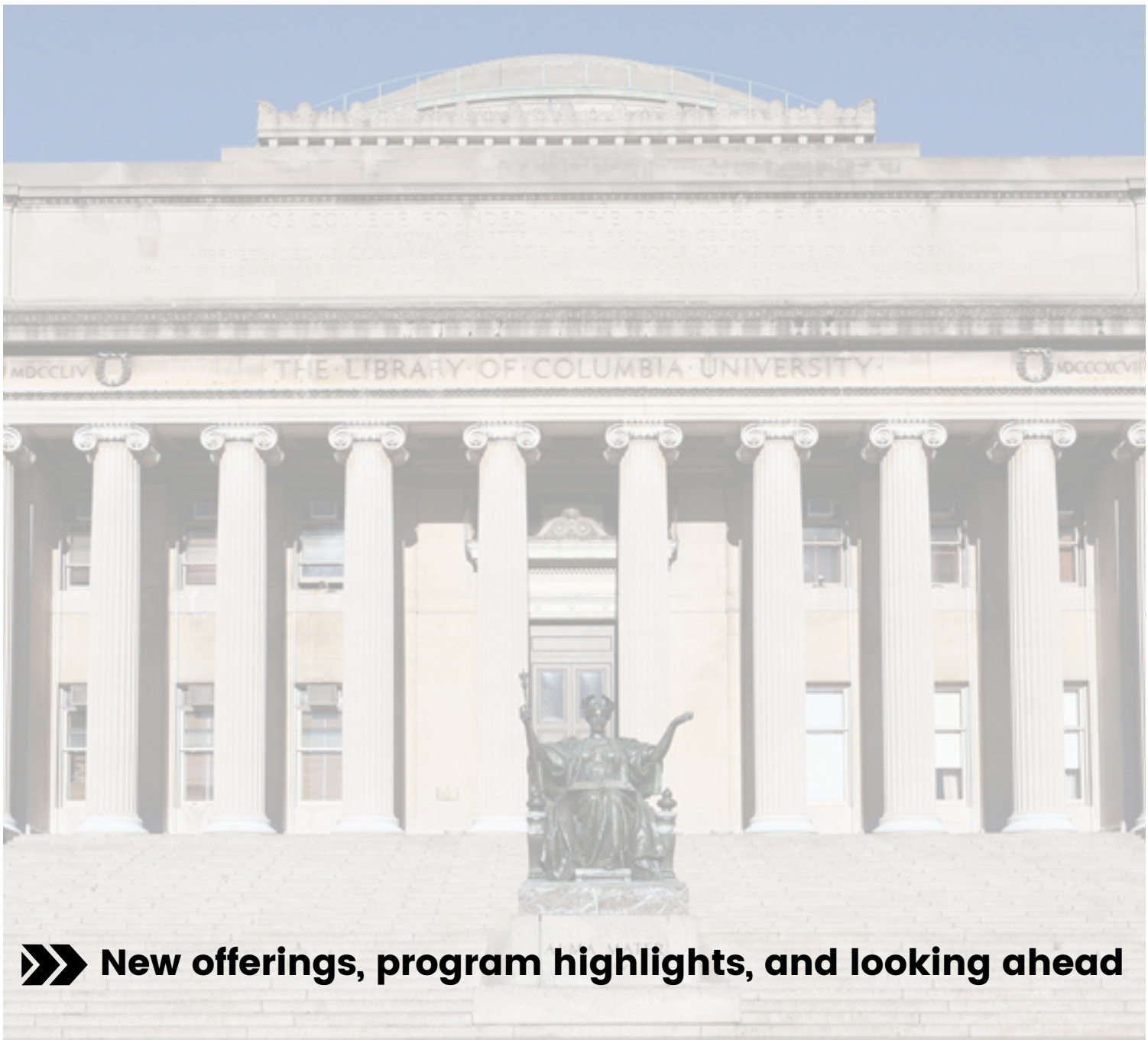
COLUMBIA | Lab-to-Market Accelerator Network

FALL 2023 UPDATE



New offerings, program highlights, and looking ahead

LETTER FROM L2M

Dear Friends of Columbia Lab-to-Market (L2M) Accelerator Network,

As we wrap up the Fall '23 semester, we wanted to share several updates on existing programs, new partnerships, and select programmatic highlights from across L2M network. We hope these updates encourage you to reach out and explore ways to get involved (as a mentor, investor, speaker, or partner) in our efforts to help deep-tech innovators across New York region validate and commercialize their cutting-edge technologies.

We wish you Happy Holidays and extend our gratitude for your continued support of the **L2M Network**. See you all in 2024!

Best,
Dmytro, Jack, and Michelle

L2M team additions:
This summer, we welcomed Michelle Lee (LinkedIn) as the newest member of the L2M family. Michelle is the L2M Alliance Associate and manages several Life Sciences and Physical Sciences programs. Previously, she was a program manager at gener8tor, a venture capital firm based in Wisconsin, running the cybersecurity investment accelerator, based in San Antonio, Texas.

Additionally, for L2M's 2023-2024 cycle, we are proud to be joined by an amazing cohort of L2M Student Venture Associates (SVAs):

- Murun Jargal, Graduate Student, Sustainability Management
- Emaan Qazi, Graduate Student, Applied Analytics
- Olivia Kwon, Undergraduate Student, Financial Economics & Computer Science

New Initiatives – we are excited to share the launch of several new initiatives.
We are partnering with VC firm **Material Impact** to launch the **Materialize New York Accelerator** to move advanced technologies from the academic lab that are ready to be spun out into successful startups. The program is focused on innovations in biomanufacturing and sustainable products, sustainable food and water, data storage and security, robotics, AI, and augmented reality, transportation and mobility, and underrepresented healthcare. The commercialization bootcamp for selected teams from several New York City universities will begin in January 2024, led by Material Impact and their broad network. For program updates, please monitor the **Materialize New York** page.

L2M has announced the VALIDATE Accelerator for the NSF Engineering Research **Center for Smart Streetscapes (CS3)**, providing teams from CS3-affiliated universities (Columbia, CUNY, FAU, Rutgers, UCF) a customized program with education from industry and academic research experts, hands-on value-added workshops, active mentoring, and venture creation opportunities. Six academic teams focusing on smart intersection and flood detection have been selected and will kick off their journey in early February '24.

Ongoing partnerships – we continue to build on our existing program portfolio:
This year, we continued collaboration with the **Columbia Center on Global Energy Policy (CGEP)** to help organize the second solicitation for the **Carbontech Development Initiative (CDI)**, a large-scale market transformation grant-seeding and commercialization initiative for carbontech science and technology. 44 startup and academic applications were received in late October. To learn more about the program, cohort teams, and keep up to date, please visit the **CDI Website**.

Together with Mount Sinai Innovation Partners (MSIP), we continued our partnership with Empire State Development Corporation (ESD) to administer the third round of the $40 million **NY State Biodefense Commercialization Fund**. This year, the program focused specifically on point-of-care (POC) diagnostics, easy-to-use sample preparation to allow for access in low resourced settings, and tools for sequencing and serology-based tests that support infectious disease and pathogen surveillance. Applications closed in November, kicking off the ranking and evaluation process of submissions from academic and startup institutions, with the goal of announcing Round 3 awardees in Q2 of 2024. Round 1 and 2 awardees continue their development and commercialization work with program mentors.

The Columbia Life Science Accelerators (**Columbia Biomedical Engineering Technology Accelerator** – BioMedX, **Translational Therapeutics Accelerator** – TRx, and **Accelerating Cancer Therapeutics** – ACT) received applications from faculty-led teams with affiliations across 22 different academic departments at Columbia. We are thrilled to kick off another cycle of the Lab-to-Market bootcamp course which pairs accelerator teams with graduate students from Columbia SEAS and CBS to run through a commercialization-focused curriculum. Faculty-led teams and graduate students will have a unique opportunity to learn first-hand from numerous experts, get mentorship from industry experts and CTV's Executives in Residence (XIRs), and apply those learnings and pitch for early-stage validation funding at the end of the program.

Programming beyond accelerator bootcamps:
In addition to offering early validation support via traditional bootcamp setting, we continued to partner with industry experts to offer L2M Business Operations Workshops (BizOps) to our broad alumni network. On October 31, L2M hosted its Fall '23 Business Operations Intensive, a half-day series of sessions on outgrowing university research labs, scaling early-stage medical device projects, creating "best in class" management teams, and different types of board structures which set university teams up for success. You can watch all recorded sessions **here**.

Let's talk!
We would love to tell you more about L2M programs and connect you to our cohort teams of deep-tech innovators. Please **reach out** and/or complete this **intake form** if you would like to learn more about any of our programs or explore collaboration opportunities. As always, you can **sign up for our newsletter** to stay informed of the latest L2M news.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L2M Network Website

NETWORK SNAPSHOT

This year we received applications from teams across **five accelerator programs** each aimed at providing critical mentorship, education, and project funding to support them at various stages of development. Below is an overview of the program names, areas of focus and accepted teams.

Program Name	Program Focus Area(s)	Accepted Teams
Columbia Life Science Accelerators (TRx, ACT, BiomedX)	Therapeutics Drug Development Medical Devices Diagnostics Platform Technologies Software	30 Columbia faculty-led teams across 22 academic departments
Materialize New York Accelerator	Biomanufacturing & Sustainable Products Sustainable Food and Water Data Storage and Security Robotics, AI, and Augmented Reality Transportation and Mobility Underrepresented Healthcare	Deep Tech teams from NYC-based universities
Center for Smart Streetscapes (CS3) VALIDATE	Smart Cities Smart Street Intersections Streetscape Navigation Municipal Mobility	6 student and faculty teams from CS3 - affiliated universities
ESD Biodefense Commercialization Fund	Point of Care Diagnostics Diagnostic Development Tools Sequencing Tools Pathogen Surveillance	Academic and Startup teams applying for grants of up to $4 million
Carbontech Development Initiative	Carbon Capture Carbon-to-Building Materials Carbon-to-Chemicals, Fuels & Materials	12 academic and startup teams

COLUMBIA LIFE SCIENCE ACCELERATORS

The Columbia Life Science Accelerators are comprised of three distinct programs (**BiomedX**, **TRx**, **and ACT**) which translate cutting-edge faculty-led university research out of the lab through project funding, commercialization education, and support to advance innovative ideas with the potential to positively impact health outcomes.

This year's selected cohort teams include:

Translational Therapeutics Resource (TRx)

- **The beneficial effect of glucose in the progression and survival of patients with amyotrophic lateral sclerosis** (Dr. Ikjae Lee)
- **Innovative treatments for heart disease caused by obesity and diabetes** (Dr. John Morrow)
- **Development of small molecule drugs for eye diseases caused by genetic mutations of the BEST1 gene** (Dr. Tingting Yang)
- **Therapeutic diets derived from insights from metabolism can be used alone and in combination with pharmacological treatments for neoplastic and degenerative diseases** (Dr. Brent Stockwell)
- **Simultaneous targeting multiple pathologies in Alzheimer's disease with one compound** (Dr. Caghan Kizil)
- **A nutrient supplement composition in vinegar gummy for diabetes prevention and glycemic control** (Dr. Ka Kahe)
- **Targeting the genetic susceptibility protein CD33 for the treatment of AD and dementia** (Dr. Elizabeth Bradshaw)
- **Treatment of aggressive lung cancer using a novel therapeutic strategy to re-engage immunity** (Dr. Benjamin Izar)
- **Structure-based discovery of novel potentiators for improved pharmacological treatment of Cystic Fibrosis** (Dr. John Hunt)
- **Targeting COPD pathogenesis through treatment with SSRIs** (Dr. Jeanine D'Armiento)
- **Generation of an orally administrable form of osteocalxcin to treat sarcopenia and age-related memory loss** (Dr. Gerard Karsenty)

Accelerating Cancer Therapeutics (ACT)

- **Targeted Immunotherapy for Aggressive Myeloid Leukemia** (Dr. Tannishtha Reya)
- **A novel, ultra high-throughput screening platform for discovery of modulators of protein-protein interactions** (Dr. Marko Jovanovic)
- **Chromosome changes as biomarkers for drug response in cancer** (Dr. Alison Taylor)
- **Targeting IL-25 to ameliorate immune-related adverse events of checkpoint inhibitors & improve antitumor responses** (Dr. Adam Mor)
- **A novel small molecule inhibitor of Ku70 for the treatment of U2AF1-mutant MDS/AML** (Dr. James Manley)
- **Advancing Childhood Brain Tumor Treatments: A New Approach with Gene Editing Technology** (Dr. Falak Sher)

Biomedical Engineering Technology Accelerator (BiomedX)

- **In silico CRISPR platform with biology-guided Large Language Model** (Dr. Raul Rabadan)
- **TechNHolytics: Advancing Care with Digital Maturity Assessments for Nursing Homes** (Dr. Gregory Alexander)
- **OptiCardio: Transforming Cardiac Ablation Procedures to Precision Therapy** (Dr. Christine Hendon)
- **Storage and preservation of living allogenic heart valve replacements to treat children with congenital heart disease** (Dr. David Kalfa)
- **SurgiView: Lights. Camera. Surgery** (Dr. James Lee)
- **TeleheartCR: A Novel Telehealth-enhanced Hybrid Cardiac Rehabilitation Program** (Dr. Andrea Duran)
- **Human ImmuneChip for Precision Medicine in Cancer** (Dr. .Gordana Vunjak - Novakovic)
- **Monitoring of blood pressure with medical-grade accuracy in everyday settings using wearable sensors & machine learning** (Dr. Sam Sia)
- **Insight: Rapid assessment of functional T cell health** (Dr. Lance Kam)
- **Rapid Identification of MASLD Using an Automated Algorithmic Approach** (Dr. Julia Wattacheril)
- **Breathe: T cell production for immunosuppression** (Dr. Lance Kam)
- **Artificial Intelligence for Inner Ear Malformations Diagnosis based on Inner Ear Magnetic Resonance Imaging** (Dr. Jeffrey Kysar)
- **WiWeight - Wireless Radiofrequency stomach nerve ablation for Weight Loss** (Dr. Ana Emiliano)

TRx Website
ACT Website
BiomedX Website

material impact | materialize NEW YORK

MATERIALIZE NEW YORK

A CATALYST FOR GROUNDBREAKING DEEP TECH INNOVATION

We partnered with Material Impact (MI) to advance development of novel technologies in the NYC area through a unique accelerator offering, Materialize New York.

Program participants will work alongside the MI team to de-risk their innovation from a business perspective (customer identification, product-market fit, market size, feasible milestones, etc). With MIs guidance and commitment toward human impact, the goal of the program is to prepare early-stage teams for their startup journey by putting together the building blocks of a strong foundation and move them from the academic lab toward start-up formation.

At the program conclusion, select team(s) will receive a seed investment from MI toward the creation and launch of their start-up.

Areas of Interest	**Biomanufacturing & Sustainable Products**	**Sustainable Food & Water**	**Data Storage & Security**
	Robotics, AI, & Augmented Reality	**Transportation & Mobility**	**Underrepresented Healthcare**

The Program

Company Building

Three modules covering everything teams need to know to launch a startup and take material science innovations from fantasy to fact.

Mentorship

Dedicated one-on-one mentorship meetings with the Material Impact team to guide teams towards success.

Funding

Access to VC financing and the opportunity to pitch the Material Impact team.

Learning Objectives

- **Assess the commercial value of technologies**
- **Clearly define value proposition**
- **Develop an actionable and effective go-to-market strategy**
- **Conduct customer interviews to validate and test assumptions**
- **Understand the roles and risks involved in getting ideas off the ground**
- **Create a well-rounded pitch deck**
- **Learn the tools and tactics required to target customers**

Please contact **Sherry Bermeo** with any questions!

Program Website

CENTER FOR SMART STREETSCAPES (CS3) VALIDATE

Led by Columbia in partnership with Florida Atlantic University, Rutgers University, University of Central Florida, and Lehman College, the NSF Engineering Center for Smart Streetscapes (CS3) is the only federally funded large-scale research center focusing on smart city technologies. The VALIDATE Program will focus on forging livable, safe, and inclusive communities through real-time, hyper-local streetscape applications built on advancements in edge-cloud technology, wireless-optical engineering, visual analytics, computer security, and social science.

Selected inaugural cohort teams include:

Climate Impact

Climate Impact uses AI and web cameras to identify potential flood events in real time, ensuring prompt alerts as well as post-disaster estimates of flood levels and damages.

Led by: Dr. Marco Tedesco, Professor, Lamont-Doherty Earth Observatory, Columbia University

Flood Sense

FloodSense provides flood sensors and crowdsources hydrologic data to improve the accuracy of flood forecasts

Led by: Dan Zimmerman, Graduate Student, Electrical Engineering, Florida Atlantic University

KeeVeeve

KeeVeeve provides real-time street maps that displays anonymous traffic/crowd data and anomalies and interfaces with smart city technologies.

Led by: Mahshid Dehkordi, Graduate Student, Electrical Engineering, Columbia University

FloodFinder

Flood Finder is building a camera that is able to detect flooding of roads to alert the public to reroute.

Led by: Isaac Martinez, Undergraduate Student, Business, Florida Atlantic University

SSSI Sustainable Safe Smart Intersections

Sustainable Safe Smart Intersections provides a simulation model for intersections capable of analyzing the impact of intersection redesigns

Led by: Christopher Grullon, Undergraduate Student, Engineering, Columbia University

WalkWise

Walkwise is a GPS-based pedestrian intent prediction tool running on users' devices to prevent collisions in vehicular traffic

Led by: Caspar Lant, PhD Student, Computer Science, Columbia University

Program Website

CARBONTECH DEVELOPMENT INITIATIVE (CDI)

CARBONTECH DEVELOPMENT INITIATIVE

The Carbontech Development Initiative (CDI), aims to position New York State as a global carbontech hub by supporting research and development, facilitating technology transfer, and commercializing innovation. With programmatic support from L2M and funding support from the New York State Energy Research and Development Authority (NYSERDA), CDI facilitates collaboration between academia, private businesses, and the public sector to create, validate, and launch cutting-edge solutions. in CO2 Capture Technology, CO2-to-Building Materials, and CO2-to-Chemicals, Fuels, & Materials.

CDI awards grants across four programs, three research programs (Carbontech Leap, New Directions, Propel Carbontech) and one commercialization program (Bridge Carbontech). **Details of of Round 1 Awardee Projects are below:**

Carbontech Leap

Carbontech Leap is open to applicants who are core faculty members of the Columbia University Lenfest Center for Sustainable Energy and require a Technology Readiness Level (TRL) of 2-3.

- **To develop ready-mix carbon cured concrete formulations and processes for large scale construction projects**
  - Dr. Shiho Kawashima, Associate Professor, Civil Engineering & Engineering Mechanics (Faculty Lead)
  - Dr. Aaron Moment, Professor of Professional Practice, Chemical Engineering
- **To integrate CO2 capture and conversion to value-added chemicals**
  - Dr. Jingguang Chen, Thayer Lindsley Professor, Chemical Engineering

Propel Carbontech

Propel Carbontech is open to teams **external** to Columbia University with a Technology Readiness Level (TRL) of 2-3.

- **To Integrate Co2 Mineralization And Mining For The Recovery Of Construction Materials And Energy-Relevant Elements From Waste**
  - Dr. Simona Liguori, Assistant Professor, Chemical & Biomolecular Engineering (Clarkson University)
  - Dr. Valentina Priggiobe, Assistant Professor, Stevens Institute of Technology
- **To improve the performance and sustainability of polyethylenimine-based membrane adsorbents**
  - Dr. Haiqing Lin, Professor, Chemical and Biological Engineering (SUNY Buffalo)
  - Dr. Shenqiang Ren, Professor, Chemical and Biological Engineering (SUNY Buffalo)
- **To identify new chemical pathways for energy-efficient capture of CO2 from air**
  - Dr. Phillip Milner, Assistant Professor, Chemistry and Chemical Biology (Cornell University)
  - Dr. Tristan Lambert, Professor, Chemistry and Chemical Biology (Cornell University)
  - Dr. Brett Fors, Professor, Chemistry and Chemical Biology (Cornell University)
- **To optimize the operation of CO2 electrolyzers with active learning algorithms**
  - Dr. Miguel Modestino, Associate Professor, Chemical Engineering (NYU)
- **To Measure CO2 Desorption Rates Over Dual Functional Materials with Integrated Microscale Temperature Measurements**
  - Dr. Marc Porosoff, Assistant Professor, Chemical Engineering (University of Rochester)
  - Dr. Andrea Pickel, Assistant Professor, Chemical Engineering (University of Rochester)

New Directions

New Directions is focused on groundbreaking research promoting new and high-risk ideas on shorter-term projects.
The program is open to Columbia University faculty.

- **To harvest magnesium-based low-carbon cement from the ocean for future construction**
  - Dr. S.H. Chu, Columbia Engineering (Faculty Lead)
- **To make CCS efficient: novel adsorbent regeneration by targeted photodesorption**
  - Dr. Arvind Narayanaswamy, Associate Professor, Mechanical Engineering (Faculty Lead)

Bridge Carbontech

Bridge Carbontech is focused on research teams and startups at mid-stage (TRL 4-6) and later-stage (TRL 6-9) commercialization focused on CDI's eligible technologies.

- **To transform CO2 emissions into cement and concrete products for the global building and construction materials industry**
  - Carbix Corporation
- **To develop critical metal recovery and carbon capture from industrial residues**
  - Carbon to Stone
- **To convert Co2 to methanol in a dairy farm**
  - Hago Energetics Benefit Corporation

Program Website

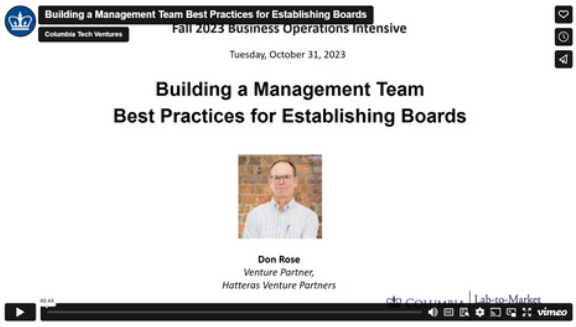
FALL 2023 BUSINESS OPERATIONS INTENSIVE

On October 31, 2023, we hosted a half-day virtual series of workshops specialized for Columbia teams who graduated from one of our Lab-to-Market programs and were eager for guidance on growth strategies. A selection of industry experts and L2M alumni teams offered guidance on next steps after outgrowing university research labs, scaling early-stage medical device projects, creating "best in class" management teams, and different types of board structures which set university teams up for success.

To watch the session recordings, please click on the thumbnails below:

Through design thinking frameworks and real-world case studies, Gregg Jackson shares strategies and resources to help growing device companies structure their Product Development, Program Management, and Strategic Business Development.

Hear from the leaders of two Columbia University startups sharing their stories of successes and pitfalls navigating the NYC Life Science entrepreneurship ecosystem.



In this session Don Rose discusses how to build an effective and reliable management team followed by a comprehensive overview of different types of company board structures.

Drawing from his experience supporting early stage Life Science innovation formerly as CEO of NewYorkBio and currently as part of Columbia's Office of Research Initiatives & Development, Derek Brand offers perspectives on potential directions for projects outgrowing an academic setting.

Columbia L2M Video Library