

# DESHPANDE BITS & BYTES

## Message from the Executive Director



MIT is preparing to welcome students and faculty back to campus this fall, and we are thrilled to be able to see our Deshpande community in person once again. Our project teams have continued to innovate during the pandemic, some in the labs at MIT and others remotely. They will be joined in September by a new roster of Deshpande projects for the coming year, and we are excited about their potential for impact on the world. We'll be in touch about the return of events like our Innovation Showcase & Open House and the IdeaStream conference, as we make preparations for gathering safely. Read on to learn about the ongoing work of our projects and spinout companies

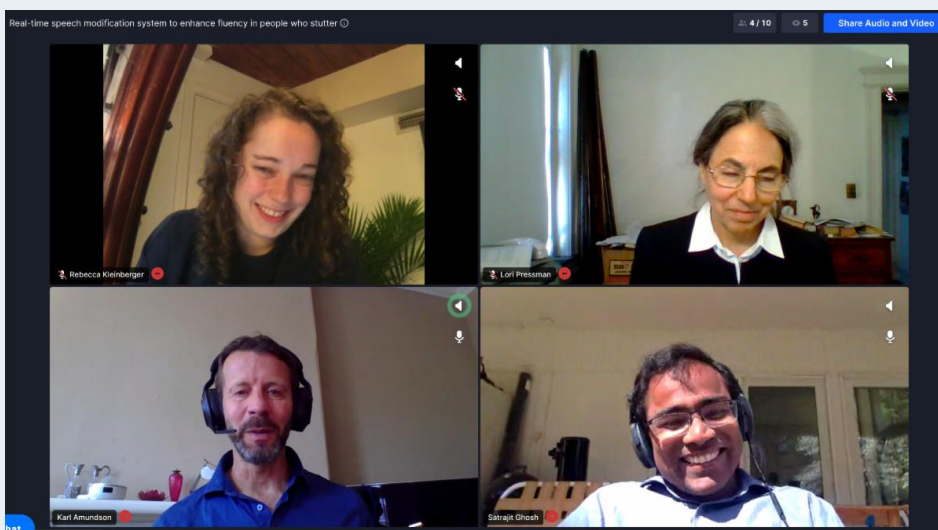
- Leon Sandler

## Catalyst Spotlight: Sameer Bharadwaj

Sameer Bharadwaj chatted with us about his path to becoming CEO of Orbia, advice for launching a startup, and being a Deshpande Catalyst mentor. Upon joining Orbia in 2016, he first led Orbia's compounds business group and later assumed leadership of the Alphagary, Koura, and Vestolit commercial brands. Previously, Sameer held key positions at specialty chemicals company Cabot Corporation and worked as a strategy consultant for The Boston Consulting Group, serving clients in a variety of industries. | [Read our Q&A with Sameer](#)



## IdeaStream 2021 conference highlighted Deshpande-supported research



IdeaStream, the Deshpande Center's premier annual event, was held virtually April 14-15. The conference highlighted the cutting-edge research of our Deshpande teams. Above, Deshpande grantees Satrajit Ghosh and Rebecca Kleinberger held a breakout session with Catalyst Lori Pressman and Karl Amundson. | [Watch videos of the IdeaStream 2021 panel discussions and presentations.](#)

# SPINOUT & GRANTEE NEWS

## Deshpande medical device startup seeks a founding CEO



This team is launching a medical device startup with a bioadhesive for haemostasias and tissue sealing, and is seeking a founding CEO to lead the company, raise investment capital, set the strategy, and build the team. The technology was developed in the Zhao lab

at MIT. Their research was profiled in an MIT News article describing how Hyunwoo Yuk spent two years by his brother's side through visits to operating rooms and intensive care units following a horrific accident. Those years gave him insight into the problems and limitations of medical technologies. Drawing on a background in soft materials, Yuk developed SanaHeal, a bioadhesive tape that can easily bind to tissues or organs. He works with Principal Investigator Xuanhe Zhao at MIT and Christoph Nabzdyk of the Mayo Clinic.

[Learn about the CEO search](#) | [Read the MIT News article](#)

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## How 3D-printed models of neuronal axons can accelerate development of therapies to treat neurodegenerative disorders

Research scientist Anna Jagielska spoke with the Deshpande Center about developing artificial axons using advanced 3D printing, in the hopes of speeding up the discovery of drugs that stimulate myelin repair. "Artificial axons fill an unmet need, providing the right tools to begin to address these neurological diseases," Jagielska says. "By supplying a sufficiently accurate representation of the neural environments for each of these illnesses, we're hoping to help develop therapies that may alleviate them." The team's format is compatible with pharmaceutical setups for drug screening, and fabrication throughput has been improved to produce samples with high reproducibility in a short period of time — a 96-well plate within minutes. She works with Principal Investigators Krystyn Van Vliet and Nicholas Fang on the Deshpande project [Artificial axons as a myelination assay for drug screening in neurological diseases](#). | [Read our article in MIT News](#)



## Inkbit Secures \$30 million in Series B Funding



Deshpande spinout Inkbit recently announced the closing of \$30 million in its Series B round of financing. The new funding, led by Phoenix Venture Partners LLC, will boost production of the company's additive manufacturing system, Inkbit Vista, and grow the commercial team to support expansion into the APAC and EMEA regions. PVP's Managing General Partner, John T. Chen, stated, "As the leading investor in materials science enabled technologies, PVP sees the technology Inkbit has commercialized as a total game

changer to the additive manufacturing industry because it solves the key bottlenecks preventing 3D printing from being adopted for mass manufacturing of high-quality finished goods. Via Separations spun out of the 2013 Deshpande project [A Platform for Multimaterial Fabrication](#). | [Read more from Inkbit](#)

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## Via Separations announces successful pilot of industrial electrification technology

Deshpande Center spinout Via Separations, which is developing process intensification systems to reduce energy intensity, announced its first successful pilot with Graphic Packaging International for black liquor concentration. Via's cross-industry filtration system is capable of reducing the energy required to separate chemicals by 90% and capital expenditures by 50%. "This successful pilot represents the first step towards deploying membrane-based filtration systems across pulp, chemical and petrochemical separations — representing an enormous opportunity to reduce 12% of US energy consumption," says Via CEO Shreya Dave. Via Separations spun out of the 2015 Deshpande project [Fouling Resistant Nanoporous Membranes](#). | [Read more from Via Separations](#)



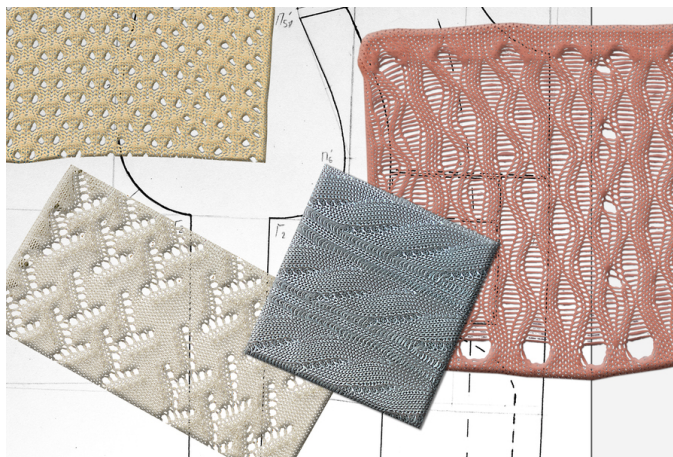
## Osmoses, startup improving chemical separations, wins MIT \$100K competition



Osmoses, a Deshpande startup trying to dramatically increase the efficiency of chemical separations, won the MIT \$100K Entrepreneurship Competition in May. The company has developed a molecular filtration solution containing tiny channels that can be precisely sized to separate even the smallest molecules. The company says its membranes can form channels that are 1/100,000 the width of a human hair, allowing the separation of molecules that differ in size by a mere fraction of an angstrom — less than the size of an atom. “This is one of the greatest challenges of the century for our society, but also one of the biggest opportunities for companies that can innovate in this space,” postdoc Francesco Maria Benedetti said in the winning pitch. He works with MIT Professor Zachary P. Smith, PhD candidate Katherine Mizrahi Rodriguez, and Holden Lai, a postdoc at the University of Pennsylvania, on the Deshpande project [Polymer membranes with exceptional performance and stability](#). | [Read the MIT News article](#)

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## Can plastic bags be recycled into fabrics of the future?



The stuff of plastic wrap and grocery bags, polyethylene is thin and lightweight, and could keep you cooler than most textiles because it lets heat through rather than trapping it in. But polyethylene would also lock in water and sweat, as it's unable to draw away and evaporate moisture. Now, MIT engineers have spun polyethylene into fibers and yarns designed to wick away moisture. The researchers hope that fabrics made from polyethylene could provide an incentive to recycle plastic bags into wearable textiles, adding to the material's sustainability. “Once someone throws a plastic bag in the ocean, that's a problem. But those bags could easily be recycled, and if you can make polyethylene into a sneaker or a hoodie, it would make economic sense to pick up these bags and recycle them,” says research scientist Svetlana Boriskina. She leads the Deshpande project [Antimicrobial & easy-care SmartPE fabrics](#). | [Read the MIT News article](#)

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## Inspired by personal tragedy, developing a bioadhesive tape for repairing damaged tissue



Hyunwoo Yuk spent two years by his brother's side through visits to operating rooms and intensive care units following a horrific accident. Those years gave him insight into the problems and limitations of medical technologies. Drawing on a background in soft materials, Yuk developed SanaHeal, a bioadhesive tape that can easily bind to tissues or organs. He works with Principal Investigator Xuanhe Zhao at MIT and Christoph Nabzdyk of the Mayo Clinic on the Deshpande project [Novel nature-inspired bioadhesives for tissue sealing](#). | [Read the MIT News article](#)

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## LiquiGlide raises \$13.5 million; partners with Colgate and Mibelle

Deshpande spinout LiquiGlide announced it has raised \$13.5 million, bringing its total funding to \$50 million. The announcement was coupled with the news that LiquiGlide has partnered with consumer-goods company Colgate and the Swiss cosmetic and pharmaceutical company Mibelle Group. The Deshpande startup was cofounded by Dave Smith, pictured here, and Kripa Varanasi from the 2009 Deshpande project [Nano-engineered Surfaces for Ultra High Power Density Thermal Management](#). | [Read the Boston Globe article](#)



## Innovation to Improve Ability webinar



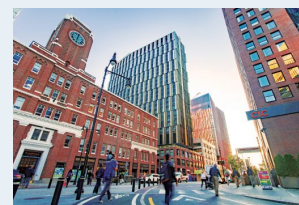
The Alana Down Syndrome Center hosted a webinar in June showcasing two projects funded by the Technology to Improve Ability program at the Deshpande Center. Leon Sandler, Deshpande Executive Director, moderated the webinar with Jaya Narain and Kristina Johnson (top row) and Ravi Rasalingam and Debkalpa Goswami. | [Watch the full webinar.](#)

## The Deshpande Center has moved!

In case you haven't heard, the Deshpande Center has moved across the street to Building E38, 292 Main Street.

We are located on the sixth floor.

Our phone number remains the same.



## Make Innovation Possible: Giving Opportunities



Your gift will make the groundbreaking research by our MIT teams — and the life-changing products by their future companies — possible. You can [Donate Online](#) using MIT's secure donation page, or contact [Leon Sandler](#) to discuss named and other giving opportunities.

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Have updates for our Deshpande Bits & Bytes newsletter? Email news and photos to [deshpandecenter@mit.edu](mailto:deshpandecenter@mit.edu).

