, distinguished partner at Verrill Law, delivered an in-depth exploration of critical IP strategies for the pharmaceutical sector.

Commercialization

Hangups to Breakthroughs: A New Era for IP Policies | AUTM Eastern Region Meeting

Myron Kassaraba, Panelist

National Institute of Health & CRI Co-hosted Webinar | Global E-Week at Northeastern

The CRI celebrated Global Entrepreneurship Week by co-hosting a webinar with the National Institutes of Health. Participants learned about grants and resources available for translational researchers and aspiring entrepreneurs.

Life Sciences & Health Tech Winner Announcement | The Eddies Showcase, Mass Innovation Network

Mark Saulich, Presenter

Research and Startups Combining Biomarkers, Devices, and Algorithms for Personalized Diagnosis and Intervention Annual | MarkersandMarkets Biomarker and Companion Diagnostics Conference

Vaibhav Saini, Presenter

8-week Drug Development Seminar Series | CRI Webinar

During this deep dive series, scientists and experts from Boehringer Ingelheim covered patient-centric drug development and how laboratory research translates into therapeutic drugs. Participants learned how their research agendas play a pivotal role in developing life-changing medicines to serve patients in need.

Ventures

University Technology Transfer Perspective & Non-dilutive Funding Opportunities | ENET Event

Katie Hemphill, Speaker

Speed Pitch Training| Equalize Startups at MassBio

Katie Hemphill, Pitching Coach

Unseen Barriers: Decoding Gaps in Massachusetts' Innovation Landscape | Portal Innovation

Katie Hemphill, Panelist

Venture Judging | The Eddies Showcase, Mass Innovation Network

Katie Hemphill, Judge









Patent Fee Recovery

$600k

12%
INCREASE
OVER FY 23

Revenue Distribution Spanning Five Years

$893k

INVENTORS SHARE

$645k

TO THE LABS
(Reinvestment into research)

AMPLIFYING
CAPACITY

Mastering efficiency to propel system-wide impact

Stewardship of resources and transparency of processes are fundamental traits of innovation, and the CRI's Finance & Operations team prioritizes both in their persistent efforts to streamline infrastructure and generate relevant data that informs key decisions for CRI team members, Northeastern stakeholders, and industry partners.

FINANCE & OPERATIONS

I am extremely proud of the CRI team and their approach to problem solving. They're always thinking outside of the box to create impact.

Jennifer Boyle-Lynch
Executive Director

VOICES
from the team

What motivates our quest for impact?

Our motivation comes from the inventor community. Seeing their creativity and drive is influential. As the Operations team, we touch and support many different aspects of accomplishing the CRI's goal of purposefully moving technologies from the lab to the world. Our CRI team members have the same creativity and drive we see in the researchers, and they are always discovering new ways to drive our mission forward. This drive is contagious and inspires Operations to excel.

What we are most proud of for FY24?

The Operations team rolled out a revised Invention Disclosure Form for researchers to submit inventions for potential patent protection. Based on inventor feedback, we streamlined the form by minimizing open-ended questions, which dramatically reduced completion time. We also prioritized information gathering about funding sources thereby enabling us to more efficiently comply with Federal and non-federal reporting requirements. These modifications have led to an increase in submitted disclosures and have given us an opportunity to further train the inventor community about the importance of disclosing.

What are we excited about?

For FY24 we prioritized data integrity, and our next step is to use this trove of data to make informed decisions about where we allocate our time and resources and for providing better visibility and transparency to the global Northeastern community. Also, we are committed to reviewing and revising our cost-effectiveness strategies to benefit our licensees. By streamlining cost tracking and revenue recovery processes, we aim to ensure greater efficiency and transparency thereby strengthening our partnerships with both licensees and law firms.

FINANCE & OPERATIONS

CRI Listens and Responds

The CRI solicited feedback from Northeastern's research community and found that the Invention Disclosure Form was unnecessarily time consuming. With responsive adaptability, the CRI streamlined the form, saving inventors time and improving the quality of information received.

Expanding the Team

James Ssemata, CRI's new Finance & Operations Associate

James assists in the stewardship of CRI's revenue streams and expenditures. By reviewing the milestones of CRI licensees, he ensures that royalty and equity payments and patent expenses are tracked, invoiced, and disbursed accurately and on time. James provides up-to-date financial data that helps inform the strategic decisions of CRI team members, and his efforts guarantee that CRI funds are ready for judicious deployment and maximal impact.

Milestone Projects FY24

- Simplified Invention Disclosure Form
- Data Integrity Audits
- Single Sign-on for Inventor Support Software
- Streamlined Billing Processes
- Scaling of System-wide Operations

Innovative Minds Working Purposefully Creating Enduring Impact

Jennifer Boyle-Lynch
Executive Director

The CRI team is agile and responsive–focused on the translation of university innovations into tangible solutions through licenses, spinouts and collaborations. Our dedication to establishing ongoing dialogue with industry informs Northeastern's progressive research, enabling a productive balance between exploration and implementation.

INTELLECTUAL PROPERTY AND COMPLIANCE

Andy Curtin
Director
Intellectual Property

Rhonda Kivlin
Patent Compliance Manager

Monika Kasprzak
Patent Administration Manager

CONTRACTS

Elmira Zenger
Associate Director
Property & Contracts

Shivani Aryasomayajula
Contracts Specialist

COMMERCIALIZATION

Myron Kassaraba
Director
Commercialization

Mark Saulich
Associate Director
Commercialization

Vaibhav Saini
Senior Manager
Commercialization

Katie Hemphill
Director
Technology Ventures and Talent Network

VENTURE DEVELOPMENT

Sal Darji
Spinout Program Consultant

MARKETING AND PROGRAMS

PJ Dupuis
Assistant Director
Marketing & Programs

Elizabeth Ortiz
Senior Marketing & Communications Manager

FINANCE AND OPERATIONS

Veronique Corrdin
Associate Director
Finance & Operations

Jacqui Mitchell
Technology Transfer Data & Operations Analyst

James Ssemata
Finance & Operations Associate

Vision and passion driving execution that will continue to deliver results with impact.

Our strong and empowered team will continue to identify opportunities for improvement and innovation, ensuring that Northeastern remains at the forefront of tech transfer and commercialization. The CRI has made a profound impact setting up policies, guidelines, and infrastructure with a small, lean team which has been a rewarding challenge. We take pride in our ability to break out of traditional structures and suggest new, innovative approaches. As the CRI moves forward, we will continue to harness this spirit of innovation and agility to drive our success.

Follow us:

cri.northeastern.edu

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Center for Research Innovation

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