

## THE MINDSET OF BIG IDEAS

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### Audio Bumper

You're listening to the Slice of MIT podcast, a production of the MIT Alumni Association.

### INTRO: MIT is Switzerland

**LINA COLUCCI:** “People in Boston see MIT as kind of Switzerland. MIT doesn't do medicine, but it's this place where brilliant technologists, designers, developers, and engineers are at. And the medical community wants to work with these brilliant people. And the reason we've had so much success because MIT is this Switzerland, neutral ground, and everyone wants to work with us.”

### CHAPTER: Prologue

**NARRATOR:** Good ideas never exist in a vacuum—they come from life experiences, world views, curiosity, hard work, and collective brain power. And when put to practice, the best ideas address real issues and solve real problems.

And MIT is never at a shortage of big ideas. The MIT mindset lends itself to tackling unique questions, then digging deeper to find solutions that question the status quo.

So, how are MIT alumni putting this solve-anything mentality into practice? And what are some big ideas—and solutions—that are making a tangible impact? In this Slice of MIT podcast, we'll hear from five MIT alumni who are asking questions and confronting problems that will shape the future. We'll hear how a hacking ethos is leading to

breakthroughs in medicine; how embracing new technologies will shape the camera of the future; how rethinking microbes could change the way we treat disease; and how crowdsourcing is helping protect Earth from asteroids.

These conversations took place at the 2015 South by Southwest festival, the emerging technology forum in Austin, Texas, that attracted more than 30,000 attendees and featured more than 100 MIT alumni presenters. In a few of these interviews, you’ll hear some background noise. That’s just the non-stop collective brainpower that is South by Southwest.

## CHAPTER: Hacking Health Care

**NARRATOR:** MIT doesn’t have a medical school, so it might seem unusual that so many alumni and researchers are involved in health care and medicine. But those two fields face new issues every day, like research funding, cost-saving initiatives, and new methods for treatment. Lina Colucci and Priya Garg are part of a group working to solve these problems using MIT’s oldest methodology: hacking.

Colucci and Garg are co-directors of [MIT Hacking Medicine](#), a student-run group that bring together innovators from different fields for “Health Hackathons.” Each weekend-long hackathon attracts about 400 physicians, researchers, and entrepreneurs with a shared interest in a specific issue—like pediatrics or critical care—who use so-called design thinking to collaborate on new strategies.

Hacking Medicine’s first hackathon was held at MIT in October 2011. Since then, the numbers are staggering. More nearly 6,000 innovators have attended more than 40 events in 20 countries, and have spawned more than a dozen startups. Lina, the voice you heard at the beginning of this podcast, explains the design thinking mentality.

**COLUCCI:** “Design thinking is something that is standard in the design community but something that health care just doesn’t see. People say, ‘OK, here are the problems in health care, and we want to change them, but their methodologies could be off-base. We want to take this user-centered approach and think about different stake holders and their needs and wants. That’s especially important in health care because there are so many conflicting incentives and different players. We see a hackathon as being a spark that gets unlikely players collaborating together.”

**NARRATOR:** During the hackathons, strangers-turned-collaborators share ideas in pitch sessions, then meet with other participants for advice. Priya and Lina say it’s a different approach that some attendees may not be accustomed to, but are growing more open-minded.

**GARG:** “What we’ve seen recently is wanting to change—all the major hospitals in the Boston area have innovation centers now. They want to incorporate our methods and we work with all of them. Even though they recognize that there are

structures in place that are slow-moving, there are now these core people who recognize that it’s important and it’s got to happen soon.”

**COLUCCI:** “A lot of the medical system up until this point has been regimented and told to do things for a certain way—and that’s for good reason. People’s lives are at stake. At the same time, we’re realizing there’s a lot broken about the health care system, and finding the clinicians who have that expertise of the health care system and are able to provide insights without being negative—and constantly saying, ‘No, it can’t be done that way’—is hard to find. We’ve been fortunate that we have a community built up of people coming to our events. And they are the right clinicians. Having the critical mass of those people in the room just gets everyone in that right mindset.”

**NARRATOR:** So, think of Health Hackathons as the sum of thousands of big ideas, rooted in a mentality that approaches a real problem from an unseen perspective. Priya explains:

**Garg:** “Our entire methodology and the reason we are called hacking medicine is we identified that hacking is such a core part of the MIT culture and so we wanted to bring that into health care.

“Two core things about our methodology—one is disrupting the silos that are so prevalent in the health care industry then applying the MIT hacking ethos together to actually create these disruptive innovations.”

**NARRATOR:** MIT Hacking Medicine shows how thinking differently can lead to new ideas in health care. So what happens when we apply this mentality to a specific medical topic, like bacteria?

## **CHAPTER: A Microbial World**

**NARRATOR:** We may not know it, but each of us carry more than two pounds of microbes all over us. And no matter where we are, we are surrounded by our microbiome. This complex biological system of more than 100 trillion microorganisms on the human body, in airwaves, and in every environment.

But only recently have scientists discovered how important and how useful microbes can be. Bernat Olle is co-founder of Vedanta Biosciences, a Boston-based startup that researches interactions between the human microbiome and the immune system. He’s finding that an anti-bacterial world may be counter-productive to a healthy immune system.

**OLLE:** “Modern habits have been to clean up everything, sterilize everything, make it clean. We’re starting to find out now that this is not really a good idea—the abuse of antimicrobials and chemicals to clean and sterilize. This is actually

eliminating a lot of the microbial exposures that we have as humans, which we know are really important to help key human functions.”

**NARRATOR:** Research in the field of the microbiome is still in its early stages, and Olle—who was named “Innovator of the Year” by *MIT Technology Review Spain*—is part of a growing group of engineers focusing on this area. His research has shown that microbes may be able to train the part of the human immune system that is responsible for preventing autoimmune diseases.

**OLLE:** “Take a sample from a person that contains trillions of microbes, and you try to figure out what’s in there and whether it’s any different between a healthy person and a person that has a disease. When you find a difference, then you’re like, OK, maybe there’s some information in that data that can be the starting point for a drug program.

“So, in a pill, instead of their being a small molecule, like aspirin, the pill contains live microbes, so you swallow it, they colonize in your stomach and your gut and your colon, primarily intestine, and they provide functions that are important to your immune system.”

**NARRATOR:** Research has already shown that microbes play important roles in metabolism, digestion, and even mood. But Olle says the biggest challenges may be to change public perception, and help society embrace the ideas that microbes are not that bad.

**OLLE:** “One of the big contributions of this field is going to be changing mind frames. Moving from, ‘Oh microbes, scary stuff, stay away, pathogens, disease!’ to, ‘Microbes, actually most of them are good. Lets’ expose ourselves to microbes and make sure we have good drugs against the nasty ones.’”

**NARRATOR:** Bernat, Lina, and Priya show us that a Big Ideas mindset can lead to real-world change. But it’s not all serious. While these alums are rethinking healthcare, one alumnus is reimagining the camera of the future.

## CHAPTER: The Camera Reimagined

**BRØNDMO:** “Henri Cartier-Bresson wrote this book in the early 1950s called *The Decisive Moment* and coined that phrase where there is something very special about freezing the moment. You know, the Robert Capra shot where the soldier is being shot and falling in the image. Or the police chief of Saigon shooting his prisoner on the street. There’s sort of this school of thinking which is: camera, picture, frozen image. I think that’s very powerful as it continues to exist, but I like to think, ‘I’d like to hit the play button on that.’”

**NARRATOR:** Hans Peter Brøndmo is a serial entrepreneur whose work has focused on bringing new technologies to consumers. He spent nearly a decade at Nokia, including

three as head and “intrapreneur” of the Everyday Adventure division, where his team built smart-connected devices, apps, and wearables that focuses on imaging and location services.

At South by Southwest, Hans Peter discussed how advances in smartphone technology are rapidly evolving imaging and visual storytelling. To some, these technologies—like Snapchat, Instagram, and Vine—may make the camera obsolete. But to others, if we embrace the integration of photo and video, and reevaluate the definition of a camera, we may be in the midst of a photographic renaissance.

**BRØNDMO:** “Some people will show the folder of their apps, and they’ll say, hey, check out my cameras. So that’s becoming a whole thing. Is it all computational that way, right? Or, is even the notion that the camera is dead? And that’s where it gets kind of interesting.”

“The artificial boundary between video and photo is a technology boundary. It’s not in my view, kind of a medium boundary. That’s one my pet peeves. I think that boundary is going to get erased and every still image will have a play button and every video you want will have an ability to say, ‘Stop—scrub back. That’s the beautiful picture I want to use as a representation of what I’m looking at.’”

**NARRATOR:** For the first time in the history of our society, we have the ability to document nearly everything. New cars have driving cameras; buildings have security cameras; drones and satellites can capture images above us; and everyday life is documented through social media. So, in an era where nearly anything can be a camera, where does the artistry begin? It’s less about the lens and more about the person behind it.

**BRØNDMO:** “The camera reimagined is not about the camera. The camera reimagined is about the form. While the tools are important, they’re only important in service to the form. So the story, if you like, and expressing yourself and sort of creating new forms, that’s what this is all about, and the camera becomes the tool for doing that.

“And so what I love about thinking about the camera. You’re really thinking about storytelling. You’re thinking about art, you’re thinking about communication, self-expression, self-representation, it’s all these things, you know, the reason we shoot, the reason we capture, is the reason we makes the tools to support it.”

## **CHAPTER: Crowdsourcing Solutions**

**NARRATOR:** Jenn Gustetic is the Assistant Director for Open Innovation in the White House’s Office of Science and Technology Policy and a program executive at NASA.

Part of Jenn’s role is to help infuse the U.S. government with new ideas. One approach they’ve employed is [NASA Solve](#), an element of President Obama's Strategy for American Innovation that invites anyone—not just big companies and organizations—to help NASA solve pressing real-world issues. The rewards are two-fold: collaboration with the world’s largest space agency and scholarships and cash prizes for the best solution.

**GUSTETIC:** “There are number of different ways, depending on your skill set, to actually contribute to meaningful problem solving. And NASA Solve is a one-stop shop that allows to people to compete for money or to participate in citizen science activities that help expand and accelerate scientific knowledge, so that anyone can see themselves in the work that NASA does.”

**NARRATOR:** Perhaps the most well-known example is a 2013 challenge issued by NASA that focused on finding all asteroid threats to human populations. The goal: Use public engagement, open innovation, and citizen science to learn more about the asteroids in Earth’s orbit and the dangers they may pose.

**GUSTETIC:** “The [NASA Asteroid Grand Challenge](#) was announced in June 2013 to find all asteroid threats to human populations and know what to do about them. Kind of the definition of grand! It’s something that of global importance—literally—because we’re protecting our planet! But also asteroids are really interesting potential future destinations and sources for materials off-planet.”

**NARRATOR:** After 10 months of public input, nearly 1,200 people submitted more than 700 ideas and solutions. NASA distributed more than \$55,000 in prize money, and the challenge helped the space agency increased their capability to identify asteroids by 15 percent—a huge increase—and create a new application that allows scientists to use software to recognize more asteroids from existing surveys and telescopes.

Jenn says that a major driving force behind finding solutions is to first redefine the problem. Don’t focus only on the end-goal. Think about the incentives of the people you’re trying to engage. Determine the scope of the issues and then reimagine how to solve the problem.

**GUSTETIC:** “You really have to understand what you’re asking and what you’re driving. Problem definition is key, but it’s not a skill that taught or really widespread.”

“Think about what the scope of the problem should be and not just trying to solve the problem. A lot of what my job is to help think about how we change the frame from federal employees being problem solvers to being problem definers. So that we can unleash creativity from other fields that might actually help us get to better solutions.”

**NARRATOR:** What do you think is the key to a big ideas mindset? And how do we turn big ideas into real action? Tweet your thoughts on this episode to [@mit\\_alumni](#)—that’s at-mit-underscore-alumni. And if you want to hear more surprising, insightful, and quirky stories about MIT, [subscribe to the Slice of MIT podcast on iTunes](#). Please rate the podcast and leave a review—tell us what you liked, and didn’t like, about this episode. And let us know what type of stories you’d enjoy hearing in the future.

Special thank you to all of the MIT alumni who took part in the 2015 South by Southwest Interactive, especially Hans Peter Brøndmo, Lina Colucci, Priya Garg, Jenn Gustetic, and Bernat Olle.

Subscribe on iTunes to automatically receive next month’s episode of the Slice of MIT podcast. For more stories about MIT at South by Southwest, [visit the \*Slice of MIT\* blog](#) at [slice.mit.edu](#) and search s-x-s-w-15.

Closing Audio Bumper

## CHAPTER: SOLVE AND HUB-WEEK CROSS PROMOTION

**NARRATOR:** Want to learn more about the mindset behind big ideas? This podcast was produced to coincide with HUBweek, the first-ever weeklong celebration of the arts, science, and innovation culture of Boston, co-sponsored by MIT in locations throughout Boston and Cambridge; and Solve, the launch of an ongoing MIT program to bring together a global group of creative thinkers, doers, and influencers to explore, model, and test new solutions to the world’s most pressing problems.

For more information on HUBweek, which takes place October 3rd through 10th, 2015, visit [w-w-w-dot-HUBweek-dot-org](#). And for more information on Solve, which takes place at MIT October 5th through 8th, 2015, visit [solve-dot-mit-dot-edu](#).

### NARRATOR

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### MUSIC

“How it Begins”  
“On the Group”  
“Wallpaper”

All songs by Kevin MacLeod (incompetech.com)  
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